J. SWANEY.

SHIP RAISING APPARATUS.

APPLICATION FILED MAY 4, 1920.

1,373,574. **Patented Apr. 5, 1921.**

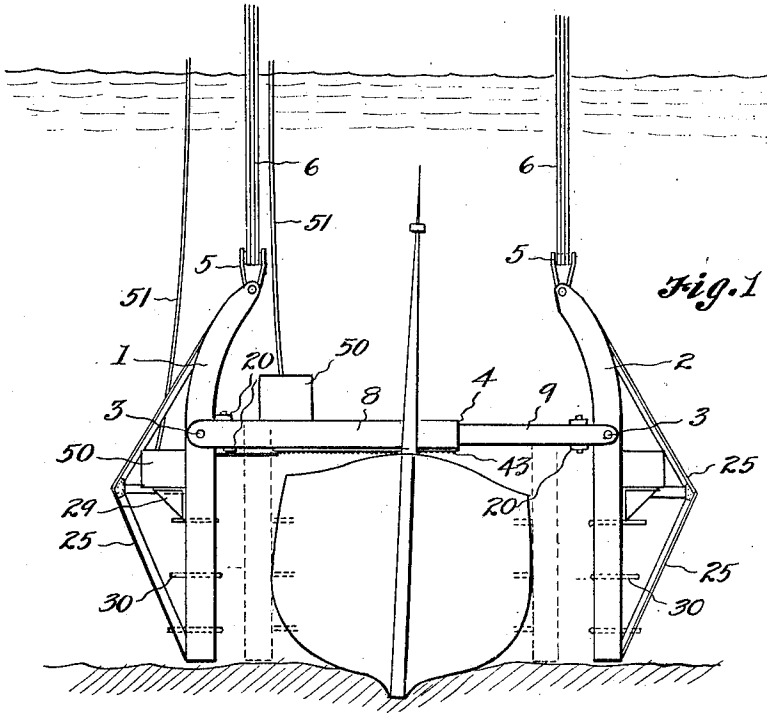


Fig. 1

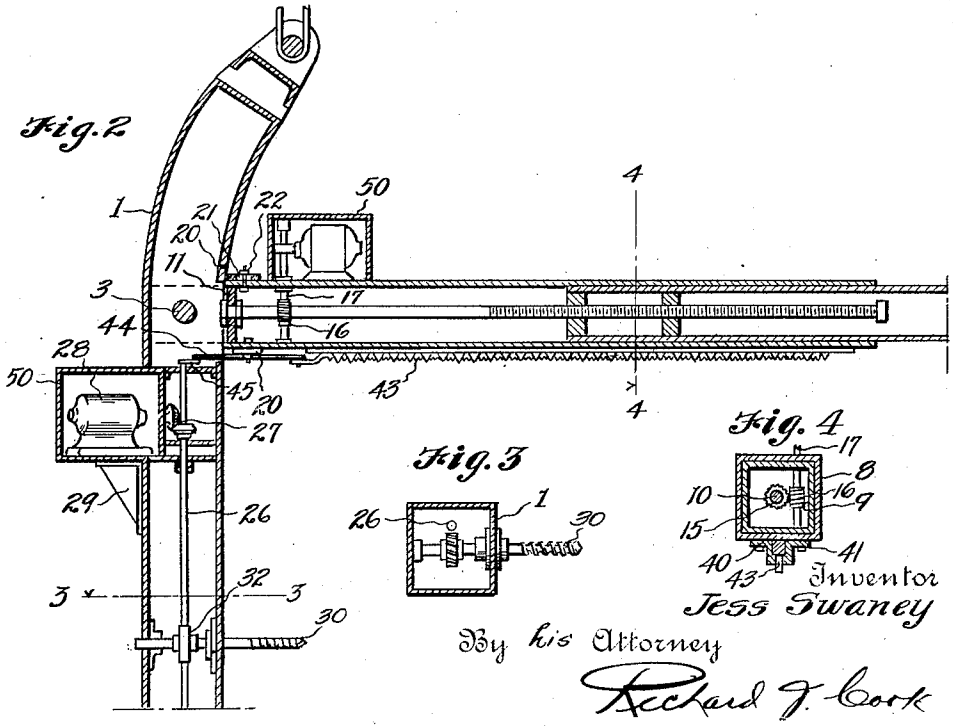


Fig. 2

Fig. 3

Fig. 4

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SHIP-RAISING APPARATUS.

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To all whom it may concern:

Be it known that I, JESS SWANEY, a citizen of the United States, and resident of the city of Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Ship-Raising Apparatus, of which the following is a specification.

This invention relates to ship raising, or salvaging devices, and more particularly to devices of that character that may be used after the fashion of grappling hooks for gripping and raising sunken vessels; the principal object of the invention being to provide a device of the above character which may be lowered to any depth and attached to a sunken vessel without the aid of divers, and without necessitating any previous dredging to permit the device to get in gripping contact with the vessel.

It is also an object of the invention to provide a device of this character, comprising paired lifting arms, adapted to engage opposite sides of a vessel, and which are connected by a telescopically adjustable beam which permits the application of the device to vessels of different sizes and permits expansion of the device sufficiently that its placing over a sunken ship is made easy.

A further object of the invention resides in the provision of a cable cutting device which may be used to remove any obstruction in the way of proper setting of the lifting arms and cross beam about a ship.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 illustrates the application of a ship raising device, constructed according to the present invention, to a sunken ship; showing in full lines the device in expanded position as it is lowered about a ship, and in dotted lines showing the lifting arms moved against the opposite sides of the ship.

Fig. 2 is an enlarged sectional view of a part of the cross beam and one end of the lifting arms, particularly illustrating the means for telescoping the cross beam sections, and for operating the lifting and boring drills, also showing the cable cutter on the cross beam.

Fig. 3 is a transverse section, through the lifting arm, taken on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section through the telescoping members of the cross beam, on the line 4—4 of Fig. 2.

Referring more in detail to the several views of the drawings, wherein like reference numerals designate like parts—

1 and 2 designate paired lifting arms, which are pivotally mounted by connecting pins 3, in vertical, spaced apart relation at the opposite ends of a connecting or cross-beam 4, which is attached to the said arms slightly above or near their longitudinal center in such manner that their lower ends may swing toward or from each other.

The upper ends of the arms 1 and 2 are preferably curved toward worm gear wheel 16 on a vertically mounted shaft 17 that has driving connection with an electric motor 18 supported upon the cross beam.

With this construction it is apparent that the motor may be operated to revolve the screw to move the beam sections inwardly or outwardly to effect a desired spacing of the lifting arms.

Fixed to the cross beam on its upper and lower sides and near its opposite ends, are cross bars 20 provided with slots 21 therein, extending in the direction of the beam, through which bolts 22 are extended to fix the bars to the beam at any distance, within the limit of the slots 21, from the inner sides of the lifting arms, so that the swing of their lower ends inwardly or outwardly may be limited thereby.

It is also desired that the lifting arms be strengthened and braced by truss structures indicated at 25, placed on the outside of the arms to brace their ends against outward pressure.

Extending vertically within each of the lifting arms, below its point of attachment with the cross beam, is a drill driving shaft 26, which is operatively connected at its upper end through gearing, as indicated at 27, with an electrically driven motor 28, supported from the arm by means of bracket members 29.

Also mounted at vertically spaced intervals within the arm below the motor are drill shafts 30 which have their drilling ends extending inwardly from the arms. These drill shafts are each connected by suitable driving gearing, as indicated at 32, with the motor driven shaft 26 and have any desirable automatic advancing mechanism connected therewith whereby they may be moved inwardly during a drilling operation.

Mounted for reciprocation on the under side of the beam section 8, between guides 40 and 41, is a saw 43, which is connected by means of a pitman 44 with a crank arm 45 on the upper end of the shaft 26, so that, as the latter revolves the saw will be actuated to cut any obstruction that may be in the way of lowering the device over the body of a vessel.

The electric motors used in the device are all to be incased in water tight housings, 50, and are supplied with electricity through cables 51, which lead therefrom to the vicinity of the hoisting apparatus.

Assuming that devices of this character are so constructed, in using the same to lift a sunken vessel, they are taken on barges or the like, to the point directly above the sunken vessel, and, with the lifting arms expanded, are lowered about the vessel, as shown in Fig. 1. The motor 18 is then started to draw the arms, 1 and 2, against opposite sides of the vessel, and when this has been done, the motor 28 is started to turn the drill shafts 26 to drive the drills 30 into the walls of the vessel to serve as lifting members. The entire device is then raised by the cables 6 until the vessel can be towed to shore.

It is apparent that when lifting is being done, the inwardly curved upper ends of the lifting arms serve to clamp the inner ends against the ship to prevent any possible slipping out of the lifting drills.

It is also apparent that, should cables or ropes between the masts of the vessel obstruct the proper placing of the device, these will be quickly cut by the saw provided on the under side of the beam 4.

The advantage of such a device over others now in use, is that it may be used to salvage ships from any depth and does not require divers to place, or fasten the device to the ship. No previous preparation about the vessel is necessary, such as dredging or placing cables about the vessel, as the arms are of such a character that effective gripping may be had on a vessel without the necessity of extending them beneath the body.

Having thus described my invention, what I claim as new therein and desire to protect by Letters Patent, is:

1. A ship raising device of the character described, comprising a telescoping cross beam, vertically disposed lifting arms pivotally fixed intermediate their ends to opposite ends of said beam, means for adjusting the beam sections to move the lifting arms toward or from each other, and means at the upper ends of said arms for attachment to hoisting cables, for the purpose set forth.

2. In a ship raising device of the character described, a cross beam comprising telescoping sections, lifting arms pivotally mounted at opposite ends of said beam in vertically disposed position and adapted to be lowered with the beam along opposite sides of a ship; said arms having inwardly curved upper ends, and having lifting members at their lower ends adapted to be brought into engagement with the ship walls, means for adjusting the beam sections to move the lifting arms and members against the ship and means at the upper ends of the arms for attachment to hoisting mechanism.

3. In a ship lifting device of the character described, a telescopically adjustable cross beam, vertically disposed lifting arms pivotally fixed intermediate their ends to the opposite ends of said beam and adapted to be lowered along opposite sides of a sunken ship, drill shafts mounted in the lower portions of the lifting arms adapted to be extended in an inward direction therefrom, means for adjusting the length of the cross beam to move the lifting arms against opposite sides of a ship, means for driving and extending the drill shafts to enter the ship walls, and means at the upper ends of the lifting arms for attachment to lifting cables, for the purpose set forth.

4. A ship raising device of the character described, comprising two telescoping sections forming a cross beam, said sections having cross heads fixed therein, vertically disposed lifting arms pivotally fixed intermediate their ends to the opposite ends of said cross beam and adapted to be lowered therewith to opposite sides of a sunken ship, an adjusting screw revolubly fixed at one end in one of said cross heads and threaded through the other cross head, means for rotating the screw to adjust the sections to move the lifting arms from or against the ship, means at the lower ends of said arms for lifting engagement with the ship, and means at the upper ends of said arms whereby attachment may be made with hoisting or lowering cables.

5. A ship raising device of the character described, comprising two telescoping sections forming a cross beam, said sections having cross heads fixed therein, vertically disposed lifting arms pivotally fixed intermediate their ends to the opposite ends of said cross beam and adapted to be lowered therewith to opposite sides of a sunken ship, an adjusting screw revolubly fixed at one end in one of said cross heads and threaded through the other cross head, means for rotating the screw to adjust the sections to move the lifting arms from or against the ship, a plurality of drill shafts mounted at vertically spaced intervals in the lower ends of the lifting arms and adapted to be advanced inwardly therefrom, a shaft for driving and advancing said drills into a ship wall, an inclosed electric motor for driving

said shaft and means attached to the upper ends of said arms for lowering or raising the device.

6. A ship raising device of the character described, comprising two telescoping sections forming a cross beam, said sections having cross heads fixed therein, vertically disposed lifting arms pivotally fixed intermediate their ends to the opposite ends of said cross beam and adapted to be lowered therewith to opposite sides of a sunken ship, an adjusting screw revolubly fixed at one end in one of said cross heads and threaded through the other cross head, an inclosed motor, operatively connected with the screw to rotate the latter to adjust the length of the cross shaft to move the lifting arm from or against a ship, drill shafts revolubly and extendibly mounted in the lower ends of the lifting arms, an inclosed motor operatively connected with said drill shafts to drive and extend the same into a ship wall, and means at the upper ends of the lifting arms for connecting the device with hoisting apparatus.

Signed at Seattle, Washington, this 26th day of April, 1920.

JESS SWANEY.