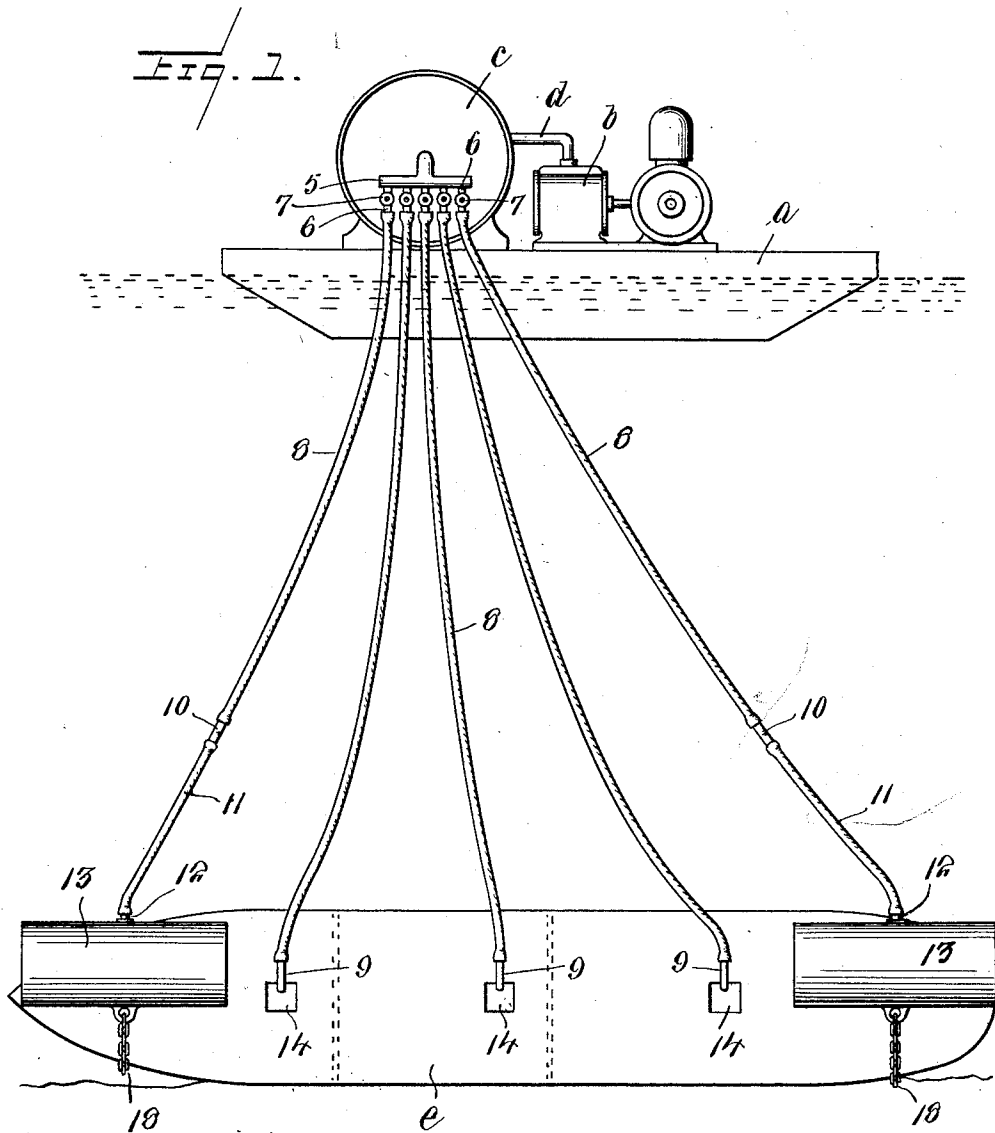


T. H. GAWLEY.
 APPARATUS FOR RAISING SUNKEN VESSELS.
 APPLICATION FILED APR. 12, 1912.

1,062,963.

Patented May 27, 1913.

2 SHEETS—SHEET 1.



Witnesses
 E. R. Ruppert.
 M. E. Langhlin

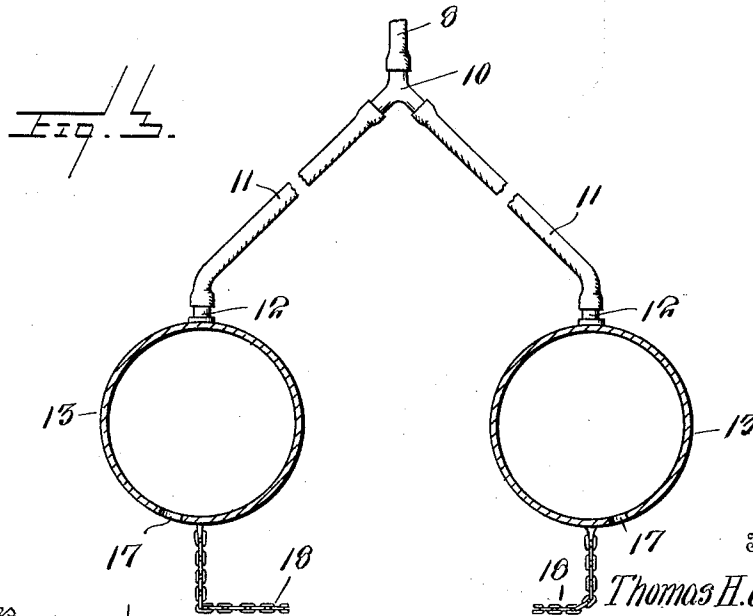
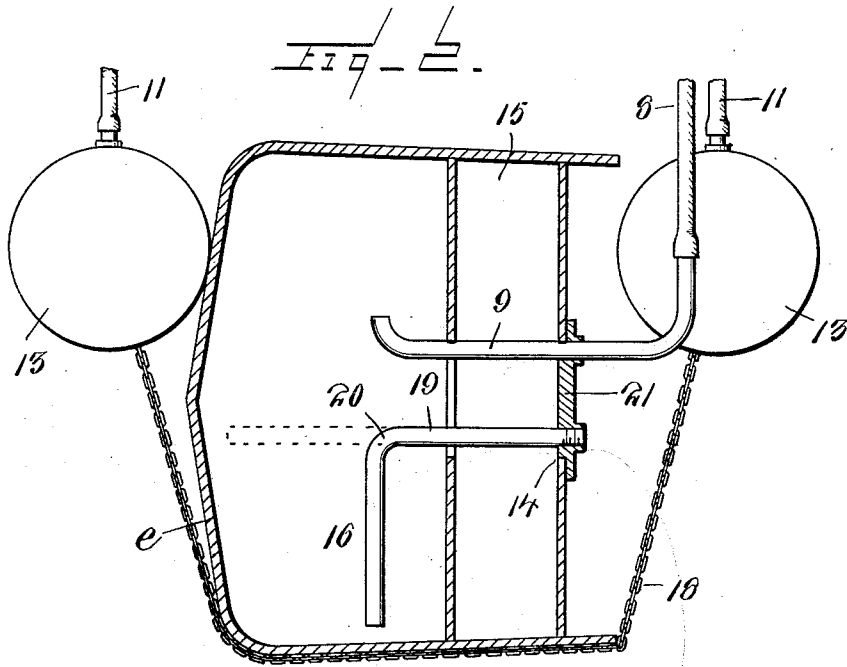
Inventor
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UNITED STATES PATENT OFFICE.

THOMAS HECTOR GAWLEY, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-SIXTH TO WILLIAM H. BYRNES, JR., AND ONE-SIXTH TO EDWARD C. BYRNES, BOTH OF NEW ORLEANS, LOUISIANA.

APPARATUS FOR RAISING SUNKEN VESSELS.

1,062,963.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed April 12, 1912. Serial No. 690,319.

To all whom it may concern:

Be it known that I, THOMAS H. GAWLEY, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Apparatus for Raising Sunken Vessels, of which the following is a specification.

The general object of the invention is to maintain the opposite ends of a sunken vessel in horizontal alinement while the vessel is ascending to the surface of the water under the action of floating apparatus; and to this end the invention consists in certain improved constructions, arrangements and combinations of devices, which will be fully described hereinafter, and then pointed out in the claim.

Other objects will appear and be better understood from that embodiment of my invention of which the following is a specification, reference being had to the accompanying drawings forming part hereof, in which;

Figure 1 is a side elevation of the invention in use. Fig. 2 is a detail showing a cross section of a sunken vessel and the means for expelling the water from the lower hold and raising one end of the vessel. Fig. 3 is a detail partly in section and elevation of the tackle for one end of the vessel.

The invention is adapted for use in connection with vessels sunk alongside docks or in open rivers, bays or in the sea; and since boats are usually employed for carrying the operating mechanism of the usual floating apparatus, I have elected to show such operating mechanism, hereinafter described, arranged on a boat, although if the vessel were sunk adjacent to a wharf, this apparatus could readily be installed upon and operated from such wharf if such arrangement were found convenient.

The boat *a* is adapted for carrying a suitable air compressor *b* and a suitable container *c* which is suitably connected such as by a pipe *d*, to the discharge of the compressor *b*.

A header 5 suitably connected to one end of the container *c*, forms the discharge passage from the container and carries a series of nipples 6, each of which has a suitable controlling valve 7 which operates to control the passage of compressed air through

the nipple. The disposition of the container 55 and the header with its valve controlled nipples, is such as to render the valves 7 readily accessible to the operator on the boat *a*.

The nipples 6 and the upper ends of a plurality of flexible tubes or pipes 8, are adapted for detachable connection to each other and by preference the nipples 6 extend downwardly so as to prevent the forming of kinks in the pipes when in use and straight a passage as possible for the compressed air from the nipples through the pipes.

The length of the pipes will, of course, be equal, or substantially so, to the depth of that portion of the body of water in which the vessel has sunk and at their lower ends certain of these pipes are adapted for connection to nozzles 9—9, while others are adapted for connection to Y-couplings 10. Those pipes to which the Y-couplings are connected go to the opposite ends of the sunken vessel and the pipes 11—11 which connect to the couplings 10—10, diverge downwardly as shown in Fig. 3, so as to straddle the sunken vessel and are connected to nipples 12—12 carried by compressed air tanks 13—13, which are arranged over opposite portions at the opposite ends of the vessel. The nozzles 9—9 are by preference, angular in shape and are of such lengths as to admit of their being inserted into the lower holds of the sunken vessel.

In the drawings I have shown the device employed in connection with a sunken vessel *e* which rests on its side. This vessel is also shown as having fore, mid-ship and aft hatchways. As shown in Figs. 1 and 2, the hatchways 14 are open and the nozzles 9 pass through the between deck compartments 15 and into the lower holds 16 where they discharge upwardly as shown in Fig. 2. In this connection the compressed air tanks which are oblong and extend fore and aft of the vessel, are arranged alongside the bottom of the vessel at a trifle above the keel and alongside the upper deck. As shown in Fig. 3, the compressed air tanks are provided on their lower sides with openings 17 through which a sufficient quantity of water is admitted to so weight the tanks as to enable them to sink from the surface of the water where they are partly filled, to the vessel *e*.

The operation of weighting and sinking the tanks 13 is done prior to compressing the air into the tanks, and as they lower or sink they are directed to the position shown in Figs. 1 and 2, by suitable tackle connected to the tanks and in the hands of the divers or operators positioned at the sunken vessel. When lowered the tanks at each end of the vessel, are connected to the opposite ends of a chain 18 passed around the end portion of the vessel as shown in Figs. 1 and 2. This done, and with the valves 7 open and the compressor compressing into the container c, the water in the tanks 13 is forced through the openings 17 by the air entering the tanks through the pipes 11—11. The buoyancy of the tanks, of course, increases as the water is expelled therefrom and upon the expulsion of all the water and when the tanks have attained their maximum buoyancy their lifting effect on the vessel will be sufficient to move the same. However, and in order to reduce the strain on the tanks 13—13, the compressed air passing through the nozzles 9 and into the lower holds 16 displaces the water and thereby renders the vessel more buoyant and accelerates the lifting or upward movement thereof.

Practice has demonstrated that in raising vessels by the use of compressed air, one end of the vessel invariably moves upwardly faster than the other. This permits the compressed air to escape when the faster moving end projects above the water whereupon and upon the receding into the water of this last-named end, the water will rush into the space from which it was expelled thereby causing that end to sink rapidly, while the other end may move upwardly beyond the surface of the water and thus permit the compressed air to escape with the result that the vessel will again fill and sink to the bottom.

With the present construction the tendency of one end of the vessel to rise faster than the other may be overcome by operating the valves 7 so as to cut off the supply of compressed air to the tanks and holds at that end of the vessel which is seen or observed to rise more rapidly than the other. This cut-off of air may be continued until the vessel is horizontal after which the valves may be operated or opened so as to again admit air to the holds and tanks as before. By so operating the valves as occasioned by the conditions before stated, the vessel may be controlled to rise on an even keel or in

horizontal position and may be maintained with her upper surface flush with the surface of the water so as to be towed in that position to the most convenient place for beaching or turning her upright.

In carrying my invention into practice, I found it desirable to utilize a discharge conduit in conjunction with each nipple 9 to facilitate the expulsion of the water from the hold of the vessel. This discharge conduit is indicated at 19 and in the present instance is bent at right angles to itself as at 20 and terminates immediately adjacent the lowermost part or wall of the hold, the outer extremity of the conduit being threaded or otherwise fastened to a sealing plate 21 closing the hatchway in the top deck of the vessel and provided with a passage through which is passed the nipple 9. Should the vessel be resting on an even keel or be in a substantially upright position, the conduit would be straight, as indicated by the dotted lines in Fig. 2. Thus, the water within the hold will, under the action of the air entering the hold from the nipple 9 be forced outwardly of the vessel through the conduit 19. If desired or deemed advisable, the conduit 19 may, at an appropriate point in its length, be equipped with a check valve or the like to prevent back flow of water into the hold subsequent to the discharge of such water therefrom.

What is claimed as new is:

An apparatus for raising sunken vessels comprising a header adapted for connection to the container of an air compressor and having a plurality of valve controlled nipples, a plurality of compressed air tanks, means for connecting said tanks in pairs and admitting of their disposition on opposite portions of the vessel to be raised, a plurality of flexible tubes carried by the nipples, a plurality of tubes carried by the tanks, Y-couplings connecting certain of the first with the second named tubes, sealing plates secured in the hatches of the vessel, nozzles extending through said plates and connected to the other of the first mentioned conduits, and discharge conduits also secured in said plates.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS HECTOR GAWLEY.

Witnesses:

GEORGE SCHMITT,
EDWD. C. BYRNES.