XXV.—PATENTS ISSUED BY THE UNITED STATES DURING THE YEARS 1882, 1883, AND 1884, RELATING TO FISH AND THE METHODS, PRODUCTS, AND APPLICATIONS OF THE FISHERIES.

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ANALYSIS.

Section C.

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2.—*Knives; fish knives (for general use).*

2.—*Knives; clam and oyster knives.*

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SECTION D.

I.—PREPARATION AND PRESERVATION OF FOOD.

Fish-cars and other floating cages for aquatic animals.

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DESCRIPTION OF PATENTS.

No. 266134.

(James B. Grady, Philadelphia, Pa.; patented October 17, 1882; fish-cutter. See Plates I, II, III.)

A machine for removing the heads and tails of fish as a preliminary step in preparing them for boxing. The usual method of preparing the fish by hand is as follows: The fish are brought to the operating-table in baskets, crates, &c., where they are to be laid out in regular rows. The operator then removes the heads and tails with a knife, after which the fish are carried to the flakes or drying dishes. The removal of the heads and tails is laborious work, and even when performed by a skillful workman not always well done. In preparing the fish for boxing it is necessary that none of them should be over a certain size, the boxes being all of a standard size. If the fish are longer than the standard, they must either be trimmed by the person employed in boxing or be returned to the cutting table. If a gauge is used by the cutter, it takes longer time to dress and prepare the fish. The object here is to provide means whereby the fish may be carried from a series of hoppers and automatically delivered by a system of elevators and endless belts to a series of pairs of saws or other cutting apparatus, which removes their heads and tails, after which they are delivered into a receptacle. The fish are placed in a hopper, A, as they come from the water. This hopper has an opening, *a*, at its lower end, through which they pass, and they are then taken up one at a time, by buckets, *b*, on endless apron B, moving on the pulleys b^1 b^2. The fish are carried by the apron to the of the top roll b^1, where they drop off into the trough C, which is wider at the top than the bottom, and has running through it, at its bottom, the endless belt D, moving on the pulleys *d* d^1. The fish are thrown into the trough C crosswise, but the trough being V-shaped, they fall on the carrier lengthwise. They are then carried by the belt D forward toward the pulleys d^1, under which are placed the saws or cutters I I^1 for removing the heads and tails; but as it is necessary that all the fish should arrive at the saws with their heads on the same side of the belt, or with their heads toward the larger saw, the gate E is placed over the apron D. This gate is placed at an angle over the apron, with its lower edge very near to but not in contact with the apron, and it is held in place by the arms *e e* passing through the sides of the trough C. It is also held down by a spring. When the fish are moving on the belt with their tails forward, or in the direction of the pulleys d^1, the tail acts as a wedge or lever and raises the end of the gate E and allows the fish to pass under it. If, on the contrary, they approach the gate heads forward, the head strikes against the edge of the gate and the fish slides up and over the

gate and is thrown into or against the lower end of the semicircular-shaped turner F. The momentum carries them partly around the circumference of the inner side of this turner, when they fall back on the belt D behind the gate E, having been turned in an opposite direction from what they were when they met the gate E. By this arrangement all the fish are carried tails forward, after either going over or under the gate E. From there they are carried forward to the pulley d^1. At this point is placed what is called a deflector, and which is intended to place the fish on the carrier or belt H, with the heads toward the saws or cutters I^1. This deflector is made in the shape of a longitudinal section of a cone bent to a semicircle and having an extension or flattened side, *g*. The fish enter the deflector at its larger end, tail first, and, following the shape of the cone, the tail strikes the brush or stop g^1. The head slides along the flattened side and the fish drops on the belt with the head toward the saw or cutter I^1. The belt H moves on the pulleys $h\ h^1$ in the direction of *h*, and it also runs under the pulley d^1 and belt D. The fish are carried by the belt H forward and under belt D and pulley d^1, which hold it in position while the cutters $I\ I^1$ remove the heads and tails. They are then carried forward by the belt H and deposited in the box K, whence they may be removed from time to time and cleansed of their entrails, or otherwise further prepared for boxing.

CLAIMS.

"1. In a machine for dressing fish, the combination of the hopper A, the elevator-belt B, provided with buckets *b*, chute C, endless belts D and H, with their pulleys *d h* and *d' h'*, and knives I and I^1, substantially as shown and described.

"2. In a machine for dressing fish, the combination of the endless belt or carrier D, pulleys *d d'*, swing-gate E, deflectors F and G, chute C, and the cutters I and I', substantially as shown and described.

"3. In a machine for dressing fish, the combination of the endless belts D and H, with their pulleys *d h* and *d' h'*, and the cutters I I' on each side of the belt, with the chute C and deflector G, whereby the fish are delivered sidewise to the cutters, substantially as shown and described.

"4. In a machine for dressing fish, the combination, with the chute C and carrier D, of the inclined gate E and curved deflector F, whereby the position of the fish on the carrier is automatically regulated, substantially as described.

"5. In apparatus designed to prepare and dress fish by mechanical means, a deflector made, substantially as described, as the longitudinal section of a cone or conoid, and having a flattened side or projection, and adapted to alter the relative position of fish while descending from one carrier to another carrier parallel to it."

No. 253363.

(Jeremiah W. Foard, San Francisco, Cal.; patented February 7, 1882; fish-hook extractor. See Plate IV.)

A shaft of brass, of malleable iron, or of rubber, has a recess formed by overlapping flanges riveted to the shaft, and of such width as to cover the point of a hook and prevent its reinsertion in drawing.

To extract a hook from a fish's throat the line is drawn moderately taut and the instrument is inserted into the shank of the hook, embracing it within the recess, and is then pushed down upon the inside of the bend of the hook till the barb is liberated. This done, the extractor is withdrawn, bringing the hook with it.

CLAIM.

"The fish-hook extractor herein described, consisting of the shaft C, having overlapping flanges A at the point and adjacent sides, forming recesscs B, substantially as shown, and for the purposes specified."

No. 295611.

(Louis A. Amouroux, New York, N. Y.; patented March 25, 1884; machine for opening oysters. See Plate V.)

The object is to open oysters quickly and conveniently. The shell is separated at the hinge to avoid losing the juice.

A frame has standards for supporting a fulcrumed lever having a serrated jaw, against which the oyster is placed, and an adjustable standard is rigidly locked to the slotted base of the frame, and provided at its upper end with a twisted and pointed knife for severing the butt or hinged part of the shell. In operation, the hook *d* of the detachable upright standard D is first so placed over any one of the transverse rods a^2, as to be at a desirable distance from the serrated lever B, according to the size of the oyster to be opened. The oyster is then placed with its mouth against one of the teeth of the jaw, while the butt or hinged end of the shell is placed against the knife. The lever is then pressed down, and the butt of the oyster forced against the knife, whereby the muscle that holds together the two halves of the shell is severed by the point of the knife, while the sections of the shell are separated by the twisted portion. The shell is then opened by a recessed knife, by which also the oyster is removed.

The inventor says:

"I am aware that oyster-openers in which a fixed serrated abutment and a reciprocating knife are employed have been used heretofore, and I do not claim the same."

CLAIMS.

"1. An oyster-opener consisting of a supporting frame, a fulcrumed lever having a serrated jaw, an adjustable standard having a fixed and twisting knife, and means whereby the standard is rigidly locked to the base of the frame, substantially as set forth.

"2. The combination of a base, A, having fixed upright standards A′, and a recess with transverse rods a^2, a fulcrumed lever, B B′, an adjustable standard, D, having a fixed and twisted cutting-knife, *e*, and a bottom hook, *d*, and heel, whereby the standard D may be rigidly locked to the base at varying distances from the jaw, substantially as set forth."

No. 299756.

(Cuningham Drake, Philadelphia, Pa.; patented June 3, 1884; oyster-clamp. See Plate VI.)

In opening oysters difficulty is often experienced in holding the oyster firmly and the hands are frequently cut.

This invention is intended to present an inexpensive and convenient clamp for holding the oyster firmly during the operation. The clamp consists of two parts, of wood or metal, hinged together at their rear ends. The bottom part is longer than the top, and has a recess rounded at its inner end and gradually increasing in depth from the open front side, forming an inward-inclined bottom. The top has a similar recess. As the oyster is held between the hinged parts or jaws, its projecting end may readily be broken with a knife or hammer, and a pointed implement inserted for prying the shells apart.

CLAIM.

"The oyster clamp or holder consisting of the recessed bottom part A, and short recessed top part, B, hinged together at C, the bottom part projecting beyond the top, as shown, substantially as and for the purpose set forth."

No. 297079.

(J. Frank and Franklin L. Homan, New Haven, Conn.; patented April 15, 1884; apparatus for catching star-fish. See Plate VII.)

An apparatus for the removal of star-fish from oyster-beds. The great destruction of oysters due to star-fish is well known. A dredge or drag to be drawn over the oyster-beds to start the fish from the oysters over which they may be, has, behind it and above its plane, a receptacle in which the fish, naturally rising when disturbed by the drag, will be caught. The oysters which have been disturbed and passed over the drag will fall back between this and the mouth of the receptacle, and be left on the bed. A separate receptacle, however, may be attached directly to the drag and thus below the first, to catch the oysters as they pass over.

CLAIM.

"The combination of the drag A provided with means, substantially such as described, whereby it may be drawn over the surface of the oyster-bed, with an opened-mouthed receptacle, D, in rear of the drag, the mouth arranged to open above the plane of the drag, and so as to leave an open space downward between the drag and the mouth, substantially as described."

No. 256041.

(Ebenezer Pierce, New Bedford, Mass.; patented April 4, 1882; breech-loading bomb-gun. See Plates VIII and IX.)

This invention comprises a combined bomb-gun and harpoon, in which the gun can be charged without detaching the barrel. In this respect it differs from a patent for a similar invention granted the present inventor January 28, 1879, No. 211777. The gun barrel is hinged to the breech-piece so that it can be dropped down or turned away from the breech when the gun is to be charged. Within a chamber in the breech are a hammer, its main spring, and a firing-pin which explodes the charge when struck by the hammer. The chamber is closed by top and bottom plates which prevent the access of water thereto. The journal pins of the hammer project through the sides of the chamber. One of these pins carries a pawl which engages a trigger pivoted to the face plate of the breech-block. On one side of the gun is a rod which is divided near the breech of the gun. The lower portion of this rod is supported by and slides in guides upon the breech piece, and the upper portion is supported by and slides in guides upon the barrel. The outer end of the rod projects beyond the muzzle of the gun. The lower end engages with the firing mechanism in the breech-piece. A spiral spring encircles the upper portion of the rod above the breech, and keeps it from contact with the divided lower portion of the rod. The gun is thrown and when the front end of the rod strikes the body of the whale it is pushed back against the lower portion of the rod, which strikes the trigger and explodes the charge, which projects the harpoon into the whale.

The inventor says:

"Of course it is well understood that as breech-loading guns have long been in use no attempt is made in this application to broadly claim a breech-loading bomb-gun; but by making the bomb-gun breech-loading by hinging the barrel to the breech-piece it is found to be far more serviceable and convenient than in my patent hereinbefore referred to, in which the barrel is not hinged, but must be entirely detached from the breech-piece for loading.

"It is obvious that if in the present instance the rod for firing the gun were held by guides both upon the barrel and the breech-piece, as in the case in my said patent, the barrel could not be turned upon the

hinges for purposes of loading; but by carrying the sliding rod which operates the firing mechanism by impact, as before described, solely upon guides on the barrel, the barrel can be turned upon its hinge for the purpose of loading without detaching the rod therefrom. Therefore the rod will be in position on the barrel of the gun at all times and always ready, so that after the insertion of a cartridge the barrel can be closed and the gun will be ready for instant action without necessitating the attaching of the rod. Moreover, the rod cannot be lost, which, were it detachable, would often occur."

CLAIMS.

"1. In a breech-loading bomb-gun, the combination of a hinged barrel with the breech-piece carrying firing devices, a sliding rod adapted to connect with and actuate the firing devices by impact, as described, said rod being arranged in guides on the hinged barrel to move therewith during the act of inserting a cartridge or charge in the barrel of the gun when it is turned on its hinge, as and for the purpose set forth.

"2. The combination, with a breech-loading bomb-gun, of the divided sliding rod, which operates the mechanism employed for firing the charge by impact, one portion of said rod being supported by a guide upon the breech-piece and the remaining part of the rod being supported by guides upon the barrel, whereby the barrel can be turned back on its hinge without disconnecting either of the rods, substantially as described."

No. 256548.

(Patrick Cunningham, New Bedford, Mass.; patented April 18, 1882; bomb gun. See Plates X and XI.)

The object here is to provide a combined bomb-gun and harpoon which may be loaded and unloaded with ease and celerity, and one which will be safe to handle and use, and also one in which can be used the bomb-lance and cartridge combined, patented to this inventor December 28, 1875, which bomb-lance requires a breech-loading gun in which to be fired.

With a hinged-barrel breech-loading bomb-gun is combined a rod, the rear end of which fits in a socket attached to the breech-piece of the gun, that part of the rod which is inclosed in the socket having a spur which passes through an elongated slot in the side of the breech and connects with and actuates the firing devices when the rod is shifted to the rear by force applied at its front end.

CLAIMS.

"The combination of a breech-loading bomb-gun, having a hinged barrel and provided with the slot *l*, with the socket B, having spring *i*, and the rod C, provided with the projection *g*, substantially as shown."

No. 10392, reissue.

(Ebenezer Pierce, New Bedford, Mass.; patented October 9, 1883, original patent No. 256041, April 4, 1882; breech-loading bomb-gun. See Plates XII and XIII.)

The details of the invention are more fully described than in the original patent. The construction and operation of the device are, of course, the same as that of the original patent, a description of which has already been given. The change is in the description and claims.

CLAIMS.

"1. In a breech-loading bomb-gun, the combination of a hinged barrel, with the breech-piece carrying firing devices, and a sliding rod adapted to connect with and actuate the firing devices by impact, as described, said rod being arranged in guides on the hinged barrel to move therewith during the act of inserting a cartridge or charge in the barrel of the gun when it is turned on its hinge, as and for the purpose set forth.

"2. The combination, with a breech-loading bomb-gun, of the divided sliding rod which operates the mechanism employed for firing the charge by impact, one portion of said rod being supported by a guide upon the breech-piece and the remaining part of the rod being supported by guides upon the barrel, whereby the barrel can be turned back on its hinge without disconnecting either of the rods, substantially as described.

"3. In a breech-loading bomb-gun wherein a hollow breech-piece contains the firing apparatus, and a catch is provided to engage with a tumbler-tooth on the hammer-axis when the gun is cocked, a push-rod on the exterior of said breech-piece, adapted, when pushed, to release said tumbler-tooth, in combination with a barrel hinged to the upper edge of one of the sides of said breech-piece, and latched or pinned to the upper edge of the opposite side of said breech-piece, substantially as described.

"4. In a breech-loading bomb-gun, a flat-surfaced breech-piece having a barrel hinged thereto at one of its upper edges on a line with the surface of said breech-piece, and latched or pinned thereto at the opposite edge, substantially as described."

No. 253456.

(Marcieue H. Whitcomb, Holyoke, Mass.; patented February 7, 1882; fishing apparatus. See Plate XIV.)

This apparatus, designed to be set after the fashion of a trap, is for fishing through holes in the ice, and when a fish is caught on the hook a signal denoting the fact is automatically displayed. A cylindrical tube forms the body of the apparatus, and into the end of this tube is inserted a stick which serves as a standard. On the outside of the tube

is hung a spool to hold the fish-line. The lower end of this spool bears on a stop, the upper end being kept in place by an elastic clasp, which can be moved up and down on the tube, permitting the removal of the spool, and can be set to bear against the end of the spool with sufficient friction to prevent the spool from turning too rapidly. In the tube is a piston, to the upper end of which is attached a pompon, or flag, as a signal, the pompon or flag being drawn into the tube when the trap is set, but shooting up into sight when the trap is sprung. The piston is impelled upward by a coiled spring, one end of which is attached to the tube and the other to the piston. The piston is a rod bent out laterally at its lower end, which projects through a vertical slot in the side of the tube and forms a tappet for co-operation with the tripping-lever, which is pivoted to the outside of the tube and has its inner end hooked to catch upon the lateral projection of the piston, with the other end (when the trap is set) projecting laterally for connection with the fish-line. A loop at a convenient point is tied in the line and hung upon the out end of the tripping-lever. Thence it drops into the water with a hook depending therefrom. When a fish is caught its pull upon the line detaches the hook of the tripping-lever from the lateral projection of the piston, which being freed flies up and displays the signal at the top.

CLAIMS.

"1. The combination of the tubular body, the spring-piston with its signal-top, the tripping-lever, and the fish-line, all substantially as described, and for purposes specified.

"2. The combination of the tubular body, the spool thereon, the spring-piston, the tripping-lever, and the fish-line, all substantially as described, and for purposes specified."

No. 263638.

(Richmond A. Wentworth, Appleton, Me.; patented August 29, 1882; fish-trap. See Plate XV.)

This invention relates to that class of attachments for fishing-lines in which the bait-hook and line, when pulled by the fish, operate a trigger, releasing a spring to jerk the hook suddenly into the mouth. A metal rod has an eye in its upper end for the attachment of the line. Encircling the upper end of the rod, and fastened with one end near its top, is a coiled spring, the lower end of which is fastened to a cross-piece, which slides upon the rod, and is enlarged where the rod passes through it. To this cross-piece is fastened the lower part of the fish-line, to which the bait-hook is attached. This part of the line passes down along the rod and over a small sheave at its bifurcated lower end. Thence it passes through the forked lower end of the trigger and over a little sheave or roller inserted therein. Upon the lower end of the trigger is a spring, the free end of which bears against the lower part

of the rod which is grooved longitudinally to receive it, and prevent its slipping sidewise. By moving this spring up or down upon the trigger the force required to spring the trap may be adjusted at pleasure according to the size and species of fish which it is desired to catch. The upper part of the trigger is hinged in a short arm which is fastened upon and projects from the rod.

CLAIM.

"The herein-described fish-trap or hook-spring, consisting of the rod A, spring C, sliding cross-head D, trigger E, having the adjustable spring F, and hook-line B′, passing through the lower ends of rod A and trigger E, all constructed and combined to operate substantially as and for the purpose shown and set forth."

No. 272232.

(Charles J. B. Gaume, Brooklyn, N. Y.; patented February 13, 1883; fishing-tackle. See Plate XVI.)

The fishing-line is thrown out into the water, and the land end is passed over the pulley H, around the cleat or catch O on the arm N, and is received on the cleat C, the arm L having been previously raised and the inner end of the latch-lever M passed into the aperture *a*, and the stud *b* passed under the outer end of the latch-lever M. As soon as a fish touches the hook or the bait on the same, this slight tension on the line will be sufficient to cause the bell at the upper end of the rod of F to ring. If the fish nibbles at the bait, the tension on the line will be sufficient to draw the outer end of the arm N upward, and thus release the outer end of the lever M, which will then swing downward with its outer end, thereby causing the inner end to pass out of the aperture *a*. The spring J will then draw the arm L down very suddenly, and will jerk the line, as the same is attached to this arm L. This jerk on the line pulls the hook into the fish's jaw.

CLAIMS.

"1. In a fishing-tackle, the combination, with the block A, of the slotted tube E, the spring J, the disk K, the arm L, the latch-lever M, and the pivoted arm N, substantially as herein shown and described, and for the purpose set forth.

"2. In a fishing-tackle, the combination with the block A, of the slotted tube E, the spring J therein, the disk K, the arm L, the latch-lever M, the pivoted arm N, provided with a lateral stud, *b*, and the cleat or catch O on the arm N, substantially as herein shown and described, and for the purpose set forth.

"3. In a fishing-tackle, the combination, with the block A, the slotted tube E, the spring J, the disk K, the arm L, the latch-lever M, the pivoted arm N, provided with the catch O, the rod F, provided with the bell G, and the pulley H, substantially as and for the purpose set forth."

No. 279508.

(David B. Tiffany, Xenia, Ohio; patented June 12, 1883; fishing-stake. See Plate XVII.)

The stake is driven into the ground. Inserted into one side at a suitable distance above the ground is a screw-rod or clamping-bolt on which is a line winding-reel. The contact of the inner end of the reel with the stake is prevented by a washer on the screw-bolt. The clamping-rod can be loosened to allow the reel to revolve upon it, or it can be so tightened as to hold the reel rigid and prevent its revolution. On the upper end of the stake is a gong which sounds an alarm when a fish is hooked and draws the line from the reel.

The inventor says:

"I am aware there is nothing new in the mere use of an alarm used in connection with a reel, and I do not therefore broadly claim such a device.

"I am aware that a fishing-stake provided with a reel and an alarm mechanism is not new, and this I disclaim. My invention differs from these in placing the reel upon a clamping-screw, so that the reel can be allowed to freely revolve and thus sound an alarm, or be locked in place, so that the line cannot be drawn off when left at night."

CLAIMS.

"The combination of the stake A, the reel D, the washer F, screw clamping-rod G, which passes through the reel directly into the stake, the projection H on the end of the reel, the spring-actuated hammer J, and gong O, the parts being combined and arranged to operate substantially as shown."

No. 279556.

(Cicero Fisher, Temperance Hall, Tenn.; patented June 19, 1883; fish-trap. See Plate XVIII.)

The invention relates to improvements in fishing-tackle in which, by means of a spring and trigger and hooks, the fish is fastened without jerking the pole by the hand; and the object of the invention is to hook the fish immediately upon its seizing the bait. On the end of the block or pole is fixed a metallic plate, *b*, containing a niche, *c*, for the end *e* of the trigger. When the spring is drawn down to be set the trigger passes through the loop or staple *s*, which is in the end of the block and serves as a rest for the trigger while in the niche *c*, and prevents the end where the line is tied from rising up with the spring.

CLAIM.

"The combination with the block or pole B, provided with loop or staple *s*, of the spring A, trigger T, link *a*, and line L, having one or more hooks, all substantially as and for the purpose described."

No 283444.

(Richmond A. Wentworth, Appleton, Me.; patented August 21, 1883; fish-trap or spring-hook. See Plate XIX.)

The invention relates to that class of spring attachments for fishing lines in which the bait, hook, and line, when pulled by the fish taking the bait, operate a trigger, releasing a spring and suddenly jerking the hook into the mouth of the fish biting; and it consists in an improvement upon the fish-trap, for which letters patent of the United States, No. 263638, were granted this inventor August 29, 1882.

A metal rod has an eye or hole at its upper end to which is attached the fishing line. Encircling the upper end of this rod, and fastened with one end near its top is a coiled spring, the lower end of which is fastened in a cross-piece which slides upon the rod. To this cross-piece is fastened the lower part of the fishing line, to which the bait hook is attached. This part of the line passes down along the rod and through a small piece of cord or wire, which passes through an eye in the lower end of the rod to the lower end of the trigger. On the trigger is a spring, the free end of which bears against the lower part of the rod, which is grooved longitudinally to receive the end of the spring and prevent its slipping sidewise. By moving this spring up or down upon the trigger, the force required to spring the trap may be adjusted according to the size and species of fish which it is desired to catch. Around the top of the rod inside of the coiled spring is placed another small coiled spring, against which the shoulder of the cross-head strikes when the trap is sprung, thus cushioning the stroke of the cross-head.

CLAIMS.

"1. The herein-described fish-trap or spring-hook, consisting of the rod A, spring I, spring C, sliding cross-head D D′, trigger E, having the adjustable spring F, and connected by a cord or wire, *b*, with eye *a*, and hook-line B′, passing through said eye *a*, all constructed and combined to operate substantially as and for the purpose shown and set forth.

"2. The combination, in a fish-trap or spring-hook of the described class, of the rod A, spring C, having cross-head D D′, and cushion-spring I, substantially as and for the purpose herein shown and set forth."

No. 286494.

(Merrill R. Skinner, Hamburg, N. Y.; patented October 9, 1883; fish trap-hook. See Plate XX.)

This invention relates to those hooks which are provided with auxiliary hooks or gaff-hooks, so connected with the bait-hook that a pull on the bait-hook will cause the gaff hooks to swing down and seize the

fish or other animal which is pulling on the bait-hook. The bait-hook is attached to the coil of the spring by a snood. When a fish or other animal seizes the bait-hook and pulls on the same, the draft is transmitted by the spring-arms to the gaff-hooks, which latter are swung outward and downward on their pivots, whereby the spring-arms are distended, until the gaff-hooks have passed a position at right angles to the bail, when they begin to close, this movement being accelerated by the pressure of the spring-arms. The inclined position of the slots produces a wedging action, which tends to facilitate and accelerate the closing of the hooks. As the spring-arms are attached to the gaff-hooks at a short distance from their pivots, the downward movement of the gaff-hooks will be very quick, thereby enabling the gaff-hooks to seize the fish immediately. For some kinds of fish a very light spring is employed for connecting the bait-hook with the gaff-hooks, and if such a light spring is used in the device, and it is desired to use the hook with a greater spring pressure, this is accomplished by stretching a rubber band, *i*, over the spring-arms *e*, as represented in the drawings. The rubber band can be moved toward or from the coil *e'*, thereby reducing or increasing the pressure on the spring-arms, as may be desired. By increasing or reducing the length of the snood *k*, the point at which the fish is seized by the gaff-hooks can be regulated. The gaff-hooks are set by pressing them back into the frame, in which position they are held by the spring.

CLAIMS.

"1. The combination, with a bail D, of gaff-hooks C, pivoted to the bail, a spring B, having its arms *e* attached to the gaff-hooks near their pivots, and a bait-hook, A, attached to the spring B at the junction of its arms, substantially as set forth.

"2. The combination of the bail or frame D, gaff-hooks C C, pivoted to the frame D, and provided with inclined slots *h*, a spring, B, constructed with arms *e*, engaging in the slots *h* of the gaff-hooks, and a bait-hook, A, attached to the spring B, substantially as set forth."

No. 254313.

(William E. Hemming, Redditch, county of Worcester, England, assignor to Charles F. Imbrie, New York, N. Y.; patented February 28, 1882; fish-hook. See Plate XXI.)

The object is to provide barbed fish-hooks with a baiting needle, upon which living bait may be placed and held securely, or upon which a trolling-spoon may be quickly adjusted. A duplex-barbed fish-hook has rigidly secured to and between its shanks one limb of a bent baiting needle, the lower end of the limb terminating in a catch which clasps the lower end of the needle when it is pressed down. When released the needle springs out to an angle with the limb when anything desir-

able may be slipped upon the needle. The needle may be passed through any small and not necessarily vital part of live bait, and when the needle is held in the catch it will hold the bait securely. A trolling-spoon provided with staples may be adjusted on the pin instead of the live bait, being held by the catch, the same as the bait.

CLAIMS.

"1. As an improved article of manufacture, a fish-hook made substantially as herein shown and described, with a baiting-needle, B, attached to the rear portion of its shank, as set forth.

"2. The combination, with the hooks A, of the spring baiting-needle B and clasp *b'*, substantially as specified.

"3. The combination, with the hooks A and baiting-needle B, of the trolling-spoon C, provided with hooks or staples *d*, whereby said trolling-spoon may be removably attached to and locked next the barbed hooks, substantially as herein shown and described."

No. 264256.

(Frank De Forest, De Soto, Mo.; patented September 12, 1882; fish-hook. See Plate XXII.)

Two hooks with their barbs in opposite directions, and bent so that their barbed ends may separate, are jointed near the top of the shank. The shanks have the usual eyes for receiving the fishing line, which passes through them, so that when it is drawn upon, the upper ends of the hooks are brought together and the barbs are spread. The bait of sufficient size to retain the barbed ends together is placed over the hooks. When thus baited, the hooks cannot separate by being drawn through the water; but when taken by the fish, and the line is thus drawn upon, the barbs spread.

CLAIM.

"The double-jointed fish-hook consisting of the two hooks A pointed in opposite directions, with their points arranged to stand in close contiguity to each other, whereby they are held against being spread apart by the action of the water by the bait placed thereon, and having their shanks looped or bent into eyes around a pivot, *b*, while their upper ends have passed through them the line *c*, all constructed as shown and described, and for the purpose set forth."

No. 280610.

(William N. Greer, Watertown, Dak.; patented July 3, 1883; fish trap-hook. See Plate XXIII.)

The invention has relation to that class of fish-hooks generally known as "lever-hooks", and more particularly to that class of lever-hooks in

which the catch-hook is held by means of a clamp. In using this class of hooks it is desirable to be able to set the catch-hook so that it will be released and strike the fish biting on the bait-hook, while it is at the same time desirable to have the catch-hook set in such a manner that it will not strike the fish which may only be nibbling at the bait. To this end the clamp is made adjustable on the shank, so that it may clamp the catch-hook farther from or closer to the fulcrum of the latter, according to the nature and manner of biting of the fish for which the bait is set, more force being required to release the catch-hook when it is clamped far from the fulcrum than when it is clamped near to it. The spring-catch F consists of a strip of spring metal forming an eye, F′, at its inner doubled end, which slides upon rod D. The ends are held together by a small set-screw, G, while its outer ends form wings *f*, which clasp the shank of the hook C, when inserted, in such a manner that by a slight pull it may be drawn out of the said clamp. As the fish takes the bait and pulls upon the bait-hook A, this in turn pulling upon the enlargement B of the upper hook, C, will tilt this upon its fulcrum in the eye *d*, so as to release it from the spring-clamp F on rod D, thereby, by the leverage between the points *b* and *d*, throwing the upper hook downward with considerable force, causing its barbed point to penetrate the body of the fish caught on the bait-hook, so that it will be impossible for the catch to escape.

CLAIM.

"The combination, in a fish-hook of the described class, of the spring-clamp F, forming eye F′, and clamping-wings *f*, having set-screws G and sliding adjustably upon rod D, with the catch-hook C hinged to the end of rod D, and having bait-hook A hinged near its fulcrum, as and for the purpose shown and set forth."

No. 310118.

(William C. Bower, Union Springs, Ala.; patented December 30, 1884; fish-hook. See Plate XXIV.)

To prevent the fish from swallowing the hook, this is provided with a lateral branch arm which may be formed of the same piece of wire as the hook, and by a return or bend of the same.

CLAIM.

"A fish-hook provided with a rigid rearwardly-extending branch arm, B, permanently attached at or near the upper termination of the lower curve of the hook, and on the side opposite the barb *a*, and having a free unattached end, as shown, as and for the purpose intended, substantially as described."

No. 295369.

(Newton A. Dickinson, Chester, Conn.; patented March 18, 1884; trolling-hook. See Plate XXV.)

A tapering stick has a socket in its lower end, into which the upper screw-threaded end of the hook is secured, and has a reduced upper end, forming a shoulder, upon which a cap of lead is placed, having an aperture in its upper end, through which an eyed screw passes into the end of the stick. The eyed screw holds the cap in place, and serves for the attachment of the line. A spring rod or fender is secured at its upper end in the side of the cap, and its lower end is near the end of the hook, serving to fend off any sea-weeds or the like which the hook may meet, while it is sufficiently elastic not to interfere with the catching of the fish that may bite the hook.

CLAIM.

"The combination of a tapering stick having its upper portion reduced to form a shoulder, and having screw-threaded sockets in the ends of the same, a hook having a screw-threaded shank inserted into the lower end of the stick, a cap of heavy metal fitting over the reduced end of the stick, an eyed screw fitting into the upper end of the stick and holding the cap in place, and a flexible or elastic rod or fender fastened into the side of the cap and extending down to near the point of the hook, as and for the purpose shown and set forth."

No. 253308.

(Karl Müller, Hornberg, Baden, Germany; patented February 7, 1882; bait-hook. See Plate XXVI.)

The bait-hook is inclosed within a fish-shaped casing made of two sections. One section is provided, at that part which represents the head of the fish, with helically-bent wings, the other at the corresponding end with a lug which fits into an eye of the head of the section. The edges of the shell can be sprung together. At the interior of the casing is mechanism for throwing forward the catching-hooks applied to a base-plate. The base-plate is retained at its rear end on one section by a retaining strip at the tail of the same, while the front end is secured by a pin and by a latch piece. To the plate are further attached two guide-brackets, by which a rod is guided. This rod is provided with two fixed cones, one near the rear end of the rod, the other near the front end, back of the head of the shell. Between the front cone and a collar attached to the base-plate is interposed a spiral spring, which bears upon the front cone, and which tends to throw the rod in the direction of the arrow shown in Fig. 2. The spring-pressed rod is locked by a recessed latch-piece that is retained at the front end of the rod by a spring, and by a forked rod, and a fulcrumed lever. The latch-piece may be so moved as to clear the rod by pressure upon the rod *w* and

lever *x*, which are extended beyond the shell at opposite sides of the head. When the pressure on the rod *w* and lever is released and rod *l* withdrawn the latch *o* again retains the rod *l*. Guide-brackets serve also for the purpose of applying thereto a number of hooks which extend radially from the grooved cone *t* of each bracket, the ball-shaped inner ends of the hooks being retained in the grooves of the cones *t* by collars *v*. The casing is provided with slits for the free outward passage of the hooks when the actuating mechanism is released. The hooks are thrown outward by the cones *m* as soon as the latch *o* is released from the rod and permits the forward motion of the same. The bait-hook is operated in the following manner: A silver string is attached by means of the hole *n* to the front end of the base-plate *g*, and then passed through the two holes *u* at the head of the section *a*, being then connected with a common string, by which the bait is drawn through the water. The fish tries to bite at the head. This causes the pushing in of the parts *w x* by the force of the bite, and consequently the release of the latch *o* and of the rod *l*, which is instantly thrown forward, so that the cones *m* spread the hooks *i*, which pass through the outside of the shell into the mouth of the fish and hold it in such a manner that a release of the same is impossible.

CLAIMS.

"1. In a bait-hook, the combination of a fish-shaped shell, having helically-bent fins back of the head and longitudinal slits in the body thereof, with outwardly-swinging hooks, a spring-actuated mechanism for throwing out the hooks, and a latch mechanism projecting through the head of the shell, whereby the hook-actuating mechanism is locked or released, substantially as set forth.

"2. In a bait-hook, the combination of the longitudinally-guided rod *l*, having fixed cones *m* and spring *p*, with the outwardly-swinging hooks *i*, hinged to the brackets *k*, substantially as set forth.

"3. In a bait-hook, the combination of the outwardly-swinging hooks *i* and guided slide-rod *l* with a recessed locking-latch, *o*, spring *o'*, forked rod *w*, and fulcrumed lever *x*, substantially as specified.

"4. In a bait-hook, the combination of the guide-brackets *k*, having each a grooved cone, *t*, with hooks *i*, retaining-collars *v*, shell *a b*, havslits *i'* for the hooks *i*, and means for operating the hooks, substantially as set forth."

No. 256843.

(William T. J. Lowe, Buffalo, N. Y.; patented April 25, 1882; spoon-bait for fishing. Patented in Canada January 28, 1882. See Plate XXVII.)

The invention relates to that class of spoon-bait in which the lower portion of the spoon is adjustably held out from the rod upon which it revolves. Heretofore spoons have been made with U-shaped guides

rigidly secured thereto and embracing the rod upon which the spoon revolves, and having spiral springs surrounding the guide between the spoon and rod. In such construction the U-shaped guide, which projects from the rod, is apt to catch upon the side of the boat or elsewhere and become bent or broken. Again, spoons have been made with a wire secured at the botton of the spoon and extending in a curve downward to the rod, and there loosely secured by an eye in the end of the wire. This form of spoon-bait, like the other just described, is liable to catch upon objects with which it comes in contact. To avoid the difficulty, the spoon is provided with a wire spring, located near the top, or where the spoon is loosely secured to the rod upon which it revolves. The spring is provided at a point near the spoon with one or more spiral turns to give it the proper degree of elasticity. By locating the spring at the upper end of the spoon it is entirely protected by the spoon from being torn away or damaged.

CLAIM.

"The combination, with the rod *a* and the spoon *d* provided with the eye *d'*, of the spring *e*, having the spiral turn or turns e^2, and the eye e^3, the spring *e* being located near the top of the spoon and being rigidly attached to the spoon at one end, and working loosely upon the rod *a* at the other end, substantially as shown and described."

No. 261194.

(Lewis C. Wylly, Patterson, Ga.; patented July 18, 1882; trolling-spoon. See Plate XXVIII.)

This invention relates to that class of baits or decoys, used by fishermen, known as "spinning baits" and trolling-spoons." Ordinarily spinners have had the hooks upon which the fish are caught arranged at some distance from the spinning spoon. Here the hooks are placed directly upon the spoon, which is screw or scroll-shaped, or auger-curved, and of a single piece of metal tapering at the ends, with the barbs above the lower end. A shackle-link is fastened at its lower ends directly to the upper end of the spoon and receives a swivel to which the line is attached.

CLAIMS.

"1. In trolling-baits, the spinner A, consisting of a single piece of metal of elongated screw form, and having taper or convex ends, substantially as and for the purpose set forth.

"2. The elongated screw spinner A, having hooks B rigidly secured to the faces of said screw at equidistant intervals, substantially as and for the purpose set forth."

No. 267203.

(Lysander S. Hill, Grand Rapids, Mich.; patented November 7, 1882; spoon-bait. See Plate XXIX.)

A wire has a loop upon its upper end for the attachment of the swivel or the line and a loop upon its lower end for the attachment of the hook. The inner ends of these loops form stops to limit the movement of the spoon in its vertical play upon the wire. The upper end of the spoon is provided with a loop, which serves as a means of attachment to the wire at this point, and below this upper end there is hinged to the spoon a rod, which has a loop formed on its outer end to catch over the wire and an S-shaped stop on its inner end to strike against the spoon, and thus prevent the spoon from dropping too low. This rod being pivoted to the wire, any pressure upon the lower end of the spoon will cause it to close inward toward the wire and then rise upward, and as soon as the pressure is released the spoon at once drops downward and outward at its lower end. The weight of the spoon is made to operate it entirely, and thus springs are dispensed with.

CLAIM.

"The combination of the wire A, the spoon D sliding thereon, and a hinged connecting-rod, I, having the stops O formed on its outer ends for striking against the spoon, substantially as shown."

No. 273996.

(Christopher Hymers, Saint Louis, Mo.; patented March 13, 1883; self-adjusting fish-shaped fish-hook holder. See Plate XXX.)

This invention is, in some respects, an improvement on the invention described in a patent granted to this inventor January 4, 1881, No. 236161, the hook being held between similar expanding jaws. There is, however, in addition, a safety-hook that may be used to prevent the opening of the jaws by the impingement of the fish's head against the hook when used in trolling. The jaws in this improvement are pushed into their conical socket and held therein by a spiral spring in place of a cam, as before. A spoon is provided, having its body slit transversely and the slit portions bent out in opposite directions to form bands, adapting the spoon to be slipped on and off the bait without disturbing the hook.

CLAIMS.

"1. The combination of the gripping-jaws I, link L, knob M, and spring O, forcing the jaws into a tapering socket of the metal fish F.

"2. The combination of the parts I, L, M, O, and fish F of the safety-hook P, substantially as and for the purpose set forth.

"3. The spoon S, having bands *s*, adapted to be applied to fish-hook body F, as set forth."

No. 276055.

(William T. J. Lowe, Buffalo, N. Y.; patented April 17, 1883; spoon-bait for fishing. See Plate XXXI.)

The invention relates more particularly to certain improvements in spoon-bait for fishing for which a patent was granted this inventor April 25, 1882, No. 256843. It is found in practice that the spoon arranged as shown and described in the above-named patent is liable, in rapid trolling, or when the spoon is drawn through the water against a strong current, to spread too far for advantageous results, and remain so until the wire spring is bent into shape again by hand. This is said to be a serious objection to the perfect working of the spoon-bait, and the object of the present invention is to overcome this difficulty. To this end, to the spoon-bait of the previous patent is applied a link loosely pivoted at both ends, which connects the spoon with the rod or wire upon which it revolves in such a manner as to limit its outward movement without disturbing in any degree its free revolution in the water.

CLAIMS.

"1. In a spoon-bait for fishing, in combination, the spoon *d*, provided with the eye *d'* at its upper end, and the loop or bend *f* upon its inner surface, the spring *e*, located near the top of the spoon, as shown, and provided with the eye e^3, and a connecting-link loosely pivoted at one end in the loop or bend *f*, and loosely encircling at its other end the outer portion of the spring *e*, as and for the purpose stated.

"2. In combination, the rod or wire *a*, the spoon *d*, provided with the eye *d'* at its upper end, and the spring loop or bend *f* upon its inner surface, the spring provided with the eye e^3, and connecting-link *g*, having the eye *g'*, as and for the purpose stated."

No. 281083.

(Louis Kessler, Ludington, Mich.; patented July 10, 1883; fishing apparatus. See Plate XXXII.)

In the usual construction of spoon-bait, the forward end of the spoon is rigid with or hinged to the rotating sleeve, allowing it to yield to a certain degree to the pressure from forward as it is drawn through the water, but still causing it to offer a large amount of resistance, and consequently present a severe strain upon the line, especially if drawn with considerable speed. To avoid this the spoon is attached to the ends of coiled springs fastened to the rotating sleeve, at the center of the inner concave side of the spoon, allowing it to tilt away from the sleeve when drawn speedily through the water, and thus causing it to present only its point, as shown in dotted lines in Fig. 2, and so offer less resistance.

CLAIM.

"In a spoon-hook, the rotating spoon-shaped shield fastened at the center of its inner concave side to the outer ends of coiled springs fastened to the side of the rotary sleeve, as and for the purpose shown and set forth."

No. 289508.

(Artemas Lord Dawson, Elk Point, Dak., assignor one-half to Charles Howard Freeman, of same place; patented December 4, 1883; fish-hook. See Plates XXXIII and XXXIV.)

The hooks are detachably secured in place within grooves in the shaft, and a spoon of peculiar construction may be used, in connection with the hook device, for trolling. The shaft has an enlargement at its lower end which is provided with longitudinal grooves at its sides, which open into cross-grooves provided at its top. The shanks of the hooks are laid into the longitudinal grooves, with their upper ends projecting sufficiently beyond the enlargement of the shaft, the points of the hooks being turned outward, and the projecting ends of the shank are then bent down into the cross-grooves, forming a catch securely to hold the hook against a downward pull. A thimble, fitting the enlargement, is then pushed down upon the same, and is held in place firmly by a screw-nut, the shaft being threaded just above the enlargement for the purpose. At the end of the shank there is an eye for the attachment of the line. The hook may be used thus, but for trolling a spoon or spoon-bait is attached. To permit the ready attachment or detachment of the spoon, the shaft is provided between its enlargement and the eye with an annular projection or collar, and the spoon has a spring wire loop, which is passed over the shaft between the collar and the eye, then with its legs along lateral grooves or recesses in a projection at the upper end of the spoon, and downward from its concave face, and then has its bent ends sprung into holes in the spoon. Below these holes is the attachment of a spring which extends toward the lower end of the spoon on the concave side, has its end bent upward, projecting through a hole in the spoon, and bears against a hinged fin on the convex surface of the spoon. The fin causes the spoon to revolve in the shaft of the hook as it is drawn through the water, and while the spring holds it out in proper extension it permits the hinged fin to be pressed against the body of the spoon when desirable, as in withdrawing the spoon from the mouth of a fish. For trolling, feathers may be secured upon the thimble.

CLAIMS.

"1. In combination with the shaft A, provided with grooves, and with the screw-threads *s*, fish-hooks B, fitting within the said grooves.

and thimble C, to incase the said shaft and hooks, and the nut *t*, working on the said screw-threads, as and for the purpose described.

"2. In a device for fishing, a spoon provided with a fin secured by its edge to one face of the spoon, at an angle to the axial line thereof, whereby a progressive motion of the spoon through the water causes it to rotate, substantially as described.

"3. In combination with a shaft or holder for the hooks, the trolling-spoon D, provided with a projection, *r*, or similar device, and the spring *o*, to embrace the shaft or holder A and the said projection, having its ends detachably secured to the said spoon, substantially as described.

"4. In combination with a trolling-spoon, the fin E, hinged at one edge to one face of the spoon, at an angle with the axial line of the same, and a spring to hold the said fin at an angle with the face of the spoon when acted against by the water, substantially as described.

"5. In combination with a trolling-spoon, D, fin E, hinged in an oblique position to one face of the said spoon, spring *m*, secured to the opposite face and passing through an opening in the said spoon, to maintain the fin at an angle to the spoon in opposition to the passage of the water, and mechanism for connecting the said spoon to the shaft or holder for the hooks, substantially as described."

No. 295350.

(William Dudley Chapman, Theresa, N. Y.; patented March 18, 1884; artificial fish-bait. See Plate XXXV.)

This invention relates to revolving metallic bait used in trolling for fish, or so-called "minnow-propellers;" and it consists in an improvement upon the minnow-propeller, for which a patent was granted this inventor July 5, 1870, No. 104930. Two corresponding plates of silver-plated or nickel-plated sheet metal are cut of the shape shown in the drawings, each plate being gradually enlarged toward its rear end, where it is provided with a series of notches. At their upper reduced ends these plates are fastened upon a small metallic tube. They are then bent around said tube in opposite directions, and again fastened to it near its lower end. An open space is left on opposite sides of the central rod or tube, whereas in the minnow propeller shown and described in patent No. 104930 the contiguous concave faces of the two plates are secured together the greater portion of their length. By the improved construction not only is the resistance of the water reduced when the device is used for trolling, inasmuch as the water will pass between the central tubular rod and the openings or water-ways on both sides of the same, but the device will revolve with greater speed and regularity than the old one, without reducing its strength or increasing the cost of manufacture. That part of the tubular stem which is between the points of attachment of the plates is wrapped with foil, which is held in place by silk cord of variegated colors, or fine wire

twisted spirally around the tube. This adds to the attractiveness of the bait without materially increasing its cost. The lock-snood is of ordinary construction, and upon its central portion the tubular stem D rotates.

CLAIMS.

"1. The artificial trolling-bait, composed of the central tube D, the curved plates A B, of gradually-increasing width toward their lower ends, having the notches C, and fastened to the central tube at the points E and F, whereby open spaces G are left on opposite sides of the tube, between it and the contiguous edges of the plates, and the lock-snood C′, inserted through the tube, all constructed and combined substantially as and for the purpose set forth.

"2. The artificial trolling-bait, composed of the central tube D, having a foil envelope or wrapping, H, held in place by cords or a fine wire, I, the curved plates A B, of gradually-increasing width toward their lower ends, having the notches C, and fastened to the central tube at the points E and F, whereby open spaces G are left on opposite sides of the tube, between it and the contiguous edges of the plate, and the lock-snood C′ inserted through the tube, all constructed and combined substantially as and for the purpose set forth."

No. 295758.

(Charles B. Hibbard, Grand Rapids, Mich.; patented March 25, 1884; spoon-bait. See Plate XXXVI.)

The invention relates to spoon-baits of the class wherein the spoon is attached to a supporting-wire by a yielding connection which permits the spoon to be moved inward, and, when the pressure is released, to return to its ordinary position. The object is to simplify the construction of the connecting devices, and also to locate them so that they will not interfere with the action of the spoon or with the line. The spoon has at its forward end an eye which slides upon the rod, and is limited in its motion by the inner end of the loop. Upon the spoon is soldered a spring composed of a length of wire bent to form a double spring and having its bent portion formed into a loop. Between the parallel sides of the spring is soldered a stop, the free end of which is curved outward and then down. The spring is connected to the wire by an arm or lever, having at one end an eye which slides upon the rod, and at the other end a curved loop, which is illustrated in detail in Fig. 2. The straight portion of the lever passes between the parallel sides of the spring, and is then curved around and under the spring, the lower portion of the loop fitting into the space left by forming the curve in the end of the stop. The spoon may now revolve on the wire and slide freely back and forth thereon. At the same time the spoon may be pressed inward, which will cause the loop on the end of the

lever to work under the spring and slightly raise the same, the stop limiting such motion at the proper point. When the pressure is released the return of the spring forces the loop outward, and thereby changes the relative position of the spoon and its supporting-wire, until these parts assume their first position.

The inventor says:

"I am aware that spring connections between the spoon and its supporting wires are not new, and I do not make any claim, broadly, to such construction, my claims being limited to the improvement in details which I have invented."

CLAIMS.

"1. The combination of the wire A, the spoon C, the spring D, secured to the spoon, and the independent lever F, connected to the spring at one end, as described, and at the other to the wire A.

"2. The combination, with the wire A and sliding lever F, of the sliding revolving spoon C, having the doubled spring-rod D and stop E, substantially as described."

No. 271424.

(Harry Comstock, Fulton, N. Y.; patented January 30, 1883; artificial bait. See Plate XXXVII.)

An artificial fish or insect is provided with fins or wings, each of which is capable of independent and substantially axial rotation, so that as the bait is drawn through the water its fins or wings will, by their free and rapid rotation, give a highly animated appearance to the object.

CLAIMS.

"1. An artificial bait for fishing, consisting of an artificial fish or insect having independently rotating fins or wings, substantially as described.

"2. An artificial fish or insect having fins or wings supported to turn upon the arms of a rod extending out from the sides of the insect or fish, substantially as described.

"3. An artificial fish or insect provided with a rod passing transversely through its body, and having its projecting ends bent back with fins or wings fitted to turn upon said arms, substantially as described.

"4. The combination, with a rod to which the line and hook are connected, of an artificial fish or insect fitted to turn on said rod, and provided with swinging and independently rotary fins or wings, substantially as described."

No. 272317.

(Ernest F. Pflueger, Akron, Ohio; patented February 13, 1883; artificial fish-bait. See Plate XXXVIII.)

Coats the showy or attractive parts of artificial bait with a substance which will be luminous in the dark. This substance may be applied upon the outside, or upon the inner surface when the bait is hollow and of glass.

The material used is in the form of a paint, and may be either self-luminous, as phosphoric compounds, or luminous "by an inherent retentive power, whereby after having been exposed to light it remains luminous for hours afterward." The substance preferred is a paint composed of sulphide of calcium and a drying oil or varnish.

A bait thus made can be used as any ordinary bait in the daylight, and at night, or in the shaded and darker places in the water, it becomes luminous and affords a bright object to attract the fish.

The inventor says:

"I am aware that lamps, lanterns, and luminous objects have been employed as decoys to entice fish into nets and to bait."

CLAIM.

"As a new article of manufacture, an artificial fish-bait, coated with a substance which is luminous in the darkness and having one or more fish-hooks attached thereto, substantially as and for the purpose specified."

No. 284056.

(Ernest F. Pflueger, Akron, Ohio; patented August 28, 1883; artificial fish-bait. See Plate XXXIX.)

The bait is hollow, and of malleable glass. On the upper half of the interior surface is deposited silver or gold liquid, to produce a highly reflective appearance. The lower half of the interior surface is coated with any suitable luminous composition, either self-luminous, as phosphorous compositions, or "luminous by an inherent retentive power." The substance named is a paint composed of sulphide of calcium and a drying oil or varnish. Longitudinally through the bait is passed a snood, to which the hook is attached. The hook and snood are held in position, and the interior coated surface of the bait is protected, by a filling of cement, or other suitable material, which also gives to the bait the proper weight or buoyancy.

The inventor says:

"I do not wish to lay claim, broadly, to the idea of a luminous fish-bait, as that has already been secured to me by letters patent No. 272317."

CLAIM.

"As a new article of manufacture, an artificial fish-bait, composed of hollow glass, having the upper half of its interior surface coated with silver or gold fluid to produce a highly reflective surface, the lower half of the interior surface coated with a luminous compound or paint, and a centrally-arranged hook-snood, the whole protected by a filling of cement or other suitable material, substantially as and for the purposes set forth."

No. 289612.

(Carl L. Bollerman, New York, N. Y.; patented December 4, 1883; rotary leader link for fishing lines. See Plate XL.)

The invention relates to that class of fishing lines generally termed "hand-lines," in which there is a weight at the end which goes into the water, and above the weight two or more knots, which are made to receive the snells carrying the hooks. The land end of the line is secured to the person of the fisherman, or to the bank or boat on which he may be. The fisherman throws the leaded end of the line out in the stream, where it sinks to the bottom, leaving the snells with their hooks at varying distances from the ground and from the lead. In throwing out the line the latter receives a greater or less number of turns, whereby the snells become wrapped about or tangled up with the line; and it is the object of the invention to produce a hand-line not open to this objection.

C represents a fishing line, which has been cut at two points, and between the cut ends are rods AA. On each rod is a loose tube, D, having at right angles thereto a fastening, E, which is rigidly attached. This fastening is a wire, coiled about the tube, one of its ends being bent to form a hook for convenient attachment and detachment of the snell F. At each end of the rod is an eye, to which the cut ends of the line are attached. A coil is made on the inside of each eye, and against this is a bead, H, with which the tube comes in frictional contact when the line turns. By this means the snells F will always assume the position shown in the drawing when the lead has reached the bottom, thus avoiding the usual tangle.

The inventor says:

"I am aware that it is not broadly new to apply a rotatable sleeve or cylinder to a rod having an eye to adapt it for attachment to a line. For example, patent No. 271424 illustrates a trolling or spoon bait, in which the body of the bait represents a fish or insect, and is applied eccentrically to a rod, around which it is free to rotate. Nor is it novel to reduce friction by means of beads of glass or other equally serviceable material."

CLAIM.

"The improved attachment for fishing lines, consisting of the rod A, having a loop and coil at each end, the beads H, placed in contact with said coils, the tube D, made concentric with said rod, around which it is free to rotate, the fastening E, applied to the tube, and the snell F, secured to said fastening, all as shown and described, to operate as specified."

No. 258393.

(Francis Endicott, Clifton, N. Y., assignor to Charles F. Imbrie, New York, N. Y.; patented May 23, 1882; fly-book. See Plate XLI.)

This invention relates to books used for carrying fishing flies and snelled hooks, and is to prevent the flies from becoming tangled, and to permit their convenient insertion and removal. At the top or bottom of each leaf are attached metal clips, and at the opposite end of the leaf are retainers. These are spiral springs attached at one end by a thread sewed into the material of the leaf, and formed at the other end with an eye for attachment of the snell. A thread, preferably of silkworm gut, passes through each spring to a point below it and through the leaf to and through the spring on the opposite side. This holds the springs in place when the flies are detached, and at the same time allows the springs to stretch. At the edges of the leaves a re-enforcing strip of metal is secured between the two sheets to protect the edges and stiffen the book. The clips and retaining springs may be alternated on each end of the leaf, and intermediate retainers applied for shorter snells.

CLAIM.

"In fly-books, the threads *d*, in combination with retainers *b*, as and for the purpose described."

No. 275703.

(Henry F. Price, Brooklyn, N. Y.; patented April 10, 1883; fishing-tackle case. See Plate XLII.)

A box is divided by a horizontal partition longitudinally into two compartments, each compartment being provided with a separate lid. The compartment shown in fig. 1 has near each end a rigid transverse strip of less depth than the compartment to retain in place a strip of cork placed just outside of it. At the center of the inside of the compartment is a shallow well, its top flush with the inside of the case. The well is of sufficient depth to contain coiled lines, leaders, &c., which are held in place by two strips or guards which cross the top. The points of the hooks are stuck into the cork strips, and the snells to which the

hooks are attached are passed from each end under the well, little uprights or strips there serving to separate them and keep them in place.

The other compartment may be divided in any desirable manner, as shown in Fig. 2.

CLAIM.

"A fishing-tackle case consisting of two compartments having a single partition adapted to serve as the bottom of both, and provided with the partitions *a*, cork strips *b*, and well *c*, substantially as shown and described."

No. 294888.

(Chancellor G. Levison, Brooklyn, N. Y.; patented March 11, 1884; fishing fly-book. See Plate XLIII.)

Fly-books, as commonly made, are provided at one end of the leaves with fixed hooks or clips, into which the fly-hooks are hooked, and at the other end of the leaves with spring-retainers, which are provided with hooks, on which the loops at the end of the snells are secured. These retainers are elastic, so that they will hold the snells stretched taut, and they usually are formed by rubber bands or spiral springs of light wire. To hold the retainers in position and prevent them from becoming entangled when not holding snells separate eye-guides, one for each retainer, are provided, and through these the retainers, free to move lengthwise thereon, severally pass. Two forms of eye-guides are shown. The eye-guides for the spiral-spring retainers consist each of a short tube. Those for the india-rubber retainers consist of rings, and two eye-guides, which are coincident with each other on opposite sides of the leaf, are formed of a single piece of tube or of a single ring, which is flattened slightly and inserted through a slot in the leaf as in Figs. 2 and 3. The single tube or ring thus applied, serves as an eye-guide for two retainers, one on each side of the leaf, and is held in place by the retainers passing through it. At the other end of the book, corresponding hooks or clips on opposite sides of the leaf are secured by a single rivet. To get, without lengthening the book, a retainer capable of considerable elongation, at the left hand of Fig. 1 is shown a spiral-spring, attached at one end to the leaf and at the other to a cord which passes around a pully, and has at its free end a hook. When the looped end of a snell is attached to the hook the spring will be elongated in a downward direction, while the cord will be drawn upward. Eye-guides may be applied both to the spring and attached cord. The pulleys are attached to the leaf by a wire inserted through the leaf, then bent up into U-shape, and then turned outward at a right angle, the portions of the wire thus projecting laterally from the leaf on opposite sides serving as the journals for two pulleys, one on each side of the leaf, and the ends of the wire being then turned down to prevent the pulleys from coming off the journals.

CLAIMS.

"1. The combination, with the leaf of a fly-book having hooks or clips at one end and elastic or spring retainers at the other end, of eye-guides for the several retainers, each attached to the leaf and receiving a retainer through it, substantially as herein described.

"2. The combination, with the leaf, of elastic or spring retainers on opposite sides thereof, and an eye-guide consisting of a tube or ring inserted through the leaf and receiving the two said retainers through its portions which are presented on opposite sides of the leaf, substantially as herein described.

"3. The combination, with the leaf A, having hooks or clips *a* at one end of retainers, each consisting of the spring D and attached cord D^2, and a pulley, *f*, around which said cord passes, substantially as herein described."

No. 252628.

(Sylvester E. Smith, Saint Louis, Mo.; patented January 24, 1882; combined sinker and fish-hook holder. See Plate XLIV.)

The shank of the hook is inserted into a tubular recess in the fish-shaped holder or sinker, one part of the recess being formed by a cam, which, when turned, firmly gripes and holds the hook-shank. The line is attached to the center of the holder, so that the holder and hook will assume a horizontal position.

CLAIMS.

"1. A sinker for fishing lines, formed in imitation of a fish and provided with a holding device for the fish-hook, as described, and for the purpose set forth.

"2. A fish hook holder formed with a tubular recess, *b*, in combination with the cam B, all arranged as herein described, and for the purpose set forth.

"3. A sinker for fishing lines, provided with a device for holding the fish-hook and an eye, *c'*, located as described, for the attachment of the line, as described, and for the purpose set forth."

No. 279206.

(Henry Van Altena, Milwaukee, Wis.; patented June 12, 1883; fishing-tackle. See Plate XLV.)

The object is readily to attach hooks and sinkers to the lines. The description is exceedingly crude and inartificial, but the following, based principally upon the drawing, would seem to describe the invention exactly.

A rod or wire is bent upon itself at its ends to form loops, and in such manner that a short shank will project beyond the loop along the body

of the wire. The wire is elastic, and so the shank tends to spring away from the body of the wire and open the loop. In this condition the loop is ready for attachment or detachment of the line or of snells or hooks. To close a loop and retain it so, the shank is pressed against the body and an annular piece of metal on the body is slid over it. The annular piece of metal serves as a sinker and may be a piece of spirally coiled wire. If two hooks are directly attached, their points may be kept in opposite directions by means of the loop.

CLAIMS.

"1. The combination of the rod A, provided with loops C C, with sliding sinkers adapted to retain the loops in a closed position, substantially as set forth.

"2. The combination, with the rod A, of spiral-wire sinkers adapted to retain the loops at its respective ends in a closed position, as shown.

"3. The combination of the line E, rod A, sinkers B, cord F, and hook D, substantially as shown."

No. 285075.

(Hale Rix, San Francisco, Cal.; patented September 18, 1883; sinker for fishing tackle. See Plate XLVI.)

A sinker for use in connection with a line employed for fishing purposes, and commonly designated as a "hand-line" or "lead-line," in contradistinction to such lines as are used with a rod.

In fishing, it is said, with an ordinary sinker (made usually of lead cast in conical form, with an opening near the apex for the attachment of the line) great inconvenience has been experienced, owing to the fouling of the sinker with rocky obstructions upon the bottom of the fishing ground, such fouling frequently resulting in the parting of the line, and loss of the sinker; and the object of this invention is to avoid these difficulties and provide a sinker which may be easily and quickly disengaged from any cramped or wedged position among rocks or other obstructions upon the bottom of the sea or fishing ground.

To this end the sinker is made of cylindrical form with semispherical ends, and has side rods, upon each of which travels a ring to which the line is attached. The rods of wire extend a short distance from the sides of the sinker and lengthwise thereof up to a short distance from each end. These rods form travelers for metal rings which slide on them, and to the rings is attached a bifurcated cord or line. Should the sinker while in use meet with any obstruction, a steady pull upon the line converts the sinker into a lever of the second class (in the specification it is said to be of the third) and causes it to move or fulcrum upon that end nearest the line, and as the strain continues or increases the sinker assumes a vertical position and the rings slide upward upon the guide rods, throwing the sinker over and releasing it.

CLAIM.

"A sinker or plummet for fishing-tackle consisting of a cylindrical body, A, having rounded ends and projecting guide-rods, B B, extending lengthwise of the body and adapted to carry the rings or loops D D, to which the line is attached, substantially as shown and set forth."

No. 286188.

(Daniel Erickson, Chicago, Ill.; patented October 9, 1883; sinker for fish nets. See Plate XLVII.)

Heretofore, it is said, sinkers had either been formed of certain predetermined lengths and tubular, their only method of attachment to the lines or nets being to string them thereon before knotting the line to the net, or by splitting shot and then placing them on and pinching the open edges over the line. In each of these constructions fishermen are confined to the use of such sizes of sinkers only as are to be found in the market.

In the present case cylindrical sinkers are formed with a deep longitudinal groove enlarged at its bottom, into which the line is laid and there secured by contracting the outer edges of the groove, and the sinker-lead is drawn or rolled in continuous rods that can be sold in coils or by the yard, and can be cut off by the fishermen to form sinkers of various lengths and suitable weights as they may require them on different nets.

CLAIM.

"As a new article of manufacture, a sinker for fishing-nets, composed of a cylindrical bar of lead provided with a slot, *a*, enlarged at its bottom, as and for the purpose set forth."

No. 261505.

(Oliver G. Wilson, Gallatin, Tenn.; patented July 18, 1882; fishing-float. See Plate XLVIII.)

The body of the float is of cork, wood, or other light material, and has a central opening extending longitudinally through it. The float stem of hard wood or composition, and either solid or in sections, is inserted into this opening with its ends projecting above and below the body. Thread is wound around the tapered ends of the float-body binding it firmly to the stem and protecting the ends. In the ends of the stem are longitudinal guide holes extending inward. From these extend counter holes to the exterior of the stem. Between the guide holes and the body of the float are holes which extend diagonally through the stem. The float is strung upon the line by the holes in the stem. The friction of the line at the holes prevents the moving or slipping of the float when the line is suddenly jerked. The line passes

out of the float at the upper end of the stem, which causes the float to sit perpendicularly on the water, and prevents the wrapping or tangling of the line about the stem.

CLAIM.

"The combination, with the body *a*, of the stem *b*, provided at each end with the stem-guide holes *d d'* and friction-holes *e e*, substantially as described, and for the purpose set forth."

No. 270358.

(Ralph W. E. Aldrich, Northampton, Mass.; patented January 9, 1883; fishing-float. See Plate XLIX.)

The float is made of a block of wood in form of a boat, and is from a foot to a foot and a half in length, and has a recess formed in it. In this recess is a sheet-metal housing, in which is journaled the reel, on which the line to which the fish-hook is attached is wound. The shaft of the reel terminates at one end in or is provided at one end with a crank for winding in the line, and for setting or locking the reel and mast by means of rods attached to the deck of the float, as shown in Fig. 3. The mast is attached to the float by springs. These springs are fast to a metal socket in which the lower end of the mast is held, and are placed upon a rod which is held in the upright plates which are a part of a plate secured to the float. The free ends of the springs are of considerable length, and extend in rear of the rod and rest in the plate, as shown in Fig. 2, and thus serve to hold the springs so that they will lift the mast when released.

The sail is attached to the mast by rings which are attached respectively to the boom and gaff, and is hoisted when the mast is lifted to vertical position, by the cord *j*, which is attached to a ring and passes through a block, and thence down to the stern of the float, where it is made fast in an eye, as shown in Fig. 1.

In the keel of the float is a small hole immediately under the reel for the passage of the baited hook and line, and in the stern of the float is an eye for attaching to the float the anchor-line.

To prepare the float for fishing, the hook is first to be baited, then passed through the hole *a*, and the length of line required drawn off from the reel. The mast is then to be brought down to the deck of the float, and the rod *h'*, passed at right angles over it and under the rod *h*, and this rod *h* is then to be placed under the crank *f* of the reel, which will cause the rods to hold the mast and reel. In this condition the float is to be anchored out in the water and the hook dropped. The mast and reel will remain in this locked condition until the line is disturbed sufficiently by the biting of a fish to turn the reel, whereupon the crank will be moved off from the rod *h* and set the reel and mast

free, thus giving play-line to the fish and signaling the biting or catching of a fish.

In most cases the fisherman will provide himself with several of the floats, and after anchoring them out in the water will await the hoisting of a sail, upon which he will proceed to the float, pull in the fish and rebait the hook and reset the float, and in most cases the bottom of the floats will be painted green, so that when in the water they will resemble the leaf of some water-plant and not frighten the fish.

CLAIMS.

"1. The combination, with the float A, of the spring-supported mast B, reel C, and means, substantially as described, for locking the mast and reel in the manner and for the purposes set forth.

"2. The automatic fishing-float, made substantially as herein shown and described, consisting of the float A, spring-supported mast B, reel C, sail D, and locking-rods *h h'*, as and for the purposes set forth.

"3. The float A, formed with the recess E and hole *a'*, in combination with the reel C, housing *d*, and line *a*, substantially as shown and described.

"4. The reel C, having the handle *f*, in combination with the rods *h h'* and spring-supported mast B, substantially as and for the purposes set forth.

"5. The combination, with the spring-supported mast B, of the sail D, block L, and cord *j*, made fast to the float, substantially as and for the purposes set forth."

No. 290154.

(Victor Vidal, jr., Pignans, France; patented December 11, 1883; fishing-float and method of manufacturing the same. See Plate L.)

Avoids unnecessary waste of cork, by using slabs, plates, or small pieces of cork from which is built a float of approximately the shape required without cementing or otherwise gluing the several pieces, plates, or slabs together, though this may be done if desired. When the float is built up as described (which may done in a suitable matrix or form) it is subjected to compression, and the pieces are tied together with cord or wire; when so tied the pressure upon the float is removed. The ties sink into the cork and form grooves for the reception of the cord for attaching the floats to the object to be buoyed. After the pressing the float may be cut or turned into any shape desired.

CLAIMS.

"1. The method of constructing floats for fishing-tackle and utilizing refuse cork, which consists in subjecting scraps or pieces of cork to pressure, and tying, while subjected to pressure, to form a practically homogeneous mass, and finally shaping the float, as described.

"2. A float for fishing-tackle, composed of scraps or pieces of cork having grooves *c*, in combination with the tie *b*, all arranged and constructed substantially as and for the purposes specified."

No. 252554.

(Julius Vom Hofe, Brooklyn, E. D., N. Y., assignor to himself and Charles F. Imbrie, New York, N. Y.; patented January 17, 1882; fishing-reel. See Plate LI.)

The object is to provide for adjustment of the bearings, so that wear can be readily compensated, and to this end screw-pivots are provided. The reel is sustained by pivot-screws tapped through the outer end-plate and the cap-plate, and having conical ends entering recesses of the same form in the ends of the axis, so that by turning the screws in and out the reel can be positioned and adjusted. The arbor of the crank-pinion has a bearing at one end in the inner end-plate, or the end-plate adjacent to the cap-plate, and at the other end is sustained by a screw-sleeve fitted in the cap-plate. The arbor has a beveled portion within the sleeve, and the sleeve is correspondingly beveled at its outer end, so that by endwise adjustment of the sleeve the arbor is set to run smoothly without endwise motion. An outer sleeve screwed on the first sleeve and against the cap-plate, serves as a set-nut and gives a finished appearance. The pivot-screws for the reel are covered by screw-caps, which serve as set-nuts and protect the projecting screws.

CLAIMS.

"1. In a fishing-reel, the combination, with the frame *a b*, the cap *c*, and the axis *i*, having conical recesses in its ends, of the pivot-screws *h*, having conical ends, and the caps *m*, screwed upon the said pivot-screws, substantially as and for the purpose set forth.

"2. In a fishing-reel, the combination, with the plates *a c*, and the arbor *e*, having beveled portion *k'*, of the sleeve *k*, having its outer end beveled, and the outer sleeve, *l*, substantially as and for the purpose set forth."

No. 253090.

(Warren Ohaver and Taylor O'Bannon, Indianapolis, Ind., assignors to the American Reel Company, of same place; patented January 31, 1882; fishing-reel. See Plate LII.)

The multiplying gear and an alarm-bell are inclosed in a cap on the crank end of the fishing-reel. A sleeve upon the outer plate of the cap serves as the sole bearing of the crank-shaft, thereby allowing this shaft to be in line with the spool-shaft without being directly connected therewith. A large gear-wheel on the inner end of the crank-shaft meshes with a small pinion fixed upon a counter-shaft upon the other end of which is a larger gear-wheel, which, in turn, meshes with a small gear-wheel upon the spool-shaft. The multiplying gear increases the

speed of the spool-shaft, and the object is rapidly to draw in the line when catching game fish, such as, for example, black bass, which if they get a slack line are apt to jump and break it. The bell is a small stationary bell, and serves as an alarm to be sounded from the fish-line upon the spool. The bell-hammer is mounted upon a pivoted lever, which is thrown back and forth by a sliding device. When this device is pushed in, the point of the lever enters a notch which leaves the bell-hammer relatively nearer the center of the bell. When the device is pulled out, it throws the bell-hammer and its shank back toward the gear-wheel on the counter-shaft, which meshes with the gear-wheel on the spool-shaft. The gear-wheel on the counter-shaft has small studs upon its sides, and the rear end of the shank of the bell-hammer when pulled out comes in contact with the studs when the gear-wheel is turned, thus sounding the hammer. As the wheels must be revolved when the lines are pulled out, the pulling of a fish upon the line will sound the hammer. A spring fastened to the inner plate of the cap acts as a brake. A pin upon the spring passes through a hole in the plate, and when not forced away rests against the end of the spool, thus serving as a brake to retard the progress of the spool, but the spring may be forced away by a sliding wedge pushed in from the outside.

CLAIMS.

"1. The combination, in a fishing-reel, with the gear-wheels thereof, one of which is mounted on the spool-shaft and another on the crank-shaft without any direct connection between them, of a crank and a crank-shaft, the latter of which is mounted in a single bearing directly in line with the bearings of the spool-shaft, but entirely separated therefrom, substantially as shown and specified.

"2. The combination, in a fishing-reel, with a bell, of a bell-hammer, a lever which is adapted to throw said hammer into or out of operative position, a wheel, and studs on said wheel, which operate to vibrate the bell-hammer when in operative position, and thereby ring the bell, all substantially as set forth."

No. 254025.

(Louis A. Kiefer, Indianapolis, Ind.; patented February 21, 1882; reel-lock. See Plate LIII.)

A metallic plate, curved to fit the rod, is secured thereto. The plate is provided with a flat fixed button cut away on one side. The device containing the locking mechanism to which the reel is to be attached forms the base of the reel-frame. The said device consists of a metallic block having a boss on its lower side, and provided with a circular seat for the button of the metallic plate, the front portion of the boss being cut away to permit the device to be passed over the button in a longitudinal direction. The head of the button is of a diameter some-

what less than the circular seat, so that the device may be turned easily upon the button. A flat spring is secured at one end to the block. The free end is provided with an angular plate, which rests when in a normal position in the opening in the front or cut-away portion of the boss. A transverse strip of metal is secured to the plate, by means of which it can be manipulated to unlock the device. The operation of the device is as follows:

The block F is passed longitudinally backward over the button D, the head entering the opening at the front of the boss, the plate K being automatically pressed upward and out of the way. When the block F has been thus placed upon the button it is turned on the same at right angles to its longitudinal position, when the straight side of the plate K will engage the straight or cut-away side of the button and lock the parts firmly together. To remove the device the plate K is elevated by means of the strip L, so as to clear the straight edge of the button, and the block is then turned to its longitudinal position, when it can be removed by sliding it longitudinally forward.

CLAIM.

"The combination, with the metallic plate provided with a button cut away on one side, of the metallic block having a boss and recess, the boss being cut away in front to permit the device to be passed over the head of the button, and the spring and angular plate attached thereto, and the transverse strip for operating the same, all constructed and arranged substantially as and for the purposes specified."

No. 259935.

(Franklin R. Smith, Syracuse, N. Y., assignor of one-half to Willis S. Barnum, of same place patented June 20, 1882; fisherman's reel. See Plates LIV and LV.)

This invention relates to improvements in that class of fishermen's reels in which the spool is caused to automatically wind up the line by the medium of spring-actuated gearings connected with said spool, and has more particular reference to the reel for which a patent was granted this inventor July 26, 1881, No. 244828. The invention consists, first, in detachably connecting the line-spool with its actuating mechanism to admit of readily interchanging spools provided with lines specially adapted for the different species of fish to be caught; secondly, in connecting the line-guide to the attaching-arm eccentrically in relation to the pivot of the spool, and having its free end extending across the periphery of the spool, whereby it serves the additional function of a brake for limiting the movement of the spool; thirdly, in the construction of the line-guide with a lateral inlet to the eye thereof for the introduction and removal of the line to and from the said eye; fourthly, in the combination, with the case inclosing the spring, of a plate secured to the free edge of the case and provided with concentric gearing, said plate

serving to close the case effectually to exclude dust and water from said case and the inclosed spring, and also affording an additional axial bearing for the case, and thus more effectually preventing lateral vibration of same; fifthly, in the combination, with the spool, of an attaching-plate provided with a square or polygonal post, a collar fitted to said post, and the spring connected to said collar, thereby facilitating the attachment and removal of the spring.

CLAIMS.

"1. In combination with the tubular post *m*, the stud *a*, provided with a female-threaded socket at one end and with external screw-threads at the opposite end, the interchangeable spool S, provided with a screw-threaded eye *e*, for the reception of the externally threaded end of the stud *a*, and the attaching-screw fitted to the cavity in the opposite end of the stud *a*, all as shown and described for the purpose set forth.

"2. In combination with the attaching-plate A and the spool S, pivoted thereon as shown, the combined line guide and brake, consisting of an arm, B, pivoted on the attaching plate in eccentric relation to the pivot of the spool, and having its free end extended across the periphery of the spool and provided with an eye, *i*, the whole constructed and operating to control the motion of the spool and guide the line substantially as set forth.

"3. In combination with the spool S, the line guide, having a guarded lateral inlet, *o*, to the eye thereof, for the introduction and removal of the line to and from said eye, substantially as set forth.

"4. The combination with the pivoted spring case C, of the geared plate K, rigidly attached to and closing the case, and provided with an axail bearing, substantially as described, for the purpose specified.

"5. In combination with the spool S and case C, the post *m*, having inside of said case a square or polygonal form externally, the collar *n*, fitted detachably to the exterior of said post, and the spring *s*, connected at its inner end to the collar *n*, substantially as and for the purpose shown and set forth."

No. 260932.

(James B. D'A. Boulton, Jersey City, N. J., assignor to William Mills and Thomas Bate Mills, New York, N. Y.; patented July 11, 1882; fishing-reel. See Plate LVI.)

The invention consists in the combination with the spool and frame of a reel, of a non-rotary internally-toothed stationary ring attached to the frame of the reel, a spur-wheel upon the spool of the reel, and a pinion engaging with said ring and wheel, to be revolved around the wheel, and at the same time rotated on its axis by reason of its engagement with the non-rotary ring, whereby a reel is provided in which the handle and spool are moved in the same direction, the latter being rotated at a much quicker speed than the former. The wheel, the pin-

ion, and the internal gear are all in the same plane, and the pinion may be pivoted on the inner side of the handle-plate which covers the gearing. With the spool is combined a stop which serves as a friction brake or drag when required.

The inventor says:

"I am aware that a reel has been heretofore made in which the rotary motion is imparted to the spool by an outer rotary internal gear, to which the handle is attached, and an intermediate wheel mounted on a fixed pivot and engaging both with said internal gear and the wheel upon the spool shaft or arbor. This reel I do not claim as of my invention, and my reel differs from it in that my internal gear is fixed instead of rotary, and my intermediate wheel, instead of being mounted on a fixed pivot, is mounted on a movable pivot, so that it may be revolved around the wheel on the spool arbor or shaft, and at the same time rotate on its pivot. The advantages resulting from this difference in construction are various. In the old reel the multiplied rotations of the spool are all transmitted through the rotation of the wheels on their axes, and hence the friction of the gear-teeth is greater than in mine, where one rotation of the spool is due to the revolving motion of the intermediate wheel around the wheel on the spool shaft or arbor. It is necessary in a multiple reel that the handle should always be made to turn toward the right, or 'in the right direction,' as it is termed, and no fisherman would like to use a reel in which the handle was intended to be turned toward the left. In my reel, when the handle is turned to the right the spool will be turned in the same direction; but if the handle of the old reel be turned to the right the spool will be turned to the left, or in a reverse direction, and the line, instead of being carried to the under side of the spool, as in my reel, must be carried to the upper side of the spool and several inches away from the rod. The carrying of the line to the upper side of the spool and away from the rod is a serious disadvantage, as the hand must hold the rod in advance of the reel, and the line would make a considerable angle at the hand or through an eye on the rod, and would be apt to cut the hand, or else rapidly wear itself out in the eye. With my reel the line follows the rod clear up to the reel and winds on the under side of the spool, and any experienced fisherman will at once appreciate the desirability of a construction which will admit of this."

CLAIMS.

"1. The combination, with the frame and spool of a reel, of a non-rotary internally-toothed ring attached to the frame, a spur-wheel upon the spool, and a pinion engaging with said ring and wheel and adapted to be revolved around said wheel and between it and said ring and rotated on its axis by engagement with said ring, substantially as and for the purpose described.

"2. The combination, with the frame and spool of a reel, of a non-rotary

internally-toothed ring attached to the frame, a spur-wheel upon the spool, a rotary-handle plate, and a pinion pivoted to the handle-plate and engaging with said wheel and toothed ring and adapted to be revolved around said wheel, and at the same time rotated on its axis by reason of its engagement with said ring, substantially as described.

"3. The combination, with the spool of a multiplying-reel and a handle geared therewith to rotate slower than said spool, of a ratchet-wheel, a coiled spring having an attached pawl or tooth engaging with said ratchet-wheel, and a friction-box containing said spring, the said box, spring, pawl, and ratchet-wheel being interposed between said spool and handle, and the whole being and operating substantially as described.

"4. The combination, with the spool of a multiplying-reel, of a wheel adapted to rotate therewith and having in it a friction-box, a ratchet-wheel adapted to rotate in the same direction, but at slower speed than said spool, and a spring coiled in said friction-box, and having at its inner end a pawl or tooth for engaging with said ratchet-wheel, substantially as described."

No. 264092.

(George H. Matthews and John T. Ostell, Montreal, Quebec, Canada; patented September 12, 1882; fishing-reel. See Plate LVII.)

Upon the ordinary plate by which a reel is attached to the rod are mounted, instead of the usual solid side disks, two rings connected by radial arms with centers, in which is carried the spindle. Upon the spindle are secured rigidly two rings similarly constructed, and of somewhat less diameter than the fixed rings and revolving just inside them. These inner rings carry on their radial arms transverse bars, upon which the line is wound, set equidistant from the center. At opposite points in the fixed outer rings are placed transverse bars in pairs, the line passing between them. Thus there is a diminution in weight without any lessening of the strength of the apparatus, and from the fact that the line by passing between the bars F F or F′ F″, even with but little tension, is to a great extent freed from the water imbibed by it during immersion, and also that as the core upon which the line is wound allows air to come in contact with its inner coils, and the sides are equally exposed to evaporation, the line can at once be wound on the reel and allowed to dry there without risk of becoming rotten. In addition to this the arrangement of the transverse bars surrounding the spindle, it is declared, enables the line to be wound up almost as fast as by the use of a "multiplier," and with less trouble and risk of breakage.

CLAIMS.

"1. In a fishing-reel, the inner open revolving rings, both mounted on and connected by a central spindle, and also connected by a series

of parallel bars, each placed equidistant from the central spindle, substantially as and for the purposes set forth.

"2. The combination, with the stationary open rings, of the connecting and parallel guide-bars placed in pairs near the periphery of said wheels, substantially as shown, and for the purpose described.

"3. The combination, in a fishing-reel, of stationary open rings with parallel guide-bars, a spindle, and inclosed revolving open rings with connecting parallel bars equidistant from spindle on which said rings are mounted, all substantially as shown, and for the purposes specified."

No. 271166.

(Edward C. Vom Hofe, Brooklyn, N. Y.; patented January 23, 1883; fishing-reel. See Plate LVIII.)

To enable the fisherman, while operating the reel with one hand, to control the position of the click with the thumb of the hand which holds the fishing-rod, the frame which forms the bearings for the axle of the reel has a handle for turning the reel, mounted on one side of the frame, and a ratchet-wheel and a movable click on the opposite side. Springs act on the click to retain it in position when it is in gear with the ratchet-wheel and also when it is thrown out of gear. The frame forms the bearings for the axle of the reel, which is provided with a flange for securing it to the fishing-rod. The reel is operated by a handle on one side of the frame, in the present instance on a separate shaft, which is geared with the reel-shaft by a multiplying gear; but the handle may be mounted directly on one end of the reel-shaft. On the opposite end of the frame is mounted a click, which engages with a ratchet-wheel on the reel-shaft. The click is secured to a pin, which projects through a radial slot in the head of the frame, and is secured to a button situated on the outside of the head. This button is in such position that it can be manipulated by the thumb of the hand which holds the fishing-rod, and by moving it in a radial direction the click is thrown in or out of gear with the ratchet-wheel. Thus, the fisherman can throw the "ratchet drag" in or out of operation while he retains control of the reel. The click swings on its pin and is subjected to the action of two springs similar to the click in the patent granted this inventor September 2, 1879, No. 219328; but the head of the new click is arrow-shaped, as shown in Figs. 2 and 3, and, furthermore, the pin which supports the click is mounted in the sliding button. When the button is moved inward to the position shown in Figs. 3 and 5 the springs catch behind the head of the click (Fig. 3), and retain the click in gear with the ratchet-wheel, the button being thereby prevented from moving out spontaneously; and when the button is moved out to the position shown in Figs. 2 and 4, the springs bear upon the inclined

sides of the head of the click and retain the click out of gear with the ratchet-wheel.

The inventor says:

"I do not claim broadly as my invention the combination of a ratchet-drag with a fishing-reel, such being well known."

CLAIMS.

"1. The combination, substantially as hereinbefore described, of the frame which forms the bearings for the axle of the reel, the handle for turning the reel mounted on one side of the frame, the ratchet-wheel and click mounted on the opposite side of the frame, and the button which carries the click and serves to throw the same in and out of gear with the ratchet-wheel, said button being so situated that it can be operated with the finger or thumb of one hand while the handle is operated with the other hand.

"2. The combination, substantially as hereinbefore described, of the click having an arrow-shaped head, the button which serves to move the click in and out of gear with the ratchet-wheel, and the springs which bear on the click and lock the same when in gear and also when out of gear with the ratchet-wheel."

No. 281918.

(George H. Palmer, Fair Haven, Mass., assignor to Thomas M. Bissett and Thomas J. Conroy, New York, N. Y.; patented July 24, 1883; fishing-reel. See Plates LIX and LX.)

The drum constituting the frame of the reel, and serving to connect the two end plates rigidly together, is formed of a strip of metal which has portions cut away. This strip is rolled up to form a cylinder and screw-threads are cut upon the outside at the ends. Cup-shaped end-caps are provided with internal screw-threads to fit on the ends of the drum. At their centers they are provided with outward extending hub-like portions, in which, as well as in the plates, are central openings, in which are journaled the bearing-spindles of the spool. In the hubs are adjustable plugs forming bearings for the end of the spool-spindles, a conical point on each plug fitting into a corresponding recess in the spindle ends. Over the ends of the hubs, and covering the central openings, are plates fastened by screws. The spool has its center bored out from end to end, to be light. Into the ends of the bore are inserted the bearing pieces or spindles. These extend into the passage only a sufficient distance for a firm fastening. Their outer ends are reduced to fit the journal-bearing openings in the caps. The cup-shaped cap nearest the crank is deeper than the other, to leave sufficient room to receive the multiplying-gearing. Upon the bearing-piece here a pinion is screwed, and it is locked in position by a small screw. This pinion gears with a larger wheel below, fast to a shaft

journaled at its inner end in a bridge-piece projecting from the cap, and at its other end in the cap-plate, through which, and through the hub-like projection on the external face of which, it extends. To the outer end of this shaft is attached the balanced crank. To the lower side of the drum is screwed the usual longitudinally-grooved piece which fits upon the pole and over which the holding-rings are to be slipped. The object is do away entirely with the usual pillars or bolts, with their screw-nuts in the frame-work of the reel, and in the end plates or caps, these nuts being so liable to become loose. The consequent loosening of the frame and play of the parts will, as reels are ordinarily constructed with multiplying mechanism, cause this to get out of gear and become inoperative until the parts are tightened up again. In the present case the caps and drum have such an extended bearing surface that they cannot work loose, but hold the parts and gearing firmly in place, while they can yet readily be taken apart. The cap performs the double function of end-plate and a cover for the gearing.

CLAIMS.

"1. In a fishing-reel, the drum made in one piece, with suitable openings cut therein to make an open frame, and provided at each end with screw-threaded portions, in combination with the end caps provided with corresponding screw-threaded portions to fit those on the drum, substantially as and for the purpose set forth.

"2. In a fishing-reel, the drum made in one piece, with suitable openings cut therein, and provided at each end with screw-threaded portions, in combination with the end caps provided with corresponding screw-threaded portions to fit those on the drum, and a reel-attaching device fastened directly to the side of drum, substantially as shown and described.

"3. In a reel, the cup-shaped covering-cap screw threaded to fit the threaded portion on the end of the drum, and with a bearing for the spool-spindle, and a bridge and bearing to receive the crank-shaft, substantially as and for the purpose set forth.

"4. In a reel, the combination of the drum, made in one piece, the end-caps screwed upon the ends thereof, the spool provided with bearing-spindles journaled in said plates, the pinion on one of the spindles between the cap and end of spool, and the gear-wheel on the crank-shaft, journaled in the cap and the bridge-piece on the same, substantially as and for the purpose set forth.

"5. In a fishing-reel, the spool bored out centrally and longitudinally, the short bearing-pieces inserted into the central passage at the ends thereof, the pinion screwed and locked upon one of the bearing-pieces, and the adjustable screw-plugs in the end plates bearing against the ends of the spool-bearings or spindles, substantially as and for the purpose set forth.

"6. In a fishing-reel, the combination of the spool, its bearings journaled in the end caps, the screw-plugs in the hubs on the caps bearing against thee nds of the spool-spindles to adjust the longitudinal position of the spool, and the covering-plates on the ends of the hubs, substantially as and for the purpose set forth."

No. 282270.

(Thomas H. Chubb, Post Mills, Vt.; patented July 31, 1883; fishing-reel. See Plate LXI.)

The cross-plate or reel-seat for attaching the reel to the rod is made in two parts independently pivoted to the side plates to be folded within the circumference of the latter. A spring formed of a single piece of wire extends from the inner face of that side plate at which the crank is, and bears against a flange on the spool, the middle of the wire being coiled around the axis to form a collar which presses against the flange to prevent any play and rattling of the spool within the supporting-frame. The click mechanism consists of a toothed wheel mounted on the axis between the plates opposite the handle end and a pawl which is held in a position radial to the axis by a circular spring, the ends of which fit into side grooves in the pawl. The spring is soldered to the end plate, being sunk in a depression or circular rabbet, in said plate, of substantially the depth of the spring and of not much larger circumference. The pawl and its pivotal pin are rigid with one another, and the pivot has a substantial bearing in a boss in the side plate.

The inventor says:

"I am aware that pawls engaging radially with the toothed wheel controlled by a substantially circular spring engaging with its opposite sides, and adapted to click in either direction, are old, and I do not claim such as my invention."

CLAIMS.

"1. In a fishing-reel, a reel-seat constructed to be arranged longitudinally of the rod, and engaging with one side only thereof, said reel-seat being adapted to be folded for transportation, substantially as set forth.

"2. In a fishing-reel, a reel-seat arranged longitudinally of the rod and engaging with one side only thereof, said seat being divided and adapted to be folded for transportation, substantially as set forth.

"3. In a fishing-reel, the combination, with the side frame-plates, of the reel-seat hinged to the same on axes parallel to the axis of the reel, and folding within the frame of the reel, substantially as set forth.

"4. The combination, with the side frame-plates, of the folding reel-seat having sleeves of a length equal to the distance between said plates, and pins passing through said sleeves and connecting the frame-plates, substantially as set forth.

"5. In a fishing-reel, the combination, with the reel-frame, of a reel-seat made in two parts, the parts being pivoted to the reel-frame and abutting against each other to prevent further oscillation when in position for attachment to the rod, substantially as set forth.

"6. In a fishing-reel, the combination, with the frame-plate having a boss, a^2, making an increased length of bearing for the pawl-pin, of the pawl H, situated between the frame-plate and the spool, and having the pin *h* rigid therewith, substantially as set forth.

"7. The combination, with the frame-plate of the reel, having the rabbet *a* and pawl H, of the substantially circular spring I, partially coinciding with the wall of the rabbet and secured at its middle to the frame-plate, substantially as set forth.

"8. The combination, with the side plates, A A′, and the spool of the reel, of the spring *e e′ e′*, of one piece of wire, coiled about the axis of the reel and pressing against plates A′ D′, substantially as set forth."

No. 283084.

(John Dreiser, New York, N. Y.; patented August 14, 1883; fishing-reel. See Plate LXII.)

A fishing-reel of that class in which the reel follows the tension of the line when the latter is thrown out, but on which the reel can be revolved very quickly when the line is to be wound up. The reel is supported not at one side of the fishing-rod, but in line with the axis, the actuating mechanism being close to the rod at one side of the same, so that it cannot only be handled with great convenience, but without the small parts that make fishing-rods so expensive. A is the reel, and B is the spindle made square at its middle portion to apply the reel rigidly thereto, and round at the points where it is journaled to a metallic stock, C, which forms a part of the fishing-rod. The stock is provided with sockets C′ at both ends, to which sockets the upper and lower sections of the fishing-rod are securely applied. The stock has an open part, *a*, between the end sockets C′, within which the reel A is supported, so that it projects at both sides of the fishing-rod, its spindle being in line with a vertical center plane passing transversely through the longitudinal axis of the rod. The spindle has at one side a screw-button, *b*, and at the other side a pinion, *b′*, which meshes with a gear-wheel, *d*, that is keyed to a shaft, D, to the outer end of which the crank-handle, D′, is keyed. The crank-shaft D passes through the openings of the lower socket C′ of the stock C, and is loosely supported thereby, to be capable of laterally shifting motion between the terminal button *e*, at the opposite end of the shaft D, and the crank-handle D′. The pinion and the gear-wheel are inclosed by a casing, E. The gear-wheel and the shaft are acted upon by a strong band-spring, *f*, which is attached at its outer end to the casing, and forked at its inner end, bearing upon the gear-wheel. The spring tends to

throw the gear-wheel into mesh with the reel-pinion to cause the rapid winding up of the line on the reel when the shaft is turned. By shifting the shaft and its gear-wheel laterally against the tension of the spring, the gear-wheel is thrown out of gear with the pinion, so that the reel can then turn independently of the winding-up mechanism, whenever it is desired to throw out the line. The casing is further provided with a semicircular portion, *g*, that is secured by a transverse pin or key, *g'*, to the lower socket of the stock C, by means of which the casing is rigidly attached to the stock without exerting any strain upon the reel-spindle and shaft. When it is desired to separate the parts of the fishing rod after use, in order to bring them into a smaller compass, the casing is detached from the stock by unscrewing the screw-buttons *b* and *c* and releasing the pin *g'*. The reel is then taken out of the recess *a* of the stock and the rod-sections removed from the sockets of the stock.

CLAIMS.

"1. The combination of a supporting stock having end sockets for the pole-section and a central recess, a reel-spindle passing through said recess, and provided with a button at one end and a pinion at the other, a reel fixed to said spindle within said recess, a crank-shaft passing through one of the sockets of said stock, and provided with a button at one end and a crank at the opposite end, and a gear-wheel fixed to said crank-shaft, the latter being adapted to slide in its bearings to bring the gear-wheel into or or out of gear with the pinion aforesaid, the said parts being readily detachable for packing the pole, substantially as described.

"2. The combination of a metallic stock, C, having sockets C' for the rod-sections, a reel, A, supported in a recess of the stock, a reel-spindle, B, having pinion *b'*, a crank-shaft, D, supported loosely in one of the sockets, a gear-wheel, *d*, keyed to the crank-shaft D, and a spring, *f*, pressing upon said gear-wheel *d*, so as to throw it into or out of mesh with the pinion *b'* by the laterally-shifting motion of the crank-shaft D, substantially as and for the purpose set forth.

"3. The combination of a recessed supporting-stock, C, forming part of the fishing-rod, a reel, A, a reel-spindle, B, supported in bearings of the stock C, pinion *b'*, gear-wheel *d*, crank-shaft D D', spring *f*, and casing E, provided with means to attach it to the stock C, substantially as set forth."

No. 283496.

(Anton Lang, Brooklyn, N. Y.; patented August 21, 1883; fishing-reel. See Plate LXIII.)

An improvement in fishing-reels by which considerable speed can be imparted to the spindle when the line is wound up, while in throwing

out the line the spindle follows the motion of the line as the same is paid out.

A fishing-reel is provided with a spindle which turns in independent steel bearings of the frame or housing, said spindle being provided with a pinion that can be thrown by an intermediate pinion into or out of mesh with a gear-wheel that turns on the bracket of the spindle-bearing, and is operated by a crank-handle. A slide-piece throws the transmitting mechanism into gear for winding up the line at great speed, or out of gear to admit the independent motion of the spindle in throwing out the line.

CLAIMS.

"1. As an improvement in fishing-reels, the combination of the reel-frame, a reel-spindle turning in bearings of the reel-frame and having a pinion at one of its ends, an actuating gear-wheel arranged concentrically to the spindle-pinion, an intermediate pinion, and means by which the latter is thrown in or out of gear with the spindle-pinion and gear-wheel, substantially as set forth.

"2. As an improvement in fishing-reels, the combination of the supporting-frame having steel bearings for the spindle, one of said bearings being arranged in a bracket-shaped support, a spindle having a pinion at one end, an intermediate pinion, a gear-wheel revolving on the bracket-shaped support, and means for throwing the intermediate pinion in or out of gear with the gear-wheel and spindle-pinion, substantially as specified.

"3. As an improvement in fishing-reels, the combination of the supporting-frame or housing A, spindle B, turning in steel bearings *a a*, spindle-pinion *b*, intermediate spring-pressed pinion, *b'*, gear-wheel *c*, turning on bracket-support *a*, forked slide-piece *d*, and set-screw d^2, substantially as set forth."

No. 284217.

(Frederick Malleson, Brooklyn, N. Y.; patented September 4, 1883; fishing-reel. See Plate LXIV.)

Heretofore, it is said, in nearly all multiplying reels the results desired have been obtained by attaching to the head-plate of the reel a rigid post, upon which revolved a gear-wheel operated by a crank-handle supported by the post, by a revolving plate which substantially constituted a crank-handle, or by a short shaft not extending through the reel, but with a single bearing in the head-plate. The effect in either event was to bring the strain in one direction upon a point between the center and periphery of the head-plate and one side of the reel in another, reducing the leverage of the crank-handle, and increasing the friction by reason of the lateral strain on the gear-wheel, crank, and main shaft. The object is to overcome these difficulties and pro-

duce a multiplying reel so constructed as to give the benefit of the entire leverage from the center to the periphery of the reel and bring the strain on the longitudinal center of the reel.

In operation, the crank-handle, being revolved, revolves the shaft *c*, which operates the gear *f*. This engages the gear *g*, which is one-half the size of gear *f*, and, being permanently attached, gear *g* revolves the gear *h*, which is in turn twice the diameter of gear *g*, or the same as gear *f*. Gear-wheel *h* engages gear-wheel *i*, which is the same size as gear-wheel *g*, and is attached to and drives the hollow spool-shaft K. The degree of multiplication will of course be determined by the relative sizes of the gears.

CLAIMS.

"1. In a fishing-reel, the hollow revolving drum-shaft mounted in central bearings in the end plates, in combination with the independently-revolving driving-shaft passing therethrough and having its bearing therein, and provided with the crank and means for transmitting motion to the said hollow shaft, as set forth.

"2. In a fishing-reel, the operating-gear arranged upon the tail-plate *o*, in combination with a central shaft driven by a crank on the head-plate, substantially as described.

"3. In a fishing-reel, a reversible check or click consisting of the combination of the ratchet-wheel mounted on the drum-shaft, between the end plate and the spool-head, the pawl engaging therewith, the spring engaging the pawl, the post carrying the pawl and projecting through the end plate, and the switch-lever attached thereto for throwing the pawl into or out of engagement with the ratchet at will, as set forth."

No. 285346.

(William B. Doubleday, Binghamton, N. Y., assignor to Henry H. Doubleday, Washington; D. C., patented September 18, 1883; device for attaching reels to fishing-rods. See Plate LXV.)

A metal plate, curved in cross-section to correspond substantially to the curved outer face of the rod, is secured thereto. The edges of a portion of this plate are turned up, forming ways or channels. At one end of the plate the edges are closed down forming stops, and a portion adjacent to the end is cut away, in order that at the extreme end the edges may be bent down into contact with the body of the plate without carrying with them the adjacent portions. A locking-stud is thrust upward through an opening in the plate by a spiral spring within a cylindrical case attached to the under side of the plate, a hole being bored in the rod to receive the case. The reel is mounted on a curved plate, the sides of which slide in the ways of the plate on the rod, and which abuts against the stops, and is held in place by the locking-stud.

CLAIMS.

"1. In a device for attaching a reel to a fishing-rod, a concave plate adapted to be secured to the rod, and provided upon its sides with projecting lips to receive the sliding reel-plate D, in combination with a movable stop to prevent the accidental displacement of the reel, substantially as set forth.

"2. The combination of the reel, the sliding plate D, the concave plate provided upon its sides with projecting lips, and the yielding stop, substantially as set forth."

No. 285630.

(Henry C. A. Kasschau, New York, N. Y.; patented September 25, 1883; fishing-reel. See Plate LXVI.)

The object is to supply a fishing-reel that can be used without a rod. The reel is of wood or is a skeleton of metal, and has one or more crank handles. The reel-frame may be of a single post, or of fork shape, the spindle being in one case fixed to and in the other case revoluble in the reel frame. The reel frame is fixed upon a handle, and at its point of attachment thereto, at one or both sides, has a hook-shaped finger-rest, by means of which the reel can be firmly grasped, thus allowing the line to be thrown a great distance from the shore without risk of slipping from the hand.

CLAIM.

"A hand fishing-reel consisting of a revolving reel, A, reel-frame B, handle D, and hook-shaped finger-rest E at the base of the reel-frame, substantially as set forth."

No. 294429.

(Gilbert L. Bailey, Portland, Me.; patented March 4, 1884; reel fastening for fishing-rods. See Plate LXVII.)

The objects are, first, to provide means for fastening the loose reel-band, in any desired position, and, in connection therewith; second, to provide a loose reel-band which, when fastened, will hold reel-plates of different thicknesses and widths upon a reel seat having a plain surface, and without the intervention of the usual fins or ribs. The operation is as follows: Lever *g* being opened one end of the reel plate is placed in receptacle *f*, and the receptacle *e* in band *b* is placed over the other end. The lever is then brought into position, as shown in Figs. 1, 2, and 4, and through the action of cam *h* band *b* is drawn firmly down upon the reel-plate, the round part of the cam acting against the inside of groove *i* and the surface of tube *a*.

The inventor says:

"I do not claim a metal reel-seat, nor a band having a raised receptacle for a reel-plate and fastened to the lower end of a fishing-rod, as these are already in use."

CLAIMS.

"1. In a reel-fastening for a fishing-rod, a loose or sliding band having a raised receptacle for one end of a reel-plate on one portion of its surface, and a groove struck from the inside on an opposite portion, in combination with a cam working in said groove, having a lever attached and adapted to fasten said band over said reel-plate, and a metal reel-seat adapted to surround the butt of a fishing-rod, and having a raised raised receptacle for the other end of said reel-plate, fixed thereto, substantially as and for the purpose herein set forth.

"2. In a reel fastening for a fishing-rod, a loose or sliding band having a raised receptacle for one end of a reel-plate on one portion of its surface, and a groove struck from the inside of an opposite portion, in combination with a cam working in said groove, having a lever attached and adapted to fasten said band over said reel-plate, and with the butt of a fishing-rod, having a raised receptacle for the other end of said reel-plate, fixed thereto, substantially as and for the purpose herein set forth.

"3. In a reel-fastening for fishing-rods, a loose or sliding band having a raised tapering receptacle for one end of a reel-plate, and a groove struck from the inside, in combination with a cam to work in said groove, having a lever attached adapted to tighten said band upon and release it from said reel-plate, substantially as and for the purpose herein described.

"4. In a reel-fastening for fishing-rods, a loose or sliding band having a groove struck from the inside for the reception of, and in combination with a cam to work in said groove, having a lever attached adapted to tighten said band upon and release it from a reel-plate, substantially as and for the purpose herein described.

"5. The combination of sliding band *b*, with its raised portions *c* and *i*, lever *g*, with its cam *h*, and tube *a*, provided with receptacle *f*, substantially as herein described."

No. 296196.

(William N. Lockwood, Campville, Conn.; patented April 1, 1884; line-reel. See Plate LXVIII.)

This invention consists of a reel inclosed and having bearings in a case composed of two end pieces connected together by three rods, and a cylindrical shell open about one-third the circumference, one of the end pieces being so formed as to incase a gear-wheel which meshes into a pinion on the reel-shaft, the gear-wheel having a crank-handle on its shaft, by means of which the reel may be rapidly rotated and the line wound evenly thereon and without kinks. A spring-catch pivoted to one of the end pieces falls between the spokes or into the openings of one of the flanges of the reel, thereby holding the reel and prevent-

ing it from rotating when sufficient line has been paid out. This spring-catch is conveniently located to be operated by the thumb or one of the fingers of the hand holding the case, while the reel may be rotated by the other hand actuating the crank-handle. The whole of the device is made very strong and light.

CLAIMS.

"In a line-reel the combination with the shaft *b* of the plain flange *c* secured to one end thereof, and the flange *c'* secured to the other end, and provided with a lug, c^2, projecting inwardly therefrom adjacent to the shaft *b*, and to which is attached one end of the line, substantially as and for the purpose hereinbefore set forth.

"2. In combination, the inclosing-case *d d' f*, the gear-wheel *h*, provided with the crank-handle *j*, the line-reel *b c c'*, provided with the pinion, and the bell-crank spring-catch *k*, having its outer end lying along the inclosing case, substantially as and for the purpose set forth."

No. 303186.

(Henry F. Price, Brooklyn, N. Y.; patented August 5, 1884; reel-fastening for fishing-rods. See Plate LXIX.)

The object is more generally to adapt rods to receive the varying sizes of seats of reels. Sliding bands of different diameters are nested on the rod. These are employed respectively according to the size of the reel-seat, and are applied to hold either or both ends of reel-seat rod.

CLAIMS.

"1. The combination of a rod, a reel-seat, and a series of separate sliding nested bands or rings, whereby a reel-seat of varying size may be securely clamped to a rod, as set forth.

"2. The combination of a rod, a reel-seat, and a series of connected sliding nested bands or rings, said reel-bands being so constructed that they shall not separate from each other longitudinally by what is known as a "bayonet-fastening," whereby a reel-seat of varying size may be securely clamped to a rod, as set forth."

No. 303347.

(Archer Wakeman, Cape Vincent, N. Y.; patented August 12, 1884; fishing-tackle. See Plate LXX.)

A device to be applied to fishing-lines for the purpose of twirling or rotating the line, and with it the fly or bait at its end. A rotary disk or head to which the line or gimp is attached is connected with a crank, or with automatically-operating mechanism by which the line may be rotated. Ordinarily the device will be applied to a pole or rod, and

may be used in connection with a reel for winding in the line. The line B, or so much thereof as extends from the reel to and through the tubular guide *a*, is made of gimp, or of other material having sufficient stiffness to turn without buckling or twisting to any material extent, yet capable of being readily wound upon the reel. The line being provided with the usual fly or bait, and the latter being allowed to hang from the rod and thereby to straighten the line, it will be seen that rotation imparted to the shell or cylinder by the train E will be transmitted to the line B, and through it to the bait or fly, the swivel of the bait being made sufficiently tight to prevent rotation therein until a fish is hooked, and resistance thereby offered to the rotation of the bait. A brake, F, is provided with which to hold the cylinder or shell against rotation, and the reel is provided with a square stem, *f*, to receive a handle or key by which to turn it and wind in the line. The brake is arranged to enter a hole or notch, *g*, which is so located as to stop the shell with the stem *f* in proper position for operation.

CLAIMS.

"1. In combination with a fishing line or gimp, provided with a fly or bait, a rotary wheel or body connected with said line or gimp, and serving to impart a rotary or twirling motion thereto.

"2. In combination with a fishing-line or gimp, a wheel or body connected therewith, and a spring-driven train connected with said wheel or body and arranged to rotate the same, substantially as and for the purpose set forth.

"3. The herein-described device for imparting rotary motion to fishing-bait, consisting of the shell C, having tubular journal *b*, and internal reel D, and provided with means, substantially such as described, whereby it may be rotated as set forth.

"4. In combination with a bait-twirling mechanism, a fly or bait provided with a tight-fitting swivel, such as described, whereby the bait is caused to turn with the line or gimp until resistance is offered, whereupon the friction is overcome and the line or gimp permitted to turn independently of the bait."

No. 306162.

(John Kopf, Brooklyn, N. Y., assignor of one-half to Thomas B. Mills, of same place; patented October 7, 1884; fishing-reel. See Plate LXXI.)

The main point in this case seems to be the appearance which it is designed to give the finished reel. Panels of vulcanite are let into the ends where they are held by rims or bezels, and the cap-nut over the end of the outer spool journal was devised, it is intimated, to do duty as an assistant in this respect.

The inventor says:

"I do not claim as of my invention a reel having its plates or heads

composed of hard rubber or vulcanite bushed to form bearings for the spool journals, with or without metal bands encircling the rubber or vulcanite, the object of my invention being to provide a reel which shall equal in appearance one having plates or heads of rubber or vulcanite, and which shall be far more durable and strong; neither do I claim, broadly, as of my invention a reel having a recess on its inner side to receive the spool-flange, and a hub on its outer side to form a bearing for the spool-journal, the said hub having a cap-nut applied to it. Such a reel is shown in United States letters patent No. 214495, granted April 22, 1879, to L. T. Dickson; but its plate or head has no panel applied to its outer side, and having a central aperture through which said hub projects, nor has the plate or head any rim or bezel on its outer side to receive within it such a panel as I employ; neither does the cap-nut serve the double purpose of covering the spool-journal and its bearing and securing a panel in place, as does my cap-nut *f*."

CLAIMS.

"1. In a reel, the combination of the head A and the cap C, recessed on their outer side so as to form rims *c*, the head A comprising a bearing, *d*, for the spool-journal, and the panels H H′, applied to the recessed outer sides of said head and cap and fitting within the rims *c*, substantially as described, and for the purpose set forth.

"2. In a reel, the combination of the spool F, the head A, having on its exterior the hub *d*, forming a bearing for the said spool, and having the rim or bezel *c*, the panel H, fitting within the rim or bezel *c*, and having a central aperture, through which the hub *d* projects, and the cap nut *f*, applied to the hub *d*, and serving both to cover the latter and to secure the panel in place, substantially as herein described."

No. 309305.

(John Kopf, Brooklyn, N. Y., assignor of one-half to Thomas B. Mills, of same place; patented December 16, 1884; method of making fishing-reels. See Plate LXXII.)

Heretofore the base-plate and heads of a fishing-reel have been made of separate pieces secured together by screws or other means, and the heads have been connected by one or more pillars or cross-braces, which are also separate pieces from the heads; hence in the simplest reel, having but a single pillar or cross-brace between the heads, the frame has consisted of four parts, irrespective of the screws whereby said parts are often connected. A blank is cut or stamped from sheet metal by dies, the blank comprising disk-like portions for the heads of the reel, and a portion, between the disk-like portions, connected with them by necks to form the base-plate of the reel. These necks are subsequently bent so as to bring the disk-like portions into positions parallel with each other, and at right angles to the base-plate. To complete the frame of the reel a cross brace or tie is secured between the disk-like

portions at a point opposite to the base plate, to hold the heads at a proper distance apart. This tie may be a piece separate from the other parts of the frame, in which case the frame would consist of but two pieces; or the tie may be produced as a narrow tongue projecting from one of the disk-like portions of the blank, and after these are bent into positions parallel with each other to form the heads the tie is bent down to extend between them, and is secured at its free end to one of the heads. The frame would then be composed entirely of one piece of metal.

CLAIMS.

"1. The method of forming the base-plate and heads of a reel, consisting in producing a blank having disk-like head portions B′ on opposite sides of an intermediate base portion, B, and in bending the blank upon the lines *x x* to bring the said head portions into positions parallel with each other and at right angles to said base portions, substantially as herein described.

"2. The method of forming the base-plate, heads, and cross brace or tie of a reel, consisting in producing a blank having disk-like head portions B′ on opposite sides of an intermediate base portion, B, and a tongue, B^2, extending from one of said head portions, in bending the blank upon the lines *x x* to bring the head portions B′ into positions parallel with each other and at right angles to said base portion, in bending the blank upon the line *y y* to bring the tongue B^2 into a position at right angles to the head from which it projects, and in securing the free end of said tongue to the opposite head, substantially as herein described."

No. 272870.

(Thomas R. Ferrall, Boston, Mass.; patented February 27, 1883; trawl-roller. See Plate LXXIII.)

By making the trawl-roller in three different parts, that is, a central one, *d*, and side rollers, *e e*, all secured to the spindle *c*, a very strong and durable trawl-roller is produced from smaller pieces of lignum-vitae, as compared with a continuous solid roller, and thus pieces of wood are utilized that otherwise would be wasted; and if a portion of this roller should get damaged or broken such injured part may easily be replaced with another at a small expense, as compared with an entire new roller. By securing the roller to the spindle and locating the bearings outside, it will run without much friction, as compared with rollers running loosely on a fixed spindle. The bearings are self-lubricating.

CLAIM.

"In a trawl-roller, the central spindle *c*, adapted to rotate loosely in the outer bearings *b b*, and having secured to it the grooved center roller, *d*, and side rollers, *e e*, as and for the purpose set forth and described."

No. 252008.

(George P. Andrews, Staffordville, Conn.; patented January 10, 1882; fishing-rod. See Plate LXXIV.)

The sections or lengths of the fish-pole are hinged, but may be made rigid by thimbles which slip over them. The thimbles have eyes for the line. Within the but-end of the lowest section is a small steel balance, and upon the pole there is a graduated scale for the pointer of the balance. The end can be closed by a cap when the balance is not in use, it is said. What the balance is for, or how it is to be used, is not stated. It is presumed that it is to weigh fish, to be hung on the eye or little hook after removal of the cap. The rod is folded by throwing up the thimbles and laying the hinged lengths together. They are held so by a spiral spring fast to the butt. In folding the sections, the spring H is grasped at one end and straightened out to allow the sections to come together. Upon its release it will spring once or twice around the folded sections.

CLAIM.

"The combination, with a fishing-pole composed of lengths or sections hinged together, of the spring fastening device H, for the purpose specified."

No. 258902.

(Hiram Eggleston, Manchester, Vt., assignor to Charles F. Orvis, of same place; patented June 6, 1882; reel-seat for fishing-rods. See Plate LXXV.)

A spring is fastened centrally in a recess in the rod. Fixed bands project over the ends of the recess. The reel-seat plate is slid with one end under one band, and then with the other end under the other, so that both sides will be under the bands, and they will be held up against the bands by the spring. The seat may as readily be detached as attached, and in a manner that will be obvious.

CLAIM.

"In a reel-seat for fishing-rods, a spring-clamping seat, *b*, in combination with the rod having the fixed ring-bands, substantially as described."

No. 263484.

(Thomas H. Chubb, Post Mills, Vt.; patented August 29, 1882; tie-guide for fishing rods. See Plate LXXVI.)

The tie-guide through which the line passes is secured to the rod by cords or wire wound around the rod and the points of the guide, or by ferrules or bands slipped upon the rod over the points of the guide. The guide-blank is cut from sheet metal with points, inclined side edges leading inward from the bases of the points, and curved recesses be-

tween the inner ends of the inclined side edges 2 and the bases of the points 1. The blank is then bent around a former.

CLAIM.

"The tie-guide for fishing-rods, cylindrical in cross-section at its middle, and constructed of the piece of metal C′, having pointed ends 1, inclined side edges 2 leading inward from the bases of said points, and curved recesses 3 between the inner ends of the inclined side edges and the bases of the points, substantially as described."

No. 264243.

(Thomas H. Chubb, Post Mills, Vt.; patented September 12, 1882; ferrule for fishing-rods. (See Plate LXXVII.)

The object is to promote reliability in securing ferrules, such as the ferrules of fishing-rods in place. An annular groove is formed in the ferrule after it has been arranged in place. The ferrule is indented in the bottom of the groove, and the surface of the groove is then milled. The grooving, indenting, and milling are designed to be done in a machine successively, but at one operation, by suitably formed tools, as indicated in dotted lines in Fig. 3.

The inventor says:

"I am aware that ferrules have been secured to sticks by means of annular grooves, and by means of singular indentations made here and there without method, and that ferrules have been ornamented with milled rings, and I do not claim either of these alone or broadly as my invention."

CLAIM.

"The combination, with a stick, of a ferrule, E, having an annular groove formed in it by pressing the metal into the wood, and having indentations formed in it at the bottom of its groove, substantially as herein shown and described, whereby the said ferrule will be held securely in place, as set forth."

No. 270460.

(William Mitchell, New York, N. Y.: patented January 9, 1883; fishing-rod. See Plate LXXVIII.)

The object is to obtain a uniform strain and spring in fishing-rods throughout their entire length.

A represents the butt of a fishing-rod, B is the grip, and C is the rod. The grip forms a part of the butt, and the rod passes in through the upper end of the butt, and has a screw-hole in its end, or in a cap or ferrule attached to its end, to screw upon a screw D, secured to the butt-cap E. The interior of the butt A is made so much larger than

the rod C that the rod will be free to bend from end to end, so that the strain and spring will be uniform throughout its entire length, the rod coming into contact with the butt only at its ends. The aperture through the forward end of the butt is made to fit the rod exactly, in order to hold the rod steady.

CLAIM.

"The combination of the cap E, having a central screw on the inside, a hollow handle, B, having a central hole in the butt, and the fishing-rod C, having an end open tubular cap working on said screw, as shown and described."

No. 277230.

(Thomas H. Chubb, Post Mills, Vt.; patented May 8, 1883; fishing-rod tip. See Plate LXXIX.)

The head of the funnel-top is provided with a deep annular groove for the reception of the tube of the funnel-head. A center hole is drilled in the back end of the head for entry into it of a round swaging tool. The tube of the funnel-head is then pushed into the annular socket, after which the swaging-tool is driven down into the center hole to expand the central portion of the metal of the head circumscribed by the seat, and cause it to give a flaring or spread configuration to such seat, and a corresponding figuration to the inner end of the tube. After the funnel-top has been formed, it has a hole made through it for the line. By this construction the tube is secured to the head by a dovetailed joint, and if this joint should become loose or spring inward it can readily be tightened by driving the swaging-tool into the center hole.

CLAIMS.

"1. As an improved article of manufacture, the funnel-top for a fishing-rod herein described, consisting of the head C, provided with the deep annular groove or seat *b* at its inner end, and inclined opening *g*, made through the head, and tube D, having its outer end inserted in the annular groove *b* of the head, and secured thereto by the dovetailed joint *h*, as set forth.

"2. The combination, with the tapering tube D, of the head C, provided with the opening *g*, annular groove *b*, and central hole *c*, substantially as described, whereby the dovetail joint can be expanded when sprung inwardly, as set forth."

No. 279988.

(Richard Smith, Sherbrooke, Quebec, Canada; patented June 26, 1883; tension equalizer for fishing-rods. See Plate LXXX.)

A device for equalizing the tension and compression arising from strains incidental to fishing-rods when in use. Hitherto in the ordi-

nary jointed rod the resistance to strains, both tension and compression, which arise in bending, have been borne by the inherent elasticity of the rod. But as the rod cannot be uniformly elastic, it will not bend equally, nor have a uniform curve, but will assume a sharper curve in the less stiff portions. Hence the rod is liable to be sprung or broken when undue strain is exerted. Even in the split-bamboo rod, in which the several parts comprising joints are adjusted and arranged to overcome the defect arising from the unequal strength of several individual pieces, full success has not been attained. To overcome the effect of the unequal strength of the several parts comprising a rod, or in case the rod is integral, to overcome a like defect which would exist, there is attached to the upper or top portion of the rod a small steel jointed wire. This wire is to be fixed at one end to the tip, and at the other extremity to the but-end of the rod. The rear end has attached to it a head or button, which actuates a coiled spring fitting within a small double cylinder fastened to the butt.

CLAIMS.

"1. The combination, with a fishing-rod, of a tension wire or cord secured thereto, and an elastic connection, which permits the wire or cord to accommodate itself to the varying curvature of the rod, for the purposes set forth.

"2. A fishing-rod provided with a back-bone or support, consisting of a continuous or linked wire or cord attached to the tip and but-ends of said rod, the rear end being secured to the butt indirectly by a coiled or other spring contained and carried within a tube screwing within another tube or cylinder attached securely to the but, substantially as herein described.

"3. In a fishing-rod, the individual joints furnished with a wire link attached thereto by suitable devices, and when united forming an entire rod with a continuous linked wire, the latter adjustable to the curvature of said rod, and provided with a spring to equalize and distribute strains brought upon any weak point, substantially as stated.

"4. A fishing-rod, in combination with a wire or cord extending along its upper or top portion, an adjustable coiled spring to which said wire is attached, and a movable tube which incloses said spring, said wire accommodating itself to the bending of the rod by the yielding of the spring, substantially as set forth.

"5. In a fishing rod, A, the combination of the continuous or linked wire B, whose tension is adjustable by means of a coiled spring, *i*, with the closed movable cylinder E, screwing within a primary cylinder or tube, D, securely fastened to the but-end of the rod, substantially as stated."

No. 285493.

(James E. Langdon, Torrington, Conn.; patented September 25, 1883; joint or coupling for rods, &c. See Plate LXXXI.)

Two sections of tube have upon the surface of each a screw-thread. The tube section is fastened upon a rod joint, and one being smaller will pass into the other, the screw-thread upon the smaller engaging the screw-thread upon the larger or outer tube. The screw-thread formed in the surface of these tube sections may be rolled in while the sections are separated from the joints of the rod, or the sections may be put upon the ends of the rod joints and the screw-threads rolled into their surfaces, thus embedding the surface of the metal into the wood of the rod and holding the sections in place.

CLAIMS.

"1. A coupling for the joints of rods, &c., composed of two tubular sections, *c c*, of thin metal, each having a screw-thread rolled into its surface, the section *c* being longer than the section *c* and covering said section *c*, when the parts are connected together substantially as set forth.

"2. In combination with the rod-sections *a b*, a tubular coupling composed of the screw-tubes *c c*, in each of which is rolled or formed a screw-thread, which performs the double duty of holding the tube-sections upon the rod-joints and coupling the sections together, substantially as set forth."

No. 303474.

(Justice Webb, Georgetown, Ky.; patented August 12, 1884; lock-joint for fishing-rods. See Plate LXXXII.)

With a sleeve secured to the end of a rod-section in such manner that it projects beyond the end and provided with an annular ridge or collar and two studs is combined another sleeve which will fit closely into the first, provided with two annular ridges and secured to another rod-section in such manner that it will be flush with the end, and carrying a sliding ring provided with an inward projecting flange, and with two L-shaped slots for receiving the studs on the other sleeve. To unite the rod-sections the sleeve E is passed into the sleeve A, and then the ring H is pressed down on the ridge or collar C to cause the studs M to pass into the longitudinal parts of slot K. The ring H is then turned to cause the studs M to pass to the ends of the transverse parts of the slots K. The ring is thus held on the sleeve A, and as the flange J of the ring rests on the annular ridge or collar G of the sleeve E, it holds the said sleeve and the rod-section to which it is fastened in place. Either one or two L-shaped slots K can be formed in the sleeve H.

CLAIMS.

"1. In the lock-joint for fishing-rods, the combination, with the sleeve A, provided with a locking-stud of the sleeve E, constructed to fit within the sleeve A, and a collar, H, held to slide and rotate on said sleeve E, and formed with an L-shaped slot for engaging the locking-stud on the other sleeve, substantially as set forth.

"2. In a lock-joint for fishing rods, the combination with the sleeve A, provided near one end with the collar or annular ridge C and the the studs M between the end of the sleeve and the said collar, of the sleeve, E, fitting in the sleeve A and provided with the annular ridge or collar G, and of the sliding sleeve H, having an inwardly projecting flange, J, above the collar G, and also having two L-shaped slots, K, extending upward from the free edge of the said sleeve H, substantially as herein shown and described."

No. 309028.

(William W. Byington, Albany, N. Y.; patented December 9, 1884; fish line and hook guard. See Plate LXXXIII.)

A piece of elastic metal resembling the ordinary "eye" of the "hook and eye" of commerce is slipped over the fish-rod and the shaft or shank of the fish-hook.

CLAIM.

"The combination, with a fishing-rod and the line dependent from end thereof, of a detachable spring-band encircling the rod and clamping the line between the inner surface of the band and the outer surface of the rod, whereby during transportation the rod and line are maintained in close relationship with each other throughout their length while the line may be readily and speedily released for use, substantially as described."

No. 255671.

(Matthew and Thomas Reynolds, Havre De Grace, Md.; patented March 28, 1882; gill-net. See Plate LXXXIV.)

The net consists of three parts, viz, a double net externally, the mesh of which is large enough to permit fish to pass through, and an intermediate net, which constitutes the gill-net proper, and which is therefore of finer mesh. The three nets are united at top and bottom by ropes, thus forming two pockets, one on each side of the middle net. As the fish come against the net, they pass through the coarse mesh net into the pocket, where they are caught in the gill-net, which is reinforced or braced in its bulged position by the net on the opposite side, thus preventing breaking of the net however great the strain. In hauling, the

side nets forming a pocket prevent the fish caught in the middle net from becoming disengaged, so that there is no loss in the haul, however large the catch may be.

CLAIM.

"The improved gill-net herein shown and described, composed of a middle net, F, or gill-net proper, placed between two nets, E and E, to form the pockets *a* and *b*, the inner net being of finer mesh than the two side nets between which it is placed, substantially as set forth."

No. 270641.

(Jasper N. Dodge, Detroit, Mich.; patented January 16, 1883; fish-net. See Plate LXXXV.)

A collapsing landing and minnow or bait-net which can be expanded readily for use or collapsed ready to be packed without unscrewing the head from the pole. A hoop is constructed of two spring arms, which are perforated to secure the netting, are made heaviest at their inner ends where the greatest strain is, are jointed together at their outer ends, and at their inner ends are hinged to a sleeve. These arms have hinged to them two braces, which are also hinged to a thimble, the sleeve and thimble being passed over the end of a staff, and secured thereon by a head plate held firmly against the thimble. When the sleeve is pushed toward the end of the staff the braces will be extended and hold the spring arms out forming a hoop.

For the purpose of catching minnows or bait a separate net is provided, secured to narrower and thinner spring-arms of a hoop, F and F′, as shown in Figs. 5 and 6, said arms being turned at the ends to form flanges, or otherwise provided with lips, *f*, whereby they may be secured in the arms D and D′. This separate bait-net is thus adapted to be put into that previously described. When not in use it is intended to be taken out, folded up, and stowed away in any convenient place.

The inventor says:

"I am aware that heretofore the hoop of a bait-net has been provided with hinges so as to be folded, and having its sides connected by rods with a sliding sleeve on the staff or rod, so that by operating said sleeve the hoop may be expanded or collapsed, as desired, and I do not claim such construction, broadly."

CLAIMS.

"1. In a collapsable landing and bait-net, a hoop constructed of two spring-arms, hinged together at their outer ends and at their inner ends hinged to a sleeve, in combination with two braces hinged to said arms and to a thimble, said sleeve and thimble adapted to pass over a staff, substantially as described.

"2. A collapsable landing and bait net consisting of a hoop constructed of two spring-arms, hinged together at their outer ends and at their

inner ends hinged to a sleeve, in combination with two braces hinged to said arms and to a thimble, a net secured to the arms of the hoop, a staff inserted through the sleeve and the thimble, and secured therein by a head plate adapted to engage with the thimble when the hoop is expanded, said head-plate held firmly against the thimble, when thus engaged, by the projecting ends of the braces, to keep the net from turning on the pole, substantially as described.

"3. In a collapsable landing and bait net, a hoop constructed of two perforated spring-arms, hinged together at their outer ends, made heavier at their inner ends, and hinged thereat to a sleeve, in combination with two braces hinged to said arms and to a thimble, said sleeve and thimble adapted to pass over a staff, substantially as described.

"4. In a collapsable landing and bait-net, the spring-arms F and F′, in combination with a suitable net, said arms provided with means whereby they may be secured within the arms D D′, substantially as described."

No. 272305.

(Otho M. Muncaster, Washington, D. C.; patented February 13, 1883; landing net. See Plate LXXXVI.)

A hollow handle of bamboo will hold the wire of the net ring, which is sufficiently elastic to be straightened or bent without injury. The wire has its ends bent outward, and to one of the ends is attached a longitudinally grooved nut, threaded a portion of its length. The handle has on one end an internally threaded ferrule to receive the screw portion of the nut. To form the net ring the nut of one end of the wire is screwed into the ferrule, and the free end is then slipped into the groove, where it will be held by the handle into which the ferrule having the groove is sunk.

CLAIMS.

"1. The combination of the net-wire B and the longitudinally-channeled nut b^2, the latter being adapted to fit a threaded ferrule on the end of the handle, substantially as described.

"2. The combination of the hollow handle or rod A and the elastic net-wire carrying the longitudinally-grooved nut b^2, substantially as described."

No. 273651.

(Richard J. Welles, Chicago, Ill., assignor to William Mills and Thomas Bate Mills, Brooklyn, N. Y.; patented March 6, 1883: landing net. See Plate LXXXVII.)

The invention relates to landing-net rings which are detachable from their handles, and which may be slipped inside of them. The handle may be of a single piece, or of two or more pieces connected by ferrule. The ring-piece may consist of a single strip or band, elastic or flexible,

and continuous from end to end, or of two sections to be connected by a slide. In either case the two ends of the ring-piece are entirely unconnected with each other. The upper end of the handle is provided with a ferrule, in which is fixed a nut; and a rod or stem is screwed into the nut, and has a head consisting of two widely diverging arms. A crotch, the upper surface of which is recessed, or which is formed with flanges, receives the arms between these. The two sides of the crotch diverge at the same angle as the arm, and the crotch is provided with a tubular shank, which loosely surrounds the stem, and fits inside the ferrule. In the upper surfaces of the crotch are recesses, and the ends of the ring-piece are hooked slightly to enter the recesses. By holding the crotch in one hand and turning the handle, the stem will be extended or drawn in by the action of the nut, and when extended the ends of the piece may be inserted between the parts C′ and D and into the recesses. The handle is then turned to draw in the stem, and as the inward movement of the crotch is arrested by the ferrule the end portions of the ring-piece will be securely clamped in place and held against withdrawal, and also against lateral shifting, by reason of their fitting between the flanges of the crotch. The ring-piece, when detached, will straighten by reason of its elasticity, and may be placed inside the hollow handle. The construction of the crotch and arms is such that when the ends of the ring-piece are inserted between them a ring of oval form will be produced, which is considered preferable for a landing-net to a round ring.

CLAIMS.

"1. The combination, with a handle, A, provided with a nut, *a*, and a ring-piece, B, of the crotch D, the stem C, and diverging arms C′, all substantially as described.

"2. The combination, with the handle A and ring-piece B, of the nut *a*, the screwed stem C, the diverging arms C′, and the crotch D, provided with flanges *b*, which receive between them the ends of said ring-piece B and said arms C′, substantially as described.

"3. The combination, with the handle A and the ring-piece B, provided with bent ends *c*, of the nut *a*, screwed stem C, arms C′, and crotch D, provided with recesses or notches *d*, all substantially as described."

No. 255561.

(Edward Arapian, NewYork, N. Y.; patented March 28, 1882; sponge fishing net. See Plate LXXXVIII.)

A net of bag shape has attached to the mouth thereof a frame, one portion of which is of heavy material, and the remainder of buoyant material, so that when the net is cast into the water the heavy portion of the frame acts as a sinker, while the buoyant portion thereof floats, thus keeping the mouth of the net open for the reception of sponges or other like objects.

CLAIMS.

"A net of bag shape, for fishing sponges or the like, having attached to the mouth thereof a frame, one portion of which is composed of metal or other weighty material, and the remainder of wood or other buoyant material, substantially as and for the purpose described.

No. 279792.

(Edwin Paterson, Port Washington, N. Y.; patented June 19, 1883; oyster dredge. See Plates LXXXIX and XC.)

The object is to gather oysters from the bed clean, and easily, and rapidly.

Hinged in loops that are attached to the frame above foot-pieces, are two corresponding shafts which have secured to them removable grappling arms or teeth. The ends of the shafts are bent toward the center of the frame to form cranks and the ends of these cranks are attached to the lower ends of a vertically-sliding bail by connecting-rods which are hinged at their ends to the ends of the bail and the ends of the cranks, so that upon the upward movement of the bail, which takes place when the dredge is lifted out of the water, the shafts will be turned upward, bringing the cranks to a vertical and the grappling-arms to a horizontal position, and upon the downward movement of the bail, which takes place when the dredge is being lowered into the water, the shafts will be turned downward, bringing the cranks to a horizontal and the grappling-arms to a vertical position, so that the points of the grappling-arms will properly penetrate the mud at the bottom. The dredge is raised out of the water by ropes attached to the bail, and is lowered into the water by ropes attached to the frame of the dredge. A brush frees the oysters from mud just before or just after they are lifted out of the water. The brush slides upon bars held across the frame of the dredge by cross-pieces, angle-plates, and screws, and may be drawn forward over and in contact with the oysters on the grappling-arms against the tension of a spring, by means of a rope the spring serving to draw the brush backward upon the cord being released. The brush may be adjusted vertically, so that its bristles will come properly in contact with the oysters on the grappling-arms, by turning the screws which will raise the angle-plates which are held in the vertical channel-bars for that purpose. These channel-bars also serve to keep the brush from lateral or endwise movement. The rope for operating the brush passes over a pulley attached to the angle-plate, and thence over the derrick-arm back to the scow; but the brush might be arranged upon the opposite side of the dredge, or the dredge be turned around, in which case the rope might pass directly from the brush to the scow, and the pulley then be dispensed with. An air-

chamber or float attached to the top of the frame serves to prevent the dredge from sinking too rapidly when lowered. The derrick-arm is hinged to the carriage, is provided at its outer end with pulleys, over which the ropes pass, and is held at the proper angle from the carriage by tie-rods that reach from its outer end back to the carriage. The carriage runs upon rails, secured upon and forming a track upon the deck of the scow, and is provided with winding drums, over which the ropes pass, and also with a drum, over which the brush-operating rope passes. In operation, to lower the machine into the water, the drum *g'* will be turned to give the ropes *i i* perfect slack, which will throw the weight of the machine upon the ropes *j j* and permit the grappling-arms *e e* to drop to vertical position by the downward movement caused by the weight of the bail *g*. The machine is then lowered to the bottom by letting back the drum *h'*. Having reached the bottom, the weight of the machine will cause the arms *e* to penetrate the mud until the foot-pieces *b b* rest upon the bottom. The drum *g'* is then turned to wind up the ropes *i i*, which will bring the grappling-arms *e e* to a horizontal position, gathering upon them all of the oysters in their reach; and the turning of this drum *g'* is continued until the machine reaches the surface of the water, at which point the turning will cease, and the brush *k* will be operated for cleaning the oysters by turning backward and forward the drum *j*. This having been done, the machine is still further elevated by turning the drum *g'* until a sufficient height has been reached to clear the side of the small boat B'. The carriage C is then run back upon its track to bring the machine over the boat B'. The drum *h'* is then turned to throw the weight of the machine upon the ropes *j j*, whereupon the drum *g'* is set free for dumping the oysters into the small boat. Finally, the carriage being moved forward to the edge of the boat B, and the boat B moved forward or backward the length of the dredging-machine, the operation may be repeated. Instead of using the drum *h'*, a cleat may be attached to the carriage C, over which the ropes *j j* will be passed by hand, the rope being let off from the cleat gradually, for lowering the machine; and instead of placing the carriage C upon a track crosswise of the boat B it may be placed on a track running lengthwise of the boat, so that the carriage, instead of the boat, may be moved the length of the dredge at each grappling. In this case movable blocks are used at the outer end of the derrick-arm for bringing the dredge over the boat B' for dumping.

CLAIMS.

"1. In an oyster-dredge, the frame *a*, having the foot-pieces *b*, and the grappling shafts *d*, having the arms or teeth *e*, and operating mechanism for the said shafts, substantially as and for the purposes set forth.

"2. The combination, with the grappling-shafts *d* and teeth *e*, of the brush *k*, arranged above the teeth, substantially as and for the purposes described.

"3. In an oyster-dredge, the combination of the cleaning-brush *k*, guides *p p*, the brush-supporting bars *l l*, cross-pieces *s s*, angle-arms *r r'*, and screws *t*, substantially as and for the purpose set forth.

"4. In an oyster-dredge, the combination, with the grappling-arms and their operating mechanism, of the cleaning-brush adapted to be moved over the contents of the said arms or teeth and to be automatically returned, substantially as and for the purpose set forth.

"5. In an oyster-dredge, the combination, with the bars *l l*, of the brush *k* placed thereon, rope or chain *m*, and the spring *o* for returning the brush, substantially as and for the purposes set forth.

"6. In an oyster-dredge, the combination, with the cleaning-brush, rendered vertically adjustable by means of the screws *t*, and angle-arms *r r'*, connected to the brush-supporting bars, of the operating rope or chain *m* and the spring *o*, substantially as and for the purpose set forth."

No. 284156.

(John N. Woodruff, Fairton, N. J.; patented August 28, 1883; oyster-dredge. See Plate XCI.)

The dredge has a continuous shoe or runner ranging along the rake-head or bar, to which the rake-teeth are fastened. This runner lies obliquely with its forward edge about in line with the point of projection of the teeth from the rake-head, so that while the teeth will enter the river bottom their entire projecting length, the dredge will be prevented from sinking further into the soft bottom. The runner also serves to smooth the bottom to leave it in better condition for the subsequent planting and growth of the shell-fish. The rake-head is fitted with a trailing basket, which receives the oysters as they are removed by the rake teeth.

CLAIMS.

"1. In a dredge, a rake-head constructed with cross-bar *a*, teeth *b*, secured to and projecting from the cross-bar, and a shoe or runner, *c*, fitted obliquely with its forward edge about in line with the roots of the teeth *b*, or the point where the teeth overhang or project from the bar *a*, substantially as shown and described.

"2. The combination, with the rake *a b c*, constructed and operating as herein specified, of the draft-frame *e e' f* and the trailing basket *d*, substantially as shown and described."

No. 288650.

(George Merchant, jr., Gloucester, Mass.; patented November 20, 1883; purse-block for seines. See Plate XCII.)

A pulley-block adapted especially for use in "pursing" the seine, and having provision for the "purse-rope" and "bridle-rope," is substituted for the ordinary purse-ring used in seines. Heretofore common iron

rings have been placed where the blocks D are in Fig. 1, the bridle-ropes C being fastened to these rings, connecting with the seine, and the purse-rope E passing through them and into the boat at X. To raise the seine and remove the fish the purse-rope E must be drawn into the boat, pursing up the seine and slipping through the rings. There is necessarily much friction in this process, and consequently much strength is required. To relieve this friction the pulley-blocks D are presented. The purse-rope E passes over the pulley G in the shell D′, and the bridle-rope passes under the cross-bar H (through the opening I above the partition J), and is made fast to said cross-bar by means of a cord, K, to accommodate which a gouge or depression, L, is made therein. When the seine is pursed up, the pulley-blocks, being brought close together, are in danger of lapping into each other—*i. e.*, the shells D′ are apt to be forced in upon the pulleys G in the next blocks and interfere with the pulleys and rope E. To prevent this the fenders S are provided, one on each edge of the shell.

CLAIM.

"The herein-described purse-block for seines, consisting of the shell D′, provided with the fenders S, extending laterally across the same, on opposite sides thereof, the horizontal partition J above the pulley G, and the cross-piece H, located at the upper end of the frame, and provided with an indentation for the reception of the cord, by means of which the bridle-rope is secured, all combined and arranged substantially as and for the purpose set forth."

No. 256287.

(Jean Chaunier, of Lyons, France, assignor, by direct and mesne assignments, to Pierre J. Boris, of Boston, Frank G. Kincaid, of Somerville, and Osceola A. Whitmore, of Malden, Mass.; patented April 11, 1882; machine for making fish-nets. Patented in France October 30, 1880. See Plates XCIII to C, inclusive.)

This invention relates to machines for making netting for seines of the description known as the "diagonal mesh." The primary object is to provide devices for tying the threads or cords automatically into knots known as the "fisherman's" or "double-becket" knot, and similar to those employed in the construction of hand-made nets. A further object is to provide mechanism for producing a net similar to that made by hand in a rapid and effective manner, and so to construct and arrange the knot-tying devices that the knots will be tied with great rapidity and in a manner which will prevent their slipping. The means of forming the meshes and tying the knots may be illustrated as follows: The thread-guide and lifter C^2 rises vertically and lifts the warp-threads W up to the thread-bearer H, the slots *h* of which have been opened to receive the threads by the action of the pivoted arm C^9 striking against the inner sliding section, h^2, carrying the pins h^3, drawing the pins back

from said slots. At the moment the threads have reached the inner ends of the slots the projection C^6 upon the thread-guide and lifter C^2 strikes the beveled end of the sliding section h^2 of the thread-bearer, and hence shifts the same, projecting the pins across the slots. The threads will then be held by the inner pins—that is to say, the pins of the sliding section h^2 nearest the inner ends of the slots. At the same time the brocheur-frame D^2 assumes the slanting position shown in Fig. 19, so that the brocheurs will be in the oblique position also shown in said figure. This position on the part of the brocheurs and their supporting frame allows the weft-threads from the reels to rest upon the inner hooks of the fingers G, carried by the brocheur-frame, the threads being held taut by means of the tension device within the reel-carrier. The thread-bearer carrying the warp-threads then rises to some extent and swings over toward the brocheur-frame until it arrives at a position over the mold-bars, so that those portions of the warp-threads forming a loop between said bars and the thread-bearer will be in or about a vertical plane, as shown in Fig. 20. The thread-leader also swings forward over the thread-lifter C^2, which meanwhile has descended by the action of the cam-races, hereinbefore described. This thread-leader in swinging forward strikes against those portions of the warp-threads that are between the thread-bearer and the feed-bar roller B, and brings these portions, which may be designated as the "second" part of the warp-threads, alongside of those portions between the thread-bearer and the mold-bars, which may be designated as the "first" part of the warp, the leader continuing its movement until it brings said second part of the warp-threads nearer the pointed bars or fingers of the mold-bar, thereby forming a loop in each of the warp-threads. Meanwhile the brocheur-frame moves forward toward the thread-bearer, and also makes a partial rotation about its axis to bring its fingers into a horizontal position below the thread-holder and between the several loops held by the thread-holder. The reels are now upon the under side of the brocheur-frame and in a vertical position, and the weft-threads, having been caught upon the outer hook of the finger during the rotation of the brocheur-frame, will, in conjunction with the loop formed by the two parts of the weft-thread, form a triangle, as illustrated in Fig. 20. The thread-leader now holding the second part of the warp-thread near the mold-bar, one of the star-wheels will be so moved as to act upon the rack-bars on the brocheur-frame and actuate the pinions thereon in the manner before set forth. This causes a half-revolution of the brocheurs, the free ends passing through the triangle of threads and around the loop formed by the two parts of the warp-thread, which fall into or are caught by the notch d^2 in the base plate of the brocheur as the brocheur is swung from one center to the other, causing the weft-thread to take a half-hitch around the loops, as shown in Figs. 21 and 21^a. In completing its half-revolution the free end of each brocheur will be caught upon

the second head of the pair upon which it alternately turns, and as soon as it is thus engaged the other end of the brocheur will be disengaged from the head upon which it has made a quarter of a revolution, and it will then make the next quarter of a revolution upon the second head. The thread-bearer and the brocheur-frame then separate, the latter also making a partial turn backward about its axis, whereby the half-hitch formed by the weft-thread around the loop of the warp-thread will be drawn down toward the first part of the knot which is illustrated in Figs. 21 and 21ª. The thread-leader V then swings back to its first position near the feed-bar roller, and the brocheur-frame and thread-holder approach each other, assuming the position taken in forming the first part of the knot, the thread-holder swinging as before and the brocheur-frame moving toward the thread-holder and making a partial rotation about its axis, to bring the reels underneath and in a vertical position, as shown in Fig. 22. The thread-holder, in moving toward the brocheur-frame, makes a partial rotation about its axis, so that it will slant when it arrives in position over the finger of the brocheur-frame. This movement on the part of the thread-holder is caused by its finger l^2 striking against the upper end of the vertical slide-bar l', which has meanwhile been raised for such purpose by the cam L^2 acting upon the pin l on said bar l', already described. The slant of the thread-bearer opens the loop in the warp-thread, as shown in Fig. 22, such action being effected by means of a pair of the pins that close the slot in the thread-bearer, it being seen that the second part of the warp-thread will be thrown away from the first part by the pin nearest the outer end of the slot. The brocheur is then caused to return or make a half-turn in the same manner, but in a reverse direction to that which it has made in forming the first part of the knot, the second star-wheel coming into play in this instance for the purpose of actuating the rack-bars that cause a simultaneous movement of the pinions carried by the brocheur-frame. In this movement of the brocheur the reel, with the weft-thread, is carried through the loop formed of warp-thread, and this forms the second part of the knot, as shown in Figs. 23 and 23ª, which, when tightened up, will not slip under any circumstances. The brocheur-frame then moves back, and, making a partial revolution about its axis, returns to its first position; that is to say, the one which it occupied preparatory to tying the first part of the knot, as shown in Fig. 19. The thread-holder swings away from the brocheur-frame and drops the warp-threads, the arm C^3 striking one end of the inner section of the thread-holder to effect such release of the threads. The feed-roller bar also moves back, thereby drawing the warp-threads and tightening up the knot. The knots being tied upon the fingers of the mold-bar and the mesh formed around them, the highest mold-bar upon which the meshes have been formed drops, and is also shifted back a sufficient distance to cause its fingers to slip out from the meshes formed and allow the same to be taken between the rollers, as shown in Fig. 24. As

this mold thus moves back the second mold-bar is drawn with it by reason of the connection between the two and the spring before referred to. The second mold-bar having thus shifted back and dropped, the other mold-bar, which is now the highest, will take the place of the mold-bar just employed, and the next row of meshes will therefore be formed upon said highest mold-bar. The fingers of the two sets being diagonally opposite each other, admit of the meshes being formed in diagonal lines, and as soon as a line of knots have been tied, a line of meshes formed, in the manner already described, and the warp-threads taken up by the thread-holder, this thread-holder will be shifted to one side by reason of the forked lever engaging it, so that the warp-threads will be moved laterally, so that when engaged again by the weft-threads the diagonal mesh will be formed. After the next series of meshes have been formed, and the thread-holder, which, it will be remembered, released the warp-threads during the operation of tying the knots, has again taken up the warp-threads, the thread-holder will be shifted in a direction reversely to that just described.

CLAIMS.

"1. The combination, with the devices for forming the warp-threads into loops, of the brocheurs carrying the weft-threads, mechanism for causing said brocheurs first to form a half-hitch of the weft-threads around said loops, and then for passing the weft-threads through the loops to complete the knot, devices for tightening the knots, and devices for shifting the thread-holder so as to move the warp-threads laterally in order to form the diagonal mesh, substantially as described.

"2. The brocheur-frame, the brocheur carrying a reel, and mechanism for causing said brocheur to turn upon two centers upon the brocheur-frame to engage the weft-thread with the warp-thread in the manner described, in combination with devices for manipulating and looping the warp-threads, whereby the brocheur in turning upon one center will pass the weft-thread around a loop in the warp-thread so as to form a half-hitch therearound, and in turning around the remaining center will pass the weft-thread through the loop formed in the warp-thread to form the second hitch and complete the knot, substantially as described.

"3. The combination of the oscillatory brocheur-frame, carrying a series of pinions having heads upon their spindles, and a rack-bar for actuating the said pinions with the brocheur carrying a reel and adapted to engage and turn with the heads of the pinion-spindles, substantially in the manner and for the purpose described.

"4. The combination of the oscillatory brocheur-frame provided with the fingers having hooks, the brocheur supported by said frame and carrying reels for the weft-threads, the swinging thread-holder for the warp-threads, adjusted to be brought into position above the fingers of the brocheur-frame, the thread-leader adapted to bring the warp-thread down to form a loop, and mechanism for imparting the movements spec-

ified to the thread-holder and thread-leader, substantially as and for the purpose described.

"5. The oscillatory brocheur-frame provided with a series of fingers having hooks, the rotary pinions d^6, having heads D^3 upon their spindles, and the brocheurs D, each carrying a reel and formed with two grooves capable of receiving the heads of the pinion spindles, combined with mechanism for imparting the necessary oscillatory movement to the pinions d^6, substantially as described.

"6. The combination of the mold-bars M M′ with the swinging thread-leader V, the thread-holder H, constructed and adjusted to engage the warp-thread and to coact with the thread-leader in forming the warp-thread into a loop above the mold-bars, the oscillatory brocheur-frame *d*, the brocheur D, carrying a reel for the weft-thread and movable on two centers, and a part revolution upon a second center, in the manner described, so as to carry the warp-thread through said loop, and mechanism for imparting the necessary movements to said devices, substantially as described.

"7. The combination of the oscillatory brocheur-frame, the brocheurs D, carrying reels for the weft-threads, the pinions having heads upon their axles for turning the brocheurs, the slidable rack-bar located to engage said pinions, and the star-wheels adjusted to act at different periods upon the rack-bar in order to reciprocate the same, and mechanism for imparting the necessary movements to the slidable rack-bars and star-wheels, substantially as described.

"8. The combination, with the oscillatory brocheur-frame *d*, of the brocheurs D, carrying reels for the warp-threads, the pinions d^6, carrying the brocheurs upon their spindles, the slidable rack-bar engaging said pinions, the segmental racks engaging said wheels upon the brocheur-frame, the star-wheels, mechanism for intermittently actuating the star-wheels, and mechanism for operating the brocheur-frame, whereby the segmental racks oscillate the brocheur-frame, substantially as described.

"9. The combination, with the swinging bar H^3, carrying the thread-holder H, of the thread-holder H, provided with devices for engaging the warp-threads, and mechanism timed for sliding the thread-holder upon its supporting-bar, substantially as described, and for the purpose set forth.

"10. The combination, with the supporting-bar H^3, carrying the thread-holder H, of the vertically-movable bar l', and devices timed to raise said vertically-movable bar in position to tilt the thread-holder so as to spread the loop, substantially as described."

No. 262140.

(Nathaniel D. Sollers, Cove Point, Md.; patented August 1, 1882; knitting-board for manufacturing nets. See Plate CI.)

A board of nearly semicircular form is provided with a perforation, through which a finger of the hand is to be inserted to hold it steady.

If desired, a rest may be provided for another finger of the same hand underneath the board. In the upper surface of the board, or in a plate set therein, are perforations, in any two of which are inserted the two ends of a holder. This holder is formed of a piece of wire doubled upon itself in such manner that one end will extend across the board at right angles thereto and the other diagonally, giving a tapering form to the holder, while the ends are bent downward to fit into the perforations to hold the device in a plane parallel with the board. The loop end of the holder is bent slightly rearward and upward to prevent the meshes from accidentally slipping therefrom in the process of knitting. The forward end of the board, or that end next to the net, is provided with a recess for giving sufficient room to the needle or shuttle in tying the knots; and a hook is secured to the board near the recess for holding the thread while the knot is being tied. The perforations are formed on a graduated scale, whereby the holder may be so adjusted that the meshes shall be made of any given size. The operation is as follows: After a beginning of the net is made a number of the meshes are engaged with the holder D, and the thumb of the hand holding the board is placed upon these meshes to hold them in position. It is to be understood that the net should be secured to some stationary object, so that the operator can hold the meshes taut. The needle is then to be passed back toward the operator to engage the thread with the holder D. This operation is facilitated by the rearward and upward curve or bend at the loop end of the holder, as well as by the rounded and beveled surface of the board, which serves to guide the thread to the holder. The needle is then passed through the next adjacent mesh, engaging the thread therewith, and the thread is drawn toward the operator until the said mesh is drawn into such engagement with the hook F that the hook will prevent the thread from slipping while the knot is being tied. The thread is then passed to the left over the meshes on the holder, and the needle is passed from the under side up through the recess E, thereby forming a knot, which is completed by drawing the thread toward the operator. The mesh engaged with the hook is released in drawing the knot, and is passed under the thumb, where it is held while another mesh is being formed.

CLAIMS.

"1. A knitting-board for making nets, having a holder for the meshes and a hook to prevent the thread from slipping while the knot is being tied, substantially as shown and described.

"2. A knitting-board of nearly semicircular form, having a perforation through which a finger of the hand may be inserted, in combination with an adjustable holder, substantially as described, and a hook secured to the board to hold the thread in tying the knot, as shown and described."

No. 295262.

(Erick Manula, Astoria, Oreg.; patented March 18, 1884; machine for casting leads on fish-net lines. See Plates CII and CIII.)

The line is wound upon a reel, the circumference of which forms one-half the matrix in which the line lies, a projecting arm under which the reel passes forming the other half. The molten metal is conducted into the matrix and cut off by a trough which slides in the groove of an arm, and is provided with a handle for convenient manipulation (Fig. 1). This trough is perforated at intervals, and when pushed into its place fits with its perforations over those in the groove. The two parts are clamped together during the casting. The reel having the line wound upon it is turned until one of its pieces, G, is brought under the arm B. It is then clamped at its inner end by the vertically-adjustable pin J, which is moved into connection with it. Its outer end is clamped by the lever M. The matrices are formed by the grooves *c g*, in which the line lies. The molten metal is poured into trough P and flows down through the holes into the matrices, and is thus cast in each around the line. The sliding trough is then drawn back sufficiently to cut off the metal, the clamps are released, the reel drops, is relieved, and is turned until its other piece G, is brought into relation with arm B, when the operation is repeated. In this way many sinkers are cast upon the line at regular intervals and at one operation.

CLAIMS.

"1. In a machine for casting leads on lines, a reel or winch upon which the line is wound, said reel having grooves in its circumference, in which the line lies, and forming one-half the matrix, in combination with a stationary piece having corresponding grooves, forming the other half of the matrix, substantially as herein described.

"2. In a machine for casting leads on lines, a reel or winch upon which the line is wound, said reel having grooves in its circumference, in which the line lies, and forming one-half the matrix, in combination with a stationary piece having corresponding grooves, forming the other half of the matrix, and a means for clamping the reel and stationary piece together to form the matrix around the line, substantially as herein described.

"3. In a machine for casting leads on lines, the revolving reel P, having cross-pieces G, on its circumference, provided with grooves *g*, in combination with the perforated arm B, under which the reel revolves, and provided with corresponding grooves, *c*, communicating with the perforations in the arm, and forming with grooves *g* the complete matrix around the line, substantially as herein described.

"4. In a machine for casting leads on lines, the reel F, mounted on a shaft adapted to have a vertical adjustment, said reel having cross-arms G on its circumference, provided with grooves *g*, in combination with

the superposed perforated arm B, having grooves *c*, and means for clamping the reel up to the arm, to bring and hold the pieces G in connection with the arm B, substantially as and for the purpose herein described.

"5. In a machine for casting leads on lines, the table A, arms D, pivoted reel-shaft E, and reel F, mounted thereon, having the grooved cross-pieces G, with slotted inner ends on its circumference, in combination with the perforated arm B, having grooves *c*, and the means for clamping the reel up to the arm, consisting of the pin J, passing down through an elongated slot, *i*, in arm B, and having a head, *k*, on its lower end, and a cross-lever, H, on its upper end, adapted to move upon a cam *j*, on said arm to vertically adjust the pin, substantially as herein described.

"6. In a machine for casting leads on lines, the vertically adjustable reel F, having the grooved cross-pieces G, with slotted inner ends in its circumference, in combination with the perforated arm B, having grooves *c*, and the means for clamping the reel up to the arm at both ends, consisting of the vertically-adjustable pin J, engaging with the inner ends of the cross-pieces, and the forked lever M, engaging with their outer ends, substantially as and for the purpose herein described.

"7. In a machine for casting leads on lines, the revolving reel F, having the transversely-grooved cross-pieces G, in combination with the perforated grooved arm B, having transverse grooves, *c*, on its lower side, and the sliding perforated trough P, all arranged and operating substantially as herein described."

No. 257960.

(William R. McCord, East Portland, Oreg., assignor to himself, S. B. Story, C. W. Prindle, and J. M. McCoy; patented May 16, 1882; fish-wheel. See Plate CIV.)

The specification and drawing in this case are in parts very obscure, and are evidently the work of some inexperienced person. The following is substantially the language of the description, from which the reader will have to ascertain as best he can just how the apparatus is constructed. The so-called slats seem to be at right angles to the axis and parallel with one another. Two or three baskets on a shaft are driven by the current. The baskets in small wheels are nearly semicircular at the back; but in larger ones this curve is spiral, having a smaller and smaller radius as it approaches the center. When two baskets are used, buckets are added for turning the wheel when both baskets are horizontal; but with three baskets these are not necessary.

"In Fig. 4 a section of the back of the wheel is shown at an enlarged scale, showing the slats O and the ends of the same where they enter the cross-bars on the ends of the wheel arms G. These pieces, O, are made in this way so that they can be taken out when they are broken by sturgeon or floating drift-wood, when, having a number of duplicate

pieces, these are placed in the breaks and business proceeds without delay."

At the lower ends of the slide-pieces C is a frame, H, having a pin at its upper end in each side piece, and below it rests on the floor of the fish-way, and in it are placed two or three grates hinged at the upper ends, the lower ends being loaded to keep it from floating. When a snag or stone comes through the road these open and let it go through without breaking the grates. The grates form a weir to make the fish rise toward the wheel. This is necessary on account of raising the wheel from low to high water. The wheel is inclosed on each side to insure the fish taking to the way.

"On each side of the wheel is an upright timber M, on which is nailed a strip for a tongue, D, and on the central face of each of the slides C are two similar pieces spiked thereto for guides, fitting over the first, and on the side of C next the wheel (on either side) are two wrought-iron hooks (not shown) which pass around to back or down-stream side of M and prevent the loose sliding pieces C from becoming disengaged. C is always on the upstream edge of M. At the top of M a cap, K, is placed, having sheaves L, over which chains or ropes pass to a windlass on the shore for raising or lowering the wheel.

"The wheel-arms G are so placed that they meet the cross-pieces supporting the ends of the pieces O at the outer edge of the baskets F, where the arms and cross-pieces are clamped together with a piece of wrought or cast iron, N, and at the back of the baskets are similarly fastened. The pieces are all bolted together wherever they cross each other, and so form strong braces for keeping the wheel firm.

"The fish are discharged at points E E, on the shore side of the wheel, behind and below the shaft, by sliding down an incline. (Shown by dotted lines in Figs. 1 and 2.) This incline is a board floor placed inside the baskets F at the back side or shaft side, and in such a way that the fish do not discharge until a certain point is reached, when they slide out readily into a box placed at the side to receive them. In this they are sorted, and the small ones returned to the stream. The sides of the baskets F are made of strips of plank screwed or nailed on the inside of the wheel-arms, the outer ends being between two of the segments O and the inside one bolted to the outer one."

The inventor says:

"I am aware of many forms of fish-wheels, but that in which my invention consists is the circular and partially spiral shape of the baskets (so that the fish are taken without injuring them), and the baskets themselves, made of pieces of wood or metal in the form shown, with the slats, arms, and braces at the sides, and in combination the slide-pieces and rising and falling grates in the fish-road, as stated, all made in a similar manner of bars and slats."

CLAIMS.

"1. A fish-wheel, A, having baskets F in the form described, the sides secured to the wheel-arms, the diagonal pieces G, and the bottom made of the segments O, as described.

"2. Pieces C and frames H′, rising and falling, as shown, on guides D, in combination with the wheel."

No. 259143.

(Thomas Heaton, Vancouver, Wash.; patented June 6, 1882; mechanical device for catching fish. See Plate CV.)

An endless chain passes over two skeleton wheels, one of which is journaled in shaft supports upon two connected floats or boats, the other wheel is submerged, the endless chain having nets for catching and elevating the fish. The submerged skeleton wheel may be adjusted to suit different depths of water, and instead of using the nets for catching fish, rakes, forks, or tines may be attached to the chain and used for gathering and elevating oysters and clams.

CLAIMS.

"1. The combination of two endless parallel chains on two skeleton wheels and two floats supporting the same, whereby oyster-dredges, fishing-nets, or sand-elevators may be operated as described.

"2. The combination, with floats having blocks *g* and carrying-shaft *a*, of a submerged wheel D, having its axle suspended both from shaft *a* by the rods *f* and by hooks and eyes from the floats, and held in any desired position by the rods *d*, passing through loops *e* on said blocks *g*, as shown and described.

"3. In combination with the boats or floats A A, skeleton wheel C, journaled upon the boats, the submerged wheel D, hung on the rods *f f*, and the endless chains E, provided with the fish-nets F, the submerged wheel being adjustable by means of the braces *b b* and the rods or chains *d d*, substantially as and for the purposes described."

No. 264395.

(Samuel Wilson, Dallas, Iowa; patented September 12, 1882; fishing-wheel. See Plate CVI.)

A large wheel is constructed of four or more segments which have wire or other netting at their peripheral and side portions, but have their upper projecting portions or scoop ends free. The openings communicate with an escape passage at the center of the wheel, which leads to a chute leading to a cage-net, all so arranged that the wheel being located in a fishway and rotated by the water flowing against it, or by another wheel attached to the shaft outside of the fishway, the mouths of the segments or the scoops will dip against the current—that

is, will open at the rear of the wheel to the fish ascending the stream—and will be entered by them as they attempt to pass under the wheel. Then, as each segment rises, the fish will be scooped up, carried in and shunted out into the chute, by which they will be delivered into the trap-cage, to be taken out at pleasure. The wheel may be raised or lowered as the depth of water varies.

Tackle, not shown, for hoisting the wheel will be used mainly in case of raising the wheel for protection in time of floods.

CLAIMS.

"1. A fishing-wheel having sector-nets provided with mouths P and discharge-opening I, in combination with a discharge-chute and a cage-net, substantially as and for the purpose set forth.

"2. The combination, with a fishing-wheel having catching-nets, of cage-net arranged to move up and down in guide-ways, and provided with hoisting and lowering tackle, substantially as and for the purpose set forth."

No. 301653.

(Thornton F. Williams, Cascade Locks, Oreg.; patented July 8, 1884; fishing-machine. See Plate CVII.)

A wheel of revolving dip-nets is mounted on a scow that it may be located in different positions. The supports of the wheel are upon an extension of the stern of the scow, and the nets are provided with double-inclined chutes, for discharging the fish out of each end of the wheel into other chutes extending forward and discharging into the hold of the scow, which may contain water for the fish, and the wheel-arms are contrived with buckets for rotating the nets. The wheel consists of axle *a*, arms *b*, rims *c* and *d*, and floats *e*, attached to the arms for turning the wheel by the current of the water, the floats being on the outside of the arms and parallel to them, instead of extending across from one arm to another, which would turn the fish away from the nets. The wheel may have a crank and be turned by power from the scow or elsewhere. The shaft is mounted in boxes *f*, which may slide on a single post, *g*, by a clip, *h*, connecting it thereto. The boxes, being suspended by cords *i*, form an overhead beam, *j*; or two posts may be used for each box, to form guides between which the boxes may be fitted; or a sash-frame connected over the top of the wheel and having the boxes in it, may be arranged between the posts. The cords will pass over pulleys at the top of the posts, and thence to a windlass *k*, on the scow, for raising and lowering the wheel. The posts are attached to stern timbers or keelsons *l* of the scow *m*, the posts being stayed by rods *n*. The nets consist of two sides *o*, back *p*, and a rim-section, *q*, of wire-gauze attached to the wheel-arms, rim-bars *t*, and backstays *u*, in such arrangement that the rim-section *q* and back *p* receive the fish entering be-

tween the sides *o*, gather them in as the nets rise out of the water, pass them toward the center of the wheel, where there are double-inclined chutes *v*, upon which the fish are delivered from the back *p* of the nets as they revolve, and discharge them from the center of the wheel out of both ends into long chutes *w*, alongside and parallel with the ends of the wheel, to conduct the fish directly into the hold of the scow. These chutes will have perforated or slat bottoms to allow the water discharging into them from the nets to escape, in order not to flow into and fill the scow.

CLAIMS.

"1. A fishing-machine consisting of revolving dip-nets having chutes discharging at the ends of the revolving net-wheel, supporting-posts for said wheel, a scow having extension-timbers from one end for the support of the posts, and chutes at the ends of the wheel to receive the fish from the nets and discharge them into the scow, combined and arranged, and the net-wheel being provided with means by which it is turned, substantially as described.

"2. The combination of the revolving shaft *a*, carrying a series of dip-nets having openings in their sides, with the series of double-inclined chutes *v*, mounted on the shaft, and the inclined portions thereof resting upon the lower back portions, *p*, of the nets, with their ends in line with the openings in the sides of said nets, substantially as set forth."

No. 252466.

(Albert N. Hoxie, Foxborough, Mass., and Edward Collins, New York, N. Y.; patented January 17, 1882; fish-trap. See Plate CVIII.)

The posts of the trap are made hollow and of metal, and are strengthened by a movable frame, and by a rod at the top. The frame is about the line of posts on both sides and serves as a buoy. It is attached loosely to the posts, and is permitted to slide up and down, or may be fixed to them. The separate net at the entrance to the trap is stretched from a post in the entrance to the shore, and is on a line transverse to the direction of the channel. Thus fish going up or down the river will be directed into the trap, and thence will pass into the pound.

CLAIM.

"In a fish-trap, the posts A A, made hollow, and of metal, the said posts being arranged as shown, the rods *h*, the frame G, and the net B, all arranged and combined in the manner shown, and for the purpose set forth."

No. 254989.

(Major B. Marshall, Vienna, Md.; patented March 14, 1882; fish-trap. See Plate CIX.)

The trap is formed by poles driven into the bed of the stream near its bank forming three inclosures, one of spear-head shape, and two

oblong. To the pole is attached the netting which surrounds each inclosure. One of the oblong inclosures is smaller than, and is placed within, the larger. The spear-head inclosure is closed at its bottom by a netting. Each of the oblong inclosures has an opening in its side near the bank. The inner oblong inclosure has an opening in each end. A net hedge runs from the bank of the stream through the center of the side opening of the inclosure. This hedge prevents the passage of the fish up or down the stream and guides them into the inclosure. The larger oblong has an opening at one end. From this opening extends a net funnel into the spear-head inclosure through an opening in the net and into the spear-head inclosure.

The inventor says:

"I am aware that a seine provided with a netted or closed bottom has heretofore been employed; and I am also aware that a folding net combined with an adjustable fish-pound to close the opening in the heart is not new; and I am further aware that a net with a closed bottom and having endless lines secured at their ends to the upper and lower ends of the corners or angles of the net, which lines pass through upper and lower holes in stakes planted in the stream, to which the corners of the net are secured, by means of which endless lines passing through holes in the stakes the bottom of the net may be raised up or hauled down, has heretofore been employed, and I therefore lay no claim to such inventions."

CLAIMS.

"1. The combination, with the stationary poles *a* and runner-poles *h*, each provided with a hole, *m*, near its lower end, of the spear-head-shaped net *k*, closed at its sides and bottom, and having cords *l* at the angles of its bottom, substantially as described, and for the purpose set forth.

"2. The combination, with the spear-head-shaped net *k*, provided with the opening *k'*, and secured to the stationary and runner poles *a h*, of oblong figure *c*, inclosed by nets *n n'*, and provided with the opening *c o*, funnel *p*, opening into the oblong figure *c* and spear-head, oblong figure *d*, concentric with the figure *c*, open at both ends, inclosed by the net *r*, and provided with the opening *c'*, and net *u*, extending from the opening *c'* to the bank, and secured to the stationary and runner poles *a h*, substantially as described, and for the purpose set forth."

No. 270411.

(James M. Frazer, Portland, Oreg.; patented January 9, 1883; fish-trap. See Plate CX.)

In connection with a ponton or boat is a cage, and a lead-net, with means for vertically adjusting and anchoring the same, the boat being to receive the cage and lead-net, and permit them to be lowered into the water below its bottom. The cage which constitutes the trap

proper is rectangular in form, and is to stand in an upright position, and move in the opening in the ponton. It may be constructed with reticulated sides and back and with a slatted bottom, and be provided at its top with crossing beams or pieces, while at its front it has inward inclined or deflected rows of converging staple-shaped bars. The staple-shaped bars are also arranged in a horizontal position, and passed, those of one row through one corner-post or upright of the cage at their looped or connected ends, while their other portions are passed through a second upright of the cage, with their free ends extended beyond the upright to a point a short distance forward and at one side of a vertical plane passing centrally through the cage. The opposite row of staple-shaped bars is similarly arranged and secured in position, whereby a chute, having a narrow longitudinal opening, is provided to direct the fish into the cage or trap. The cage is suspended and vertically adjusted or raised and lowered by a rope or chain, passed through tackle or pulley blocks connected to a cross-beam, a hook and ring, and to the top crossing-bars of the cage or trap in a similar manner. The beam is secured at one end, upon an upright, fastened to the boat at the front side of the opening therein, and upon a cross-bar secured to uprights, also fastened to the ponton at the sides of the opening The rope or chain is further passed over a pulley supported upon the upright, thence under a pulley at the lower end of the upright, and finally connected to a winding apparatus upon the boat.

The lead-net B is hung in the opening in the boat, with its upper edges connected to rods secured to the sides of the opening, while its bottom may be made of slats, G, secured in a bottom frame to rods to which it is attached at its lower side edges. The bottom of the net is connected to the bottom of the trap at one end by eyebolts and hooks, while the ends of the sides of the net are connected by rings to bail-shaped rods fastened to the corner-posts of the front frame of the trap by their horizontal portions. The lead-net is connected near its outer end to a bail to which is attached a rope, passed up over a pulley, hung upon a beam, secured to uprights, fastened to the sides of the opening in the boat near its stern. This arrangement permits the raising and lowering of the lead-net simultaneously with the vertical adjustment of the trap in letting the same down into the water to entrap or impound the fish, and removing the same from the water to enable the fish to be taken from the trap, which is done through a door in one side thereof. The lead-net is extended beyond the stern of the boat, the extension being connected to booms anchored and hung at the stern of the boat, on the sides of the opening therein, by swinging which inward that end of the net is closed as the same is elevated to prevent the escape of the fish. The extension of the net is also weighted or anchored to resist the action of the current by means of iron balls and chains or ropes, with the ropes or chains connected to the extension. An oblique brace, of which there are two, has its upper end passed through the slot of a

bar fastened to the sides of the opening in the boat, near its stern, while its lower end reaches down to the bottom of the net and near its inner end, where the two braces are connected together underneath by a cross-rod, supporting the bottom thereat. The upper end of the brace is confined in place by teeth in one end of the slot of the bar, engaging teeth or notches in the brace, and a stud or projection, secured in the side of the opening in the boat in such relation to the brace as to hold its teeth or notches in engagement with those of the bar.

This apparatus permits fishing either in fresh or salt water and to a depth of a single fathom or less, or to a depth of as many as 20 fathoms or more.

CLAIMS.

"1. In a fish-trap, the combination, with a ponton or boat A, having an opening therein, of the cage B and a rope or chain passed over elevated pulleys and under a pulley disposed to permit the convenient manipulation of the rope or chain to move the cage up and down within said ponton or boat, said cage having at its front side rows of inward-projecting converging bars, providing a narrow entrance-opening thereto, substantially as and for the purpose set forth.

"2. In a fish-trap, the combination, with the ponton or boat A, having an opening therein, of the cage B, having the rows of inward-projecting converging bars, forming a chute having a narrow opening, the lead-net B′, connected to the cage B and to the rods secured to the sides of the opening of the ponton, and having an extension, G′, hung upon booms K, connected to the stern of the ponton, and means for raising and lowering the cage and net, substantially as and for the purpose set forth.

"3. In a fish-trap, the combination, with the open ponton or boat A and the lead-net B′, of the oblique brace M, connected underneath the bottom of the net by a rod, M^2, to a similar opposite brace, and the mortised, notched, or toothed support M′, and stud or projection *f*, substantially as and for the purpose set forth."

No. 306896.

(Carol F. Bates, Hughes Springs, Tex.; patented October 21, 1884; mixture for fish-baits. No drawing.)

Half an ounce of asafetida is dissolved in one pint of warm water. To this is added half an ounce of oil of anise and half a pint of honey. For buffalo fishing a bait composed of mush and raw cotton, dipped into the mixture, is employed; but the mixture is to be used with fish-bait of any kind.

The inventor says:

"I am aware that the use of anise-oil and asafetida in similar compounds to the one described by me is not new, and this I disclaim."

CLAIM.

"A mixture for fish-baits that is composed of asafetida, oil of anise, and honey, substantially as hereinbefore set forth."

No. 299690.

(Willis H. Sherwood, Saint Joseph, Mo.; patented June 3, 1884; fishing-bait kettle. See Plate CXI.)

Within an outer pail is suspended a perforated sheet-metal or wire-gauze pail of somewhat less diameter, leaving a space between the two. The outer pail is provided with an annular rim, and downward extending flange. To the rim is hinged a perforated cover, which, in connection with the rim, entirely closes the top of both pails without the necessity of a supplemental cover. The flange holds the inner pail stationary. The pails have separate bails. To the bail of the inner pail a cord may be fastened, so that when this pail is lifted out of the outer, it can be anchored in water for the benefit of the bait. The perforated pail is provided with a dipper, which is also perforated and provided with a wire handle, whereby the minnows to be used as bait may be selected at will.

CLAIM.

"The pail A, in combination with the perforated pail B, provided with the rim *b* and flange *c*, by which the perforated pail is suspended within the outer pail, and provided with the dipper E, substantially as and for the purpose specified."

No. 299765.

(Richard K. Evans, Washington, D. C.; patented June 3, 1884; bait fish can. See Plate CXII.)

To avoid the necessity of frequently changing the water that fish may live, the water when depleted of air is reaërated by means of an air-pump attached to the side of the vessel, the air passing up through the water from a perforated pipe at the bottom of the can.

CLAIMS.

"1. The portable bait-can A, in combination with an air-pump, C, and a pipe to conduct the air from the pump to a point below the surface of the water in the bait-can, for the purpose set forth.

"2. The can A and air-pump C, in combination with the pipe *f*, provided with the return-bend *g* and perforated section *h*, all constructed, arranged, and operated as described."

No. 302086.

(George W. Barton, Bethlehem, Ky.; patented July 15, 1884; fisherman's minnow-bucket. See Plate CXIII.)

The object is to provide a minnow-bucket in which the minnows may readily and conveniently be selected and caught. A perforated, dished false bottom slides on a vertical rod centrally fixed in the bottom of the bucket. The false bottom may be raised and lowered by two spring-rods fixed to it and provided with projections which catch into loops on a short transverse bar at the upper end of the vertical rod (as shown in Fig. 1), to set the false bottom at any determined height, the projections being released from engagement with the loops when it is desired to lower it, by pressing the spring-rods together; or the false bottom may be raised by a spiral spring which encircles the central rod and has one end bearing against the bottom and the other against a sleeve on the rod, to which sleeve the false bottom is fixed, spring-catches at different heights on the sleeve taking into a notch in the rod as desired, and when the sleeve is turned so that the catches will be in vertical line with the notch, and the false bottom is either being raised by the spring or lowered by pushing down the sleeve, all as shown in Fig. 2. Instead of several spring catches on the sleeve and a single notch in the rod, there may be a single catch on the sleeve and several notches in the rod.

CLAIMS.

"1. In a fisherman's minnow-bucket, the combination, with a central guide-rod secured to its bottom, of a false bottom sliding on said guide-rod, and provided with a handle having spring-catches engaging with the guide-rod substantially as shown and described.

"2. In a fisherman's minnow-bucket, the combination, with a guide-rod, B, secured to its bottom and provided with notches, *i*, of a perforated false bottom, C, provided with the apertured tube E, spring-catches, *f*, secured to said tube, and spring F, surrounding the guide-rod and arranged between the false bottom and the bottom of the bucket, substantially as shown and described."

No. 302161.

(Thomas W. Rudolph, of Saint Louis, assignor of one-half to Charles D. Moody, of Webster Groves, Mo.; patented July 15, 1884; minnow-bucket. See Plate CXIV.)

In combined minnow-buckets and minnow-nets here, the bucket and also the net are provided with floating covers. The minnow-bucket has a bail, and also a cover with a depression in its top for holding ice to keep the contents cool. The depression is perforated for the purpose of allowing the water from the melting ice to drip into the bucket. A reticulated bucket of woven wire or fish-net is to be placed inside the minnow-bucket. This wire or net bucket is provided with a perforated

cover designed to float the bucket when in the water. If the inner bucket is of net, it has a hoop at its top, having ears which pass through slots made through the floating perforated cover to receive fastenings. The ears may receive a pole when the net is used for catching fish. The net may be provided with hoops between its ends for the purpose of keeping it distended when in use.

CLAIMS.

"1. The combination, with an inner reticulated bucket or net, of a buoyant cover therefor, and an outer bucket inclosing both, substantially as described.

"2. The new article of manufacture described, consisting of a minnow-net or reticulated bucket having perforated ears *a a*, a cover having slots to receive said ears, and a float applied to said cover, substantially as described.

"3. A perforated minnow-bucket having a float attached to it, in combination with an outer imperforate bucket, substantially as described."

No. 307375.

(Charles F. Busche, Saint Louis, Mo.; patented October 28, 1884; minnow-bucket. See Plate CXV.)

The invention relates to that class of minnow-buckets which float when placed in the water. It is said that as heretofore constructed such buckets have generally been provided with an air-tight chamber in the lid to cause the bucket to float. The disadvantage of this construction of bucket, it is declared, is that in lifting the lid, the air-chamber being raised with it, the body of the bucket is tilted by transferring the supporting air-chamber to one side, the result being the upsetting of the contents into the larger bucket. To obviate this, the bucket is made with an annular air-tight chamber, to which both the perforated body and the lid are secured.

CLAIM.

"As a new article of manufacture, a minnow-bucket consisting of an annular air-tight chamber, C, having a lid, B, secured thereto, and a perforated body, A, supported by the chamber, substantially as shown, whereby the lid can be raised without disturbing the horizontal position of the bucket, as set forth."

No. 253501.

(Edward Bourne, Allegheny, Pa.; patented February 14, 1882; sportsman's game-ring. See Plates CXVI and CXVII.)

The ring is of a single piece of wire pointed at one end, which is bent to form a hook. At the other end is formed a loop into which the hook end is caught after passing it through the game that is to be carried.

Near the loop-end an eye is formed by which the ring may be suspended, and below this eye the wire is bent to form an opening into which a strap to be passed over the shoulder may be inserted.

CLAIM.

"The herein described sportsman's game-ring, constructed from a single piece of wire bent to form a circular ring, A, an eye, *e*, for suspending said ring, an opening, *g*, for the reception of a shoulder-strap, a loop, D, and a pointed end, C, bent to form an open loop or hooked end to engage said loop D, as specified."

No. 276945.

(Addison White, Huntsville, Ala.; patented May 1, 1883; game carrier. See Plate CXVIII.)

A frame of a single piece of wire with loops or eyes, formed at opposite sides thereof by coiling the wire at unequal distances from one end. The frame thus constructed has two arms, the ends of which are bent to form hooks which are passed through the game and engage with the loops. A strap or belt with swiveled snap hooks at the ends may be used to suspend the frame from the shoulders.

CLAIMS.

"1. A game carrier or holder consisting of a wire frame, A, having loops *a a* at opposite sides thereof, and arms *c d*, provided with hooked ends *e e*, adapted to engage with the said loops, substantially as described.

"2. In a game carrier or holder, the combination, with the frame A, having loops or eyes *a a* at opposite sides thereof, and hooked arms *c d*, adapted to engage therewith, of the snap-hooks B B and strap C, substantially as described."

No. 278856.

(William F. Benedict, New York, N. Y.; patented June 5, 1883; basket. See Plate CXIX.)

To strengthen and protect baskets used for carrying heavy matter, such as coal and oysters, they are provided underneath with perforate or imperforate metallic bottoms, and at their sides may also be provided with metallic strips which turn down over the brim. Requisite metallic handles are fastened to opposite strips, and pass over the basket handles. The bottom and strips are bolted to the basket or splint body.

CLAIMS.

"1. In combination with the basket A and handle a^2, the strip F, covering the said handle, cross-strip d', riveted to the ends *f* of the said

strip F, and the side strip D, secured to the said cross-strip d' and connected by its lower end to the bottom of the basket, substantially as and for the purpose hereinbefore set forth.

"2. The combination of the basket A, the metallic bottom-protector B, the rim surrounding side strip C, the handle a^2, the metallic strip F, the cross-strip d', and side strip D, all constructed and connected together substantially as and for the purpose hereinbefore set forth."

No. 257597.

(Samuel N. Long, West Harwich, Mass.; patented May 9, 1882; fishing apparatus. See Plate CXX.)

This invention relates to that class of fishing apparatus in which a bag or pocket is attached to the side of the vessel, into which the catch may be discharged from the seine and kept until wanted.

Booms attached to the rail support the bag or pocket. Guys are attached to the outer ends of the booms, and have their inner ends secured adjustably to the side of the rail to enable the booms to be adjusted horizontally. Coiled springs are secured to the masts of the vessel by ropes, which pass through and are firmly attached to both ends thereof. When the springs are compressed the ropes which pass through them are slack. When the springs are expanded the ropes are tightened, but then prevent further expansion of the springs. The ropes are reeved through blocks attached to the outer ends of the booms, thence up through blocks or dead-eyes at the lower ends of the springs, thence through blocks attached to the rail of the vessel at the inner ends of the booms, and finally are attached to fastenings on the deck. By this tackle the outer ends of the booms may be adjusted vertically. The object of the springs is to relieve the masts in case the vessel rolls and the pocket is heavy with fish. Around the sides and ends of the pocket is passed a stout rope, which strengthens and enables it to support the weight of the fish. Ropes are attached to the outer ends of the booms and reeved through the ends of the pocket, passing under the same through suitable rings or eyes. The inner free ends of the ropes may be made fast upon the deck of the vessel.

In operation the ropes are slackened until the outer edge of the pocket comes below the water-line. The end of the seine has been previously attached to the edge of the pocket, and the men in the seine-boat then commence hauling in the seine, thus forcing the fish from the latter into the pocket. When the seine has been hauled in and its entire contents discharged it is detached from the pocket, and the outer edge of the latter is then, by pulling the ropes, hoisted to the desired height above the water-line, thus preventing the escape of the fish.

When the fish are to be removed from the pocket the latter may be gradually pursed up by means of the ropes under it.

CLAIMS.

"1. The combination of the booms C, the bag or pocket D, the blocks I T U, ropes H, and coiled springs F, all arranged and operating substantially as and for the purpose set forth.

"2. The combination, with the vessel A, of the booms C, the bag or pocket D, attached to said booms and to the side of the vessel, and having rings or eyes M, and the ropes L, attached to the outer ends of the booms, reeved through the eyes M, and having their inner ends secured adjustably to the deck of the vessel, as set forth."

No. 268558.

(Michael S. Small, Cape Elizabeth, Me.; patented December 5, 1882; fish-sack. See Plate CXXI.)

A floating fish-sack to be attached to the side of a vessel for holding the fish that have been caught in the large seines. Suspended from the side of a fishing vessel by ropes is a square sack of heavy twine netting secured to a line which runs around its top and from which it hangs. Above the hanging-line on two sides of the sack are two flexible cylindrical floats. These floats are composed of a series of small cork seine-floats, arranged contiguously along a lace-line, and so closely placed as to make one long cylindrical float. They are fastened to the hanging-line by the ends of the lace-line, and the lace-line and hanging-line are further held together by seizings. The cylindrical float is sufficiently flexible to bend and turn to the undulations of the waves. No matter how much the vessel may roll, the sack will not "churn," but only rise and fall with the surface of the water. Fastened to the hanging-line at the outer side of the sack are the looped seine-line for attachment of the seine, seizings, and stop-lines. Projecting over the side of the vessel is a boom, and running through a block, *a*, the end of the boom is a painter-line. This line is represented as hooking into one of the loops at the outer corners of the sack. When in the water the inner ends of the floats rest against the vessel's hull, and projecting outward at right angles keep the mouth of the sack extended. If there is a tendency of the floats to drift in against the vessel's side, the painter-line can be hooked into one of the loops and drawn inboard with sufficient tautness to keep the float extended under the boom. As soon as a school of fish have been caught in a large seine it is brought alongside the fishing vessel and the sack is lowered over the side, the suspending ropes being made fast to some point along the vessel's rail. The seine is then attached to the sack by taking a number of the floats on the hanging-line of the seine, gathering them into a compact bundle, and passing this through one of the loops of the seine-line. The stop-line is then passed over the seine-line and tightly tied. This operation is repeated until all the loops across the front of the sack contain a bundle of seine buoys. Thus the seine and sack are securely fastened together.

The fish can then be easily transferred from the seine to the sack. After the fish have all been transferred the stop-lines are unbound and the seine is taken away. In order that the weight of fish contained in the sack shall not sink it far below the surface of the water and permit the contained fish to escape as fast as a stop is untied and a bundle of seine-floats is withdrawn, a movable buoy or float is substituted, so that when the seine is taken away there will be a series of buoys attached to the hanging-line along the front of the sack, having sufficient buoyancy to keep the sack floating. The sack can readily be taken from the water folded into a compact mass.

CLAIMS.

"1. A floating fish sack or pocket provided with the flexible buoy or float D, consisting of a series of small floats, *d d*, arranged contiguously upon a lace, *f*, and seized to the hanging-line C at intervals, as shown, substantially as and for the purposes set forth.

"2. A floating fish pocket or sack consisting of a box-shaped netted receptacle, B, suspended from the hanging-line C, the flexible buoys or floats D, made as described, centrally pierced by the lace-line *f* and securely fastened to said hanging-line C by means of the lace-line *f* and seizings *h h*, the seine-line H, made secure to the hanging-line by seizings *g g* and the stop-lines *n n*, for the purpose of binding a bundle of seine-floats into the loops between said seine-line and said hanging-line, all constructed and arranged substantially as set forth."

No. 292123.

(Richard A. Lindsay, Baltimore, Md.; patented January 15, 1884; live-box for fish. See Plate CXXII.)

The top is buoyant, and has a door for introduction of the fish. The bottom is non-buoyant, and is of perforated metal or of wire-work, or may be imperforate. The top and bottom are connected by cord-netting, which forms the sides and ends, and permits the top and bottom to be brought close together, so that the device will occupy a greatly reduced space in transportation.

CLAIM.

"In a fisherman's live-box, the combination of a rigid buoyant top having an opening for the introduction of fish and a hinged door to close the said opening, a rigid non-buoyant bottom, and cord-netting sides, substantially as and for the purpose specified."

No. 265544.

(Diedrich Schmidt, New York, N. Y.; patented October 3, 1882; fish-safe. See Plate CXXIII.)

The object is to prevent salted fish from losing in weight by the evaporation of the water in the same. A case is provided with a slatted

floor for receiving a box containing salted fish, and below the slatted floor there is a water-pan, which fills the case with moisture and prevents the rapid evaporation of the water in the salted fish. There is a second slatted floor above the first, above which upper floor the sides of the case and the upper door are provided with glass panels. The smoked fish on the upper slatted floor will be exposed to view by the glass. The upper floor, E, can be made solid, in place of being made of slats.

CLAIMS.

"1. In a fish-safe, the combination, with the box A, of the doors C and D, the slatted floors E and F, and the water-pan G, substantially as herein shown and described, and for the purpose set forth.

"2. In a fish-safe, the combination, with the box A, of the doors C and D, the slatted floors E and F, the glass panels J, and the water-pan G, substantially as herein shown and described, and for the purpose set forth."

No. 291195.

(Ralph S. Jennings, Boston, Mass.; patented January 1, 1884; fish package. See Plates CXXIV and CXXV.)

The claims describe the package and fully set forth the invention believed to be involved in the case. Fig. 2 of the drawing exhibits a supposed course or movement of air.

CLAIMS.

"1. The herein-described portable package for transporting fish, it having a tight top and bottom and tight sides, except that one side has an air-aperture at or near the bottom, and the other side has another air-aperture at or near the top, in combination with partitions or shelves formed of narrow cross-bars constructed to allow large air spaces between them, and arranged, substantially as set forth, to compel the air which enters the lower aperture through the side of the package to move in a broken or circuitous passage to the upper aperture, substantially as set forth.

"2. The herein-described portable package for transporting fish, it consisting of an outside casing and interior partitions or shelves constructed of strips or supporting-pieces arranged to allow a free passage of air between them, and each arranged to project part way across the side of the package opposite to the side from which the adjacent partitions or shelves project, and air apertures through the sides of the casing, substantially as set forth.

"3. In a portable package for transporting fish, the combination of the external casing and the interior partitions or supports, each having at one edge a cut-away portion or passage for air, and means, substantially as set forth, to prevent the fish from moving over said passage."

No. 295517.

(Charles A. Bergtold, New York, N. Y.; patented March 25, 1884; fish-box. See Plate CXXVI.)

The outer or main part of a double box is provided with a removable cover, at one extremity whereof is placed a block whereon the fish are dressed. A door or cover shuts over the inner box, and is provided with a glazed panel. This cover is hinged to the first named, and, when opened, rests against two supports at its back. At one extremity of the main box are located a towel-holder and a receptacle for the knife used in preparing the fish for use. The inner box is supported upon cleats vertically located at each corner against the wall of the outer box, extending to the bottom thereof, serving to support the inner box and strengthening the outer one. At the bottom of the inner box is a trap, through which the space between the bottoms of the two boxes may be reached, as the upper box is much less in depth than the outer, the trap being provided with handles for removal. Across the bottom of the main box extend two cleats cut away in the center. The walls of the inner box are perforated with small holes, and the top of the cover to the main box is perforated in like manner. In using this fish-preserving box a sponge or woolen cloth saturated with water, wherein salt and alum have been dissolved, is placed in the open space between the bottoms of the two boxes and the fish are put into the inner box. The evaporating moisture from the sponge or cloth charges the air between the two boxes, and that in the inner box, keeping the fish fresh, and any deleterious oders that, if confined, would hasten decay of the fish, pass out through the perforations in the cover.

CLAIM.

"A fish receptacle and preserving device consisting of main box A, having handles D, towel-holder B, knife support C, removable top G, having depending edges *g*, perforations *g'*, and dressing-block L, inner box I, having lip I', handles *i*, trap J, and perforations *g'*, the main box being provided with cleats E and F, and the whole combined and arranged to operate substantially as shown and described."

No. 300061.

(Spencer Lee Fraser and William A. Brigham, Toledo, Ohio; patented June 10, 1884; oyster refrigerator. See Plate CXXVII.)

The refrigerator-box is divided horizontally at or near its middle by a perforated partition, upon which the ice is placed. This partition has a central opening, through which is inserted a receptacle, into which the articles are placed. This receptacle rests upon the bottom of the box, and is retained in a proper central position by a partition. The box is provided with a cover, which has a central opening, which, when the cover is in position, is directly over the mouth of the receptacle.

The receptacle extends upward so far that it is closely surrounded by the cover, which thus assists the partition in retaining the receptacle in proper central position, and also closes the box entirely, while leaving the receptacle open. An independent cover is provided for the receptacle, the ice in the box remaining thus at all times covered and unexposed to the air at any time. The ice on the shelf, by direct contact, cools the upper portion of the receptacle, and the drip-water and cold air which settle in the lower compartment of the box keep the lower portion equally cool. Only the upper half of the receptacle is surrounded by ice. In addition, the shelf acts as a partition to keep the drip-water from collecting around the ice. The drip-water may be removed by a faucet in the lower part of the box. A pipe, which is shown as extending upward from the lower compartment of the box and communicating with the external air, is provided for purposes of ventilation.

CLAIMS.

"1. A refrigerator-box and a food-receptacle contained therein, in combination with a cover for said box, provided with an opening adapted to encircle the top of said receptacle, whereby access may be had to the receptacle without exposing the contents of the box, substantially as set forth.

"2. The refrigerator-box *a*, the perforated shelf *d*, and the receptacle B, in combination with the box-cover F, provided with a central opening, E, adapted to encircle the top of the receptacle B, and the cover G of said receptacle, substantially as set forth."

No. 259442.

(William West, Keene, Ontario, Canada; patented June 13, 1882; can-filling apparatus. See Plates CXXVIII to CXXX, inclusive.)

The invention is an improvement upon an apparatus patented to John West and R. D. Hume, October 19, 1880, No. 233449, and consists in certain details of construction by which the material is delivered beneath the vertical plunger in a better manner, the operation of the cutting-knives is more perfect, and the knives are less liable to become dulled. A is the main shaft, having fixed to it the spur-gear wheel B, which meshes with the pinion C upon the driving-shaft D, by which it is rotated. Upon the shaft A is a cam which actuates a vertical rod, F, having guides and an anti-friction roller. This rod has its upper end connected with a horizontal lever-arm, G, one end of which is pivoted to a standard on the table or frame which supports the mechanism, and the other end is connected by a rod or link, H, with the plunger I, so that the rotation of the cam will cause this plunger to be elevated, and its weight, or, if desired, a spring, will carry it down when released. This plunger is guided, as shown, and moves in a corresponding chute,

J, to force the fish down into the compression cylinder below, after the fish has been placed beneath the plunger by a reciprocating carrier, K, which moves in a trough, L, and is operated by a peculiarly-shaped lever-arm, M, notched or forked at M′, so as to be driven from the vertically-reciprocating bar N. A horizontal lever, O, actuated by a spring, P, and a cam, Q, on the end of the shaft A, moves the bar N up and down. The upper end of this bar has a rack, R, formed upon it, which engages with teeth S, circularly placed upon one side of a hinged swinging plate, T, and by the vertical reciprocation of this rack the plate T is caused to swing up to admit the forward movement of the carrier K, with the fish which has been placed before it, and after the carrier has been withdrawn it swings down, so as to complete the movement of forcing the fish into the chute, and also to form a wall at that side while the plunger passes down. The compression-cylinder into which the fish is forced by the plunger I is placed at the bottom of the chute, similarly to the one shown in the patent referred to; but the knife V, by which the fish is cut and shaped, is a single one, working entirely in one direction. This knife is in the form of a cylinder, having an opening cut out of one side equal in its dimensions to the size of the chute through which the fish is forced down, and as this cylindrical knife has its open side uppermost when the plunger I is forcing the fish down it receives enough to fill it. The knife then rotates upon its axis sufficiently to cut off the cylinder full and at the same time close it off from the chute. A horizontal knife, 2, is so placed that its edge is opposite to and assists the cylindrical knife. This knife V has a flange, W, upon one end, the flange having notches X X upon opposite sides of its periphery, as shown, and these notches are engaged successively by the point *y* of a curved cam-shaped lever, Z, which is pivoted to a disk, *i*, on the side of the eccentric-gear wheel *a* and rotates with it. A spring, *b*, holds the point *y* in contact with the periphery of the flange W, and when, in the rotation of the gear-wheel, it reaches one of the notches X it will fall into it and carry the knife along until the point *y* is lifted out of the notch by the action of a stationary pin, *c*, on the back of the cam-lever Z, the pin being fixed to the outside of the chute. When this occurs the knife remains stationary until the point *y* engages the next notch X and again moves the knife. By this action the knife is left stationary when its open side is uppermost and in line with the chute, so as to receive the fish, and again when in the opposite position and while the fish is being forced out of the compression and forming cylinder into the can. The knife is driven at a varying rate of speed by means of the two eccentric gears *a a′*, one of which carries the actuating cam-lever, as before described, while the other, *a′*, which is the driver, is mounted upon a shaft, this shaft carrying a bevel-pinion, *d*, and the bevel-gear wheel *e* upon the main shaft A meshes with and drives it. The disk *i* upon the side of the eccentric gear *a* is held and adjusted so as to regulate the movements of the knife by means of a

screw, *f*, which passes through slots in the gear *a*, so that it may be moved around the axis, and thus change the position of the cam-lever Z relative to the flange W. The knife is moved slowly when its open side and cutting-edge are downward, and it is moved at its greatest speed when the open side is upward and the inclined cutting-edge is moving across the chute to cut off the supply. The piston *g* moves through the center of the cylindrical knife and forces the fish from it into the extension *h*, upon which the can fits, as described in the former patent above referred to. The movement of this piston is effected by means of a pin, *i*, projecting from the disk *j* on the end of the shaft A, this pin striking an arm, *k*, which projects downward from the guide extending in rear of the pistons. A bent arm, *l*, pivoted to the frame below, has a pin projecting in front of the arm *k*, and the arm *l* is acted upon by the pin upon the disk, so as to return the piston after it has been forced forward, in the same manner as shown in former patent. A vertically-sliding knife or plate, *m*, is formed across the space between the cylindrical forming-knife and the rear part of the extension *h* upon which the can fits, as soon as the piston has been withdrawn past that point, and thus closes the end of the cylindrical knife and former for the introduction of another charge by the plunger moving in the chute. The sliding knife *m* has a stem projecting downward, and a spiral or other spring, *n*, acts against a pin or shoulder to return the knife after it has been drawn down and then released. The knife is drawn down out of the cylinder by means of an arm, *o*, one end of which is connected with the stem of the knife, while the opposite end is curved and brought into such a position relative to a cam, *p*, upon the main shaft that as the shaft rotates the cam acts upon the lever, moving it about its fulcrum until the knife is drawn down, and then releases it, so that the spring throws it back again. When the supply of fish within the vertical chute is sufficient the swinging gate T is prevented from opening by a latch, *r*, a notch in which engages one of the pins or teeth S (by which and the rack R it is operated), and thus holds it against the action of the spring P until the latch is tripped and the gear released. As long as the chute contains a quantity of fish the plunger I will not descend very low; but as soon as the quantity diminishes to a certain point an arm, *t*, which is secured to the upper part of the plunger and moves with it, passing down outside the chute, will strike the rear end of the latch *r*, and thus disengage it, so that the gate can operate. The cam which moves the lever by which the plunger is actuated may be turned upon the shaft, so as to regulate the movement of the plunger, by means of a screw, E′, passing through a slot in a disk upon the main shaft, the cam lying in contact with the disk.

CLAIMS.

"1. In a can-filling apparatus, and in combination with the vertical fish-receiving chute J and the vertically-reciprocating plunger I, guided

as shown, the cam E, adjustable upon the driving-shaft, the vertical rod F, the lever-arm G, and the connecting rod or link H, substantially as and for the purpose herein described.

"2. The horizontal trough L, opening into the upper part of the chute J, in combination with the reciprocating carrier K, moving in said trough, so as to transfer the fish into the vertical chute, substantially as herein described.

"3. In combination with carrier K, moving in the trough L, the lever-arm M, connected with the carrier by a link, and having the fork or notch M′, in combination with the vertically-reciprocating bar N, substantially as herein described.

"4. The hinged swinging-gate T, opening or closing the passage between the trough L and chute J, and having the toothed segment S, in combination with the reciprocating bar N, with its rack R, engaging said segment, substantially as herein described.

"5. The bar N, moving in guides, as shown in combination with the lever O, cam Q, and spring P, substantially as and for the purpose herein described.

"6. The cylindrical receiver, having one side open and the edge forming a knife, V, so that a supply of fish may be forced through the opening from the chute J, and cut off and formed to enter the can by the rotation of the knife, substantially as herein described.

"7. The cylindrical knife and shaper V, turning within the chute J, and provided with the flange W, in combination with the curved lever Z and rotating gear-wheel *a*, substantially as herein described.

"8. In combination with the cylindrical knife and shaper V, with its notched flange W, and curved operating-lever Z, the disk *i*, supporting the lever, and adjustable upon the gear *a* by slots and screws *f*, so as to regulate the movements of the knife, substantially as herein described.

"9. The cylindrical knife and shaper V, with its notched flange, and the curved pivoted lever Z, and spring *b*, rotated by the gear-wheel *a*, in combination with the stationary pin *c*, whereby the pawl *y* is disengaged at each semi-revolution of the knife, substantially as herein described.

"10. In combination with the hollow rotating knife and former V, operating within the chute J, as shown, the eccentric gears *a a′*, meshing with each other to drive the knife with a variable speed, substantially as herein described.

"11. In combination with the hollow intermittently-rotating cylindrical knife and former V and the eccentric driving-gears *a a′*, the piston *g*, reciprocating through the cylindrical knife and the sleeve upon which the gear *a* turns, and the stem or extension *h*, operating lever and cam, substantially as herein described.

"12. The hinged swinging-gate T, toothed segments S, and vertically-moving bar N and rack R, in combination with the latch *r* and the arm

t, connected with the plunger, substantially as and for the purpose herein described."

No. 262575.

(Augustine Crosby, Benton, Mo.; patented August 15, 1882; machine for filling cans with meat, fish, &c. See Plates CXXXI and CXXXII.)

In some can-filling machines a pair of semi-cylindrical knives or cutters rotating about a longitudinal axis, one within the other, in concentric circles, have been employed to cut the meat, fish, &c., delivered thereto from the chute or hopper and properly shape it to fit into the can to be filled. These cutters, when opened to their full extent by rotating them on their axis, so that one will lie snugly within the other, form a semi-cylindrical chamber or receptacle of a size and shape adapted to contain only one-half of the contents of the can to be filled, the meat or fish in the chute above being forcibly pressed directly down into the receptacle, and extending up above the upper edges of the cutters, which, as they are rotated, cut off a portion of suitable size and shape to fit the can to be filled, and as the meat or fish is soft and elastic, the mass of material above the cutters must be held down while they are operating, in order that a sufficient quantity may be cut off to properly fill the can. It is declared that to effect this pressure requires the expenditure of considerable power, while the mechanism employed within the chute to produce this pressure is in the way and interferes with the proper sorting and arranging by hand of the pieces of meat or fish before they reach the cutters, while the juices are expressed and escape at various points, thus running to waste, whereby the quality of the meat or fish is injuriously affected; that furthermore, as the cutters fit one within the other when opened, they do not form a true circle when closed up to make the cut, and it therefore becomes impossible to make the cylindrical plunger employed to force the substance into the can fit accurately within the chamber formed by the closed cutters, the space thus left between the plunger and the interior of the cutters affording an opportunity for tough fish skins and sinews to catch between the edges of the cutters and become twisted or jammed, and hence not to be carried forward by the plunger, when they will accumulate and cause the machine to become clogged, while it frequently happens that one end of a long piece of skin or sinew will become caught while the other end is carried by the plunger into the can, and when the latter is removed from the machine its contents will be drawn out in consequence of one end of this piece of skin being still held fast in the machine, causing much delay and waste of time and material. Finally, in some machines the meat or fish is forced into a nearly circular die or receptacle and cut off by a straight knife; but this construction is declared to be objectionable, as the portion of meat or fish is not properly shaped to fit the can, being left flat on one side, and a

great pressure has to be exerted to force the meat or fish into the die, while all of the machines heretofore constructed for filling cans employ springs, and are, it is said, generally complicated and liable to get out of order on account of the great variety of irregular movements necessarily imparted to the different portions of the mechanism. This invention has for its object to overcome all of these difficulties; and it consists in the combination, with the chute, of a pair of semi-cylindrical knives or cutters so pivoted together as to open and close in the arc of a circle having its center in or near the line of their circumference, whereby they are adapted, when open, to receive the material from the chute, and when closing or advancing toward each other to gather together, cut off, and firmly compress the material received from the chute and properly shape it to fit the can to be filled, thus dispensing with the heavy pressure heretofore required to force the material from the chute to the cutters; also in the combination, with the chute and a pair of semi-cylindrical shaping and compressing cutters, constructed and operating as described, of levers secured to said cutters and actuated by cams; also in the combination, with a pair of semi-cylindrical shaping and compressing cutters so pivoted or hinged together as to open and close in the arc of a circle having its center in or near the line of their circumference, and form when closed a true cylinder, of a reciprocating piston or plunger adapted to accurately fit within the space or chamber formed by the said cutters when closed, and thereby insure the discharge of the entire contents of the chamber, whereby the machine is prevented from becoming clogged by the introduction of any portion of the material in the chamber between the piston and the inner surfaces of the cutters; also in providing the piston or plunger with an automatic vacuum-valve for admitting air into the chamber in which the meat or fish is compressed, for the purpose of preventing the formation of a vacuum therein on the withdrawal of the piston; also in the combination, with the semi-cylindrical shaping and compressing cutters, constructed and operating as described, and the casing and chute, of a reciprocating piston or plunger actuated by certain mechanism, as hereinafter set forth, whereby the machine is simplified and rendered more durable and effective in its operation; also in the combination, with the reciprocating piston and its actuating mechanism, of certain mechanism for operating the semi-cylindrical cutters, so constructed and connected as to cause the cutters to be entirely closed to form a true cylinder before or immediately after the piston reaches them on its forward stroke; also in supporting the can upon a series of bars of U or V shape in cross-section, so arranged as to form exit-passages for the escape of the air from the can while it is being filled; also in securing the can-supporting bars to a removable ring attached to the front of the casing, said ring forming a guide for the sliding-gate, which closes one end of the chamber in which the meat or fish is compressed.

CLAIMS.

"1. In a can-filling machine, the combination, with the chute C, of a pair of semi-cylindrical cutters, G, so pivoted or hinged together as to open and close in the arc of a circle having its center in or near the line of their circumference, whereby they are adapted, when open, to receive the material from the chute, and when closing or advancing toward each other to gather together, cut off, and firmly compress the said material received from the chute and properly shape it to fit the can to be filled, substantially as set forth.

"2. In a can-filling machine, the semi-cylindrical shaping and compressing cutters G, adapted to receive the material from the chute, and so pivoted or hinged together as to open and close in the arc of a circle having its center in or near the line of their circumference, in combination with the chute C and the levers *d*, actuated by the cams *w a'* on the shaft T or other suitable operating mechanism, substantially as described.

"3. In a can-filling machine, the combination, with a pair of semi-cylindrical shaping and compressing cutters, G, so pivoted or hinged together as to open and close in the arc of a circle having its center in or near the line of their circumference, and form when closed a true cylinder, of a reciprocating piston or plunger, I, adapted to accurately fit within the space or chamber formed by the said cutters when closed, and thereby insure the discharge of the entire contents of the chamber, whereby the machine is prevented from becoming clogged by the introduction of any portion of the material in the chamber between the piston and the inner surfaces of the cutters, substantially as set forth.

"4. In a can-filling machine, the combination, with the semi-cylindrical shaping and compressing cutters G, of the reciprocating hollow piston I, having a head, *i*, provided with an automatic vacuum-valve, *n*, adapted to admit air into the chamber E in front of the piston as it is withdrawn, substantially as and for the purpose described.

"5. In a can-filling machine, the combination, with the semi-cylindrical shaping and compressing cutters G, operating as described, and the casing B and chute C, of the reciprocating piston or plunger I, with its connecting-rod L, lever M, rock-shaft *p*, slotted lever *q*, connecting-rod N, and actuating-disk P, all constructed to co-operate substantially in the manner and for the purpose set forth.

"6. In a can-filling machine, the combination, with the reciprocating piston I and its actuating mechanism, of the shaft T and mechanism connected therewith for operating the semi-cylindrical cutters G, so connected as to cause the cutters to be entirely closed, to form a true cylinder, before or immediately after the piston reaches them on its forward stroke, substantially as described.

"7. In a can-filling machine, the combination, with the casing B, the shaping and compressing cutters G, and the reciprocating piston I, of

the can-supporting bars *l*, made of U or V form in cross-section, and arranged with their open sides outward to form outlets or exit-passages for the escape of the air from the can as it is being filled, substantially as set forth.

"8. In a can-filling machine, the can-supporting bars *l*, secured to a removable ring, 25, attached to the front of the casing B, said ring forming a guide for the sliding gate H, substantially as described."

No. 265137.

(Charles L. Pond, Buffalo, N. Y.; patented September 26, 1882; package for oysters, &c. See Plate CXXXIII.)

The invention relates to the construction of the removable head of barrels, tubs, or other vessels in which oysters and other similar perishable articles are packed, and has for its object so to construct the removable head that it can be readily applied and removed, and that when applied it is sufficiently tight to prevent the escape of the contents of the package, and that it can be readily sealed, and that it has no projecting parts which would interfere with the handling and stowing of the package in transportation. At the upper head are two segmental side pieces. These are fixed within the barrel upon an inner hoop, there being a groove on the curved edge of each piece which fits upon the hoop, and nails being driven from the exterior of the barrel through the hoop into the side pieces. Between the parallel sides of the side pieces is the removable portion of the head, which consists of two parts hinged together below. The outer ends are grooved to fit over the rest of the hoop. Each removable part has at its side a packed offset which rests upon an offset on the corresponding side piece. Two clamps pivoted to the side pieces opposite the hinged edges of the removable portion overlap the adjacent parts and secure them in place. Each clamp consists of two wings, respectively, on the upper and lower sides of the cover, and secured to the same by a vertical pivot which turns in the side piece. The upper wing has an arm which projects rearward, and turns upon a plate secured to the top of the side piece. The plate has two upward-projecting stops to limit the movement of the arm to a quarter-circle. One of the stops and the arm resting upon it is perforated, so that the wire of a seal may be drawn through both perforations, thereby preventing the clamp from being turned without breaking the seal. The upper wing and the arm are in one piece with a hub, the exterior surface of which is hexagonal, turned by a wrench. One of the removable parts is provided with a removable handle shaped to serve, when removed, as a wrench to turn the clamps. The wrench end of the handle is attached to the cover by a metallic strap, which is secured to the upper side of the cover, leaving sufficient space between the under side and the upper side of the cover to permit this end of the handle to be inserted under the strap. The cover is provided with depres-

sions for the reception of the ends of the handle. The opposite end of the handle is inserted under a similar strap and bears with its end against a spring seated in an inclined socket in the cover, whereby the handle is pressed toward the strap. Upon pressing the handle toward the spring until the opposite is withdrawn from under the strap, the handle is released. The handle is reattached in an obvious manner.

CLAIMS.

"1. The combination, with the body A, provided on its inner side with a hoop, *d*, of the grooved stationary end pieces, B, hinged cover C C′, provided with grooves in its ends, and ledges *c c′*, formed respectively on the stationary end pieces, and hinged cover, substantially as set forth.

"2. The combination, with the body A, having end pieces, B, of the hinged cover C C′ and clamps F, whereby the hinged cover is secured in place, substantially as set forth.

"3. The clamp F, composed of two lips, *f*, secured to a pivot, *f′*, which is provided with a head, *h*, adapted to be seized by a wrench, substantially as set forth.

"4. The combination, with the side pieces, B B, and the hinged cover C C′, of one or more clamps, F, each provided with two lips, *f*, arranged respectively on the upper and lower sides of the cover, substantially as set forth.

"5. The combination, with the side pieces, B B, and a hinged cover, C C′, of one or more clamps, F, provided with lips *f*, adapted to engage over the adjacent portions of the cover, an arm, *g*, formed on the clamp, a fixed plate, *g′*, provided with stops g^2 g^3, and means whereby the arm *g* can be locked to one of the stops, substantially as set forth.

"6. The combination, with the cover, of a removable handle, I, straps *k k′*, and spring *l*, substantially as set forth."

No. 296023.

(Thomas Levi, New Westminster, British Columbia, Canada; patented April 1, 1884; device for keeping fish, meat, fruit, and other preserving cans clean while being filled. See Plate CXXXIV.)

A tin case or cylinder to fit over fish, meat, fruit, or other preserving cans while being filled. The tin case or cylinder is made one size larger in circumference at the top, increasing in size to the bottom, and a size shorter in length than the preserving-can, with a rim at the top turned inward and downward. When the preserving-can is filled, it is lifted by the pressure of the fingers and thumb on the case or cylinder, the object being to keep the can while being filled clean, and to enable the person filling the preserving can to remove it after it has been filled without touching it with his hands, thereby keeping it clean and saving labor.

The inventor says:

"I make no claim to the preserving-can A."

CLAIM.

"The combination of the case or cylinder B with the preserving-can A, when applied as shown in the Fig. C, substantially as described."

No. 299710.

(Julius Wolff, New York, N. Y.; patented June 3, 1884; sardine-can. See Plate CXXXV.)

A sardine-can having its top or bottom, or both, concave. In canning sardines as heretofore practiced the cans are made with flat or slightly convexed tops and bottoms. The fish are packed into the cans and oil is poured over them until the body of the can is filled with oil. The tops of the cans are then soldered on, and heat is applied by water or steam a sufficient time to preserve the fish. The cans are then removed, and if the soldering was properly done, the top and bottom of the cans are convex from the expansion of the inclosed air by the heat. The cans are then punched to allow the air to escape, and the puncture is thereupon closed with solder. In this process, when the cans are punched to allow the air to escape, the escaping air carries a portion of the oil with it, so that when the cans are opened the fish are found to be only partly covered with oil, and consequently not in a state of perfect preservation. To avoid this the inventor here makes a sardine-can with the top or bottom, or both, concave. The depression of the middle parts of the tops of the cans then causes the air in the cans to collect around the edges of the tops, and the heat of the soldering-tool heats the air and oil along the edges, and causes the air to expand and escape in front of it as it passes along the edges, so that when the soldering is completed the air will be sufficiently expelled. The filled cans are then subjected to heat in the ordinary manner, and if the soldering has been properly done, the expansion of the small quantity of air left in the cans will have expanded the concaved top and bottoms into an approximately level or horizontal position, and the cans are ready to be cooled and stored for market. In case the tops and bottoms of the cans, when the boiling operation has been completed, have not been expanded into level positions, it shows that the soldering was not properly done, and that the inclosed air and part of the oil have escaped during the boiling operation. Such cans have to be resoldered, punched in two or more places and placed in hot oil until they are again filled with oil. The punctures are then filled with solder and the sardines are marketed as seconds.

CLAIMS.

"1. A sardine-can having its top or bottom concaved and secured within the body of the can, as and for the purpose set forth.

"2. In a sardine-can, the combination, with the body A, provided

with the offsets *a*, of the concave top B, provided with a flange *b* and bead *c*, substantially as herein shown and described."

No. 288106.

(Freeman Payzant, Lockeport, Nova Scotia; patented November 6, 1883; process of and apparatus for extracting oil from fish liver and blubber. See Plate CXXXVI.)

The furnace has a water-jacket and a pipe for conducting air into the furnace below the grate; the pipe has at its upper end an adjustable hood for catching the air. The furnace is put into a tank or vat containing fish livers and blubber. The oil rises to the surface, and the livers and blubber sink to the bottom.

CLAIMS.

"1. The method herein described of preventing the discoloration and injury of the oil, which consists in interposing a stratum of water between the oil-yielding substance and the furnace, substantially as described, and for the purpose set forth.

"2. The combination, with the oil-holding receptacle, of a water-jacketed furnace, substantially as shown and described.

"3. The combination, with the furnace A B C, provided with an air-pipe, D, and adapted to be supported in a tank, of the water-jacket F, surrounding the furnace and extending from below the grate nearly to the upper end of the furnace."

No. 294940.

(Peter C. Vogellus, Gloucester, Mass.; patented March 11, 1884; process of extracting oils and fats from fish. No drawing.)

In extracting oil from fish, fish-livers, or fish-heads where solvents are employed as the extracting agent, to obviate the difficulty experienced by the presence of water, this is first removed by subjecting the fish whole or cut up and raw, but preferably while being heated or cooked, to the action of a substance, such as plaster-of-paris, which will absorb the water without taking up the oil.

CLAIMS.

"1. The improved process of extracting oils from fish, consisting in subjecting the fish to the action of plaster-of-paris or some similar water-absorbing agent, whereby the water is removed therefrom, and then mingling the fish with a suitable solvent, whereby the oil in the fish is dissolved, substantially as described.

"2. The improved process of extracting oils from fish, consisting in heating the fish, subjecting the same to water-absorbing agents, and then to the dissolving action of solvents, substantially as described.

"3. In the process of extracting oil from fish, the subjection of the latter to the water-absorbing action of plaster-of-paris or equivalent absorbents, substantially as specified."

No. 259140.

(Frank L. Harris, Harrisonburg, Va.; patented June 6, 1882; manufacture of fertilizing material. See Plate CXXXVII.)

Bone, horn, or hoof is subjected to pressure while immersed in water heated above the boiling point for the required length of time, which will be until the water reaches the temperature of about 250° or 300° Fahrenheit. The pressure is produced by heating the water in which the bones are immersed in an air-tight vessel. The bone thus treated is then removed and allowed to dry. The water remains in the vessel, and a fresh charge of bone is introduced into the same, and the operation is repeated. After a succession of operations the water is drawn off, and the dried bone is allowed to soak in the water thus enriched with gelatine until the bone has absorbed most of it. The bone is then again dried, and finally is pulverized for market.

The drawing shows a furnace and a closed vessel surrounded by a jacket, and placed upon the furnace. The closed vessel has a steam-tight cap, and the flame and heat from the furnace enter the space between the jacket and the closed vessel rapidly to heat the latter. An ordinary gage indicates the pressure and a chain that can be connected with a crane serves to lift the apparatus from the furnace when desired.

CLAIMS.

"The herein-described process of producing a fertilizer, consisting in immersing bones, horns, or hoofs in water within an air-tight vessel, and while so immersed and confined subjecting the article to pressure by heating the water above the boiling point, removing and drying the charge, and introducing into the same water a fresh charge, and treating it in a similar manner, next allowing a quantity of the article thus treated and dried to soak in the water, so as to absorb the gelatine contained therein, and finally drying and pulverizing the article."

No. 263322.

(Azariah F. Crowell, Wood's Holl, Mass.; patented August 29, 1882; manufacture of fertilizers. No drawing.)

Instead of first pressing the fish to extract therefrom the oil and gelatinous and nitrogenous liquid, and afterward mixing with the latter a superphosphate, as described in a patent to this inventor, dated September 24, 1878, No. 208224, the fish (dogfish, menhaden, &c.) and superphosphate are mixed together and cooked by steam or otherwise, whereby a greater amount of the gelatinous and nitrogenous matters

and oil are obtained, and the soluble parts of the superphosphate are combined to better advantage with the gelatinous and nitrogenous matters, the oil being subsequently separated from such matters and the soluble parts of the superphosphate by skimming, and the cooked mass being pressed to squeeze out liquor and oil. Furthermore, by the present procedure, the insoluble parts of the superphosphate are at the same time mixed with the fish scrap or pomace, whereas by the former patented process this mixture had to be effected at another time and at an increased expense.

The inventor says:

"Consequently I do not herein claim to first press from the fish the oil and gelatinous and nitrogenous liquid, and afterward mix with the said liquid a superphosphate, and remove from the mixture the insoluble substance or substances, and evaporate the remainder to the necessary consistency. My new process involves the employment of heat and the cooking of the fish mixed with the superphosphate, such not constituting a part of my former or patented process."

CLAIM.

"In the manufacture of liquid fertilizer, the process of obtaining from fish its gelatinous and nitrogenous properties, combined with the soluble parts of a superphosphate, such consisting in mixing together the fish and superphosphate and cooking the mixture by heat and subsequently subjecting it to pressure, so as to expel from it the oily, nitrogenous, and phosphatic liquid."

No. 251772.

(John Eckart, Munich, Bavaria, Germany; patented January 3, 1882; compound for preserving meats and fish. No drawing.)

Instead of the solution mentioned in the patent granted this inventor August 28, 1877, No 194550, in which half a pound of salicylic acid to 100 pounds of water was used for preserving animal or vegetable matter, a mixture of 50 per cent. of common salt, 47½ per cent. of chemically pure boracic acid, 2 per cent. of tartaric acid, and ½ per cent. of salicylic acid, is employed. The flesh of fishes immediately after they are caught is separated from the skin and bones. The composition is then applied to it in the proportions of about twenty grams of the composition to one kilogram of flesh. The flesh is afterward filled into gut or artificial cases of parchment. These cases are then packed into casks, after which the casks are filled with a gelatine solution, made up of about 50 grams of gelatine and 20 grams of the preserving mixture to every 1,000 grams of water, and submitted to pressure in the following manner: The casks being strong and tight, their interior is put into communication with the pressure-pipe of a pump and hermetically closed; more of the solution is pumped into the cask until the pres-

sure-gauge with which it is supplied shows a pressure up to twelve atmospheres or more. This pressure is maintained from fifteen to thirty minutes, more or less, according to the requirements of the case, until the contents are completely saturated. Then an air-valve is opened and the pressure is relieved, the cover is removed and the contents are taken out. The gut cases may then be strewn over with more of the preserving mixture in a dry condition and be stored in vessels for shipment. They may also then be covered with a solution of the preserving-salt in water.

The inventor says:

"I do not herein claim the gelatine solution, as I propose to make it the subject of a separate application for patent."

CLAIMS.

"1. The preserving-salt, composed of chloride of sodium and boracic acid with the smaller quantities of tartaric and salicylic acid, substantially as herein specified.

"2. The sausage described, having a filling of meat saturated with the preserving-solution, as herein specified."

No. 255017.

(Charles L. Pond, Buffalo, N. Y.; patented March 14, 1882; package for oysters. See Plate CXXXVIII.)

The lower head of the barrel is fixed. Upon the inside of this head is a rim which forms a recess in which rests the bottom of a can, the can being stayed at the top by a ring secured to the inside of the barrel. The upper head of the barrel bears upon the upper end of the can and prevents it being displaced vertically. The upper head is removable and rests upon a rim fixed in a recess at the upper end of the barrel. Where it rests upon the rim the head has a projecting edge, which is provided on its under side with a packing ring fixed in a groove in the head, being there secured by a metallic hoop, which also serves to prevent the head from warping. Two sliding bolts arranged in recesses on the inner side of the removable head are connected at their ends to a lever which extends outward through an opening in the head. On one end of the lever to which the bolts are attached is a disk nearly circular, and the bolts are so connected to this disk on opposite sides of its center, that by swinging the outer end of the lever in one or the other direction the bolts will be extended or retracted. A casing of metal or wood secured to the under side of the removable head incloses the sliding bolts, the ends of the casing being provided with openings through which the sliding bolts protrude. One sliding bolt, that shown to the left of Fig. 2, is provided with an upward projecting tongue, and the lever has an opening which permits the tongue to project through it, when the lever is closed down upon the head. The head has upon its

upper side a recess in which the lever rests when it is thus closed down. When the bolts are retracted the head can be inserted into the open end of the barrel with the packed edge resting upon the rim. By pushing the lever down upon the head the sliding bolts are projected under the rim, thereby drawing the edge of the head tightly against the outer side of the rim and locking it in the barrel. A wire is then drawn through the opening in the end of the tongue above the lever, and its ends are connected by a metallic seal whereby the lever is firmly secured in place at a quarter circle from the insertion of the bolts, and on the under side of the head are two turn-buttons to engage against the under side of the rim. The buttons are each attached to a bolt, which projects upward through the removable head, and is provided with a knob or head having a nose. This knob turns on a plate which is seated in a recess formed in the head, whereby it is prevented from turning. The plate has two projecting stops at right angles to each other, and the nose of the knob swings between them, and the movement of the turn button is limited by the stops to a quarter turn. The buttons are to furnish an additional fastening. The nose, and the stop against which it rests when the turn-button is projected under the rim, are provided with perforations through which a wire can be drawn for the purpose of attaching a seal.

CLAIMS.

"1. The combination, with a barrel or tub, A, of a ring, *c*, composed of a strip of wood made of uniform cross-section throughout its length, and sprung into a recess of suitable shape formed in the barrel or tub near its end, substantially as set forth.

"2. The combination, with a barrel or tub, A, provided on its inner surface, near its end, with a projecting ring, *c*, of a removable head, B, resting upon the ring *c*, and fastening devices applied to the under side of the head and adapted to be projected under the ring *c* for securing the head and to be retracted for releasing the head, substantially as set forth.

"3. The combination, with a barrel or tub, A, provided with a ring or shoulder, *c*, of a removable head, B, provided with sliding bolts *f f'*, attached to the under side of the head and adapted to engage with their outer ends under the ring *c*, and a lever, F, to which the inner ends of the bolts *f f'* are connected and whereby both bolts are moved in opposite directions, substantially as set forth.

"4. The combination, with the removable head B, of the sliding bolts *f f'*, one of which is provided with a projecting tongue, *h*, and the lever F, having an opening, *h'*, substantially as set forth.

"5. The combination, with the removable cover B, constructed with a projecting rim, *b*, of a packing-ring, *d*, applied to the under side of the rim *b*, and a hoop, *c*, which surrounds the lower contracted portion of

the cover, and bears with its upper edge against the packing-ring *d*, and secures the latter in place, substantially as set forth.

"6. The combination, with the cover B, of a turn-button, L, secured to a bolt, *l*, having a head, M, provided with a nose, *m*, and a plate, N, secured to the cover B, and provided with stops, *n*, between which the nose *m* swings, substantially as set forth."

No. 261984.

(James H. Baxter, Portland, Me., assignor to himself and Charles A. Dyer and David L. Fernald, both of same place; patented August 1, 1882; apparatus for packing dried fish. See Plate CXXXIX.)

Molds which are made in two longitudinal sections hinged together, and of cylindrical contour on their interior, are constructed with a series of grooves for insertion of the binding-cords, and with fastenings for keeping the molds closed and locked when removing them from the ordinary screw press employed, and until the binding-strings are tied, during which operation other molds may be successively inserted in the press for a repetition of the process.

CLAIM.

"The fish-compressing mold C, constructed of two longitudinal sections hinged together on their one side, and of cylindrical contour on their interior, with a series of transverse grooves, *c c'*, in and through them for the reception of binding strings or cords, in combination with one or more hooks and fastenings, *e f*, for holding the molds locked with the fish under pressure, substantially as and for the purposes herein set forth."

No. 265735.

(James H. Baxter, Portland, Me., assignor to himself and Charles A. Dyer and David L. Fernald, both of same place; patented October 10, 1882; putting up dried fish. See Plate CXL.)

Fish is compressed into a compact mass in a mold under a press and held firmly together by binding strings applied at different points in its length and tied while the fish is under pressure. This bound package is then inclosed in a wrapper of waxed paper, after which the whole is inclosed in an outer wrapper of manilla paper. These wrappers exclude the air, and this fact, with the expulsion of the air from between the fish while in the press, prevents the fish spoiling in hot weather or on long voyages or from losing weight. On the exterior of the outer wrapper is inscribed a series of marks which enables the dealer to cut the package into the desired smaller parts without weighing, and this without objectionable exposure of the fish by removing the wrapper and without handling it.

CLAIMS.

"1. A package of boneless fish bound at intervals with strings and incased in wrapping-papers, one of which wrappers is marked to indicate where said package may be cut across to separate it into divisions of one pound each, or of any other unit of weight.

"2. A package of boneless fish pressed into a solid mass of uniform size throughout its length and incased in a wrapper which is marked into equal divisions indicating where the package may be cut across to separate it into multiplies of the whole package, as one-half, one-third, one-fourth, &c., as shown and described."

No. 267685.

(Anderson Fowler, New York, N. Y.; patented November 21, 1882; apparatus for preserving meats. See Plate CXLI.)

The invention is designed to provide an apparatus for carrying into rapid, cheap, and effective operation the process of preserving and curing meats, fats, fish, &c., by subjecting the same simultaneously to the action of a current of electricity, and of a preservative substance, as set forth in an application by this inventor for patent filed October 30, 1880, serial No. 19806; but the invention here may be employed with advantage wherever it is desirable to subject substances of the character indicated to the pervasive or permeating action of electricity. The meats, fats, fish, or similar organic substance to be preserved, should be packed in the cases or smaller boxes B, and surrounded by a suitable preservative agent, such as salt, saltpeter, or salicylic acid. During the operation of the apparatus the dynamo-electric machine F is in operation to generate the desired electric current, and simultaneous therewith the disks C are caused to rotate in opposite directions by the revolution of the fast pulleys on their respective shafts *b*. The cases B, being closed, and having the substance to be acted upon to be cured or preserved packed therein, are passed longitudinally through the box or tube A and between the disks C. As each box B passes into the space between the disks C the electric current is caused to pass through the conducting sides of the box and through the contents thereof. Inasmuch as the said boxes may be very rapidly passed one after another through the box or tube A and between the disks C, the operation of subjecting the contents of each box to the action of the electricity is rapid, and from the rotation in opposite directions of the disks C, and the intensity of the current derived from the dynamo-electric machine, a powerful effect of the character indicated in the aforesaid application filed October 30, 1880, is to be produced.

CLAIMS.

"1. In an apparatus for subjecting organic substances to the action of electricity, the combination of the oblong box or tube A, the disks C,

connected with suitable means for generating and maintaining a current of electricity, and one or more cases or boxes, B, adapted to pass lengthwise of the box A and between the disks C, and to contain the substance to be treated, all substantially as and for the purpose herein set forth.

"2. In an apparatus for subjecting organic substances to the action of electricity, the combination of the disks C, arranged to rotate in opposite directions, the box or tube A, one or more cases or boxes, B, constructed to pass through the box A and between the disks C, and wires or conductors adapted to connect the same with a source of electricity, arranged to pass a current of electricity from one to the other of the disks C, and through the contents of a case or box, B, as the latter is passed through the box or tube A, all substantially as and for the purpose herein set forth.

"3. In an apparatus for subjecting organic substances to the action of electricity, the combination of the insulated bearings *a* and insulated pulleys *c c'* with the shafts *b*, the disks C, the box or tube A, and one or more cases or boxes, B, adapted to be passed through the box A and between the disks C, all substantially as and for the purpose herein set forth.

"4. In an apparatus for subjecting organic substances to the action of electricity, the combination of one or more cases or boxes, B, having sides capable of conducting electricity, and non-conducting ends, top, and bottom, the box or tube A, the disks C, and wires or conductors adapted to connect the apparatus with a source of electricity in order to maintain a current of electricity from one of the disks C to the other, the conducting sides of the cases or boxes B, and the contents of said cases or boxes, all substantially as and for the purpose herein set forth."

No. 275973.

(Oscar Andrews, Gloucester, Mass.: patented April 17, 1883; preparing salt fish for market. See Plate CXLII.)

Salt fish is made into bars or cakes, each cake weighing one, two, or more pounds. The layers of fish are held together in compact form by thread or twine sewed through them.

CLAIMS.

"1. The method of preparing salt fish for the market, consisting of first making the layers of fish into a bar or cake, and then applying a fastening material interiorly to the bar or cake by passing said fastening material through the layers of fish constituting said bar or cake, substantially as and for the purpose set forth.

"2. As an improved article of manufacture, a bar or cake of salt fish, the layers of fish which constitute said bar or cake being held together compactly by means of fastening material passed through said layers, substantially as and for the purpose described."

No. 276868.

(Frederick B. Nichols and Cathcart Thomson, of Halifax, Nova Scotia, Canada, said Nichols assignor to said Thomson; patented May 1, 1883; process of manufacturing fish-meal. No drawing.)

The fish are headed and split and a portion of the backbone is removed in the same manner as for making the ordinary dry salted fish. The pieces are then washed and all bloody portions removed. Very little salt should, it is said, be used in curing, as heavy salting makes an inferior meal, even when the excess is removed by water previous to drying. For some qualities of meal it is preferred to dry without salt. In this state the fish would soon spoil, and very rapid drying must be resorted to in order to save them. The immediate application of currents of hot air would accomplish this, but would render the skin so friable as to defeat the after process, and in other respects injure it for making meal, and open-air drying would not be speedy enough to keep the fish from tainting. In order to obviate these difficulties, the fish-drying house and apparatus of the patent granted this inventor December 6, 1881, No. 260382, is employed. The drying must be more thorough than for ordinary dried fish, in order to make the fish hard and crisp. The hard-dried fish are made small enough to be fed into the hopper of a mill to be coarsely ground. Almost any kind of grinding mill may be used, provided it is not too sharp, and is set high for coarse grinding for the first run. This run should be bolted through sieves having about one hundred and forty-four meshes to the square inch. About 75 per cent. of it should pass through the bolt. The remainder, which is too coarse to pass, consists of the bones and the skin with considerable fish flesh adhering to it. In order to utilize this, it is reground with the mill set closer, and again passed through the bolt. If on examination much fish adheres to the skin, it should be subjected to another grinding with a still closer set of the mill, and again passed through the bolt. The residue from this, consisting principally of skin, bones, and scales, should not amount to more than 10 per cent. of the weight of the dried fish. This residue can be utilized as manure. The product of the last grindings contain considerable of the white portion of the skin with fragments of bone and enough of the black skin to give a coarse dirty appearance to the meal. In order to remedy this, it should be again ground in a sharper and closer set mill to reduce it to a fine meal, and this, being passed through a bolt having about four hundred meshes to the square inch, gives a fine product, and contains the most nourishing portion of the fish. The last product can be either used alone or incorporated with the first by uniform mixing.

The inventors say:

"We are aware that fish-meal has been previously made; but in all previous processes, so far as we are aware, the fish used have been so salt as to require soaking the meal to remove the excess of salt before

cooking, and the skin, fins, tail, and larger bones removed before grinding. We propose to use fish dried with little or no salt, and to grind them without removing either skin, bones, or other refuse contained in fins or tail, and to separate them by bolting."

CLAIM.

"The process of manufacturing fish-meal from dried fish, which consists in first heading and splitting the fish, then removing the backbone, then washing and drying, then chopping, grinding, and bolting through sieves, substantially as specified."

No. 273074.

(Ralph S. Jennings, Baltimore, Md.; patented February 27, 1883; process of preserving fish. No drawing.)

In this process salted fish is subjected to the action of superheated steam or hot air to destroy the organic life in the salt with which it is cured. It is stated that in salt procured by the evaporation of sea water by solar heat, there frequently exist spores of algæ, which are liable at certain seasons and under certain conditions to impart a red color to or cause decomposition of the fish cured with such salt. An endless woven wire apron hung on rollers and having within it a narrow box with a foraminous top, may be employed. Into this box heated air at 450° Fahrenheit may be forced, and be discharged from it against the fish which have been placed on the endless apron. Instead of such box there may be placed within or underneath the apron a foraminous pipe, through which superheated steam or hot air at a temperature of 400° Fahrenheit is discharged against the fish, while the apron is revolved at such speed as will expose each fish for about two seconds to the action.

The inventor says:

"I do not claim boiling salted fish, nor smoking nor drying such, as usually heretofore practiced, by means of air or products of combustion, for the purpose of curing or drying them; nor do I claim merely singeing an animal or article of food, such not being productive of a result or results attainable by my invention."

CLAIM.

"The process, substantially as described, of treating salted fish for the destruction or killing of the alga germs contained in the salt of such fish, such process consisting in rapidly passing, at or about at a speed as hereinbefore mentioned, the fish over a sufficiently-heated surface, or through or in contact with heated air or superheated steam at or about a temperature of 400° Fahrenheit, so as to superficially heat the fish to an extent required to kill the said germs, without heating the interior of the fish to the injury thereof."

No. 261623.

(Hubert W. Morgan, Westfield, Mass., assignor to himself and Edwin R. Lay, of same place, and James T. Morgan, of Winsted, Conn.; patented July 25, 1882; preparation of whalebone. No drawing.)

A strong solution of an alkali, such as potash, is heated and in this, whalebone, in the proportion of half a pound of whalebone to a quart of the solution, more or less, according to the consistency desired in the resulting mixture, is dissolved. If this solution be applied in coats to flexible but comparatively inelastic substances, they will be rendered permanently elastic thereby. Whips are instanced. A highly elastic body may be produced by making the whalebone preparation of a much thicker consistency—of that of a thick paste—and of a somewhat plastic character by adding a larger quantity of the whalebone cuttings or shavings to the given quantity of the potash solution, and then adding thereto fine cuttings of leather or leather ground up into a pulp, so that the whole mixture may be sufficiently tough and hard to take the form of a die, and then molding it. Waste whalebone in cuttings, shavings, or waste pieces, is used. This solution of whalebone may have added to it any desired water-proof substance, such as gum-shellac or other desired substance of similar nature, so that when applied it will resist the action of moisture or dampness.

CLAIM.

"A new compound or liquid preparation of whalebone, consisting of whalebone dissolved in an alkali, substantially as hereinbefore described."

No. 299515.

(Reuben Brooks, Gloucester, Mass.; patented June 3, 1884; process of treating the waste of salt fish. See Plate CXLIII.)

The object is to desalt fish-waste. The waste is first mechanically disintegrated or pulverized, is then subjected to the action of water until the salt is removed, or to that of very dilute sulphuric acid, or other antiseptic which will also prevent putrefaction, and finally the glue is extracted preferably in the manner described in patent No. 243713, granted LePage, July 5, 1881. The material, after being disintegrated, is placed in a perforated receptacle, which is itself suspended in a tank containing water, the water being changed from time to time until the desalting process is complete. From 1 to 3 per cent. of sulphuric acid may be mixed with the water, but the use of chemicals may be entirely dispensed with if the tanks are so situated as to permit a constant stream of water to flow in at the top over the material and percolate down through the mass. The liquid is discharged from the bottom, carrying the salt with it.

The inventor says:

"I am aware that tanks have heretofore been constructed for leaching chemicals, in which liquids flowing in at the top were drawn off from the bottom in a manner similar in many respects to that above described, and hence I make no claim to tanks so constructed in my present application."

CLAIMS.

"1. The process of preparing the waste portions of salt fish for the manufacture of glue, consisting in, first, crushing, tearing, or otherwise mechanically disintegrating the waste, and, secondly, removing the salt therefrom by the use of water or dilute sulphuric acid, substantially as set forth.

"2. The process of preparing the waste portions of salt fish for the manufacture of glue, consisting in, first, crushing, tearing, or otherwise mechanically disintegrating the waste, and, secondly, removing the salt therefrom by exposing the waste to the action of flowing water, substantially as set forth.

"3. The process of preparing the waste portions of salt fish for the manufacture of glue, consisting in, first, crushing, tearing, or otherwise mechanically disintegrating the waste, and, secondly, removing the salt therefrom by exposing the waste to the action of flowing water, said water passing downward through the mass, and leaving the material through which it has passed by the pressure of the water in the tank, substantially as set forth.

"4. The process of extracting glue from the waste of salt fish, consisting in, first, mechanically disintegrating the waste; secondly, removing the salt therefrom by the use of flowing water, or water with an antiseptic in solution; thirdly, cooking; fourthly, straining, and fifthly, evaporating, substantially as set forth.

"5. The process of extracting glue from the waste of salt fish, consisting in, first, mechanically disintegrating the waste; secondly, removing the salt therefrom by the action of flowing water or dilute sulphuric acid; thirdly, steaming the desalted mass; fourthly, straining, and fifthly, evaporating, substantially as set forth."

No. 260179.

(Henry F. Evans, New York, N. Y.; patented June 27, 1882; oleaginous compound used in manufacturing cordage. No drawing.)

In the manufacture of ropes, twines, and cords it is customary to treat the manila or other material with an oil. As a substitute for the oils commonly used, a mineral oil commercially known as amber-oil or Smith's Ferry oil, mixed with fish or whale oil in the proportion of fifty parts of fish or whale oil to fifty parts of Smith's Ferry oil is employed.

CLAIM.

"An oleaginous compound to be used in the manufacture of cordage, consisting essentially of an amber-oil and fish or whale oil, combined as specified."

No. 286869.

(C. W. Trammer, Great Falls, Md.; patented October 16, 1883; fishway. See Plate CXLIV.)

The invention relates to devices to enable fish to ascend a fall, or to so-called "fishways" or "fish-ladders."

An inclined chute widens upward, and has an enlarged or hopper-shaped fish inlet at its lower, and an outlet at its upper end, either or both of which may be provided with a sliding gate, and suitable means for operating the same, to regulate the flow of water. The diverging sides of the chute are straight, but the top and bottom are a series of inflected steps, which form enlarged communicating chambers, the entire space of which is filled by the water that enters the chute at the upper end or fish outlet. The water is retarded in its exit by the shape and the gradual narrowing of the chute, thus causing comparatively still water in the chambers, so that the fish will have no difficulty in working their way from the lower to the upper end of the chute, whence they emerge into the river or water-course above the dam or falls.

CLAIM.

"The improved fishway herein shown and described, having sides C C, top and bottom A and B, composed of inflected steps or sections *a* and *b*, forming gradually-enlarged chambers *c* inside of the chute, connected to one another by the narrowings *d*, enlarged fish-inlet D, and outlet E, substantially as and for the purpose herein shown and specified."

No. 301285.

(Christopher Schmitz, San Francisco, Cal.; patented July 1, 1884; apparatus for oyster-culture. See Plate CXLV.)

The oysters when near their spawning time are placed in a perforated vessel which is in the center of a basin containing sea-water. The proper time is when the two vesicles of the creature which contain the eggs and milk commence to swell, whereupon the membrane bursts and fertilization takes place, for soon after this the spat or spawn may be extracted by the operator, or the oyster itself will expel the same. When this has occurred a very fine stream of sea-water is allowed to pass through a pipe from an elevated tank into the perforated vessel. Thence it passes through the perforated sides in innumerable small and gentle currents, widely spread, which carry out with them the spat

into the basin. Thence the spat floats gently into compartments over end-gates until it finds stones and rubbish there placed to which it attaches itself. By the employment of the perforated vessel the spawn is held together until ready to float off. Then when it does go it follows the small and gentle currents flowing outward in all directions, and becomes well separated and distributed, giving each living young oyster a chance to find its lodgment. The end-gates of the compartments are vertically movable. The first set, namely, those nearest the entrance, are first closed, and a small flow of water is permitted over them into the compartments following. The young then coming down with the gentle current find such stones or rubbish as may be in that part of the canals and cling to them. The cock in the pipe from the tank is then turned to shut off the supply of water until as many of the young as possible settle down to their places. Then the first set of gates is raised and the next set is pushed down and the supply again turned on, and so on. The entire apparatus is housed, and has a general incline from the basin toward the last of the compartments.

CLAIMS.

"1. The combination, with the water-tank B, having the pipe *b* and cock *c*, of the basin C, provided in its center with a perforated annular vessel, D, a series of passages formed by the extended sides of the basin and divided by a central partition, and a series of vertically-adjustable gates, G, and canals, constructed as shown, and for the purpose herein set forth.

"2. The basin C, having outlets E, and the annular perforated vessel D, in combination with the canals F, having gates G, adjustable, and rocks or rubbish in their bottoms, and a means for supplying vessel D with a gentle flow of sea-water, substantially as herein described."

No. 263933.

(Marshall McDonald, Washington, D. C., assignor to himself and Stephen C. Brown, of the same place; patented September 5, 1882; method of and apparatus for hatching fish. See Plate CXLVI.)

The object is to provide a method of and apparatus for hatching fish, automatically agitating the eggs, eliminating the small fry as soon as hatched, and separating the bad eggs and old shells, and thereby avoiding the contamination of the sound ones. The eggs are agitated by a forced circulation of water in a closed chamber which is entirely filled with water, taking off the discharge-water and with it the bad eggs (or small fry, as the case may be), at a point central with respect to the body of the chamber, in contradistinction to taking off the bad eggs at the surface by overflow from an open jar. A pipe above supplies water under pressure and of a temperature between 50° and 80° (of what thermometer scale is not stated). Beneath this are the hatching-jar and the

receiver or collector, which together constitute a complete automatic apparatus, but there may be a series. Both the hatching-jar and the collector have two glass tubes. Of these tubes, one in the hatching-jar connects by a rubber tube with the water-supply, and extends to nearly the bottom of the jar, being held in a tubular sleeve in the cover of the jar, axially, but vertically adjustable to regulate and control the agitation of eggs and flow of water according to the necessities of the case, there being two classes of eggs to be operated upon, namely, those which are normally of greater, and those which are normally of less specific gravity than water. In the case of heavy eggs (as of the shad and the white fish), the central tube is pushed down to introduce a current of water at the bottom of the vessel, which buoys up the eggs, and filters through the mass, the dead eggs being, by degrees, carried to the surface and removed as above described. As shown in the drawings, the apparatus is arranged for operation upon eggs which are normally heavier than water. In the case of eggs that are normally lighter than water (as of salt-water fish, such as cod and mackerel), the tube is drawn up to introduce the current of water at the upper part of the vessel which passes out at the bottom, thus reversing the direction of the current. The tube is rendered water-tight in the sleeve by small stuffing-boxes at the top and bottom, which by frictional contact hold the tube to its adjustments against the pressure of the water. The other tube of the hatching-jar is the outlet tube for the water, the small fry, and the bad eggs when it is required to remove the latter. This tube is in a short sleeve in the cover, and which is also provided with a stuffing-box to render it tight, but which permits this tube to be deflected. In constructing the sleeve to permit this deflection, the sleeve and also the removable thimble of the stuffing-box are made of a larger diameter than the tube, and the packing in the stuffing-box is in the nature of a round rubber ring confined between the thimble and sleeve, and large enough to act as a fulcrum for the tube when it is to be deflected. The cover to the jar is held down by a screw-ring upon a gum gasket to form a perfectly tight closed jar. The receiving-jar is provided with a similar tight cover, and has similar tube connections for its tubes, one of which tubes is connected to a tube of jar A by a rubber pipe. The other is the discharge-pipe and opens into any suitable receiver for the waste water. Over the lower end of the discharge-tube is a large filtering bag distended over a cage, the object of which is to secure a discharge from this closed jar commensurate with the inflow without creating a violent suction through the filter, which would injure the young and delicate fish. The jars are preferably of glass. They are also of a cylindrical shape, with rounded or oval internal ends. In practice for heavy eggs, as shown, they are filled about three-fourths full of eggs that have been vitalized with the milt of the male, and the tubes are then adjusted to about the position shown. The constant flow of water under pressure into and out of the closed jar now gives the re-

quired movement to the eggs, and when the fish is freed from its shell it very soon is caught in the current of water passing up the tube, and is thereby transferred to the receiver, where it remains while the water passes out through the strainer. As the eggs are agitated by the current, the bad eggs and the shells, by reason of their less specific gravity, accumulate from time to time on the top of the strata of sound eggs. Now, to get rid of them the rubber tube is disconnected from its glass tube in the collector vessel and its glass tube in the hatching vessel, and is deflected till its end is near them, when the induction of water draws off these eggs, which are thrown away. After the jar has been purged, the pipe is again connected, and the fish are allowed to pass over again.

The inventor says:

"I am aware of the patents to Chase, August 16, 1881, and Wilmot, July 18, 1876, and I do not claim anything shown therein.

"My invention is distinctive with respect to processes described in the foregoing, and especially the Wilmot process, in that he uses an open vessel and separates the bad eggs, which are of less specific gravity, by overflow from an open vessel. I take advantage of the same principle of separating the bad from the good eggs through their different specific gravities. My process is, however, distinct in the following respects: The forced circulation in a closed vessel, and discharging the water from the vessel at a point more or less central to said chamber or below the surface of the water enable me to secure the following important results: First, I am enabled to effect the separation at any point in the jar without change in the water circulation, and thus can treat a very small quantity of eggs in the jar as well as if the jar were filled nearly to the top, as is necessary in Wilmot's invention; secondly, I avoid all slopping over of the water in the jar and avoid waste of eggs, thus permitting my process to be conducted on cars during transportation; thirdly, by taking off the discharging water in the forced circulation at a point more or less central to the jar, I avoid the spattering of the water and damage to the small fry involved in the fall from an overflowing vessel; and, fourthly, this mode of carrying off the water draws the eggs and small fry into its current with a gentle but positive suction whose influence is distributed throughout the jar, while a surface overflow has no effect in eliminating the bad eggs until they get upon the immediate surface.

CLAIMS.

"1. The improved process of automatically separating the bad eggs and small fry from fish-eggs during incubation, which consists in agitating them in a closed chamber filled full of water by means of a forced circulation of the same, and drawing off the discharge-water along with the bad eggs or small fry at a point below the surface of the water, or more or less central with respect to the jar, as described.

"2. A fish-hatching jar composed of closed glass vessel A, a detachable cover, and the inlet and outlet tubes A′ B′, one being adjustable in vertical direction and the other being deflectible, as shown and described.

"3. A collector for the small fry, consisting of a jar or vessel having an inlet-tube and an outlet-tube, with an enlarged or cage filter on its inner end immersed in said jar or vessel, as and for the purpose described.

"4. The combination of the closed hatching-jar A, having tubes A′ B′ for a forced circulation, and the collector B, having connecting-tubes B^2 and *f*, and a discharge-tube, A^2, with a cage-filter, as shown and described."

No. 277805.

(Livingston Stone, Charlestown, N. H.; patented May 15, 1883; fish-egg hatching trough. See Plate CXLVII.)

This device is analogous to the well known "Williamson hatching trough," but differs from it in construction, whereby it can be readily taken apart and folded into a small compass for package or transportation. Instead of having the sides and bottom of solid wood they are of light water-proof fabric or cloth stretched, laid, and fastened on longitudinal bars connecting the wooden ends and partitions of the trough, and confined thereto by cleats and screws. Each partition has a passage through it and is open laterally at top and bottom. Egg-hatching trays are placed in its several larger compartments. The water passing into the trough at one end flows from one compartment to the other and upward through each series of trays and escapes at the other end of the trough, which is notched, to allow the water to pass off at a proper level.

CLAIM.

"The fish-egg-hatching trough, substantially as described, composed of the notched end pieces, four connecting-bars, the series of notched transverse partitions, and the water-proof cloth or fabric and its fastening cleats and screws, arranged and adapted essentially as set forth."

No. 256240.

(Charles N. Orpen, New York, N. Y.; patented April 11, 1882; aquarium. See Plate CXLVIII.)

A tripod stand has a hook in its upper part from which the globe or aquarium is suspended. The globe is of glass and is for holding fish or water plants. It has a projecting threaded nipple on its top to which is screwed a thimble, which has on its upper part an eye by which the globe is suspended from the hook of the tripod stand. On each side of the thimble the top of the globe has oval openings through which a cur-

rent of air is maintained upon the surface of the water, keeping it cool and pure. The openings also permit access to the interior of the globe for filling it with water and for the introduction of the fish or water plants. The upper portion of the stand may be provided with a vase for flowers.

CLAIMS.

"1. In an aquarium, a globe, B, provided with a threaded nipple, and with small openings D, in combination with a thimble, C, substantially as set forth.

"2. In an aquarium, the combination, with a stand, A, provided with a hook, *a*, of the globe B, having the thimble C and eye *c* and the oval openings D, substantially as and for the purposes set forth."

No. 265255.

(John H. Scott, jr., and Albert A. Freeman, Philadelphia, Pa.; patented October 3, 1882; method of preserving oysters and similar shell-fish. No drawing.)

The object is to make oysters and like shell-fish retain their liquors and juices in their shells, preserve them alive for a considerable time, and render them capable of transportation in natural and fresh condition, even without ice. This is to be attained by binding the shells firmly together while the oyster or other mollusk is fresh and alive, by wire made to embrace the shell, or by other clamping device.

The inventor says:

"We are aware of attempts having been made to accomplish the same purpose by dipping in paraffine, wax, &c.; but this fails from the fact that it makes them air-tight, the fact being overlooked that they must have air to be kept alive; also, the method of packing in barrels with concave shell underneath; but a turning of the barrel or package permits the liquor or juice to escape, and they soon die."

CLAIM.

"The method of preparing oysters and other shell-fish for preservation and shipment, which consists in holding the shells thereof firmly clamped together while the animals are in natural condition by means of a binding-wire secured around the same, or equivalent clamping device, substantially as and for the purposes set forth."

No. 295218.

(Fortonato Clemente Zanetti, Bryan, Tex.; patented March 18, 1884; aquarium. See Plates CXLIX and CL.)

The object is to produce an ornamental and attractive suspension aquarium in which the water may easily be renewed. A glass jar has one foot or more formed integral with it. The upper edge of the jar is provided with three thickened lugs perforated to receive hooks at the

ends of chains by which the device may be suspended. The bottom between the legs or at the side is thickened and provided with a conical perforation through which the water may be drained off. For the perforation a ground plug or stopper is provided. This plug, which is of colored glass, porcelain, majolica, or other ornamental material contrasting with the white glass of which the jar is made, has an enlarged head which forms an interior ornament for the aquarium, and which may represent a man or woman, animal, plant, rock, house, or castle, or any desired ornamental object.

CLAIM.

"The herein-described improved aquarium, consisting of the vase or jar with a base support, and provided at its upper edge with the thickened perforated enlargements for the suspending-chains, and having a re-enforced bottom provided with an aperture, and a plug inserted from within the jar and provided with an interior enlarged ornamental head, as set forth."