S. P. PORTELLA.

SUNKEN SHIPS EMERGING APPARATUS.

APPLICATION FILED APR. 24, 1917.

1,253,526. Patented Jan. 15, 1918.

Fig. 1.

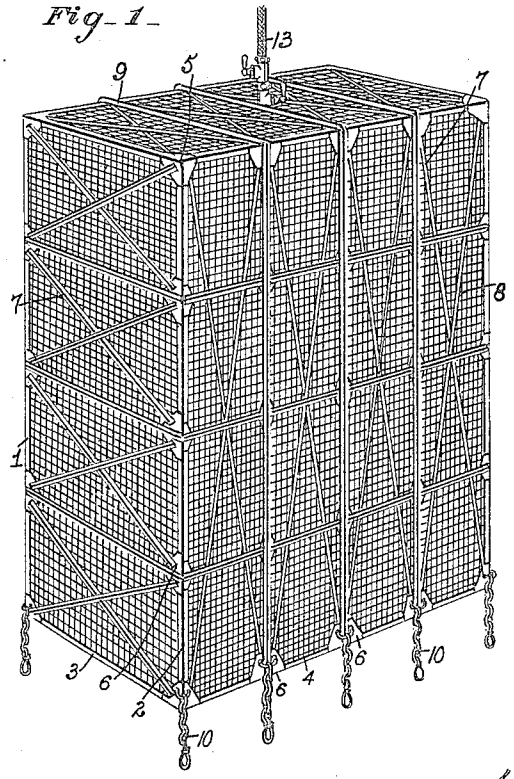


Fig. 2.

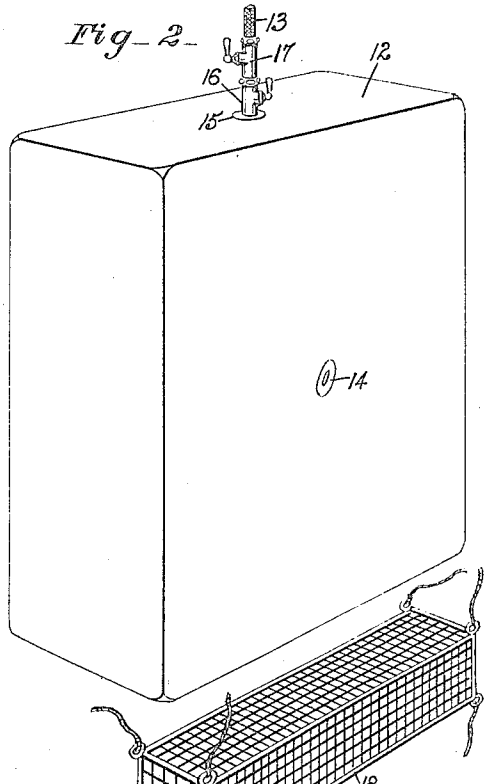


Fig. 3.

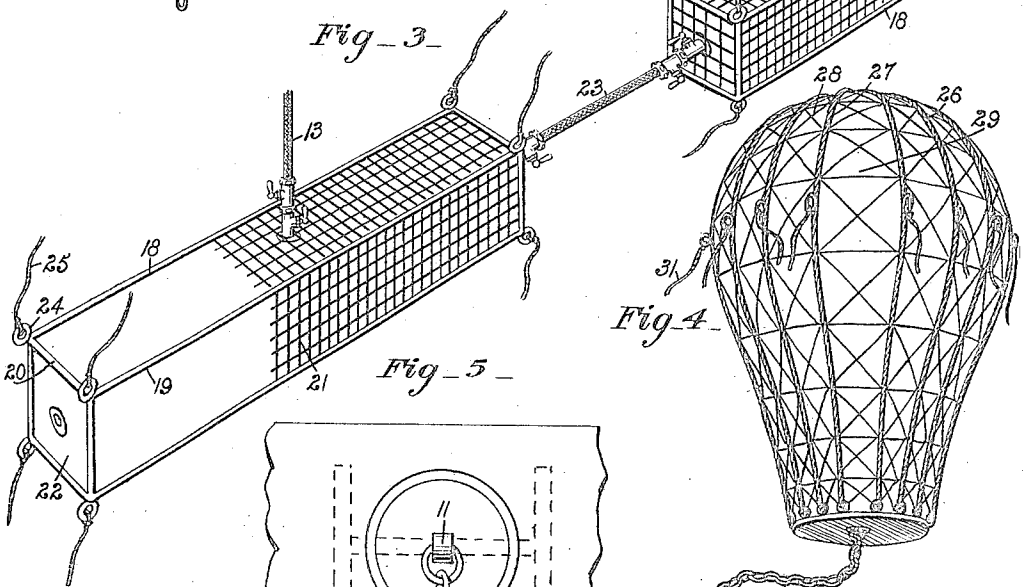


Fig. 4.

Fig. 5.

WITNESSES

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SUNKEN-SHIPS-EMERGING APPARATUS.

1,253,526. Specification of Letters Patent. Patented Jan. 15, 1918.

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To all whom it may concern:

Be it known that I, Dr. SILVIO PELLICO PORTELLA, major-physician of the Brazilian Army, citizen of Brazil, residing at 214 Rua de S. João, São Paulo, State of São Paulo, Brazil, have invented new and useful Improvements in Sunken-Ships-Emerging Apparatus, of which the following is a specification.

This invention relates to ship raising devices and has for an object the provision of means which may be properly fitted to vessels of any size and shape and then operated for raising the vessel to a proper position for being emptied of the water therein.

Another object in view is to provide an inflatable member with casings formed with means for interlocking with parts of the sunken vessel so that when the casing has been placed in position the inflation of the inflatable members will cause an upward lifting action in proportion to the amount of water displaced.

A further object in view is to provide sustantially rectangular casings for inflatable members for use on the sides of ships, and a substantially balloon-shaped structure for use on the deck of ships for righting the ship while in the water and for raising the same substantially flush with the upper surface of the water.

In the accompanying drawings:

Figure 1 is a perspective view of one of the casings with an inflatable member arranged therein.

Fig. 2 is a perspective view of one of the inflatable members.

Fig. 3 is a perspective view with certain parts broken away illustrating another shape of casing and connecting means therefor.

Fig. 4 is a perspective view of a balloon casing and associated parts disclosing certain features of the invention.

Fig. 5 is a fragmentary side view showing how some of the casings are connected to the ship at one of the lower portholes.

Referring to the accompanying drawing by numerals, 1 indicates a cage or casing formed with a plurality of uprights 2 constructed of angle iron or any other suitable members and held in place by bars 3 and 4 extending at right angles as shown in Fig. 1. Suitable corner pieces and tie plates 5 and 6 are provided that connect the bars 3 and 4 with the uprights 2. Bracing members 7 are also provided in any desired number and wherever preferred to assist in properly supporting the wire mesh lining 8 of the casing. A plurality of substantially U-shaped members 9 are also provided which rest against the top and are connected to the bottom plates 6 so that when the various chains 10 connected to the bottom plate 6 are secured to a vessel and there is an upward pull, the strain will be communicated to the entire casing. In actual operation the chains 10 are connected to the sides of the vessel at any desired point, as for instance, at the lowermost row of port holes, said chains being held in place by suitable members 11, as shown in Fig. 5, which extend through the port holes and are braced interiorly of the ship. The casing 1 could be otherwise secured to the ship if preferred without departing from the spirit of the invention.

Before the casing is rotated into position an inflatable member or bag 12 is arranged in the casing in a deflated condition so that when the casing is in position air is pumped into the inflatable bag 12 through the flexible pipe 13 until the bag 12 completely fills the casing 1. By this means the water is displaced and an upward pull is given, the upward pull being in proportion to the cubic content of the casing. It is of course evident that the air in the inflatable member 12 need not be under any greater pressure than necessary to cause the casing to be completely inflated. The bag 12 is provided with an opening 14 to which a valve member may be connected if desired, said opening being normally closed. A second opening 15 is also provided into which the valve 16 is threaded, said valve 16 being formed with a valve member which will readily permit the air to be admitted but will prevent the air from escaping. The hose or flexible pipe 13 may be made from rubber or canvas or any desired material and is provided at the lower end with a valve 17, which valve is designed to be turned off before the pipe 13 is disconnected so that no water will enter the pipe.

In Fig. 3 will be seen a slightly modified form of casing 18 which is formed from bars of any desired shape, there being preferably four bars 19 running longitudinally and connected with four bars 20 at the ends, said

bars inclosing a wire mesh 21 for retaining the inflatable bag 22. The casing 18 is designed to be connected by a flexible pipe 23 if desired, whereby there need be used only one air supply pipe 13. The corners of each of the casings 18 are provided with rings 24 for receiving the various cables or fastening means 25 which are used for securing the casings at convenient points within the sunken vessel by divers, so that when the air is pumped into the bags 22 the upward pull of the bags will produce an upward pull or strain on the ship.

In Fig. 4 will be seen a further modified form of the invention in which the casing 21 is balloon-shaped and provided with a number of ribs 27 secured to the wire mesh body 28. The wire mesh body 28 acts as means for preventing bursting of the inflatable bag 29 and acts as means for transmitting the strain from said bag to the ribs 27 and from thence to the anchoring member 30 and the guy members 31. This balloon-shaped structure of casing is preferably secured to the deck of the sunken vessel at any suitable point and if the vessel is a large one a number of these balloon casings may be used for righting the vessel and assisting in raising it to a certain extent.

In operation, the form of the invention shown in Fig. 3 is preferably utilized interiorly of the vessel and the various casings 10 are utilized along the bottom or sides, while the balloons shown in Fig. 4 are utilized on the deck. After the casings have been placed in position with the various inflatable members or bags therein in a deflated condition, pipe 13 is connected to the bags and air supplied by a suitable pump from the workmen's vessel. If desired, a number of pipes 13 may be provided so that there will be one pipe for each casing, whereby all of the casings may be inflated simultaneously or only a few may be inflated simultaneously, as may be desired. Preferably the bags are inflated in such sequence as to cause the sunken ship to first right itself and then the proper bags are inflated for causing the ship to move gradually upwardly in a proper upright condition.

What I claim is:

1. In a device of the character described, a rigid casing formed with a plurality of bracing members including a wire mesh body, anchoring means connected to said casing, and an inflatable bag arranged in said casing formed of such a size as to fill the casing when fully inflated.

2. In a device of the character described, a rigid casing provided with a plurality of bracing bars and a wire mesh body, a plurality of partially encircling tension straps, anchoring means connected with said tension straps whereby the strain is communicated from the body to the tension straps and from thence to the object connected with said anchoring members, and an inflatable bag arranged in said casing.

3. In a device of the character described, a casing provided with a plurality of bars forming a frame, a plurality of diagonal bars for bracing the first mentioned bars, a wire mesh body arranged within said bars and in contact therewith, a pneumatic bag arranged within said wire mesh body and adapted to fill the same when fully inflated, a plurality of U-shaped tensioning members straddling said casing, and anchoring devices connected with each of said U-shaped members.

4. In a device of the character described, a comparatively stiff casing, a wire mesh body arranged within said casing and in contact therewith, a pneumatic bag arranged within said wire mesh body and adapted to fill the same when fully inflated, a plurality of U-shaped tensioning members straddling said casing, and anchoring devices connected with each of said U-shaped members.

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

DR. SILVIO PELLICO PORTELLA.

Witnesses:
E. A. BURGESS,
A. COSTAY.

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