July 18, 1933. P. KOUMOUTSAKOS 1,918,405

SUBMARINE RESCUE DEVICE

Filed Feb. 18, 1933 3 Sheets-Sheet 1.

Fig. 1.

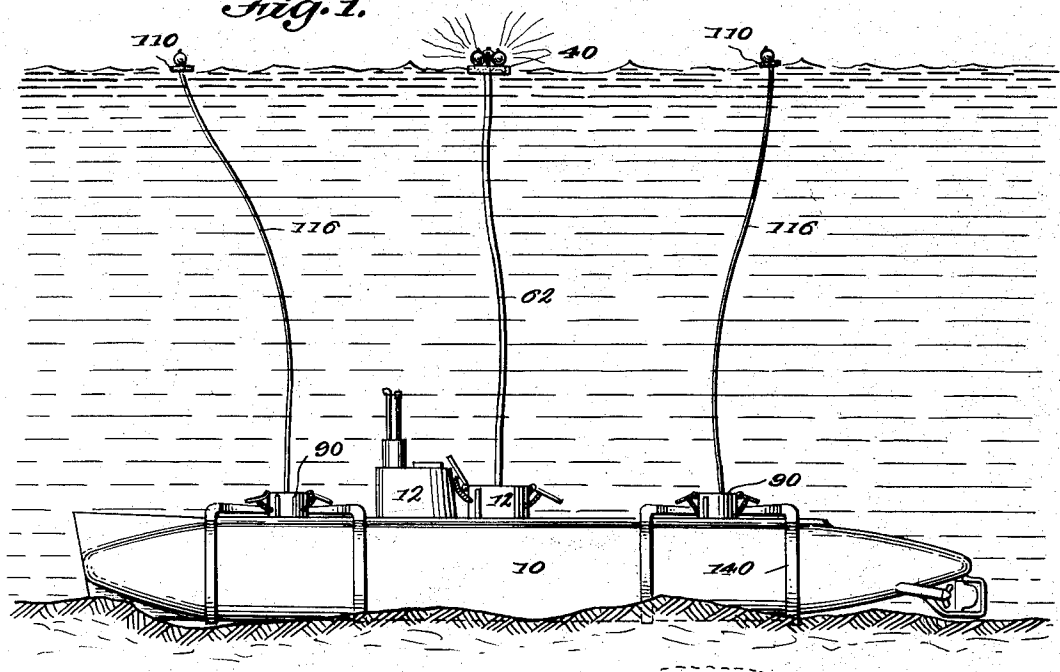


Fig. 2.

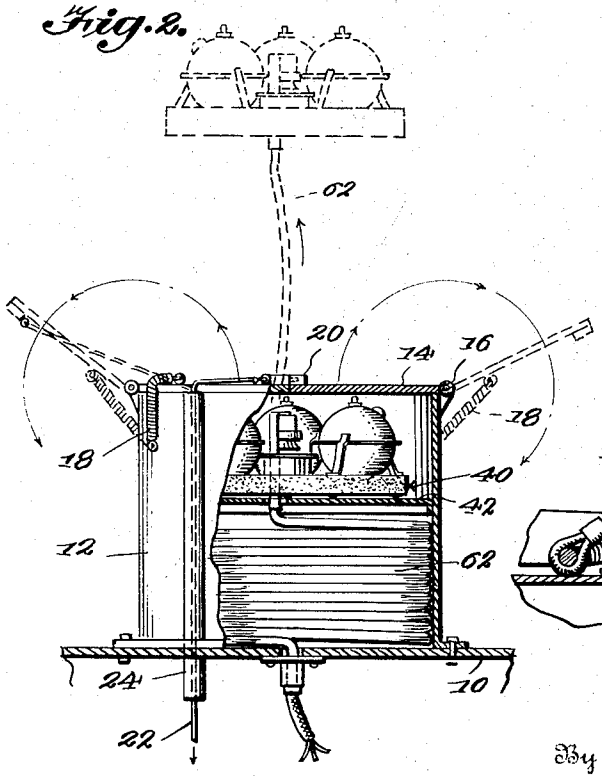
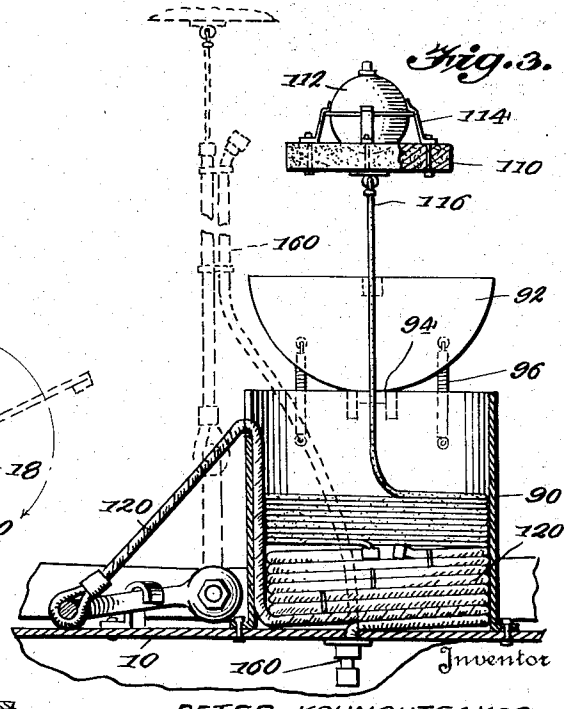


Fig. 3.



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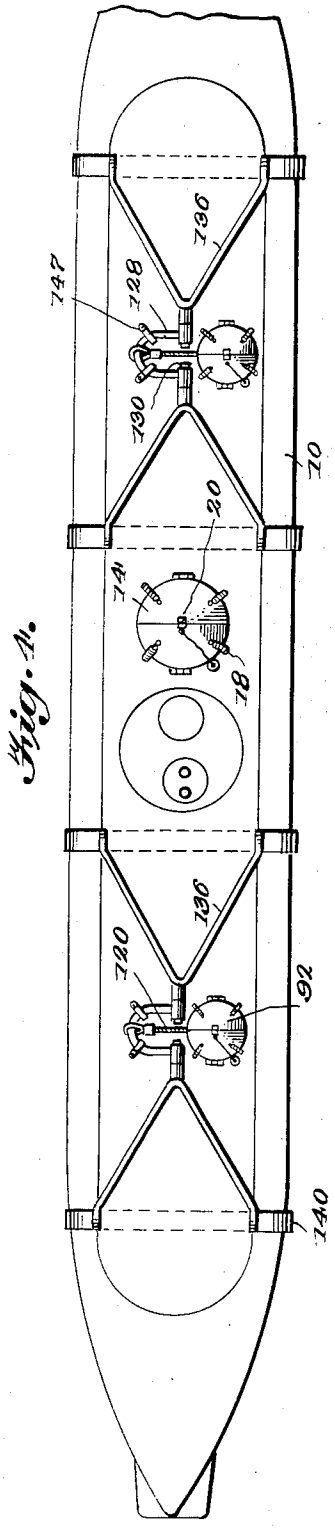
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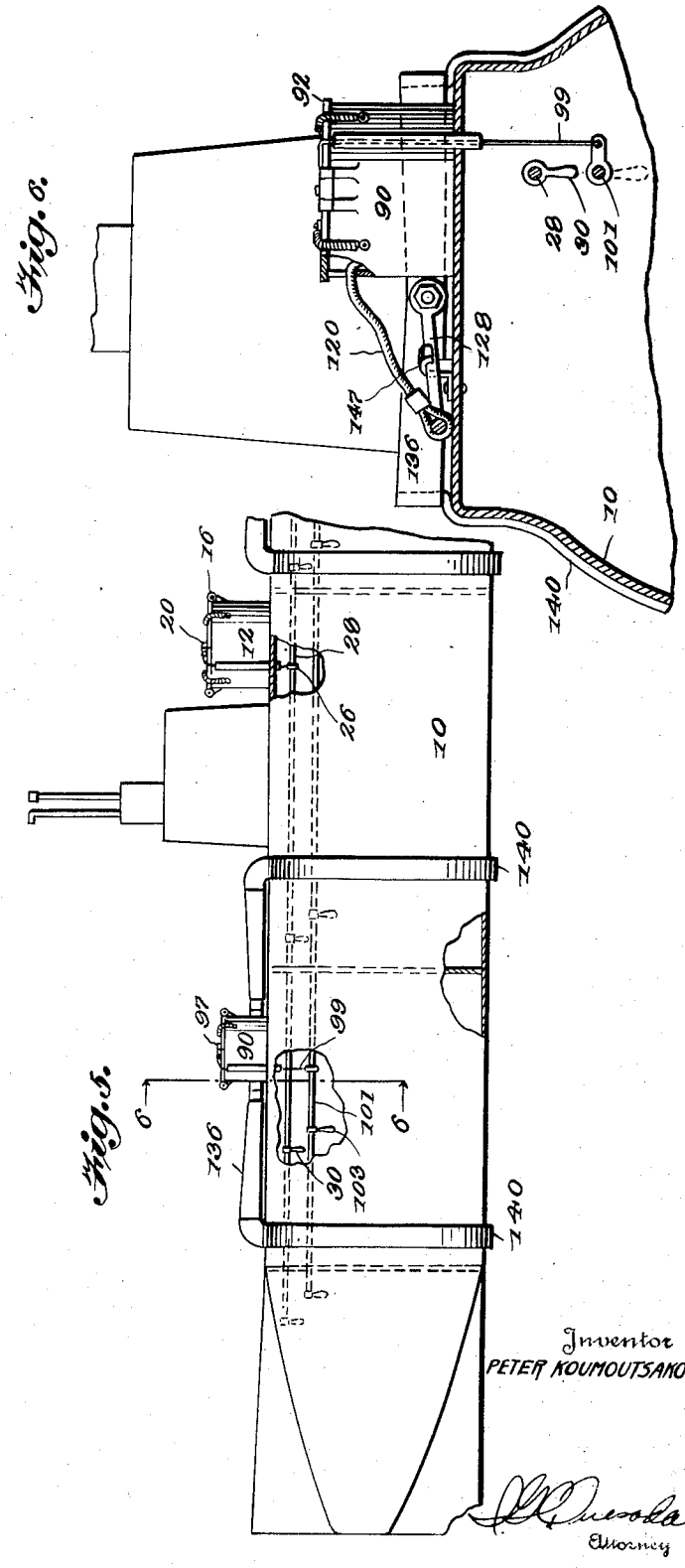
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SUBMARINE RESCUE DEVICE

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SUBMARINE RESCUE DEVICE

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Fig. 7.

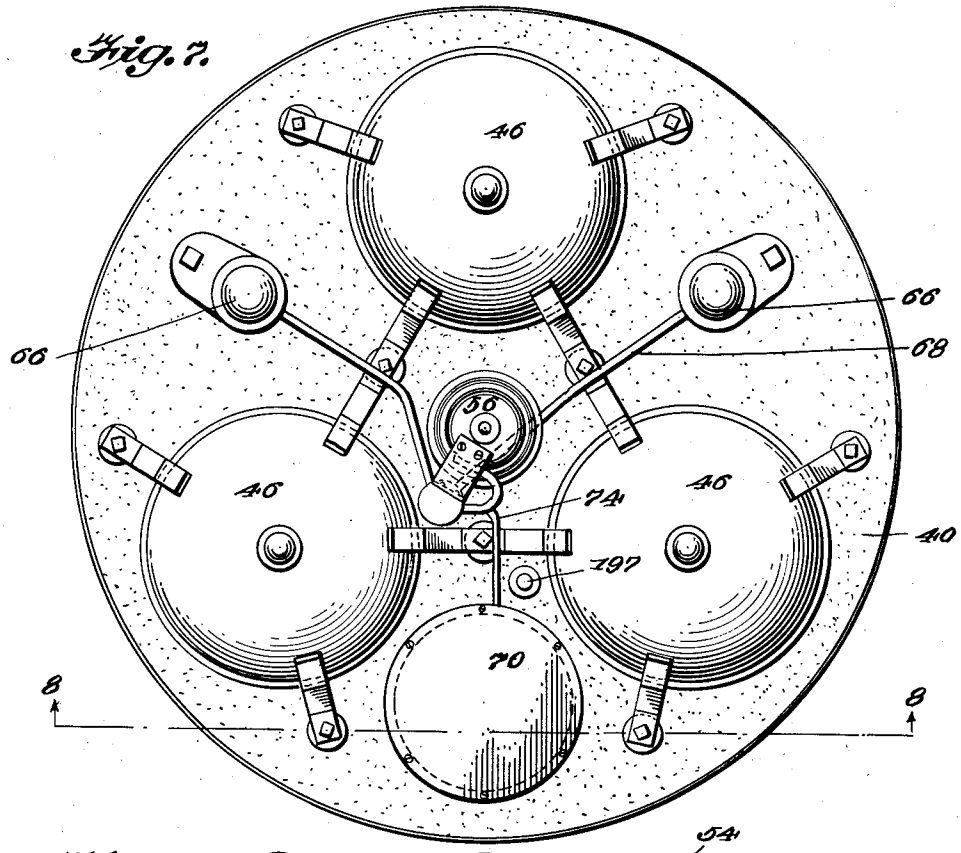
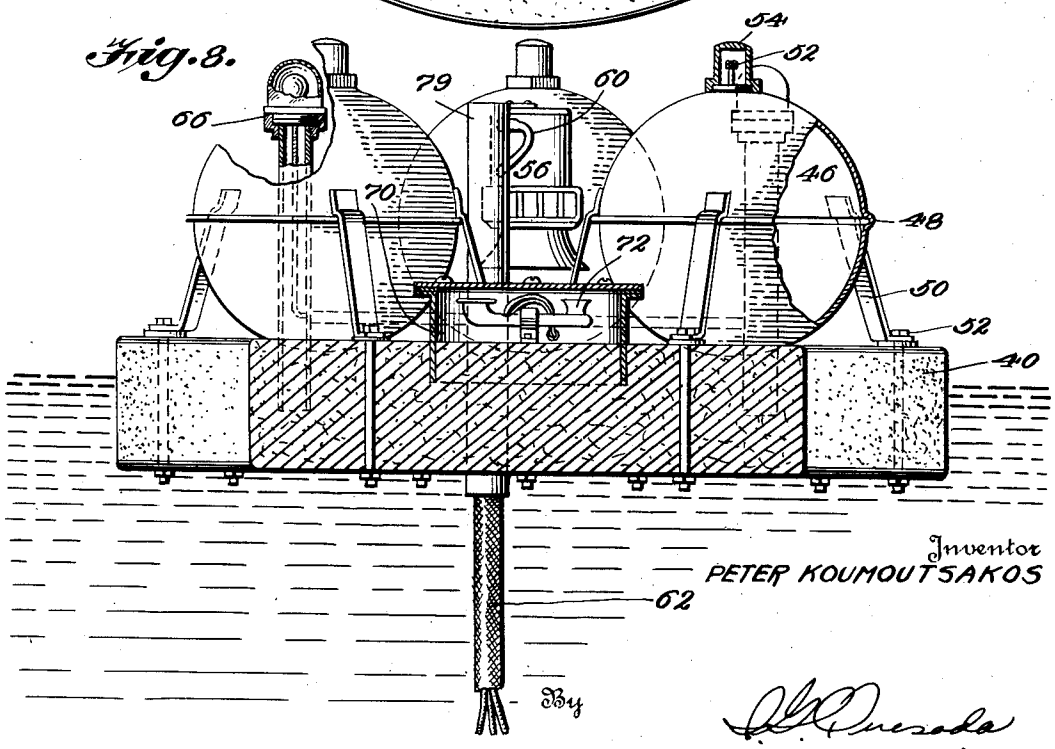


Fig. 8.



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Patented July 18, 1933 1,918,405

UNITED STATES PATENT OFFICE

PETER KOUMOUTSAKOS, OF BROOKLYN, NEW YORK

SUBMARINE RESCUE DEVICE

Application filed February 18, 1933. Serial No. 657,446.

The invention forming the subject of this application has special reference to rescue means for submarines.

Among other things, the invention contemplates simple means by which, when a submarine becomes disabled and is unable to rise to the surface, a signal buoy may be released and allowed to rise to the surface carrying with it a cable which, of course, is attached at the lower end thereof to the submarine to the end that the audible and visual signals mounted on the float may be controlled by those within the submarine. Further, the signal float may be found to carry a telephone set operatively connected with the interior of the submarine so that two-way communication may be maintained between those trapped within the submarine and those endeavoring to effect a rescue. By way of further brief reference to the signal float it is pointed out that the various signal devices thereon are strictly waterproof and the arrangement of such devices with respect to the other parts of the float, such as helium filled spheres, is such that these signal devices are protected against the destructive effects of heavy seas.

Another feature of the invention will be found to reside in the means by which salvage cables are attached to the hull of the submarine and are operatively connected to salvage buoys through the intervention of lighter cables, so that when the vessel is located the light cables attached to the salvage buoys may be hauled in to bring to the surface the heavier cables by which the submarine itself may be raised and in this connection it is noted that flexible hose sections may be attached to the aforesaid cables to allow fresh air to be introduced into the submarine and to allow foul air to be expelled therefrom.

Another object is to provide a simple and reliable means by which the previously referred to salvage buoys and signal float may be released from various compartments of the submarine so that should one or more of the compartments of the submarine be flooded, the rescue apparatus may be operated from the compartment or compartments in which the crew of the submarine has taken refuge.

A further aim is to provide a rescue apparatus of the type alluded to which may be applied to a submarine either during the construction or at any time thereafter without substantial alteration in the construction of the vessel or interfering with its intended use.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of a submarine equipped with the improved rescue apparatus, the signal float and the salvage buoys being shown floating on the surface of the water,

Figure 2 is a side elevation partly in section, of the improved signal float in place within a signal-receiving tower, the signal buoy and the cover of the tower being shown in dotted lines in the positions occupied when released,

Figure 3 is a vertical sectional view through a buoy receiving compartment or tower with the cover thereof open to allow the buoy to rise to the surface,

Figure 4 is a fragmentary plan view of a submarine equipped with the improved rescue apparatus,

Figure 5 is a fragmentary side elevation of a submarine equipped with the improved rescue apparatus, parts being broken away to illustrate the releasing mechanism for the several buoys,

Figure 6 is a detail vertical transverse sectional view taken on line 6—6 of Figure 5,

Figure 7 is a plan view of a signal float embodied in the invention,

Figure 8 is a vertical transverse sectional view taken on line 8—8 of Figure 7.

In the drawings wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates a submarine of convention or other de-

sign having the usual conning tower 12 and such other appurtenances as are found on submarines.

As illustrated in Figure 1, the submarine is provided on the deck thereof and at a suitable point between the hull and stern, with a tower 12 of cylindrical or other outline and having a closure consisting of a pair of semi-circular sections 14 horizontally hinged to the upper end of the tower as indicated at 16. It is clearly shown in Figure 2 that the sections 14 are constantly urged to fully open positions through the employment of contractile coil springs 18 attached to the outer sides of the sections at points spaced from the hinges thereof and to suitable points on the exterior of the tower, the exterior arrangement of the springs being intended to leave the interior of the tower unobstructed for the free release of signal floats, to be described.

It is further shown in Figure 2 that a spring latch 20 of a suitable design is employed to secure the sections 14 in closed position and such latch has connection with a flexible cable 22 extending into the submarine through a suitable guide tube 24 attached to the outer side of the tower and extending vertically thereof. Particular attention is now invited to Figure 5 in which it is clearly illustrated that the lower end of the cable 22 has connection with the crank 26 of a shaft 28 and that such shaft extends lengthwise through all the major compartments of the submarine so that the same is available to the crew of the submarine regardless of the compartment in which they might happen to be trapped. In this connection it is pointed out that the shaft 28 is provided at longitudinally spaced points and in each compartment, with a handle 30 extending radially to allow the shaft to be turned and thereby actuate the cable 22 for the release of the latch 20.

In Figure 2 it is illustrated that a signal float 40 preferably of disc-shaped formation is located within the tower 12 upon a horizontal partition or false bottom 42 thereof, so that when the doors 14 are opened, the float, being of a highly buoyant material such as cork or balsa wood, may rise to the surface unobstructed by hinges, springs, latches or the like.

Referring now to Figures 7 and 8 it will be seen that the signal float 40 is provided at more or less uniformly spaced points and on the upper surface thereof with shallow sockets receiving the base portions of helium containing spheres 46. It is intended that the spheres 46 shall be of metal or other suitably rigid material and such spheres are provided between the upper and lower ends thereof with circumferential ribs 48 over which the offset upper portions of anchoring posts 50 are extended. The lower portions of the posts 50 are extended angularly and are anchored to the body of the float by suitable fastening devices 52.

Of course, the spheres 46 are provided with suitable valves 52 and with protecting caps 54 extending over such valves. It is believed to be clear that since the spheres 46 are filled with helium or other buoyant gas, such spheres will add to the buoyancy of the float.

With further reference to Figures 7 and 8, it is pointed out that the signal float is provided at the center thereof with a siren 56 arranged with the horn downward and suitably waterproofed so that the same will not be rendered inoperative in heavy seas or while rising to the surface. The siren has connection with an electric cable 60 extended through a trunk line 62 to the interior of the submarine, to the end that the siren may be energized by the batteries carried in the submarine. It is shown in Figure 2 that the cable 62 is coiled in the lower compartment of the tower 12 immediately beneath the partition 42 until the float is released at which time the cable is uncoiled through the ascent of the float.

In addition to the siren 56 the float 40 is provided with signal lights 66 of the same or different colors energized through electric wires 68 extending through the trunk line 62 to a source of current within the submarine.

From Figures 7 and 8 it will also be seen that the float 12 is provided on the upper surface thereof with a cylindrical or other container 70 within which there is located a telephone set 72 connected to the interior of the submarine through a cable 74, extended down through the trunk line 62 allowing a two-way communication to be maintained between the rescue party and those alive within the submarine. The top of the container 70 is shown to be removable and at the same time strictly waterproof to positively prevent the incursion of water into the interior of the container. In fact, the signal lights 66, the siren 56 and the telephone arrangement are all strictly waterproofed as are the cables leading therefrom to the end that these parts are not interfered with either before being released or while in actual use on the surface of the water.

It is important to observe that the signal lights 66 and the telephone mechanism are spaced between the buoyant spheres 46 and are protected thereby against the destructive effects of heavy seas. Also, the siren 56 is surrounded by the series of buoyant spheres and is protected by such spheres and the anchoring posts thereof against destructive engagement by heavy waves.

Figures 7 and 8 also illustrate that the siren 56 is supported by an upstanding tubular bracket 79 which not only functions as such but as a conduit for the adjacent portions of the electric cables 68 and 74.

Referring now to Figure 3 it will be seen that the deck of the submarine carries at spaced points a pair of towers 90 of cylindrical or other form, having the upper ends thereof provided with a closure in the form of a pair of semi-circular sections 92 horizontally hinged to the upper end of the tower as indicated at 94. As in the case of the tower 12 the tower 90 is provided on the exterior thereof with a suitable number of contractile coil springs 96 attached to the sections 92 to swing the same to open positions immediately upon being released.

Spring latches 97 serve to normally hold the closure sections 92 in closed positions and such latches have connection with actuating cables 99, these cables being attached to an operating shaft 101. As in the case of the shaft 28, the shaft 101 is provided in each main compartment of the submarine with a handle 103 by which the sections 92 of the towers 90 may be released to, in turn, allow of the release of salvage buoys.

The several salvage buoys are designated by the numeral 110 and are provided on the upper surfaces thereof with helium containing spheres 112, such spheres being secured in place by anchoring devices 114.

By reference to Figure 3 it will be seen that each salvage buoy has a rather light cable 116 attached thereto so that upon the release of the buoy 110 from the tower 90 thereof such cable is hauled to the surface. When the submarine is located the rather light cables 116 are drawn in to bring to the surface somewhat heavier cables 120 by which the submarine may be raised.

Both the heavy and light cables 116 and 120, respectively, are shown to be coiled within the several towers 90, with the lighter cables on top for the reason that such cables are drawn to the surface first.

The cables 120 are shown to be extended exteriorly of the towers 90 and to be anchored to the bight portions of U-shaped bails 128, which bails are provided with aligned bearings extending lengthwise of the deck of the submarine and are mounted upon the trunnions 130 of V-shaped arms 136. More particularly, the V-shaped arms 136 are shown to be located on the deck of the submarine with the trunnions 130 thereof in aligned relation to allow the several bails 128 to be swung from the horizontal position, as shown, to upright positions, under the influence of the pull exerted from the surface. Normally, the bails are clamped to the surface by frangible clamps 147 and when a sufficient pull is exerted on the cables 120 to lift the submarine, these clamps are broken.

The V-shaped arms 136 are shown to be rigidly attached at the outer ends thereof to straps 140 which extend at suitable points about the hull of the submarine so that when a lifting pull is exerted on the cables 120 the strain on the hull will be uniformly distributed.

In carrying out the invention, hose sections 160 may be attached to the cables 116 or 120 or both, and one of such hose sections may be utilized to introduce new air into the hull and the other to expel the old air therefrom and the ends of the hose sections may be provided with suitable valves as illustrated, to exclude water.

In use, should the submarine become disabled and unable to rise to the surface, the crew, regardless of the particular compartment or compartments of the submarine in which they might happen to be located, may actuate the shaft 28 to release the signal float, after which the shaft 101 may be operated to release the salvage buoys 110 and in this manner entanglement of the several cables is avoided.

The numeral 197 is employed in Fig. 7 to denote a part of a wireless set and the remaining portion of the wireless set may be located within the vessel so as to allow those within the submarine to communicate with rescue parties at distant points.

The visual and audible signals on the surface of the signal float may be operated to attract attention and thereby assist rescue parties in locating the vessel.

When the submarine is located, communication is had with the crew with the aid of the telephone set and at an appropriate time the cables 120 may be hauled to the surface as one of the steps in the salvaging of the vessel itself.

It is to be understood that the form of invention herewith shown and described is to be taken merely as a preferred example of the same and that such changes in arrangement and construction of parts may be made as will remain within the spirit of the invention and the scope of what is claimed.

Having thus described the invention what is claimed is:

1. In a structure of the class described, a hull having a tower provided with a closure, a salvage buoy within the closure and having a cable, a releasing device for said closure, a bail attached to said cable and having bearings, V-shaped arms attached to said hull and having trunnions extending through said bearings, and frangible means normally securing the bail in an inoperative position.

2. In a structure of the class described, a hull having a tower provided with a closure, a salvage buoy within the closure and having a cable, a releasing device for said closure, a bail attached to said cable and having bearings, V-shaped arms attached to said hull and having trunnions extending through said bearings and frangible means normally securing the bail in an inoperative position, and straps extending about said hull and secured to said V-shaped arms.

3. In a structure of the class described, a float having a plurality of buoyant elements mounted thereon and extended upward therefrom, and a signal mounted centrally on the float and surrounded and protected by said buoyant elements.

4. In a structure of the class described, a float having a plurality of buoyant elements mounted thereon and extended upward therefrom, a signal mounted centrally on the float and surrounded and protected by said buoyant elements, and signal lights located between said buoyant elements.

5. In a structure of the class described, a float, a plurality of buoyant elements and signals located alternately on the upper surface of the float, and a second signal located centrally on the float and surrounded by said first named signals and said buoyant elements.

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