R. O'NEAL.

APPARATUS FOR RAISING SUBMERGED OBJECTS.

APPLICATION FILED SEPT. 28, 1915.

1,201,337. Patented Oct. 17, 1916.

Fig. 1

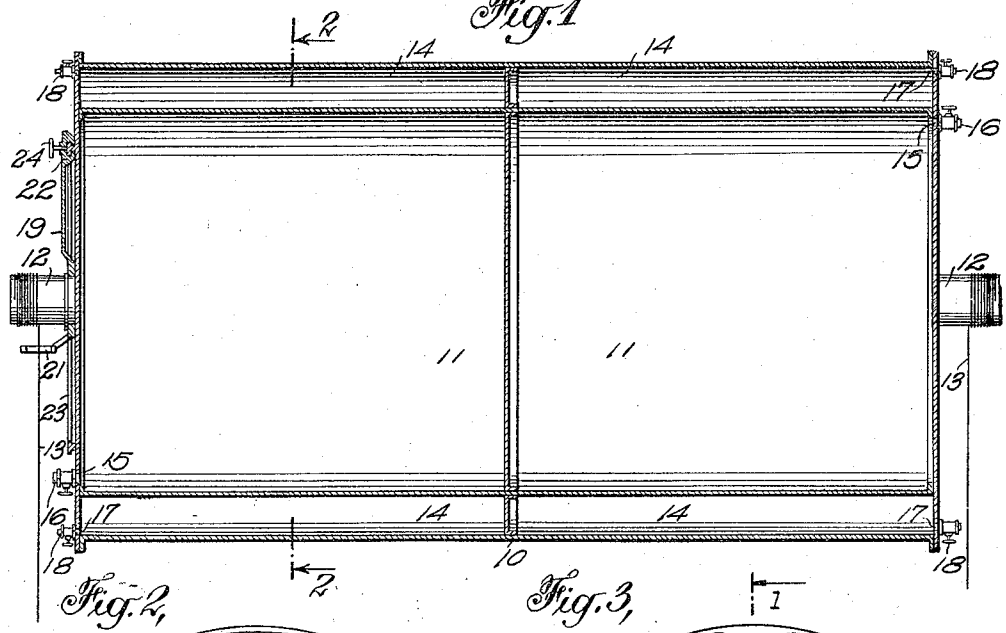



Fig. 2,

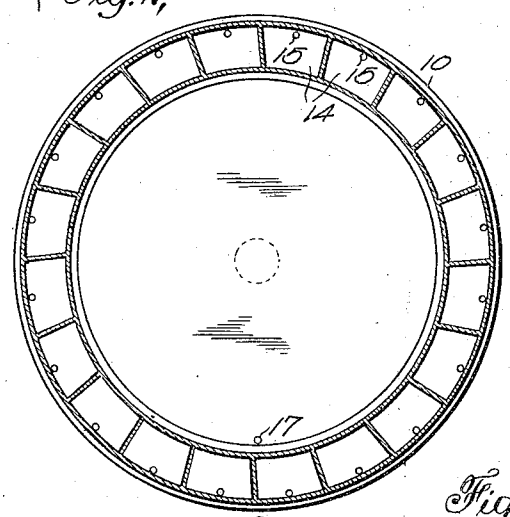



Fig. 3,

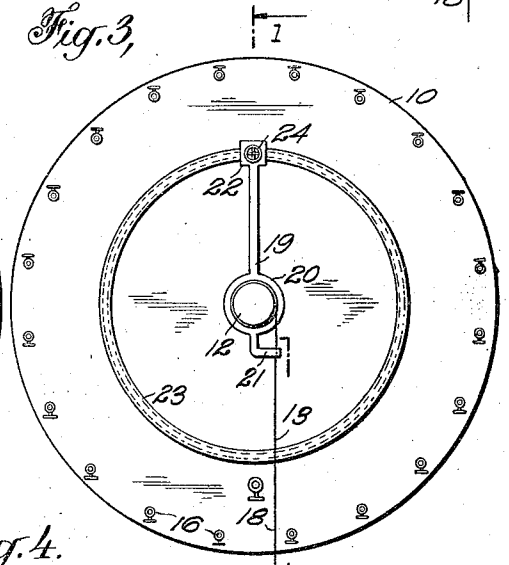
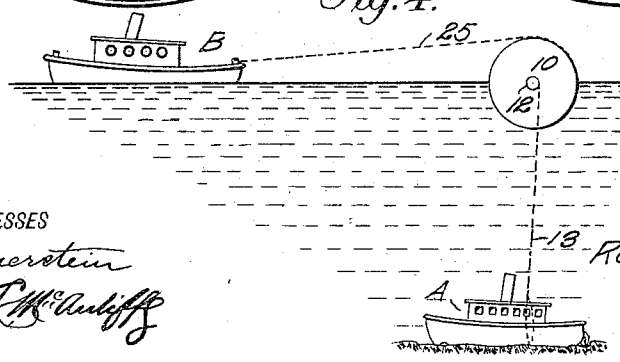



Fig. 4.




WITNESSES

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR RAISING SUBMERGED OBJECTS.

1,201,337. Specification of Letters Patent. Patented Oct. 17, 1916.

Application filed September 28, 1915. Serial No. 53,071.

*To all whom it may concern:*

Be it known that I, ROBERT O'NEAL, a citizen of the United States, and at present residing in Honolulu, in the Territory of Hawaii, have invented a new and Improved Apparatus for Raising Submerged Objects, of which the following is a full, clear, and exact description.

My invention relates to a means for raising sunken vessels or other submerged objects.

The prime object of the invention is to provide an efficient apparatus for the indicated purpose of simple form which may be easily operated and controlled.

In carrying out the invention, a pontoon is provided adapted to revolve on its axis. Means is provided at the periphery of the pontoon, whereby the mass may be varied at predetermined places at the periphery to create a torque for turning the pontoon on its axis, together with means controlled by the turning of the pontoon for raising the submerged object when connected with the latter. For the purpose of varying the mass, the pontoon is provided with pockets at the periphery disposed symmetrically thereon, and they are adapted to separately contain a fluid so that water, for instance, may be pumped therein or therefrom, thus varying the flotation at opposite sides of a vertical plane and giving the necessary turning movement of the pontoon.

The invention will be more particularly explained in the specific description following.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a longitudinal vertical section of a revolving pontoon embodying my invention on the line 1—1, Fig. 3; Fig. 2 is a cross section on the line 2—2, Fig. 1; Fig. 3 is an end view; and Fig. 4 is a diagrammatic view indicating the manner of raising and towing a submerged vessel in accordance with my invention.

In carrying out my invention in accordance with the illustrated example, a pontoon, 10, is provided, which may be cylindrical or many sided. The hollow interior of the pontoon may be formed in separate compartments 11. At the axis of the pontoon on each end thereof, a drum or shaft 12, is provided at the exterior, adapted to receive cable 13, or like flexible medium of a length to be secured to a submerged vessel A, or other submerged object for raising the same. On the pontoon 10, extending longitudinally thereof at the periphery, are a series of pockets 14, each of which is provided with means whereby fluid may be pumped thereinto or therefrom. The hollow interior 11, whether in one or more compartments is similarly equipped. In the present instance I have shown a valved connection 16, communicating with the compartments 11, at 15 and similar connections 18 communicating with each pocket 14, as at 17, thus a pumping connection may be established between any pocket 14, or compartment 11, and a tug or a towing vessel B, or other pumping means for filling or emptying a particular pocket or compartment at any time whether the pontoon be submerged or at the surface. For the purpose a hose may be connected from the tug, or the like, with the valves 16. With the described construction, if it is desired to raise a submerged object A, Fig. 4, the cables 13 are fastened thereto and the pontoon 10, is submerged to the desired extent. If a starting lift is desired to be given to the submerged object, then the compartments 11, will first be filled or substantially so, and then pumped out so that the bodily flotation of the pontoon will lift the submerged object. The turning of the pontoon on its own axis can be generally relied upon, however, for raising the sunken object by winding the cables 13. In order to give the turning movement to the pontoon, it being assumed that a given number of pockets at the top of the pontoon will be empty, a predetermined number is pumped full with water and the preponderance of weight at that side of the pontoon will cause the same to turn on its axis and wind up the cables 13. In order to brace and control the cables 13, I may provide a lever 19, having a ring 20 forming a bearing for the lever on a drum 12 and presenting adjacent to the ring a lateral member 21, adapted to exert frictional pressure against the cable 13. The lever 19 may be adjusted by its head 22, which has dove-tailed sliding engagement with a T-headed annular rib 23, on the pontoon, thus the lever may be turned about the drum 12 to vary its angular position and vary the pressure on the cable 13. To secure the lever in adjusted position a set

screw 24, may be employed. After the submerged object has been raised sufficiently, the pontoon with said object suspended by the cables 13, may be towed by a vessel B and tow line 25, (Fig. 4). In practice the towing vessel is merely a means that may be employed where it is required to bring the sunken object into shoal water and where conditions are such that this can be done. Otherwise the pontoon is designed to operate by revolving at a local point or place.

The illustrated construction, it will be understood, is given merely as one simple embodiment of my invention and I wish to state in conclusion that I do not limit myself strictly to the mechanical details herein illustrated since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A revoluble pontoon having means whereby the mass of the pontoon may be varied at predetermined places at the periphery to create a torque for turning the pontoon on its axis.

2. A revoluble pontoon having means whereby the mass of the pontoon may be varied at predetermined places at the periphery to create a torque for turning the pontoon on its axis; together with means controlled by the turning of the pontoon, for raising a submerged object.

3. An apparatus for raising sunken objects, including a pontoon, adapted to revolve on its axis and having an annular series of separate pockets serving to give submergence or flotation as predetermined pockets are filled or emptied to turn the pontoon on its axis, and means for raising a submerged object by said turning movement of the pontoon.

4. An apparatus for raising sunken objects, including a pontoon adapted to revolve on its axis, and winding means on said pontoon and adapted to turn therewith to lift a submerged object and actuated by the turning of the pontoon on its axis.

5. An apparatus for raising sunken objects, including a revolving pontoon, having a main central chamber, and having an annular series of pockets about the central chamber, said pockets having means whereby the same may be charged or emptied for submergence or flotation, to turn the pontoon on its axis by the emptying and filling of predetermined pockets, the said central chamber having also means whereby to fill or empty the same for submergence or flotation, and means to lift the submerged object by the turning movement of the pontoon on its axis.

6. An apparatus for raising sunken objects, including a revolving pontoon having an annular series of pockets adapted to be separately filled or emptied for relative submergence or flotation of the pockets at opposite sides of the perpendicular line passing through the axis of the pontoon, and means to lift a submerged object by the turning movement of the pontoon on its axis in response to the relative flotation of predetermined pockets.

7. An apparatus for raising sunken objects, including a pontoon, adapted to revolve about its axis, and having a series of pockets symmetrically disposed about said axis, each pocket having means whereby to fill or empty the same, the pockets thus being adapted to give a turning movement to the pontoon by variation in the mass at the pockets, a lifting element adapted for connection with a submerged object, and means for winding said lifting element by said turning movement of the pontoon.

8. An apparatus for raising sunken objects including a pontoon, adapted to revolve on its own axis and having an annular series of pockets about said axis, the pockets being provided with means to separately fill or empty the same for submergence or flotation, a flexible element adapted for connection with a submerged object, means at the axis of the pontoon to wind said element by a turning movement of the pontoon on its axis in response to variations in the mass at the pockets as predetermined pockets are filled or emptied, and a controlling device on the pontoon for said flexible element.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT O'NEAL.

Witnesses:
WALTER E. WALL,
EBEN HUSHINGHAM.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**