July 19, 1949. H. ALVIK ET AL 2,476,348

RETRACTIBLE ANCHOR

Filed Nov. 6, 1947

2 Sheets-Sheet 1

Fig. 1.

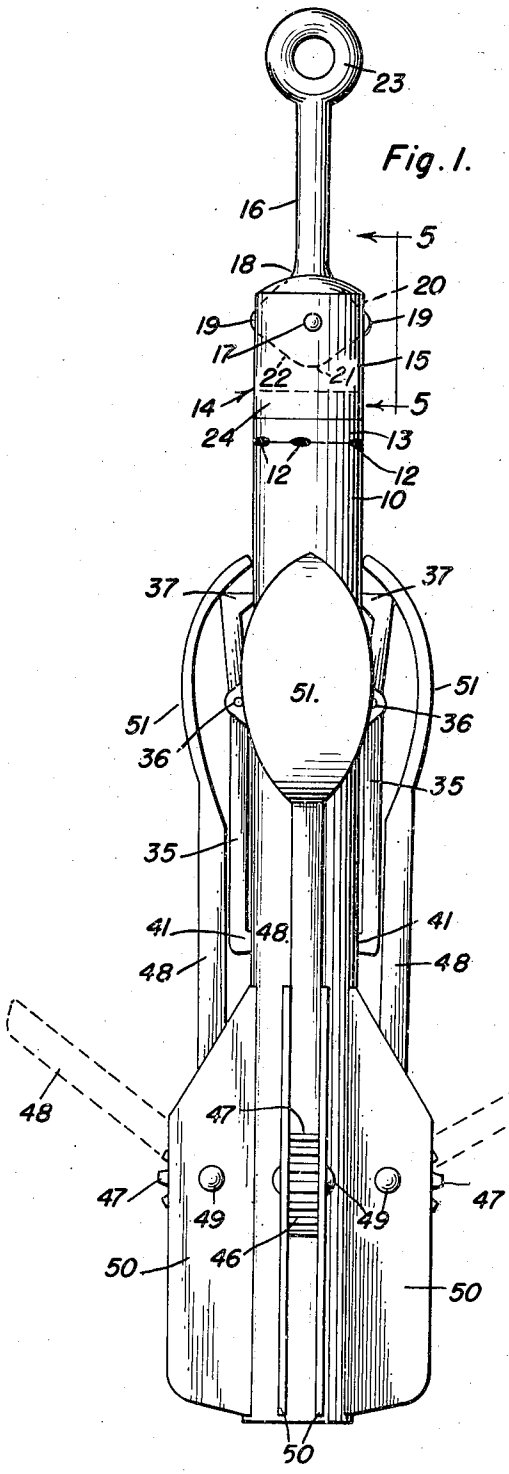


Fig. 4.

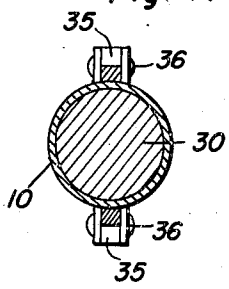
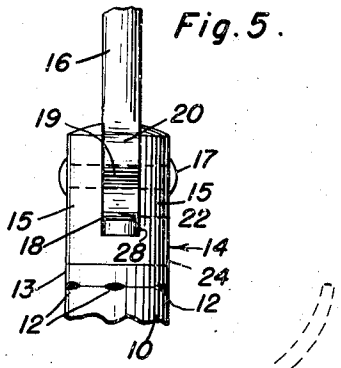


Fig. 5.



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Fig. 2.

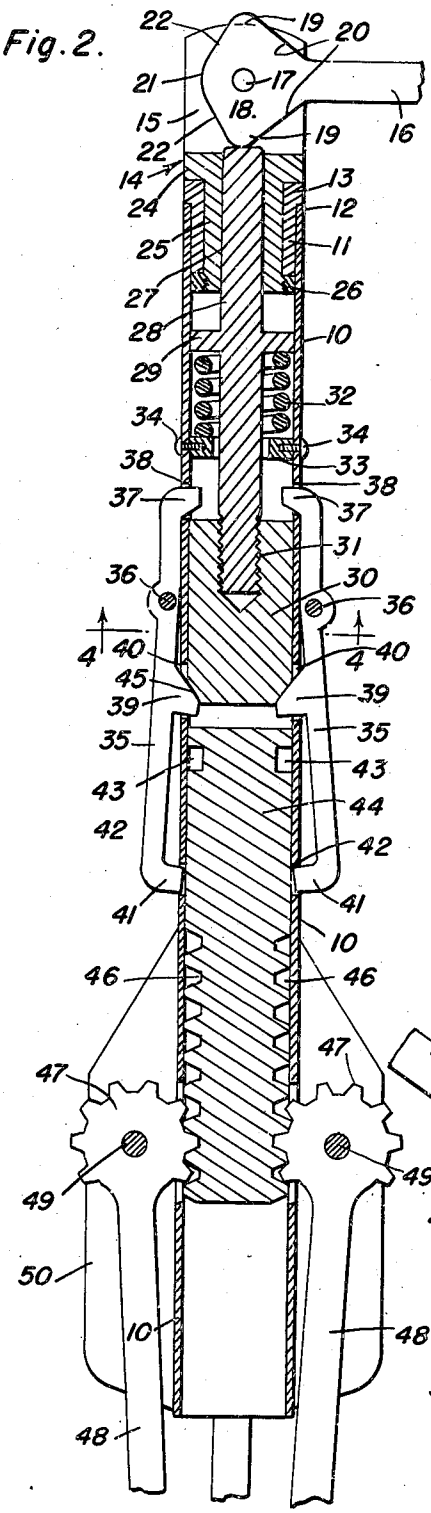
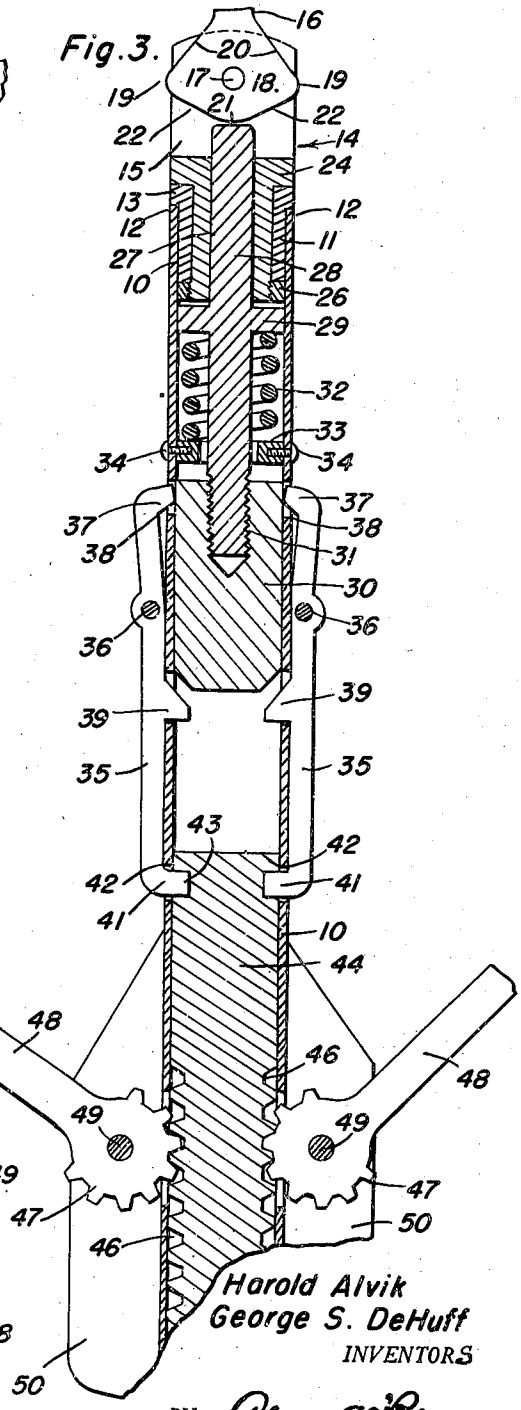


Fig. 3.



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RETRACTABLE ANCHOR

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Application November 6, 1947, Serial No. 784,379

6 Claims. (Cl. 114—208)

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This invention relates to anchors, and more particularly to a retractible or disengaging anchor. The object of the invention is to provide a novel, simple and positively acting anchor having swingable or foldable flukes adapted to be locked in their grappling position and also, adapted to be tripped or released from such position as to readily lose their anchoring hold when it is desired to hoist the anchor.

As most bodies of water have a muddy bottom with all kinds of trash, wire, roots, rocks, weeds, tree trunks, seaweed and so forth that make it difficult at times and almost impossible to weigh or pull in the anchor after it has become imbedded, the object of the present invention is to provide an anchor having means for holding the flukes thereof in anchoring or operating position and at the same time, to permit convenient tripping or release of the flukes, so that they will pull down when the anchor rope or chain is pulled, streamlining the device so that it may be readily released from anchoring position or disengaged, and pulled aboard a boat.

Another object of the invention is to provide a novel releasable holding means for the flukes when in engaging position to give a grappling or holding action, while at the same time, permitting convenient release thereof to allow the flukes to swing down into streamlined position to release the hold thereof so as to permit the anchor to be readily weighed or pulled in, and yet avoid accidental release of the trip and flukes held thereby except when the rope or chain is pulled in a position between an angle of 30 and 90 degrees from the normal axis or lengthwise dimension of the anchor, preferably by pulling the boat by the anchor rope or chain, or propelling the same to a position over or to one side nearly right angled to the body of the anchor and then pulling on the rope or chain so as to release the catch or trip device holding the flukes in grappling position so as to drop down and release their hold. However, the flukes may again be folded against the anchor body or stock to occupy a compact space when not being used.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevation of a retractible anchor constructed in accordance with the invention.

Figure 2 is a central vertical longitudinal sectional view thereof showing the flukes swung down in position to release the anchor.

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Figure 3 is a view similar to Figure 2, but showing the flukes in a grappling position.

Figure 4 is a sectional view taken on the line 4—4 of Figure 2, and

Figure 5 is a fragmentary side elevation taken in the direction of the line 5—5 of Figure 1.

Referring to the drawings in detail, the anchor is shown as comprising a body, stock or shank including a tubular body 10 in the upper end of which is received a collar or sleeve 11 which is relatively long and is provided with a reduced portion on which the end of the tubular body may be welded as indicated at 12 adjacent to an annular flange 13 formed by recessing the collar 11 therebeneath. The collar is designed to turn on a swivel block 14 having spaced ears 15 produced by the forked upper end of the swivel block in which an arm 16 is pivoted at 17, the arm having a head 18 with a cam formation providing opposite projections 19 with inclined surfaces 20 extending from the arm and a rounded bottom portion 21 with flat surfaces 22 extending to the rounded projections 19 at the sides, all of the surfaces 20 and 22 being flat and permitting actuation by swinging the arm in opposite directions. The arm may have an eye 23 at its free end, for attachment of a chain or cable. The swivel block 14 has an annular flange 24 at the top and a reduced sleeve portion 25 forming a bottom shoulder which fits against the upper end of the collar 11 so that the two may turn relatively, while attachment and retention of the sleeve 25 in the collar 11 or the latter on the former, after the parts are assembled, so as to prevent withdrawal of the swivel block, is provided by means of an annular nut or collar in the form of a ring 26 threaded on the lower end of the sleeve 25 against the lower end of the collar 11. By this means, the swivel block and arm 16 can make a three hundred sixty degree turn with respect to the body, sufficient clearance being provided between the sleeve 25 and the collar 11 to permit free turning while preventing the sleeve from being withdrawn.

The sleeve 25 is provided with a central bore 27 axially thereof, to receive a plunger 28 which is provided between its ends with an annular flange 29 movable within the tubular body 10 and having its lower end externally threaded for engagement with an internally threaded socket centrally or axially in the upper end of an enlargement 30 provided on the plunger or formed integral therewith, though shown with the threaded

connection 31. A spring 32 is provided between the bottom of the flange 29 and a ring or collar 33 secured within the tubular body 10 as indicated at 34, so as to exert upward tension on the plunger 28 and its head or enlargement 30. The tubular body 10 is also provided on diametrically opposite sides, with locking levers 35 pivoted near their upper ends as indicated at 36 at diametrically opposite points to the tubular body 10 and having inwardly directed ends or catches 37 designed to extend through openings 38 in the tubular body beneath the collar 33. The upper arms of the levers 35 are shorter than the lower arms and the longer arms are provided with bevelled catches 39 which extend through openings 40 in the tubular body 10 at diametrically opposite points beneath the openings 38 and the enlargement or head 30. The lower ends of the levers or longer arms thereof are also directed inwardly to form catches 41 adapted to extend through openings 42 in the tubular body 10 below the openings 40 to engage notches or an annular groove 43 in a plunger 44 spaced from head 30 and movable in the lower portion of the tubular body 10. The lower end of the enlargement or head 30 is provided with a wedge-shaped point or tapered end 45 adapted to engage the bevelled upper edges of the catches or locking dogs 39 so that when the levers are engaged with the plunger 44 as shown in Figure 3 of the drawings and the plunger 28 is forced downwardly, the bevelled end or wedge-shaped point 45 will engage the projections 39 and release the lower ends 41 of the levers from the groove 43 of the plunger 44 when the arm 16 is pulled at right angles. Diametrically opposite points of the plunger 44 are provided with rack teeth 46 to engage pinions 47 on the enlarged pivoted ends of flukes 48 pivoted at 49 between bifurcations or jaws 50 provided on the lower end of the tubular body 10, so that when the plunger 44 moves downwardly, the flukes 48 will be swung upwardly against the tubular body in the manner shown in Figures 1, 2 and 3 of the drawings. This action is caused by swinging the arm 16 at right angles from the position shown in Figure 3 to the position shown in Figure 2, causing the projections 19 between flat surfaces 22 and 20 to force the plunger 28 downwardly against the spring 32 while permitting the arm 16 to turn in an arc of three hundred sixty degrees. When the projections 39 are released from the groove 43, the anchor drops down over the plunger 44 or the latter rides upwardly in the tubular body 10 so as to swing the flukes 48 downwardly as shown in Figure 2, to an extended retractible or releasing position whereby the flukes are disengaged from their anchor hold. Thus, more certainty of the anchor holding under extreme conditions, with greater strength and no chance of tripping the latches, is possible, unless the anchor rope or chain is pulled at nearly right angles to the body of the anchor thus pulling the arm 16 until the cam 18 contacts with the plunger 28 at its upper projecting end as seen in Figures 2 and 3 of the drawings, moving the locking block formed by the head or enlargement 30 to release the projections 39 from the groove 43 and permitting the adjacent end of the locking block, head or enlargement 30, to move in further spaced relation with respect to the adjacent or upper end of the plunger 44 and releasing the latter from the ends 41 by swinging the lower ends and longer arms of the levers 35 outwardly on the pivots 36 by the cam action thus provided. However, when the ends 41 engage the groove 43, the flukes

are locked in the "up" position for grappling or holding the anchor, as indicated in Figure 3 and the flukes are provided with flat blades or hooks 51 to obtain a good hold or purchase at the bottom of the body of water or stream. When the flukes are thus held in service position and locked out, the arm 16 is held on an angle of approximately thirty degrees from the axial center or may extend upwardly in line with the axis as indicated in Figures 1 and 3, or thirty degrees at either side of the center by contact of the plunger 28 and the pressure caused by the spring 32 against the flat sides 22 of the cam 18, thus holding the arm 16 always in position or so that it can be turned to a position for the pull which will release the flukes and free the anchor by pulling at nearly right angles to the body of the anchor to release the flukes so that they can drop down to a streamlined position as indicated in Figure 2.

In order to release or disengage the anchor and permit the latter to move to its disengaging or retractible position, the boat is pulled as by means of the anchor rope or chain or is propelled to a position over or to one side at nearly right angles to the body of the anchor and given a hard pull, so as to release the levers 35 and the plunger 44 to permit the flukes to drop down into releasing position. Otherwise, the flukes will be held in anchoring or grappling position and will not be released except in the manner stated, thereby positively holding the anchor in engaging or anchoring position except when it is desired to release the same and weigh or pull in the anchor after it has become imbedded. In other words, the locking block, enlargement or head 30, normally holds the plunger 44 down but when the levers 35 are disengaged by pull on the arm 16 through the medium of the cam 18 and plunger 28 against the action of the spring 32, at projections 39, this causes or permits the plunger 44 to move upwardly by the leverage of the anchor flukes or hooks and weight thereof when a pull is exerted on the whole anchor shank or body and as the rack plunger moves up, the anchor flukes or hooks move down and with continued pulling on the anchor rope or chain, straighten out to release them from anything that they may have become imbedded in or with. Of course, any number of flukes or hooks may be provided, four being shown in the drawings, but it is obvious that three or more may be used as may be found practical and necessary in the particular anchor in question, depending upon its use. Otherwise, when the anchor is set, in anchoring or grappling position, no amount of pull on the anchor rope or chain will disengage the anchor by releasing the rack plunger and permitting the flukes or hooks to drop unless it is pulled at almost a right angle with the anchor body length while the anchor is imbedded or between thirty and ninety degrees, thus providing a positive anchor but one which may be readily released to move to a folded, disengaged or retractible position when desired.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention what is claimed as new is:

1. A retractible anchor comprising an anchor

body, a plunger movable in the body and normally held in projecting position, a locking block formed at the lower end of the plunger, levers engaged above the block and beneath the same, a rack plunger in the body also engaged by the levers, and flukes operatively connected to the rack body to swing downwardly when the rack body is released, downward movement of the block causing release of the levers from the rack plunger.

2. A retractible anchor, comprising an anchor body, a plunger movable in the body and normally held in projecting position, a locking block formed at the lower end of the plunger, levers engaged above the block and beneath the same, a rack plunger in the body also engaged by the levers, and flukes operatively connected to the rack body to swing downwardly when the rack body is released, downward movement of the block causing release of the levers from the rack plunger, said rack body being held by the levers by upward swing of the flukes.

3. A retractible anchor, comprising an anchor body, a plunger movable in the body and normally held in projecting position, a locking block formed at the lower end of the plunger, levers engaged above the block and beneath the same, a rack plunger in the body also engaged by the levers, and flukes operatively connected to the rack body to swing downwardly when the rack body is released, and an arm having a cam member cooperating with the plunger for the purpose of releasing the levers by pressure on the plunger.

4. A retractible anchor, comprising an anchor body, a plunger movable in the body and spring-held in projecting position, a locking block formed at the lower end of the plunger, levers engaged above the block and beneath the same, a rack plunger in the body also engaged by the levers, and flukes operatively connected to the rack body to swing downwardly when the rack body is released, said rack body being held by the levers by upward swing of the flukes, and an arm adapted for connection with an anchor cable or chain having a cam thereon adapted to engage the plunger first mentioned to force the latter downwardly against the action of the spring to release the levers, engagement of the cam with the plunger permitting upward movement of the rack plunger.

5. A retractible anchor comprising a tubular body, a collar in the body, a sleeve retained in the collar and swivelled therein, an arm pivoted on the sleeve and having camming surfaces, a plunger axially movable in the sleeve, spring means in the tubular body acting against the plunger to hold the latter projected for engagement by the cam, locking levers pivoted on the tubular body and operating through openings therein, said plunger having a locking head with a tapered end to engage projections of the levers

to release the latter, a rack plunger movable in the tubular body below the locking head, and flukes pivoted on the tubular body and having pinions in engagement with the rack plunger to swing downwardly from grappling position to release position upon release of the levers and upward movement of the rack plunger with respect to the tubular body.

6. A retractible anchor comprising a tubular body having a plurality of diametrically opposed openings therein in spaced relation longitudinally of the body, a swivel block mounted to turn in an angle of 360 degrees in one end of the tubular body and retained from displacement relative thereto, said swivel block having spaced apertured ears, an arm having means for connection with an anchor cable or rope and having a cam end with opposite rounded projections and flat surfaces, pivoted between the ears of the swivel block and adapted to swing from a position in line with the block axially to a position at right angles thereto, a plunger movable axially through the swivel block and having an annular flange within the tubular body, a spring held in the body and acting against the flange to project the plunger, an enlarged locking head on the lower end of the plunger and having a tapered end and normally held up by the spring with the plunger, levers pivoted upon opposite sides of the tubular body and having projections at its ends and intermediately to engage the head and to enter the openings of the tubular body, a rack plunger in the lower portion of the tubular body separated from the locking head of the first plunger and having a groove to receive the projections of the levers at their lower ends to hold the rack plunger down, flukes pivoted to the sides of the body and having pinions engageable with the teeth of the rack plunger to hold the flukes upwardly or outwardly in anchoring position and adapted upon release of the lower projections of the levers from the groove to permit the rack plunger to move upwardly and cause the flukes to swing downwardly in streamline position along the direction of the sides of the tubular body upon swinging the arm to cause its cam surfaces to engage the first plunger at one side of the cam or the other, to release the flukes from grappling or holding position whereby the anchor may be weighed or pulled in by release from its imbedded holding position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
780,039	Hurley	Jan. 17, 1905
1,782,449	Siebert	Nov. 25, 1930