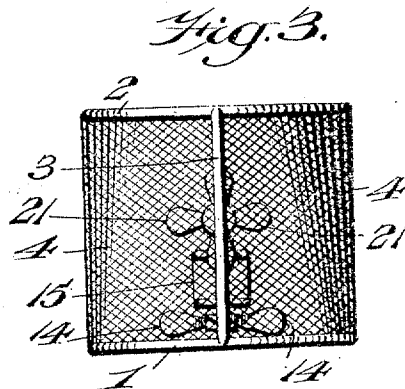
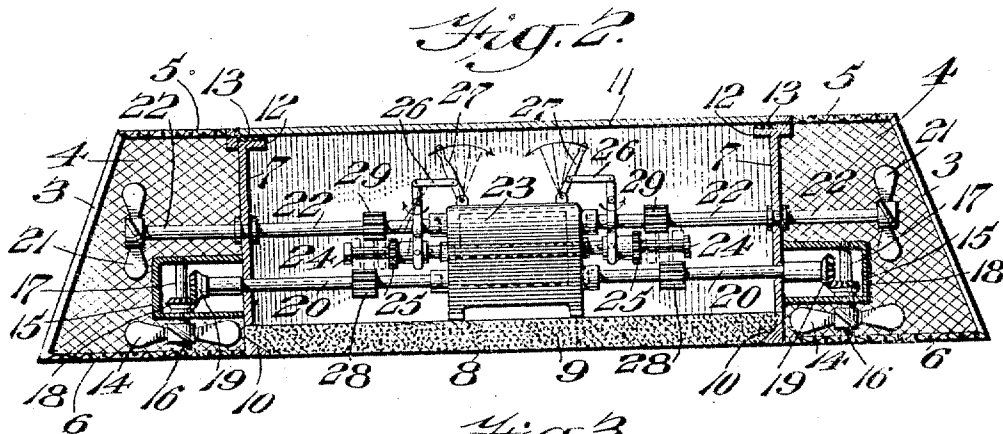
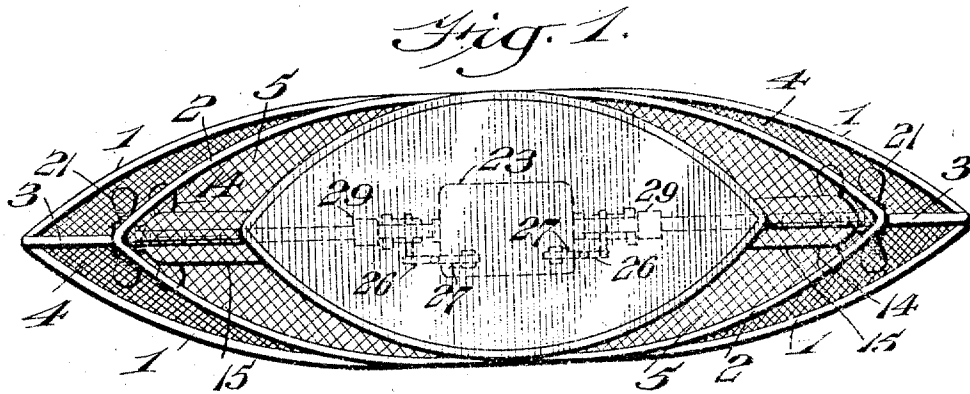


J. R. ROBINSON.
RAISING AND LOWERING DEVICE.

APPLICATION FILED MAR. 31, 1909. RENEWED SEPT. 20, 1910.

981,314.

Patented Jan. 10, 1911.



Witnesses

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JAMES R. ROBINSON, OF PASADENA, CALIFORNIA.

RAISING AND LOWERING DEVICE.

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Specification of Letters Patent.

Patented Jan. 10, 1911.

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To all whom it may concern:

Be it known that I, JAMES R. ROBINSON, a citizen of the United States, residing in the city of Pasadena and county of Los Angeles, State of California, have invented a new and useful Raising and Lowering Device, of which the following is a specification.

This invention relates to a mechanism for raising or lowering a vessel or the like in water and has for an object to produce a device which is mechanically operated to produce sufficient power to force the vessel upward when submerged and also aid in sinking it to the bottom when on the surface.

It consists of a plurality of propellers so arranged as to advantageously and efficiently raise or lower the vessel and also propel the same through the water when it is submerged at any level.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a plan of a vessel embodying my invention. Fig. 2 represents a longitudinal section of the same. Fig. 3 represents an end elevation of the vessel.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: 1 designates the bottom frame of a vessel for submarine purposes, 2 the top frame thereof and 3 the side members joining the top and bottom frames, forming in the present instance, a skeleton frame work adapted to receive the novel mechanism of my invention. Preferably, this frame work is covered with a screen 4 which is in the preferred form of steel in order to resist contact with obstacles hidden beneath the surface of the water and thus protect the mechanism within while at the same time, free access of water to the interior thereof is readily permitted.

5 and 6 designate a somewhat similar screen forming the top and bottom respectively, of the frame work and as herein disclosed is of somewhat heavier construction

which is especially desirable in order to allow the impacts with the irregularities which may exist on the bed of the ocean, river or the like, as the case may be. It will be noted as herein disclosed, that this frame work is substantially elliptical in shape, in order to more readily position the vessel when submerged, and that the ends and sides are somewhat inclined toward the bottom to lessen the resistance as the vessel is raised.

7 designates the sides of a water tight compartment inclosed by the frame work 1 and 2 and is provided with a slotted bottom 8 which is preferably covered with a layer of concrete 9 or like material forming a foundation for the mechanism, to be hereinafter described, which is located within the aforesaid compartment.

It will be noted as herein shown, that the sides 7 are provided with a cut-away portion 10 to form an anchor for the concrete or like material which when set, forms a substantially integral structure with the sides 7.

11 designates the top of the compartment formed by the sides 7 and is secured by any well known means to the sides 7 which, in the present instance, are provided with inwardly extending flanges 12 to form a seat for the top 11 and between which and the top a suitable packing 13 is located to prevent any leakage of water into the compartment and thereby effectually make the same water tight.

14 designates a propeller located at each end of the vessel and in the compartments formed by the screened frame work each being suitably mounted on a shaft 17 which in the present instance, is vertically disposed and journaled respectively in a collar 16 secured to the bottom 6 and a box 15 suitably secured to the sides 7 of the compartment.

It will be noted that the boxes as here shown are closed on all sides to prevent the entrance of any water which would effect the driving mechanism. This mechanism consists of beveled gears 18 mounted respectively on the shafts 17 and meshing with which are similar gears 19 fixedly mounted on driven shafts 20, extending inwardly of the inner compartment.

21 designates a second propeller located at each end of the vessel and also in the compartment formed by the frame work 1 and 2 which in the present instance are each

mounted on the horizontally disposed shaft 22, the latter passing through the wall 7 in a manner similar to the shaft 20 and adapted to cooperate with the mechanism in said compartment.

The driving mechanism for the shafts 20 and 21 may be of any suitable construction capable of serving the purpose but preferably consists of a plurality of motors or a single motor 23 mounted in the water-tight compartment and driven from any suitable source and from which driving shafts 24 receive power and are located adjacent the shafts 20 and 22. Each shaft 24 has secured thereon a sliding gear 25 adapted to be actuated by suitable lever mechanism 26 operated by movement of a hand lever 27 to slide the gear 25 in either direction as desired.

28 designates a plurality of gears mounted on the lower shaft 20 and 29 designates a similar gear mounted on each shaft 22 by means of which gearing any of the propellers may be thrown into operation by shifting the levers 27 to throw the gear 25 into mesh with the gears on the respective shafts 20 and 22.

In operation the device is lowered into the water in the vicinity of a sunken vessel or at the point at which it is desired to carry on submarine operations and when everything is ready for its submersion, the propeller or propellers 14 are rotated by throwing in the operating lever 27 to start the propellers rotating, whereupon the vessel is lowered beneath the surface and brought into close proximity to the point desired. It will be understood that an operator is located within the compartment containing the motor and that light and air are supplied to him in a manner common to all types of such apparatus. It will, of course, also be understood that a diver is in the vicinity to make proper connections to the submarine device, either loading material on the top of the compartment or attaching it to the device and as soon as this is accomplished, the levers 27 are thrown in the opposite direction to bring the gearing controlling the propellers 14 into operation, whereupon through the reverse rotation the device is gradually forced upward in the water to the surface and whatever is brought upward therewith may be removed. The propellers 21 can also be operated during the lowering or raising movement so that the device may be driven in any direction as required.

It will be noted that the propellers 14 are somewhat larger than the propellers 21 so that the raising operation may be carried out as rapidly as possible. If it is desired to give the device an inclined position while lowering into the water, the same may be accomplished by throwing the proper levers to bring both a propeller 14 and a propeller

21 into operation at the same time, whereby the combined forces acting against the body of water produces a resultant which inclines the vessel at the proper angle and this angle may be varied according to the different occasions by a regulation of the speed of the two propellers. Of course, it will be apparent that if one propeller is rotated at a higher speed than the other, the action will have a tendency to overcome the driving action of the other propeller and thereby give to the vessel the necessary angle.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a submarine vessel, a water tight compartment, a plurality of propellers on vertical and horizontal shafts mounted exterior of said compartment at either end thereof, a screen inclosing said propellers, driving means mounted in said compartment and connections from said driving means to each of said propellers.

2. In a submarine vessel, a water tight compartment, a plurality of propellers on vertical and horizontal shafts mounted exterior of said compartment at either end thereof, a screen inclosing said propellers, driving means mounted in said compartment, connections from said driving means to each of said propellers and means to control the operation of each of said propellers.

3. In a submarine vessel, a water tight compartment, driving mechanism mounted in said compartment, a plurality of propellers exterior of said compartment and mounted on a substantially horizontal shaft extending into said compartment, a plurality of propellers mounted exterior of said compartment on a substantially vertical extending shaft, and connections between said driving mechanism and each of said propellers to operate the same and independent screens at the tops and bottoms of the spaces occupied by said propellers.

4. In a submarine vessel, a water tight compartment, driving mechanism mounted in said compartment, a plurality of propellers exterior of said compartment and mounted on opposite ends of a substantially horizontal shaft extending into said compartment, a plurality of propellers mounted

exterior of said compartment on substantially vertical extending shafts one at each end of the vessel, connections between said driving mechanism and each of said propellers to operate the same, and a screen construction inclosing all of said propellers.

5 5. In a submarine vessel, a water tight compartment, driving mechanism mounted in said compartment, a plurality of propellers exterior of said compartment and
10 mounted on opposite ends of a substantially horizontal shaft extending into said compartment, a plurality of propellers mounted exterior of said compartment each secured
15 on substantially vertical extending shafts one at each end of the vessel, connections between said driving mechanism and each of

said propellers to operate the same, a screen construction inclosing all of said propellers, and means to disconnect each of said propellers from said driving mechanism. 20

6. In a submarine vessel, a water-tight compartment, a plurality of propellers mounted exterior of said compartment, means for driving said propellers, compartments outside said water-tight compartment
25 receiving said propellers, and screens inclosing the sides and tops and bottoms of said outside compartments, the screens at the tops and bottoms being of heavier material.

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