

C. W. EVELETH.
SALVAGE APPARATUS.
APPLICATION FILED MAY 3, 1920.

3 SHEETS—SHEET 1.

WITNESS
M. E. Lessin

INVENTOR
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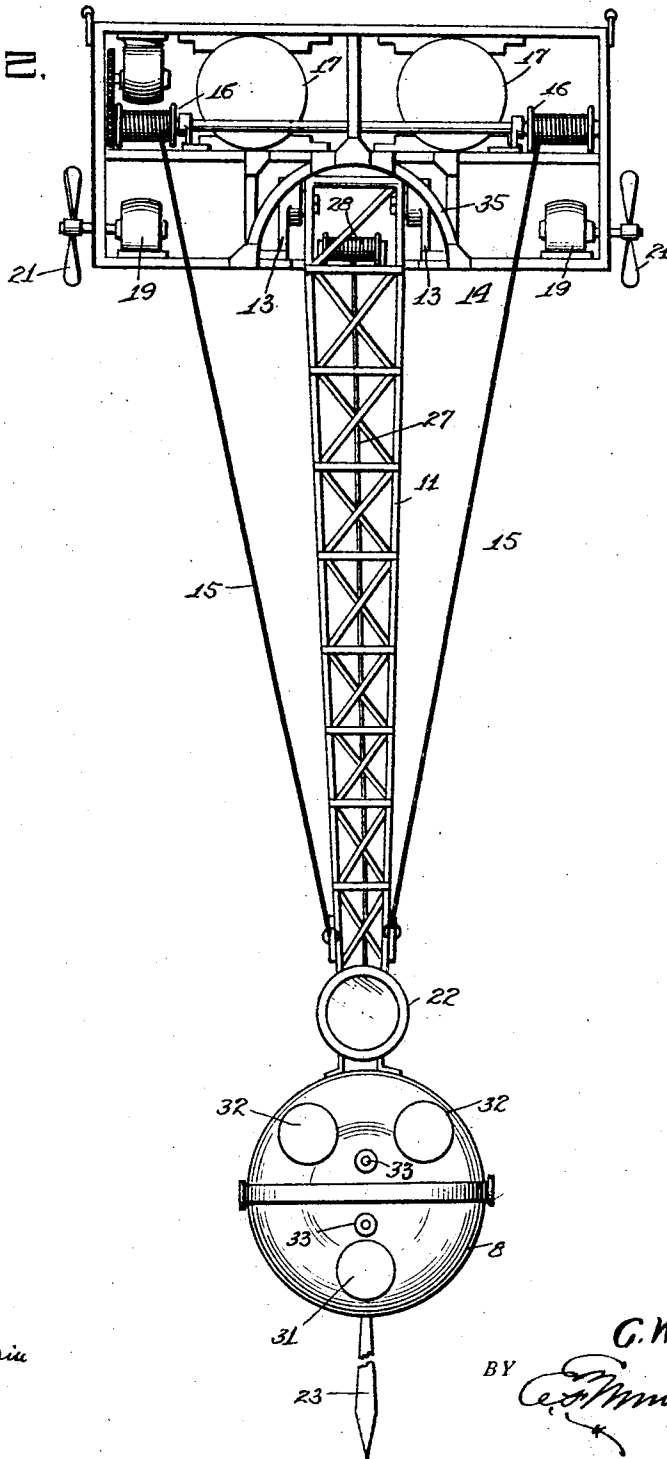
1,409,690.

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Patented Mar. 14, 1922.

3 SHEETS—SHEET 2.

FIGURE 2.



WITNESS
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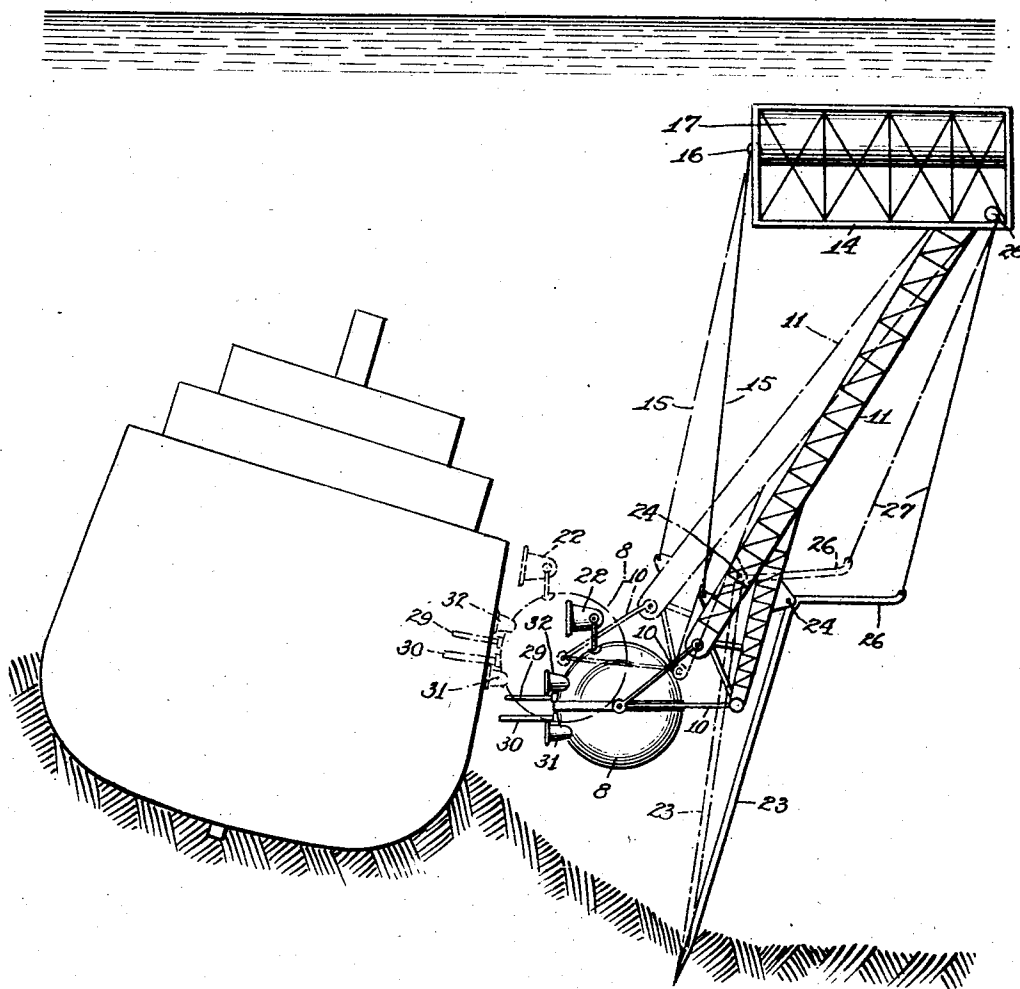
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FIGURE 3.



WITNESS
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UNITED STATES PATENT OFFICE.

CHARLES W. EVELETH, OF NEW YORK, N. Y.

SALVAGE APPARATUS.

1,409,690.

Specification of Letters Patent.

Patented Mar. 14, 1922.

Application filed May 3, 1920. Serial No. 378,469.

To all whom it may concern:

Be it known that I, CHARLES W. EVELETH, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented certain new and useful Improvements in Salvage Apparatus, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: To facilitate mechanical operations in water at greater depths than usual when employing human divers; to secure freedom of movement and accuracy of manipulation in a mechanism of the character mentioned; to provide an apparatus as mentioned having means for securing stability of the tools employed and the working position thereof; and to provide such an apparatus with means for independent locomotion.

Drawings.

Figure 1 is a side view of an apparatus of the character mentioned, and showing in dotted lines therein a variation in the working position of the said tool;

Figure 2 is a front view of the same;

Figure 3 is a schematic view showing the apparatus in conjunction with an assumed wreck at the bottom of the sea, and, by broken lines, the working position to which the apparatus is adjusted.

Description.

The present invention is designed for employment in conjunction with a salvage apparatus for which application for patent was filed by me July 12, 1919, which application was given the Serial Number 310,365. In the application referred to provision was made for a hoisting apparatus to operate without special stresses or strains when lifting a sunken vessel.

The means employ in part a number of cables, each attached directly to the vessel, and operatively to a minor flotation device, capable of exerting a flotation impulse much less than the weight of the vessel. This device is termed, in said application, a jack, the cables with which the said jacks co-operate being preferably attached to the wreck by means of bolts fastened thereto. These bolts are preferably secured to the wreck by setting the same in holes or openings formed in the side of the wreck, the form of bolts

preferably employed being what is known as an expanding bolt. These bolts are attached to the ends of said cables, to be drawn upon when the lifting impulse is imparted to the wreck or flotation pontoons thus connected therewith.

The mechanical operation of boring the necessary holes for the bolts referred to cannot be carried on by divers in the usual suits beyond certain depths. Many of the wrecks which it is sought to salvage are to be found at these greater, and heretofore impracticable, depths. It is the purpose of the present invention to facilitate the operation of connecting the cables to the lifting apparatus at depths much greater than that possible under the present methods.

As seen in the drawings, a globe 8 is pivotally supported by trunnions 9 on an outrigger frame 10. The frame 10 is extended from the end of an inverted mast or boom 11. The boom 11 is constructed of metal of suitable character, and is trussed to provide the lightest structure possible for the greatest length extension thereof. The boom 11 is mounted by heavy gudgeons 12 in standards 13, suitably supported in a cage 14. The lower extremity of the boom 11 is connected by means of a lifting cable 15 with the winches 16, in the side of the cage 14 removed from the standards 13. This arrangement secures the equipoise of the boom 11, and parts associated therewith, when the end of said boom is lifted to place the globe 8 in operating position.

The cage 14 is suitably constructed, and is floated by a series of air tanks or pontoons 17. Air or expansive gases are supplied to the pontoons 17 from any suitable source, such as the large pontoons employed for floating the wreck, or by a surface-floated vessel accompanying the same. These devices have not been shown in the accompanying drawings for the sake of clarity. It will, however, be understood that the pontoons 17 are connected by suitable piping with an air supply adapted to increase or diminish the quantity of air maintained in said pontoons.

The cage 14 and members associated therewith may be suspended in part by cables 18 from the main flotation apparatus, shown in the application above referred to. To provide independent movement of the locomotion for the cage 14, to facilitate the placement of the globe 8, the cage has supported

therein, at convenient stations, electric motors 19 and 20, the armature shafts of which are provided with suitable propellers 21. There are two motors 19, the propellers 21 of which are disposed to operate upon the cage 14 from opposite directions. These motors and propellers attached thereto are employed for steering or pointing the cage 14 which is propelled in a forwardly or rearwardly direction by the propellers 21 connected to the motors 20. The electricity supplied to the said motors is transmitted from the accompanying vessel or from the flotation pontoons referred to, and the supply is controlled by switches disposed within the globe 8, so that the said motors may be actuated in conformity with the desires of the mechanics in the chamber formed by the globe 8.

To guide the said mechanics a searchlight 22 is mounted on the globe 8, and is supplied with electricity from the same source, through a switch also controlled from within the globe 8. By means of the searchlight the mechanics can direct the operation of the movement of the cage, and if the globe is telephonically connected with the main flotation pontoon referred to, or the surface-floated vessel accompanying the same, any assistance required therefrom may be solicited.

The present apparatus is provided with an extended anchor bar 23. The bar 23 is extended at a distance beyond the globe 8, and is pivoted by a shaft 24 on a bracketed structure 25, extended from the boom 11 adjacent the lower extremity thereof. The anchor bar 23 has an operating arm 26, the extremity whereof is connected by means of a cable 27 with the electric motor-operated winch 28.

It is obvious, from a review of the structure shown in Figure 1 of the drawings, that if the extreme end of the bar 23 has been inserted in the soil of the bottom on which the wreck rests, the lower end of the boom 11 and the globe 8 attached thereto may be moved forward by lifting the extremity of the arm 26 by means of the cable 27 and winch 28, connected therewith. This action is shown in Figure 3 of the drawings, wherein the globe 8 is shown as having been lowered to the original position, where the end of the anchor bar 23 is engaged with the bottom on which the wreck rests, and also the result of lifting the extremity of the arm 26 which is shown as having brought the globe 8 into the position thereof where the tools 29 and 30 can be made effective, and where the buffers 31 and 32 with which the globe is provided, may operate to rock the said globe on the trunnions 9 to present the said tools 29 and 30 in the proper position to most effectively operate upon the side of the wreck.

As seen best in Figure 2 of the drawings, the buffers 31 and 32 are triangularly disposed, the three-point arrangement being most effective in leveling the globe 8 or presenting the boring drills 33, or the plungers substituted therefor, in operating positions, perpendicular to the surface of the wreck.

The operation of the herein described apparatus is substantially as follows: The wreck having been located by sounding, or otherwise, the cage 14 and parts associated therewith, is lowered, until the globe 8, with the human operators therein, is placed in the vicinity of the wreck. As indicated, the telephonic communication between the vessel in attendance, and the globe 8, is maintained, and the operators within the globe 8 can advise as to what necessary assistance is required from the attendant ship, for adjusting the cage 14 to facilitate the operation to be carried on by the operators within the said globe.

A position such as shown in Figure 3 having been attained by manipulating the propellers 21, the arm 26 is lifted to rock the bar 23 forward on its anchored point to advance the globe 8 until the buffers 31 and 32 thereof engage the side of the wreck, and level the globe 8 with reference to the pitch of the wreck. Provision for maintaining the purity of the air within the globe 8 having been provided, or a supply of air having been arranged for, the mechanics can work for a considerable time. The work performed is to bore, by means of drills 29 and 30, holes in the side of the vessel. When the holes have been bored, the drills are withdrawn, and the expanding bolts to which the ends of the cables for lifting the wreck are provided, are slipped within the said holes, and the expanding members contained in the said bolts are permitted to assume the position to which they automatically attain. The bar 23 is then rocked back to the position shown in full lines of the drawings, Figure 3, and the cage 14 is again lifted slightly to remove the point of the bar 23 from engagement with the earth at the bottom of the sea. The propellers 21 are then set in motion to shift the cage 14 and parts associated therewith, so that the next series of holes for the lifting cables may be bored. The required position having been approximated, the cage 14 is lowered, until the bar 23 again engages and becomes anchored in the earth when the arm 26 is again raised, with the result that the globe 8 is disposed in operative relation to the side of the wreck. This operation is repeated until all of the lifting cables pendant from the apparatus shown and described in the application above referred to have been connected with the vessel, in which event the cage 14 and parts associated therewith herein shown and described, are re-

moved from the wreck and floated or drawn to the surface of the water, in which they have been operating. The operation of floating the wreck is then performed by the apparatus forming the subject matter of the application above referred to.

The globe 8 herein described is hollow and suitably equipped with devices operatively connected with the various sources of supply, such as the electric supply, and air, the description of which equipment has been purposely avoided as unnecessary inclusion of devices not forming the subject matter of the present invention, and generally in common use.

It will be understood, also, that while the operating chamber has been described as a globe 8, other forms may be used, if found more desirable, and other means of access may replace the hatch 34, which, in the present instance, is curved to conform to the surface of the globe 8, and is bolted thereto prior to the submersion thereof.

The hatch 34 or other means of ingress and egress is lifted above the surface of the water when the cage has been floated to the surface, and the boom 11 has been drawn by the cables 15 to a horizontal position, which is permitted by the arch 35 at the forward end of the cage 14.

Claims.

1. An apparatus as characterized comprising a sealed operating chamber adapted to admit operators, and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; and means mounted on said chamber for leveling said chamber in its service position for placing said tools approximately perpendicular to the surface on which they are to operate.

2. An apparatus as characterized comprising a sealed operating chamber adapted to admit operators and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; and means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at appreciable distance above said chamber.

3. An apparatus as characterized comprising a sealed operating chamber adapted to

admit operators and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at an appreciable distance above said chamber; and means for imparting independent locomotion to said flotation means, said means embodying propelling prime movers operating on said flotation means and controlled from said chamber.

4. An apparatus as characterized comprising a sealed operating chamber adapted to admit operators and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at an appreciable distance above said chamber; and means for imparting independent locomotion to said flotation means, said means embodying a plurality of sealed electric motors having variously disposed propellers operatively engaged therewith, and means operative within said chamber for actuating said motors.

5. An apparatus as characterized comprising a sealed operating chamber adapted to admit operators and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at an appreciable distance above said chamber; and a rigid boom operatively connecting said flotation means and said chamber.

6. An apparatus as characterized comprising a sealed operating chamber adapted

to admit operators and to resist outwardly applied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at an appreciable distance above said chamber; a rigid boom operatively connecting said flotation means and said chamber; and means for swinging said boom on said flotation means for lifting said chamber to a level with said flotation means for permitting the ingress and egress of operators into and from said chamber when lifted.

7. An apparatus as characterized comprising a sealed operating chamber adapted to admit operators and to resist outwardly ap-

plied pressures; tools extending outwardly from said chamber through the wall thereof; means operatively connected with said chamber for maintaining the working position thereof against pressure exerted by said tools; means mounted on said chamber for leveling said chamber in its service position for presenting said tools approximately perpendicular to the surface on which they are to operate; means for floating said chamber at predetermined depths, said means being submerged with said chamber, and held in spaced relation thereto for flotation at an appreciable distance above said chamber; a rigid boom operatively connecting said flotation means and said chamber; a rigid anchor bar operatively related to said chamber, said bar being extended beyond said chamber for engaging the bottom whereon the object being operated upon rests; and means operable from said flotation means for swinging said bar on its engaging end as a fulcrum toward the said object for causing said chamber to engage the same.

CHARLES W. EVELETH.