Dec. 21, 1937. J. W. JUSTUS 2,102,626

RESCUE APPARATUS

Filed Aug. 10, 1936

Fig. 1

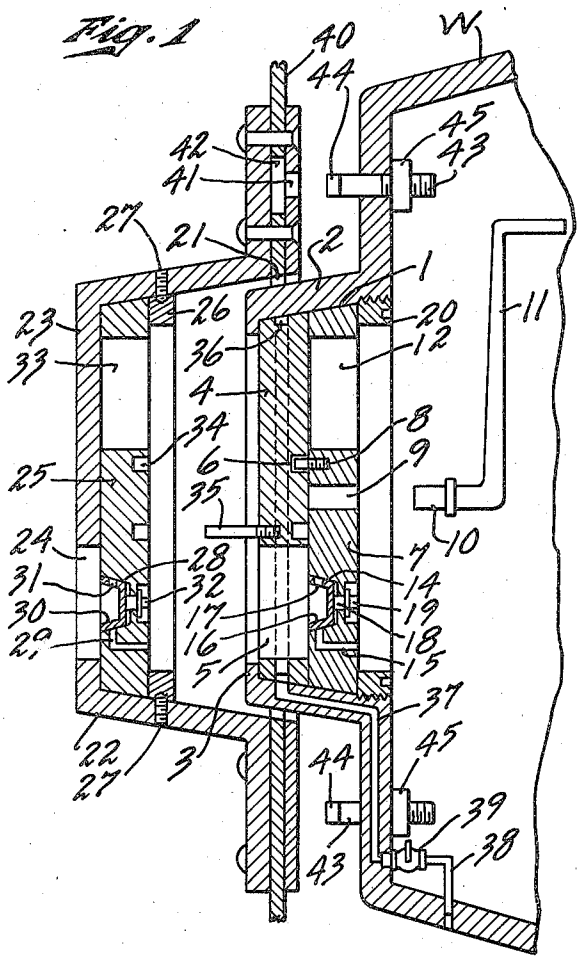


Fig. 4

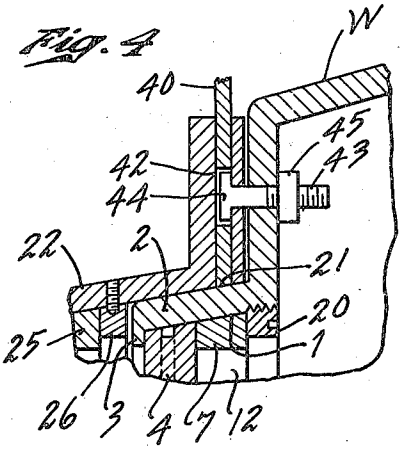


Fig. 2

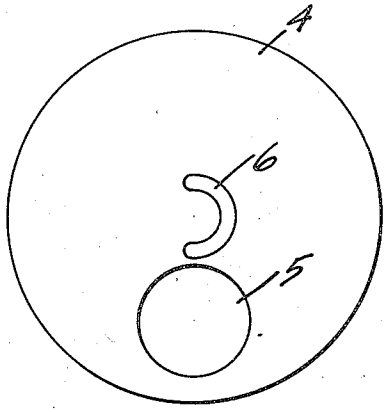
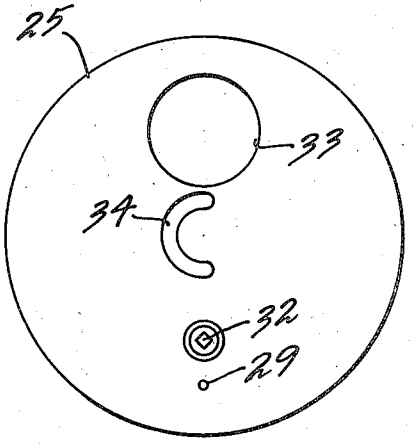


Fig. 3



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RESCUE APPARATUS

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Application August 10, 1936, Serial No. 95,159

5 Claims. (Cl. 114—16.8)

This invention relates to a rescue apparatus and has relation more particularly to an apparatus of this kind for use in connection with boats, and it is primarily an object of the invention to provide an apparatus of this kind which provides means whereby access may be had to the interior of a sunken vessel for the purpose of effecting rescue or for salvaging the cargo of such vessel. The original application for Letters Patent was filed on December 24, 1934, under Serial No. 759,092.

Another object of the invention is to provide an apparatus of this kind wherein the hull of the boat at one or more points is provided with a normally closed entrance opening together with a diving bell or other submerging structure also provided with a normally closed entrance opening for registry with the entrance opening in the hull of the vessel, the closures for the entrance openings in the vessel and the bell being operable from within the bell to adjust such closure in a manner to permit desired communication between the bell and the interior of the vessel.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved rescue apparatus whereby certain important advantages are attained and the device rendered simpler, less expensive, and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

Apparatus embodying features of my invention is illustrated in the accompanying drawing, forming part of this application, wherein:

Fig. 1 is a fragmentary view partly in section and partly in elevation and of somewhat a diagrammatic character illustrating an apparatus constructed in accordance with an embodiment of my invention;

Fig. 2 is a view in top plan of one of the closure members as herein employed;

Fig. 3 is a view in top plan of another of the closure members as herein embodied; and

Fig. 4 is a fragmentary sectional view illustrating the bell and the vessel in locked connection one with the other.

As disclosed in the accompanying drawing, W denotes a wall of a diving bell or other submerging device, the construction and character of which forms no part of the present invention. This wall W at a suitably located point is provided with an opening 1 which is defined by an outstanding and relatively long continuous flange 2 providing what might be termed a conoidal male member with the smaller end of the taper outwardly disposed. This smaller end of the male member is provided with an inwardly disposed continuous lip or flange 3 against which contacts a rotatable closure member 4 snugly fitting within the male member 2. This member 4 to one side of its axis is provided with a relatively large opening 5 while the upper or inner face of this member 4 is provided with a substantially semi-circular groove 6 concentric to the axial center of the closure member 4.

Overlying the closure member 4 is a second closure member 7 which also snugly engages within the male member 2 and has close contact with the previously applied closure member 4. The member 7 to one side of its axial center carries an outstanding lug 8 which is received within the semi-circular groove 6 of the closure member 4 hereinbefore referred to. At its axial center the closure member 7 is provided with a socket 9 preferably angular in cross section, and in which is adapted to be inserted the angular end portion 10 of an operating member 11, said member being herein disclosed as a conventional hand crank although I do not wish to be understood as limiting myself in this respect.

The closure member 7 is also provided therethrough with a relatively large opening 12 of the same diameter as the opening 5 and to one side of the axial center of the member 7. Normally the openings 5 and 12, as illustrated in Figure 1 of the drawing, are diametrically opposed so that the opening 12 is effectively closed by the disk 4 at the same time the opening 5 is effectively closed by the disk 7.

When the disks 4 and 7 are in this normal closed position the outer face of the disk 7 has a tapered pocket 14 in communication with the opening 5 and leading from this pocket 14 through the closure member 7 is a port 15 opening within the interior of the diving bell or kindred submerging device of which the wall W is a part. Snugly fitting within the pocket 14 is a hollow tapered valve member 16, the skirt of which being provided with an opening 17 for register with the port 15 upon requisite turning movement of the valve member 16 so that the port 15 will have communication with the opening 5.

The valve member 16 may be rotated in any desired manner but, as herein disclosed, the central portion of this valve member 16 carries a shank 18 extending through the closure member 7 and having an angular end 19 with which a suitable operating member may be conveniently engaged.

After the closure members 4 and 7 have been applied within the male member 2 they are effec-

tively held in desired assembly by a ring member 20 threading within the larger end portion of the male member. This ring member 20 may be otherwise applied.

The hull of a vessel at one or more points thereon, as for example in each side and substantially midship, is provided with an entrance opening 21 defined by an inwardly disposed and relatively long flange 22 whereby is produced a tapered female member in which is adapted to be snugly received the male member 2.

This member 22 has the smaller end of its taper inwardly disposed and said smaller end is closed by a head 23 preferably integral therewith. The head 23 is provided therethrough with an opening 24 of desired size and which is normally closed by a closure member 25 snugly and rotatably engaged within the inner portion of the female member 22. The closure member 25 is held in desired position by an annular member 26 fitting within the female member 22 for close contact with the applied closure member 25. This member 26 is maintained in desired position by holding screws 27 or otherwise as may be preferred.

When the opening 24 is closed by the member 25, the tapered pocket 28 in the adjacent face of the closure member 25 is in communication with the opening 24 and leading from this pocket 28 and disposed through the closure member 25 is a port 29. This pocket 28 has threadably engaged therewith a hollow tapered valve member 30, the skirt of which being provided with a port 31 for register with the port 29. The valve member 30 also carries a shank 32 passing through the closure member 25 to be engaged by a suitable operating member as has hereinbefore been stated with respect to the valve member 16.

The pocket 28 is to one side of the axial center of the member 25 and to the opposite side of said member 25 and in radial alignment with the pocket 28 is an opening 33 through the closure member 25 of the same dimensions as the opening 24, and the member 25 is adapted to be rotated to bring the openings 33 and 24 into register in order to have desired access within the hull of the vessel.

As herein disclosed the member 25 in its inner face is provided with a substantially semi-circular groove or slot 34 concentric to the axial center of the member 25 and in which is received a lug 35 projecting from the opposed face of the closure member 4 carried by the wall W as the member 2 enters the member 22. This engagement of the lug 35 within the groove 34 provides means whereby the desired rotation of the closure member 25 may be effected by the rotation of the closure member 7.

The closure member 4 has extending entirely around its periphery a channel 36 which is at all times in communication with a port 37 which extends through the wall W and opens through the outer face thereof at a desired point remote from the male member 2. As herein disclosed a portion of this port 37 is continued through a pipe line 38 within the diving bell and interposed in this pipe line 38 is a regulating valve 39.

The wall 40 of the hull of the vessel in its outer face is provided therearound with a continuous annular groove 41 concentric to the axial center of the member 22 and the inner portion of this groove or channel 41 is undercut at opposite sides thereof to provide the inner shoulders 42.

Disposed through the wall W at suitable points around the member 2 are the shanks 43, the outer ends of which carrying cross heads 44. As the member 2 snugly engages within the member 22 the heads 44 will pass into the slot 41 whereupon said shanks 43 are given a partial turn to cause the extremities of the heads 44 to overlie the shoulders 42, the shanks 43 are then effectively tightened as by the nuts 45, thus assuring a tight and effective securement of the diving bell to the hull of the vessel. The nuts 45 may be operated in any desired manner.

Before the member 2 is caused to enter the member 22, the valve 39 is adjusted into open position and the valve 16 is closed. This is to allow the water within the female member to pass out through the port 37 as the male member snugly seats itself within the member 22 and the desired anchoring or securement effected. When this anchoring or attachment is completed the valve 39 is closed and there will be a certain amount of water pressure within the openings 5 and 33 and between the closure members 25 and 4. In order to relieve such pressure to facilitate the desired operation of the closure members 4 and 7, the valve 16 is adjusted to open the communication of the port 15 with the opening 5 and then after the members 4 and 7 have been adjusted to bring the openings 5 and 12 into register and with the registering openings 5 and 12 above the valve 30, this valve is adjusted into open position to open the port 29 to the interior of the vessel. If the vessel is flooded water will start to flow out through the port 29, but, of course, the occupant of the bell will then immediately close the valve 30. If the vessel is not flooded the member 7 is continued to be operated so that the member 25 may be adjusted to bring the opening 33 into communication with the registering openings 5 and 12 and then to bring the registering openings 33, 5 and 12 into register with the opening 24. These openings are of a size to readily permit the passage of a person therethrough whereby any of the occupants of the vessel can be removed or an occupant of the bell or kindred submerging device may enter the vessel for the purpose of salvage.

It is believed to be self-evident that when it is desired to disconnect from the vessel the operation hereinbefore referred to is reversed.

From the foregoing description it is thought to be obvious that a rescue apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the spirit and principles thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. In combination, a vessel hull having an opening therethrough defined by a surrounding flange providing an entrance member, a closure member for the said entrance member provided with a passage opening, a closure member mounted within the entrance member and having an opening to register with the opening in the first closure member, a submergible vessel having an opening in a wall thereof defined by a surrounding flange to provide a member to telescope with the entrance member of the hull, a plurality of closure members within the member of the submergible vessel, said closure members having openings adapted to register with each other,

said openings being also adapted to be brought into register with the openings in the closure members of the hull.

2. In combination, a vessel hull having an opening therethrough defined by a surrounding flange providing an entrance member, a closure member for the said entrance member provided with a passage opening, a closure member mounted within the entrance member and having an opening to register with the opening in the first closure member, a submergible vessel having an opening in a wall thereof defined by a surrounding flange to provide a member to telescope with the entrance member of the hull, a plurality of closure members within the member of the submergible vessel, said closure members having openings adapted to register with each other, said openings being also adapted to be brought into register with the openings in the closure members of the hull, and means permitting the escape of water as the entrance member of the hull and the associated member of the submergible vessel are telescopingly engaging.

3. In combination, a vessel hull having an opening therethrough defined by a surrounding flange providing an entrance member, a closure member for the said entrance member provided with a passage opening, a closure member mounted within the entrance member and having an opening to register with the opening in the first closure member, a submergible vessel having an opening in a wall thereof defined by a surrounding flange to provide a member to telescope with the entrance member of the hull, a plurality of closure members within the member of the submergible vessel, said closure members having openings adapted to register with each other, said openings being also adapted to be brought into register with the openings in the closure members of the hull, and means for releasing the closure member of the submergible vessel from the pressure of the water thereon after the entrance member of the hull and the associated member of the submergible vessel have been telescopically engaged one within the other.

4. In combination, a vessel hull having an opening therethrough defined by a surrounding flange providing an entrance member, a closure member for the said entrance member provided with a passage opening, a closure member mounted within the entrance opening and having an opening to register with the opening in the first closure member, a submergible vessel having an opening in a wall thereof defined by a surrounding flange to provide a member to telescope with the entrance member of the hull, a plurality of closure members within the member of the submergible vessel, said closure members having openings adapted to register with each other, said openings being also adapted to be brought into register with the openings in the closure members of the hull, and means for releasing the closure members of the submergible vessel from the pressure of the water thereon after the entrance member of the hull and the associated member of the submergible vessel have been telescopically engaged one within the other, said means being operable from within the submergible vessel.

5. In combination, a vessel hull having an opening therethrough defined by a surrounding flange providing an entrance member, a closure member for the said entrance member provided with a passage opening, a closure member rotatably mounted within the entrance member and having an opening to register with the opening in the first closure member, a submergible vessel having an opening in a wall thereof defined by a surrounding flange to provide a member to telescope with the entrance member of the hull, a plurality of rotary closure members within the member of the submergible vessel, said closure members having openings adapted to register with each other, said openings being also adapted to be brought into register with the openings in the closure members of the hull, and means operated from the exterior of the hull to effect communication with the interior of the hull after the entrance member of the hull and the associated member of the submergible vessel are telescopically engaged and before the closure members are moved into open position.

JAMES W. JUSTUS.