H. M. MEGUERDITCHIAN.

APPARATUS FOR RAISING SUNKEN VESSELS.

APPLICATION FILED APR. 6, 1918.

1,337,250.

Patented Apr. 20, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

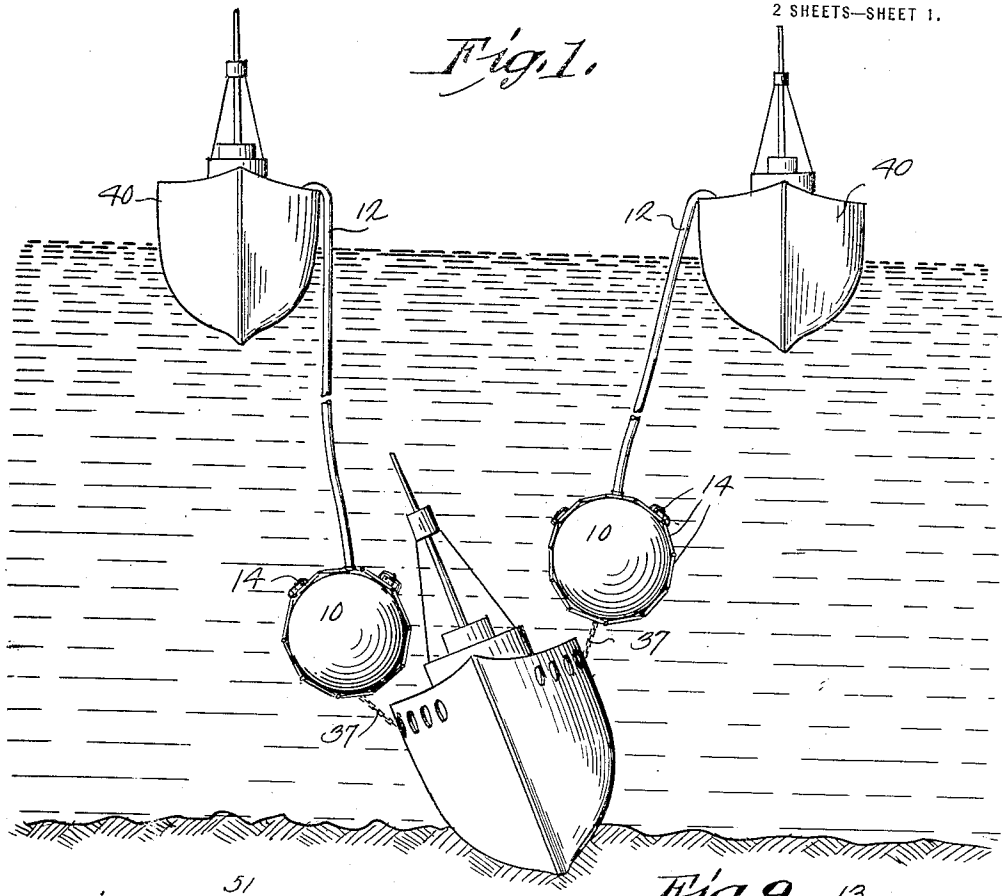


Fig. 8.

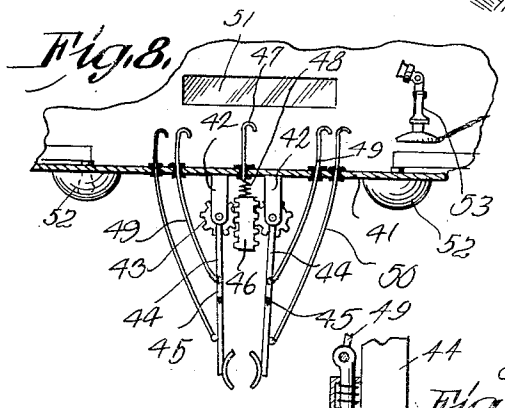


Fig. 9.

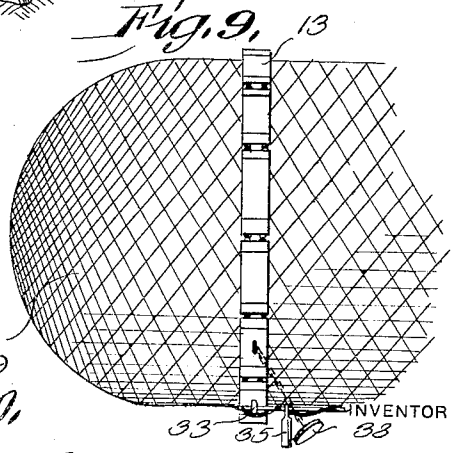
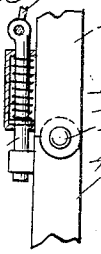


Fig. 10.



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2 SHEETS—SHEET 2.

Fig. 2.

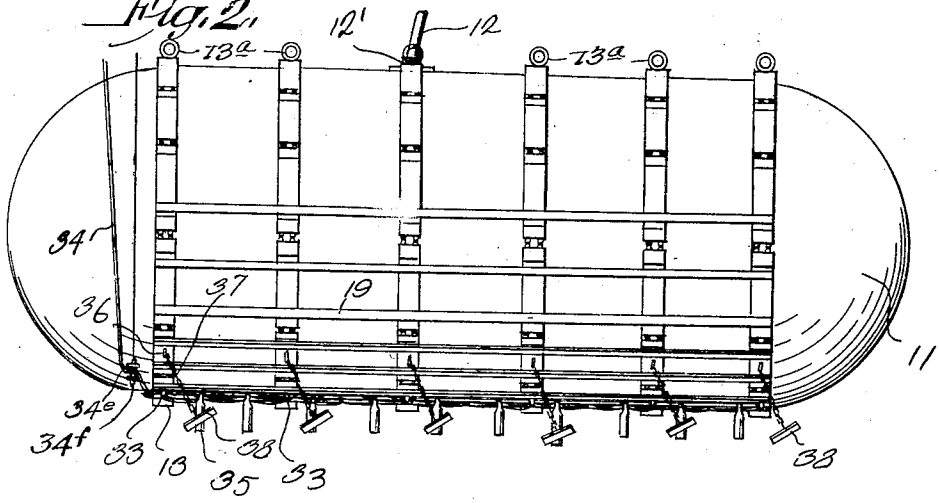


Fig. 3.

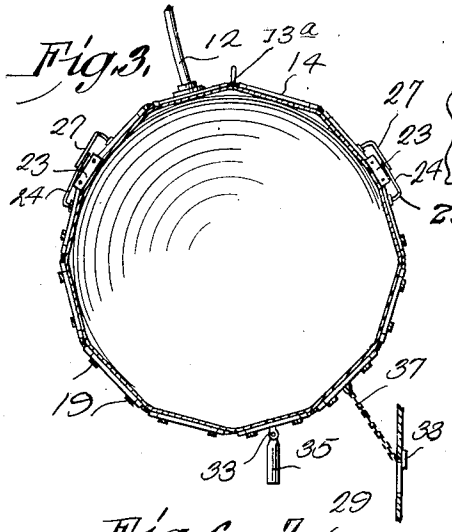


Fig. 4.

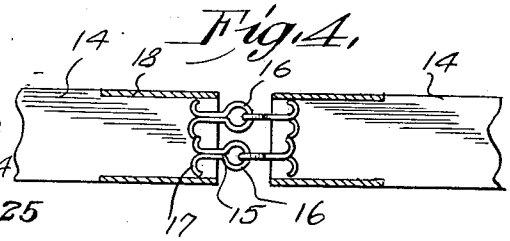


Fig. 5.

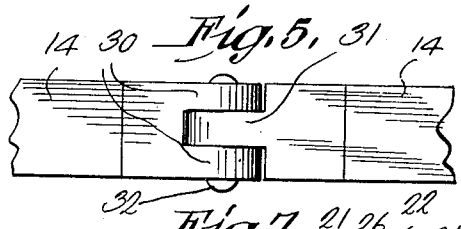


Fig. 6.

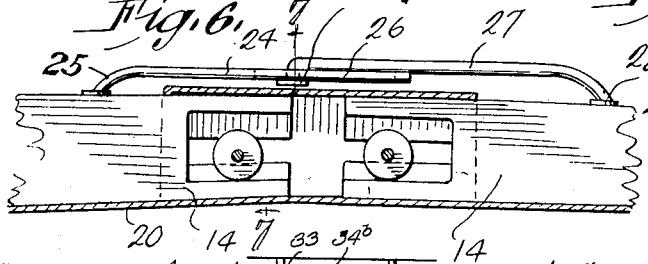
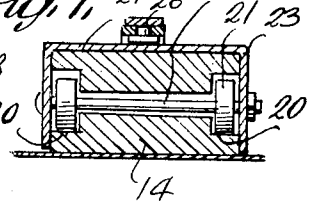


Fig. 7.



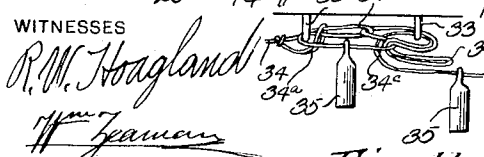


Fig. 11.

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HAIRABED M. MEGUERDITCHIAN, OF GREEN ISLAND, NEW YORK.

APPARATUS FOR RAISING SUNKEN VESSELS.

1,337,250. Specification of Letters Patent. Patented Apr. 20, 1920.

Application filed April 6, 1918. Serial No. 227,067.

To all whom it may concern:

Be it known that I, HAIRABED M. MEGUERDITCHIAN, a subject of the Sultan of Turkey, residing at Green Island, in the county of Albany and State of New York, have invented certain new and useful Improvements in Apparatus for Raising Sunken Vessels, of which the following is a specification.

This invention has relation to apparatus for raising sunken vessels, and the nature and objects thereof will be readily apparent to those skilled in the art to which this invention appertains in the light of the following explanation of the accompanying drawings, illustrating what I now believe to be the preferred embodiment, or mechanical expression, of my invention from among other forms and arrangements within the spirit thereof or the scope of the appended claims.

An object of the invention is to provide an apparatus for this purpose including a plurality of relatively large inflatable bodies adapted to be sunk in a deflated condition, and attached to the sunken vessel, and subsequently inflated by any suitable means whereby to elevate the vessel to the surface of the water.

Another object of the invention is to provide an apparatus for raising sunken vessels including inflatable bodies of a novel character, each inflatable body including a fabric container adapted to be inflated, and a collapsible framework to surround the same, said framework including sliding joints to permit the framework to expand as the containers are inflated.

A still further object of the invention is to provide means of a novel character associated with the framework of the inflatable bodies adapted to be inserted in the port holes of a sunken vessel whereby the vessel may be readily anchored to the inflatable bodies.

A still further object of the invention is to provide a novel means to be embodied in a submarine whereby the anchoring means for the inflatable bodies may be readily inserted in the port holes of the sunken vessel.

In addition to the foregoing my invention comprehends improvements in the details of construction and arrangement of the correlative parts to be hereinafter more fully described and particularly set forth in the appended claims.

In the accompanying drawings in which similar and corresponding parts are designated by the same characters of reference throughout the several views in which they appear:

Figure 1, is a view illustrating the manner in which a sunken vessel is raised by means of my apparatus.

Fig. 2, is a view in side elevation of one of the inflatable bodies.

Fig. 3, is a view in transverse section taken through the inflatable body of Fig. 2.

Fig. 4, is a detail view illustrating one method of forming the joints between the sections of the frame.

Fig. 5, is a detail view illustrating another form of joint.

Fig. 6, is a longitudinal section illustrating the sliding joints in the sections of the frame.

Fig. 7, is a transverse section taken on the line 7—7 of Fig. 6.

Fig. 8, is a detail view in section illustrating the means for inserting the anchoring element in the port holes of the sunken vessel.

Fig. 9, is a view in side elevation of one end of the inflatable body illustrating a reticulated cover therefor.

Fig. 10, is a detail view, and

Fig. 11, is a view illustrating a method of supporting the weights.

With reference to the drawings 10—10 indicates a pair of inflatable bodies, adapted to be disposed one at each side of the sunken vessel longitudinally thereof. Each inflatable body is oblong, substantially circular in cross section and provided with rounded ends, as clearly shown in Fig. 2 of the drawings. Each inflatable body consists of a fabric container 11 of material consisting of one or more layers of coarse fabric or cord embedded or vulcanized in rubber. Tubes 12 are connected to the containers to conduct the air and check valves 12′ are located adjacent the point of connection of the tubes with the container to prevent the escape of air. These valves correspond in structure to those used in pneumatic tires. Each fabric container 11 is surrounded by means of a framework of a collapsible nature consisting of a plurality of annular members of wood or other suitable material. Each annular member comprises a plurality of connected short sections 14, hingedly connected for relative movement. One form of hinge is shown in

Fig. 4. This form of hinge consists of a pair of eye bolts or the like 15 secured to the adjacent ends of the sections 14. The eye bolts, in the present instance are formed of strands of circular stock bent upon themselves at intermediate points to form eyes 16, and the terminals disposed in parallelism and then separated as indicated at 17. The shanks and bent portions 17 are driven laterally into the sides of the sections 14 and then ferrules 18 are slipped over the ends of the sections to securely anchor the eye bolts in place and to prevent their disconnection from the sections 14. The eye bolts are interlinked as shown and the sections 14 are thus hingedly connected for relative movement. Adjacent sections 14 around the bottom portion of the containers of each annular member are then connected by means of longitudinally extending strips 19. Each annular member 13 is formed at a point in its circumference with a joint shown in Figs. 6 and 7. At the joint the adjacent ends of the sections 14 are unprovided with a hinged connection of the type shown in Fig. 4, but are recessed and the lower walls of the recess cut away as at 20. The cut away portions 20 form tracks or race-ways for rollers 21 of which a pair are provided for each one of said adjacent sections 14, the rollers of each section being connected together by means of a shaft 22, with the terminals of the shafts journaled in a rectangular casing 23 open at its lower side and ends to receive the adjacent ends of said sections 14. A bar 24 is provided, having one end bent at right angles as at 25 and secured to the upper surface of one section 14, while the opposite end of the bar is slotted as at 26. A second bar 27 is provided, having one end bent at right angles as at 28 and secured to the other section 14, and its free end bent at right angles and inserted in the slot 26 offset to form the head 29 thereby permitting longitudinal movement of the bars 24 and 27 relative to each other but preventing separation thereof. A second form of joint for the section 14 is disclosed in Fig. 5 from which it will be noted that one section is bifurcated to form a pair of spaced ears 30, while the adjacent section is reduced to form an ear 31 insertible between the ears 30. A bolt 32 is then inserted in said ears to pivotally connect the sections 14 together. One section 14 of each annular member is provided with an eye bolt 33, said eye bolts being in alinement to receive a rope cable or the like 34, which passes therethrough. The cable is passed through the eye bolts in a manner peculiar to this invention. It will be noted from Fig. 11 that initially a loop 34^a is formed in one end of the cable. A second loop 34^b is then formed and passed through the eye bolt of an end member 13, said loop being subsequently passed through the loop 34^a. A weight 35 is then secured to the cable and another loop 34^c formed. A fourth loop 34^d is then formed which is passed through the eye bolt of the next annular member 13, said loop 34^d being subsequently passed through the loop 34^c. A second weight 35 is now secured to the free strand of the cable and the formation of loops just described is repeated, thereby locating a weight between each pair of eye bolts. When the last eye bolt has been reached a loop 34^e is formed through which a pin 34^f is inserted, said pin being slidable in guides secured to the end annular member 13. A cord attached to the pin is led up to the surface of the water when the float is submerged together with the free end of the cable 34 for a purpose which will be presently noted. Also secured to longitudinally alined sections 14 of the annular members 13, at opposite sides of the inflatable body, are eye bolts 36 to which short sections of chain or the like 37 are connected having their free ends connected to the intermediate portions of bars 38. If desired, the fabric container 11 may be covered by means of a reticulated material or netting 39 to prevent undue expansion of the inflatable bodies.

In use, the inflatable bodies are submerged in a deflated condition. When the fabric container is deflated it will be noted that the sections 14 of the annular members may lie in contact or the annular member may be collapsed. The floats may be lowered into the water by means of derricks with a block and fall, the latter being connected to rings 13^a, provided in the annular members 13 for that purpose. The weights 25 will cause the portion of the inflatable bodies bearing the weights to submerge first so as to form the keel of the inflatable members. When the inflatable bodies have been submerged to a point adjacent the sunken vessel the port holes are broken and the bars 38 strung at each side of the inflatable bodies inserted in the port holes as shown in Fig. 1 The tubular conduits 12 are extended upward and to a source of air under pressure which may be supplied by means of any apparatus carried on board vessels indicated at 40. The fabric containers may be now inflated by forcing air under pressure thereto and the fabric containers assume a cylindrical configuration and it will be noted that the annular members 13 will give and likewise assume a circular formation thus securely bracing the fabric container and preventing injury thereto by contact with the sides of the sunken vessel. It will be noted that when the fabric containers are inflated almost to capacity, the joints shown in Figs. 6 and 7 will operate, permitting increase in diameter of the annular members slightly

until the capacity of the fabric container is reached. The cord secured to the pin 34[f] is now tightened so as to withdraw said pin from the loop 34[e] whereupon the cable 34 is pulled. As a result the loops of said cable, beginning with the loop last made are disengaged, one from another and the weights thus disengaged from the eye bolts 33. The weights will obviously be still connected together by means of the cable 34 thus permitting the cable and weights to be elevated to the surface of the water. The buoyancy of the inflatable bodies will now be increased and they will act to elevate the sunken vessel to the surface.

It will be obvious that in shallow water the anchoring members may be inserted in the port holes of the sunken vessel, or the floats otherwise connected thereto by divers.

I have illustrated in Fig. 8 of the drawings a device designed to insert the bars 38 or anchoring members in the port holes of the sunken vessel. This apparatus may be embodied in a submarine, the shell of which is indicated at 41. Mounted exteriorly upon the shell is a pair of standards 42, each pivotally carrying a gear wheel 43. Each gear wheel 43 carries an arm 44 and said arms are formed in sections by the provision of joints 45 at points intermediate their ends defining outer sections 44[a]. The joints it will be noted permit movement of the outer terminals of the arms as well as movement of the sections 44 toward and away from each other. A rack bar 46 is disposed between the gears 43 in meshing engagement with both. A reciprocatory bar 47 is mounted in an opening in the shell of the submarine and a coil spring 48 connects one end of said bar with the rack bar 46 so that the rack bar may be shifted when the hand grip 47 is shifted in a corresponding direction. It will be noted that by movement of the rack bar 46 the gears 43 will be rotated to thus move the arms 44 toward and away from each other as the case may be. In use, the arms 44 are moved toward each other to engage one of the anchoring members 38 therebetween. Mounted on each inner section of each arm 44 is a spring pressed bolt 44[b] designed to enter keepers on the sections 44[a]. Rods 49 connected to said bolts are led through packing glands in the shell of the submarine whereby the bolts may be withdrawn. It will be seen that the bolts will act to retain the sections of the arms 44 in alinement. The anchoring member 38 having been grasped between the arms the rods 49 are manipulated to withdraw the bolts. Rods 50 pivotally connected to the outer sections 44[a] of the arm are likewise provided and led through packing glands in the shell of the submarine and by reciprocating these rods the outer sections 44[a] may be oscillated about the joints 45 to break in the glass covering of the port holes of the sunken vessel to insert the anchoring member. When the anchoring member has been inserted the rack bar 46 may be shifted to separate the arms 44 as an entirety to release the anchoring member. It will be noted that the spring 48 will act to resiliently retain the arms 44 in engagement while the outer sections thereof are manipulated. A window is provided in the shell of the submarine as indicated at 51 to permit the crew to observe the operation of the mechanism just described, and illuminating devices 52 are provided on the outside of the submarine to illuminate the surroundings beneath the water. A telephone apparatus 53 may be provided to permit the operators of the submarine to communicate intelligence to the crew of the vessels 40 to indicate when the inflatable bodies have been securely anchored to the sunken vessel.

When the wreck has been elevated to the surface of the water the floats will support the same and the wreck with floats attached may be towed into port.

In deep water where the use of a submarine is necessary to secure the floats to the sunken vessel it is my intention to provide deflatable floats of the character above described for attachment to the submarines. My object is to prevent the loss of life and property in the event that mishap occurs to the submarine while it is submerged. In the event that the machinery of the submarine breaks down while the latter is submerged, thus rendering it impossible for the submarine to regain the surface under its own power, I propose to lower floats while in a deflated condition and to secure them to the submarine so that the submarine may be elevated by inflating the floats in the same manner as in connection with the raising of other sunken vessels.

The foregoing description and the drawings have reference to what may be considered the preferred or approved form of my invention. It is to be understood that I may make such changes in construction and arrangement and combination of parts, materials, dimensions, etc., as may prove expedient and fall within the scope of the appended claims.

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

1. An apparatus for raising sunken vessels including an inflatable container and a framework inclosing the same including a plurality of collapsible annular members, each annular member comprising a plurality of hingedly connected sections, adjacent end sections, and means connecting said end sections for sliding movement.

2. An apparatus for raising sunken vessels including an inflatable container, a

framework surrounding the same comprising a plurality of annular members, each annular member comprising hingedly connected sections placed end to end with the end sections, a member spanning the adjacent ends of said sections, rollers carried by said spanning members engaging said adjacent ends of the sections, and means connecting said adjacent ends of the sections for sliding movement.

3. In an apparatus for raising sunken vessels, a framework including a plurality of annular members, each member comprising hingedly connected sections in end to end relation with end sections, said end sections having alined grooves forming race-ways, a spanning member for said adjacent ends, a pair of parallel shafts carried by said spanning members, rollers on the shaft to enter the grooves, a pair of rods, one connected to each end section, one rod having a slot, and a bent terminal of the other rod entering the slot whereby to connect said adjacent ends for relative movement.

In testimony whereof I affix my signature in presence of a witness.

HAIRABED M. MEGUERDITCHIAN.

Witness:
M. E. JONES.