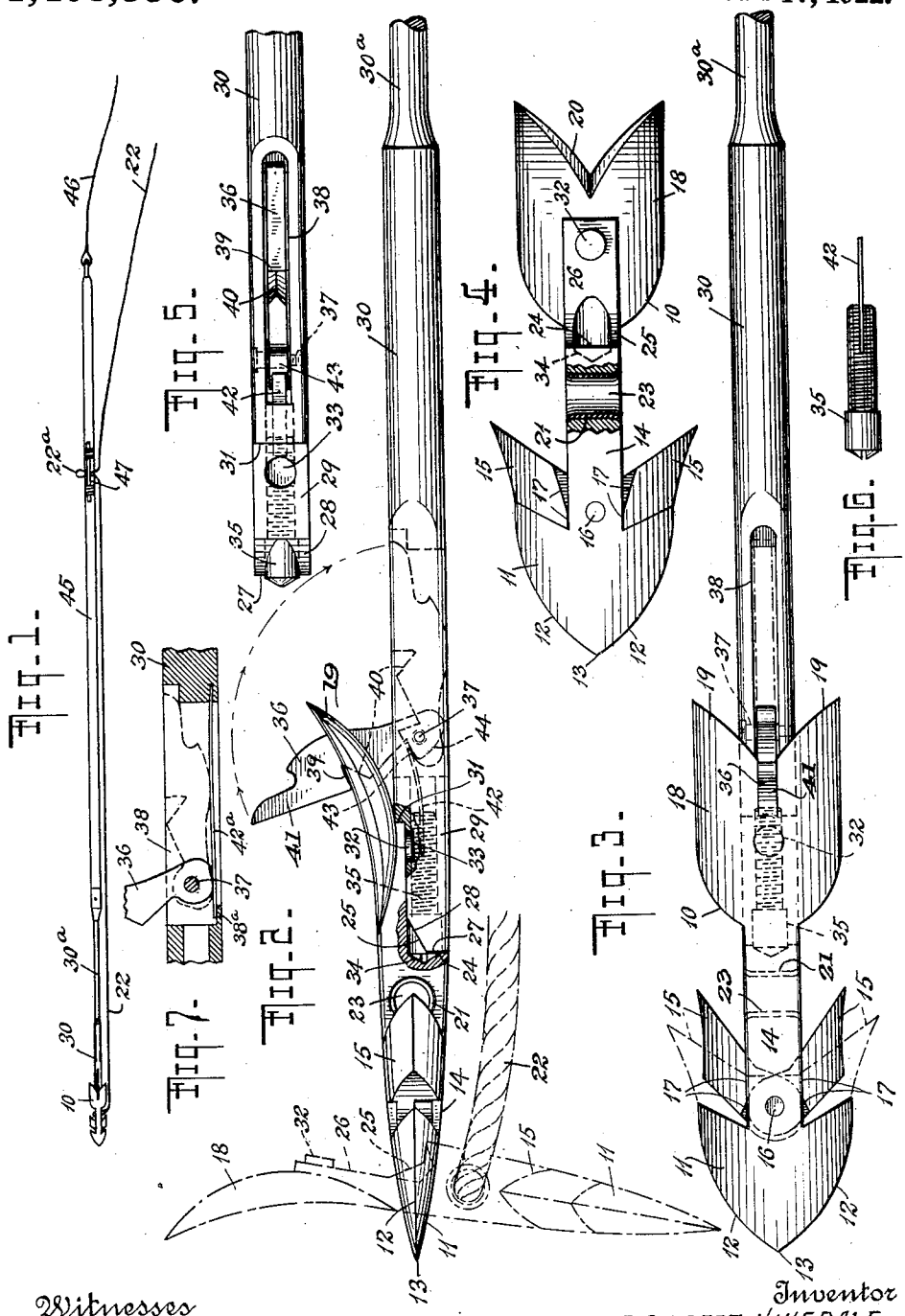
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HARPOON.

APPLICATION FILED FEB. 9, 1921.

1,403,550. Patented Jan. 17, 1922.



Witnesses

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HARPOON.

1,403,550. Specification of Letters Patent. Patented Jan. 17, 1922.

Application filed February 9, 1921. Serial No. 443,537.

To all whom it may concern:

Be it known that I, FRANK GILBERT HINSDALE, a citizen of the United States, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Harpoons, of which the following is a specification.

My invention relates to harpoons and more particularly to that type thereof commonly known as "lily-irons" in which the iron is separated from the pike after having embedded itself in the fish subsequent to the cast. In harpoons of the character set forth, an inherent disadvantage resides in the fact that the connection between the iron and the pike in many cases and from many causes, assumes a temporary permanency sufficient to prevent the separation of the pike from the iron after the latter has become embedded in the fish. This results either in a loss of the fish, a loss of the complete harpoon outfit or a loss of at least a part of said outfit. The particular object of my invention is to provide a simple construction in which the connection between the iron and the pike is such that separation of these parts at the proper time is never interfered with. My invention contemplates further a reduction of the harpoon and particularly of the iron forming part thereof to the utmost simplicity and in such a manner as to reduce or minimize the laceration or cutting of the fish, as much as possible. Other more specific objects of my invention will appear from the description hereinafter and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings which, for illustrative and descriptive purposes, show an example of my invention without defining its limits and in which Figure 1 is a more or less diagrammatic view illustrating the improved harpoon connected with its co-operating rig; Fig. 2 is a side view of the lower end thereof; Fig. 3 is a plan view; Fig. 4 is an inverted plan view of the iron itself; Fig. 5 is a plan view of the end of the pike; Fig. 6 is a detail view of a combined projection and spring forming part of my harpoon and Fig. 7 is a fragmentary view illustrating another arrangement of spring.

As shown in the illustrated example, the harpoon comprises a toggle-iron 10 having a head 11 formed with cutting edges 12 diverging in circular arcs from the point 13, said head 11 forming a continuation of a relatively reduced stem 14 which is recessed to receive the ends of flukes 15. The latter are pivotally connected at 16 with the stem 14 and in their inoperative condition occupy the position shown in Fig. 3 in solid lines, in which all parts of said flukes are located within the confines of the terminal ends of the cutting edges 12. When swung to their operative positions, indicated in dotted lines in Fig. 3, the flukes 15 form outwardly diverging continuations of said cutting edges 12 as illustrated; the flukes are formed with properly-shaped shoulders 17 whereby the pivotal movements above described are rendered possible. The stem 14 preferably terminates in a tail 18 having two outwardly diverging wings 19 curved upwardly in the position shown in Fig. 2 and being bevelled at 20 in the notch or angle formed by the diverging wings 19 for the purpose to be more fully described hereinafter. The toggle-iron is further provided with a transverse opening 21 for the accommodation of the holding line 22 which may comprise any suitable material, such as manila rope or the like; in order to reduce the chafing action upon the line 22 to a minimum and thereby conserve the same against wear, it is preferred to line the transverse opening 21 with a metal sleeve 23 which is held against removal from said opening, for instance, by having its opposite ends flared outwardly and is free to rotate or revolve in said opening 21. The sleeve 23 is of a diameter to fit the line 22 rather snugly so that, under normal conditions, there will be no relative rubbing movements between said line and said sleeve.

The tail end of the stem 14 is reduced to form a lateral shoulder 24 and an inclined face 25 which is continued as a flattened portion 26, as shown in Figs. 2 and 4. The lateral shoulder 24, inclined face 25 and flattened portion 26 of the iron are arranged to fit the end surface 27, the inclined surface 28 and the flattened portion 29 of a pike-member 30 which surfaces and portion are of corresponding form, as shown in Fig. 2; in the preferred construction, the pike-member 30 is formed with a shoulder 31 which, when the parts are combined, is contiguous to the end of the flattened portion 26 of the iron 10. With the arrangement described the iron, when in combina-

tion with the pike-member, forms a terminal continuation thereof with the parts lying flush with the surface of the pike-member, all as clearly illustrated in Figs. 2 and 3. Relative movement lengthwise of the pike is prevented by the co-operation of the shoulder 24 with the end surface 27 and of the end of the flattened portion 26 with the shoulder 31 and also by means of a stud 32 projecting from the flattened portion 26 and extending into a recess 33 formed in the flattened portion 29 of the pike-member; it will be understood that the described arrangement may be reversed or, in other words, that the stud 32 may form part of the pike-member while the recess 33 is formed in the iron. The stud 32 in co-operation with the recess 33 prevents also a separation of the iron from the pike, it being understood that in the preferred form, the stud is of a minimum axial length and the recess of a minimum depth consistent with the functions to be performed by these elements and so as to practically eliminate the possibility of binding thereof. The iron is further provided with a recess 34 extending from the lateral shoulder 24 in a direction toward the point 13 for the reception of a projection 35 extending from the end of the pike-member 30, as shown in Figs. 2 and 5; the end surface of the projection and the inner surface of the recess 34 are made of complementary form so as to fit each other and to prevent a lateral displacement of the iron with respect to the pike-member.

The iron is fixed against unintentional separation from the pike-member during the cast and at other times, when separation is not desired, by means of a trigger-latch 36 which is pivoted at 37 in a recess 38 formed in the pike-member 30, as shown in Fig. 3. The latch 36 is formed with a shoulder 39 and an inclined portion 40 which, together, form a notch, the purpose of which will appear more fully hereinafter and includes further a continuing member 41 which constitutes the free end of said latch. In its inoperative position, the trigger-latch 36 lies entirely within the recess 38, as clearly shown by dotted lines in Fig. 2, and when in its operative location, occupies the position shown by solid lines in Fig. 2, in which it extends between the diverging wings 19 with the shoulder 39 projecting over the tail 18 and the inclined portion 40, lying contiguous to the bevelled surface 20 between said wings. In the operative position of the trigger-latch it therefore projects outwardly beyond the iron 10 and preferably at an inclination toward the point 13. A spring 42, in co-operation with surfaces 43 and 44 of the trigger-latch, serves to maintain the latter in both of its positions and to throw it into these positions after the centre has been passed in each movement of said latch. In the construction shown in Fig. 6, the projection 35 comprises a screw which is screwed into the pike-member 30 from the end thereof and preferably is of sufficient length to reach or almost reach the one end of the recess 38. When made in this form, the inner end of said projection 35 may be split for the accommodation of the spring 42 and in such case, serves as a convenient support for said spring and makes it easily possible to properly combine the latter with the pike-member. Instead of mounting the spring 42 as shown in Fig. 6, the arrangement illustrated in Fig. 7 may be substituted; in this case, the one end of the spring 42^a is set into an end wall of the recess 38 and its other end rests upon a projection 38^a located at the proper point in said recess. With this arrangement, the intermediate, preferably bowed portion of the spring, engages the trigger-latch 36 to control the movements thereof in the same way as hereinbefore described, it being understood that said trigger-latch is suitably formed to properly co-operate with said spring. It will be noted with the described arrangement that the means whereby the iron is locked in casting position is located entirely on the pike-member which therefore must be constructed of a material possessed of a sufficient rigidity and stiffness to properly support said means. I prefer, therefore, to make this pike-member of suitable steel and to secure it to the pike 30^a by brazing, welding or otherwise, it being understood that the pike 30^a is constructed in the usual manner of a metal such as, for instance, Norway iron, which is capable of bending to accommodate itself to whatever exigencies may arise and in the first rush, when the bib-line brings the pole away, to prevent excessive gashing of the fish which might permit the iron to be withdrawn and which, in any case, might damage the fish from a commercial standpoint, and which is capable of being hammered out straight after it has been bent, this being a requirement which is met in existing constructions. The pike 30^a is combined with the customary pole 45 in any convenient manner so as to form a continuation thereof, the pole in turn being connected with the bib-line 46 in the well known way. In the operative condition of the harpoon and prior to the cast, the holding line 22 may be detachably connected with the pole by being passed and held in the form of a bight 22^a between the customary clamping device 47 located at an intermediate portion of the pole in the well known way.

In utilizing my invention, the iron is connected with a pike and its pole by inserting the projection 35 into the recess 34 and causing the stud 32 to enter the recess 33, these operations bringing the end surface 27, in-

clined surface 28 and flattened portion 29 of the pike-menber 30 into surface engagement respectively with the lateral shoulder 24, inclined face 25 and flattened portion 26 of the iron, thus bringing the parts into the position illustrated in Figs. 2 and 3. It will be understood that the bib-line 46, having its one end connected to the pole 45, has its other end fastened to a suitable part of the front or bow of the fishing boat in the usual way and that the holding line is connected with the pole in the manner hereinfore set forth and with the customary float on keg in the well known way. The toggle-iron 10 is locked in the position shown in Figs. 1, 2 and 3 by bringing the trigger-latch 36 to a position in which the shoulder 39 thereof extends over the tail 18 at a point between the diverging wings 19 thereof. It will be noted that in this condition of the parts, the continuing member 41 of the latch occupies a forwardly-inclined position or, in other words, rakes forwardly, as indicated in the drawings. The casting or throwing of the harpoon is done in the usual way to cause the iron to embed itself in the fish. As the iron penetrates into the fish, the member 41 will finally contact therewith and by the continued penetration, whereby a rearward pressure is applied to said member 41, will pivotally swing the trigger-latch 36 in a direction toward the recess 34, into which said trigger-latch is snapped by the action of the spring 42 upon the surface 43. After the trigger-latch has been released as described, the pressure of the flesh of the fish upon the upper surface of the toggle-iron has a tendency to maintain the latter in connection with or in position upon the pike-member 30 as long as the motion of the harpoon with respect to the fish is progressive. As soon as forward progression is arrested or, in other words, when maximum penetration resulting from the throw has been reached, the toggle-iron 10, by the action of the fish itself, will be caused to pivotally swing upon the holding line 22 or, more specifically, upon the metal sleeve 23 thereof to approximately the position shown in dotted lines in Fig. 2. This pivotal movement of the toggle-iron removes the stud 32 from the recess 33 and thereby disengages the recess 34 and the projection 35, whereby said iron is completely separated from the pike, or rather from the pike-member 30. Because of the relatively small dimensions of the stud 32 and recess 33 and of the projection 35 and recess 34, movements of comparatively slight extent are only required to bring about the complete separation of the iron from the pike so that the possibility of binding, when separation is essential, is obviated. After having been pivotally swung, as described, the iron occupies a position in the fish in which it holds against withdrawal under such strains as are ordinarily existent because of the efforts of the fish to escape. As the latter darts off with the embedded iron, the bight 22^a will be pulled from beneath the clamping device 47 and the holding line 22 thus detached from the pole 45; the latter, with its pike 30^a and pike-member 30 and the parts mounted thereon is recovered by simply drawing in the bib-line 46.

It will be seen that the action of the trigger-latch 36, when in its operative position, is such as to positively prevent any disengagement of the stud 32 from the recess 33 and the projection 35 from the recess 34, despite the comparatively small dimensions of these parts, the iron being firmly secured to the pike-member until the trigger-latch is released, as described, whereupon separation of the iron from the pike-member is quickly and positively accomplished. Loss of the fish or loss of the complete outfit or any part thereof, due to the fact that the pike fails to separate from the iron at the required moment, is thus absolutely done away with and the efficiency of the harpoon and more particularly of the iron as a medium for catching and holding the fish, is increased to a maximum extent. The construction, because of its simplicity and the absence of any complicated elements, is extremely positive in action and may be produced at a very low cost and without the necessity for any specially skilled labor.

It will be understood that while the form of iron illustrated in the drawings is the preferred form, other types of irons may be combined with the pike-member 30 and the trigger-latch 36 and their co-operating parts in an equally efficient manner by means of my improved arrangement.

Various changes in the specific form shown and described may be made within the scope of the claims without departing from the spirit of my invention.

I claim:

1. A harpoon comprising a pike, a toggle-iron detachably connected therewith, a locking member movably mounted on said pike for fixing said toggle-iron thereon and arranged to be disengaged therefrom by contact with the fish to release said toggle-iron and means for maintaining said locking member in its operative position and in its inoperative position.

2. A harpoon comprising a pike having a recess therein, a toggle-iron detachably fitted upon the end of said pike, a trigger-latch pivotally mounted in the recess of said pike and adapted to lock said toggle-iron upon said pike, said trigger-latch being disengaged therefrom by contact with the fish to release said toggle-iron and a spring within said recess arranged, after a predetermined point in the movements of the trigger-latch

has been passed, to throw said trigger-latch to its operative position and to an inoperative position in which it lies entirely within said recess.

3. A harpoon comprising a pike having a recess, a toggle-iron, complemental surfaces on said pike and toggle-iron whereby the latter is detachably fitted upon the end of the former, co-operating projections and recesses on said pike and toggle-iron whereby the operative relation of the two is maintained, a trigger-latch pivoted in the recess of said pike and adapted to engage said toggle-iron to fix it upon said pike, said trigger-latch being disengaged from said toggle-iron by contact with the fish, a spring in said recess and means on said trigger-latch co-operating with said spring, after the center has been passed in the movements of the trigger-latch, to throw said latch into its operative position and into an inoperative position in which it lies entirely within said recess.

4. In a harpoon, the combination of a pole, a flexible pike extending from an end thereof, a pike-member of rigid, inflexible material forming the outer terminus of said flexible pike, a toggle-iron detachably fitted upon the free end of said rigid pike-member and a locking device carried by said rigid pike-member and arranged to engage said toggle-iron to lock it upon said rigid pike-member.

5. A harpoon comprising a pike, a toggle-iron detachably connected therewith and provided with a transverse opening, a sleeve rotatably fitted in said opening and a casting line fastened to said toggle-iron by passing through said sleeve and filling the latter with sufficient snugness to prevent relative rotative movements between said sleeve and line under normal strains.

In testimony whereof I have hereunto set my hand.

FRANK GILBERT HINSDALE.