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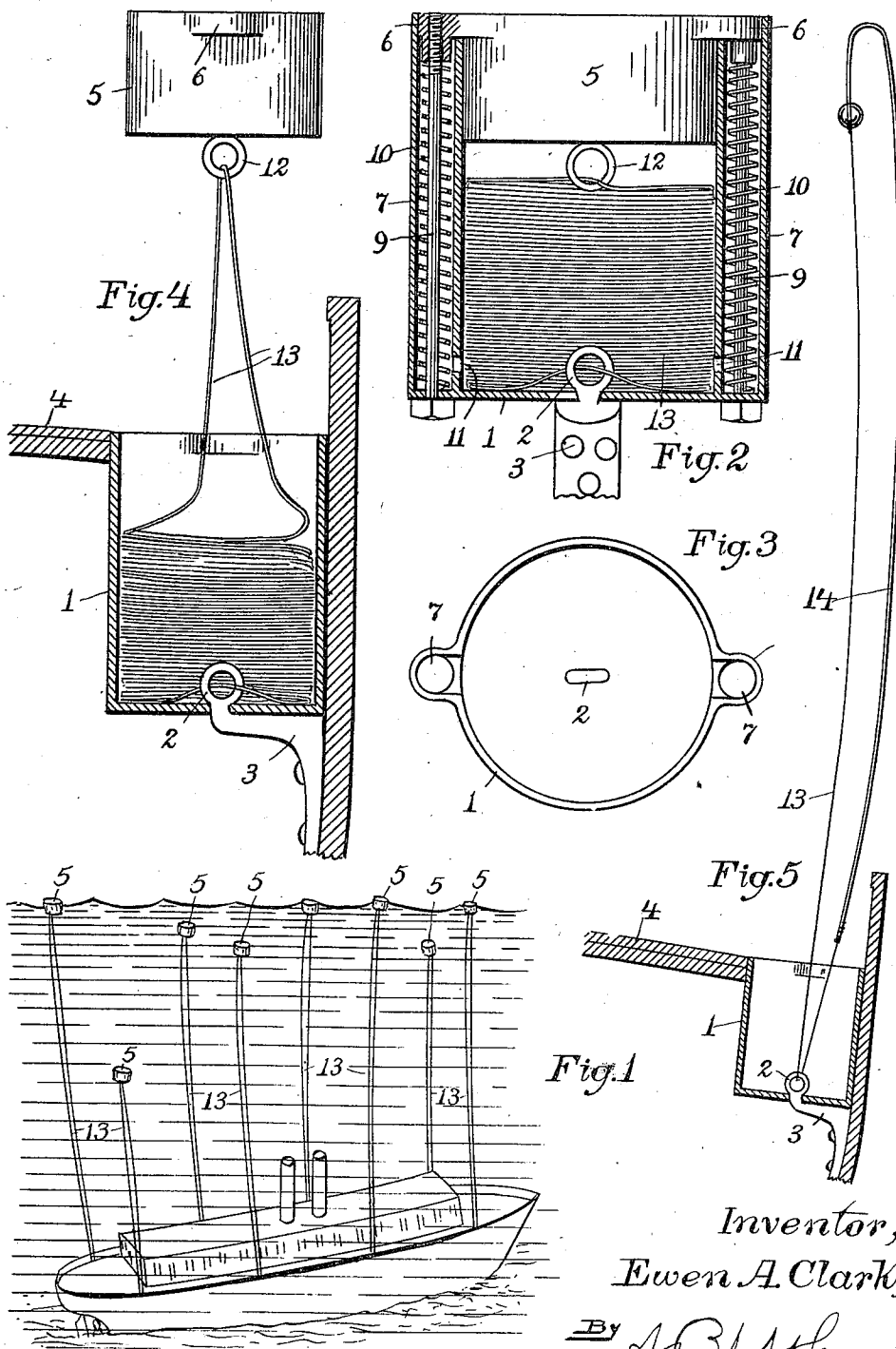
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E. A. CLARK

MEANS FOR SALVAGING VESSELS

Filed May 3, 1922

2 Sheets-Sheet 1



Inventor,
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Attorney.

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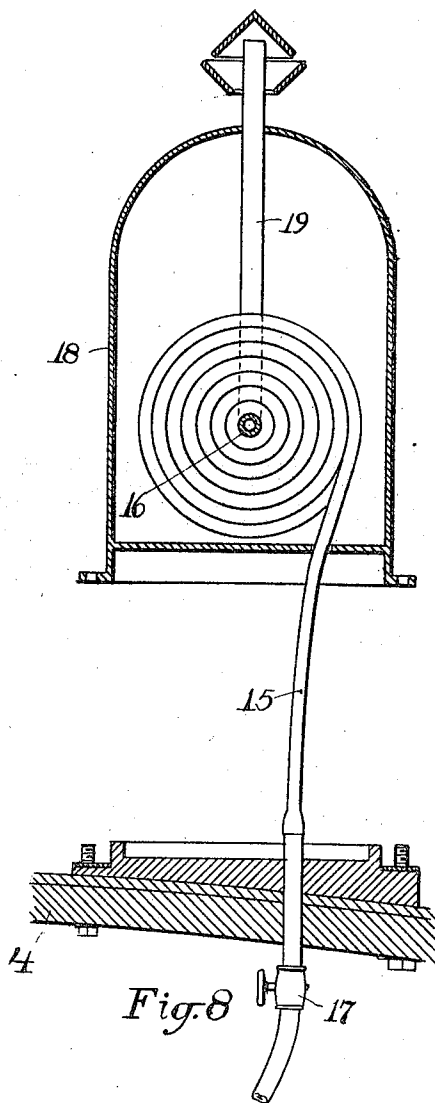
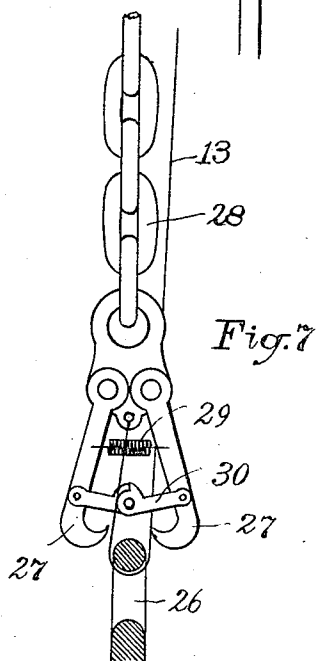
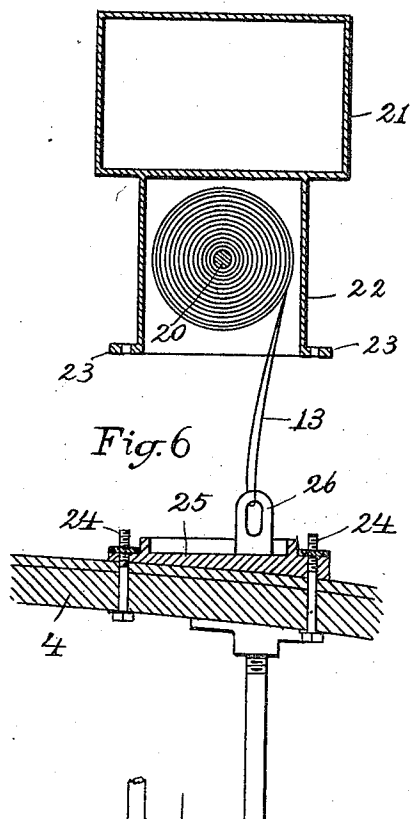
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UNITED STATES PATENT OFFICE.

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MEANS FOR SALVAGING VESSELS.

Application filed May 3, 1922. Serial No. 558,071.

To all whom it may concern:

Be it known that I, EWEN A. CLARK, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Means for Salvaging Vessels, of which the following is a specification.

This invention has for its object the construction of means for enabling sunken vessels to be raised without the necessity of sending down divers for attaching cables or chains thereto; and while the invention may be applied to many other types of craft, it is particularly designed for submarines which have sunk in comparatively shallow water, and the delay in whose raising so often results in the death of the entire crew.

In carrying this invention into effect, I provide the vessel with a number of receptacles closed by a float, each provided with a considerable length of strong cord having its ends tied together and passed through eyes in the float and receptacle. These floats are made readily detachable from within the submarine or other craft after the same has sunk; the floats rise to the surface of the water carrying the endless cords up with them, thereby serving as buoys to show where the vessel is lying; the salvaging crews arrive and cutting each cord at the surface, attach to the severed ends a length of tough but slender rope. The cord is then pulled upon to submerge and lower to the vessel the rope until its lower ends is drawn through the eye in the receptacle and thence up to the surface. A powerful cable or chain is then attached to the end of the rope and similarly drawn down through the eye in the receptacle and thence up to the surface. If a stronger cable or chain is considered necessary, it also can be attached to the end of the first cable or chain and drawn down through the eye and up to the surface, a suitable ball or other enlargement on the now lower end of the chain or cable serving to attach it to the lower eye. All the cords having been similarly utilized, any present well known forms of windlass or other kinds of hoisting mechanism can be used for raising the craft.

In the drawings forming part of this specification, Fig. 1 is a view of a sunken vessel having a number of the floats and cords connected with it, some of the floats

being represented as having reached the surface of the water and the others as nearing it. Fig. 2 is a central vertical section of one of the receptacles and its float. Fig. 3 is a plan view of the receptacle alone. Fig. 4 is a sectional elevation of a receptacle showing its float rising therefrom and uncoiling the cord therein. Fig. 5 is a sectional view of a receptacle representing a length of rope or cable being drawn down into the eye in the receptacle. Figures 6, 7, and 8 are views of modifications of the device shown in Figures 1 to 5.

The reference numeral 1 designates a receptacle having an eye 2 at its bottom, which is an extension of an elbow 3 strongly fastened to the side of the vessel, the upper edge of the receptacle being preferably flush with the deck 4.

The float 5 is fitted into the upper part of the receptacle, and is made buoyant in any well known manner. From diametrically opposite points at its upper portion project ears 6 which close tubular chambers 7 formed as parts of the receptacle. Up through the bottom of each tubular chamber reaches a screw rod 9 tapped into an ear 6 and surrounded by a helical spring 10 bearing strongly upward against the ear thereat. By unscrewing the two rods 9, the springs 10 will force the float up and out from the receptacle. To ensure this even when the vessel is deeply submerged, holes 11 are provided from the chambers 7 into the receptacle, so that when the screw rods are withdrawn from the ears 6, the surrounding water passes through the screw holes until the pressure within the receptacle is about that without.

An eye 12 is attached to the under surface of the float 5, and a considerable length of strong cord 13 is run through both eyes 12, 2, and its ends fastened together; the receptacle being made large enough to hold many feet of the doubled cord.

In the utilization of this invention, a number of the devices are embedded in the deck of the submarine or other vessel at suitable points, as indicated in Fig. 1, with the cord properly packed in the receptacle and the float fastened in place by the screw rods 9. If the submarine should in its submergence fail to come to the surface, then the men within it unscrew the rods 9 from the ears 6, and the springs 10 press the floats 5 out

from the receptacle and into the surrounding water. Then the buoyancy of the floats causes them to ascend to the surface, trailing the doubled cord 13 up with them as the latter unfolds from within the receptacle.

Word having gone forth of the sinking of the vessel, and its exact location being shown by the floats 5, a salvage crew is brought to the spot with their craft-raising mechanisms, and set to work. Each cord 13 is used in the same manner for conveying to the eyes 2 a sufficiently powerful cable or chain to be used in raising the wreck. First, the cord is cut and to the severed ends are attached the ends of a tough rope 14, as illustrated in Fig. 5, and by pulling upon one terminal section of the cord 13, the rope 14 is drawn down through the eye 2 and thence upward until both ends of the rope are at the surface. Then a powerful cable or a chain has its ends attached to the ends of the rope, and in the same way is drawn down through the eye 2 and then up to the surface, some enlargement being provided on the lower end of the cable or chain to fasten the same to the eye.

Cables or chains having in like manner been attached to all the eyes 2, they can be connected with well known hoisting apparatus, and the submarine brought to the surface.

In addition to this means for attaching hoisting cables to sunken vessels, flexible but non-compressible tubing can be substituted for the cord 13, with one open end supported by the float 5 and the other opening into the craft, and fresh air thereby forced down from the atmosphere into the vessel.

This is illustrated in Fig. 8, in which the flexible tube 15 is shown as wound upon a tubular axis 16 and having one end connected with the interior of the vessel 4 and preferably closed within the latter by a valve 17. The tubular axis 16 is rotatably supported in the float 18 and connected with a pipe 19 rising through the top of the float, the upper end of the pipe 19 being suitably protected against the splashing of water into it after the float has risen to the surface of the ocean. The upper end of the flexible tube 15 is suitably attached to the axis 16 and made to communicate therewith so that the air can be drawn in through the tube from the atmosphere.

In use, the valve 17 is kept closed in order to prevent the entrance of water through the open end of the pipe 19 until after the float 18 has risen to the surface. Then it is opened and whatever water there may happen to be in the tube is allowed to drain out, after which the tube is connected with an air pump and the desired amount of atmospheric air drawn down into the vessel.

It is, of course, evident that this air-supplying arrangement is only adapted for vessels liable to sink in comparatively shallow water, as most commonly happens to submarines, because of the considerable space occupied by a great length of coiled tubing.

As shown in Fig. 6 it is not necessary to have the cord 13 packed away in a receptacle 1 carried by the vessel, but the cord may be mounted on a reel 20 in the float 21 or in an extension 22 thereof. The extension 22 is here illustrated as provided with flanges 23 designed to be clamped by bolts 24 to the plate 25 on the deck 4. The eye 26 is here shown as vertically extended in order to permit the engagement therewith of claws 27 pivotally attached to a chain 28. These claws are resiliently drawn toward each other by a spring 29 but normally held apart by a toggle joint 30. An end of the cord 13 being attached to the end of the chain 28 and its other end kept taut, the chain is guided down toward the eye 26 until the latter comes between the claws 27 and in contact with the toggle joint 30, thereby flexing the latter and permitting the spring 29 to snap the claws together in the eye 26, whereby, when the chain is drawn upon simultaneously with several others similarly attached to the vessel, the latter can be raised to the surface of the water.

What I claim is:

1. The combination of a water-tight receptacle adapted to be attached to a vessel and having an open top, a float closing said top water-tight, means controlled from within the vessel for confining said float to said top, an extended length of cord attached to said float and receptacle within the latter, and means for admitting water within said receptacle when said operating means is actuated for the release of said float, whereby the pressure of the water upon said float is kept from preventing its escape from the receptacle.

2. The combination of a receptacle designed to be attached to a vessel and having two diametrically opposite chambers, a float fitted to the upper part of the receptacle and having ears located in the upper ends of said chambers, releasable means for holding said ears in place, a spring located in each chamber acting against said ears for throwing the float outward when the ears are released, and a cord attached to said float and receptacle and packed in the latter.

3. The combination of a receptacle designed to be attached to a vessel and having two diametrically opposite vertical chambers and an open top, a float closing said top water tight and having ears reaching into said chambers, elongated bolts rising through said chambers and having turning means below said chambers within said ves-

sel, each of said ears having a tapped hole through it for engaging one of said bolts, springs within said chambers pressing upward against said ears, and an elongated
5 cord attached to said float and receptacle within the same, said chambers communicating at their lower ends with said receptacle, whereby when said bolts are unscrewed, the water enters through said tapped holes into said chambers and receptacle and permits said float to rise. 10

In testimony that I claim the foregoing invention, I have hereunto set my hand this 1st day of May, 1922.

EWEN A. CLARK.