April 24, 1945. Y. S. MING 2,374,296

SUBMARINE EMERGENCY SAVER

Filed Oct. 8, 1943 2 Sheets-Sheet 1

Fig. 1.

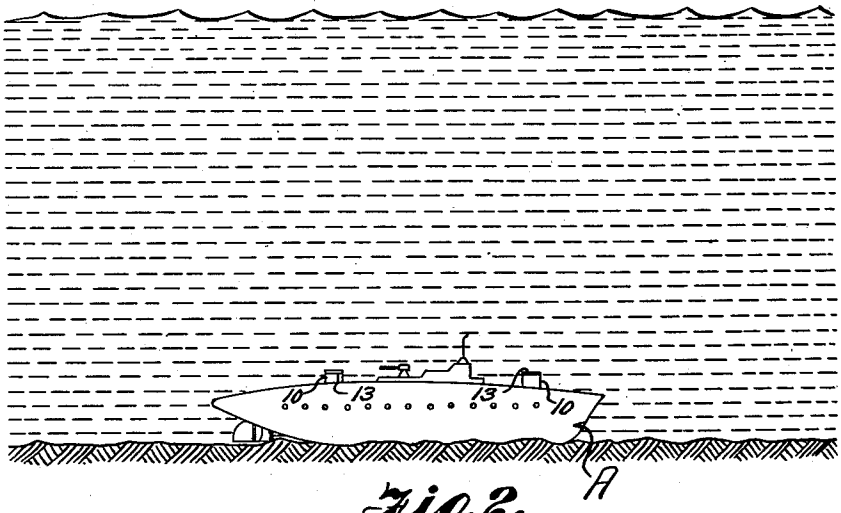
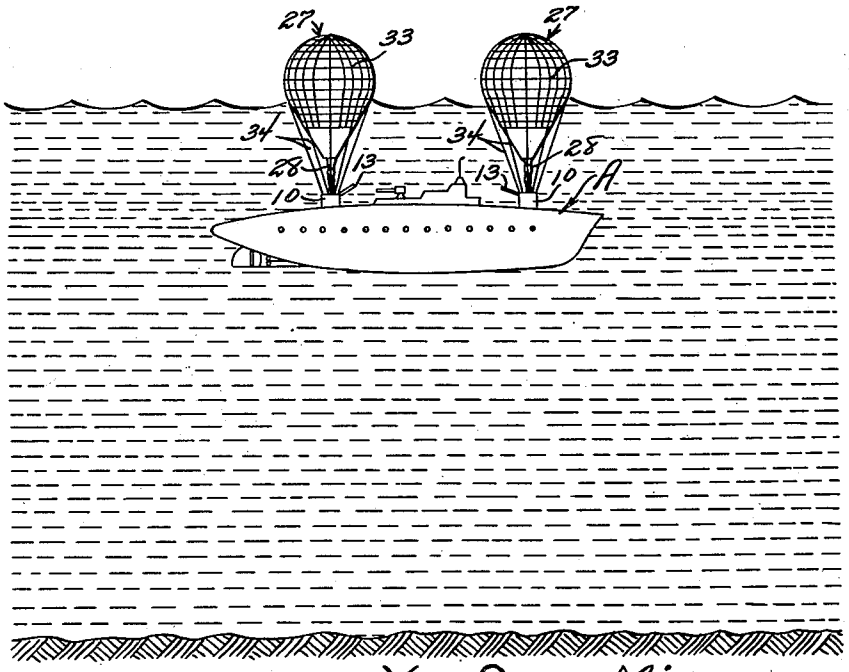


Fig. 2.



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Filed Oct. 8, 1943 2 Sheets-Sheet 2

Fig. 3.

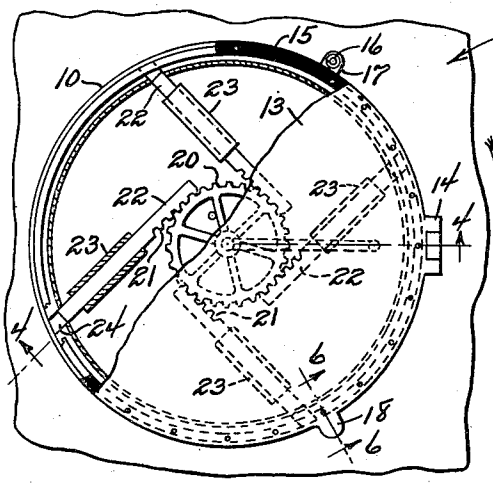


Fig. 5.

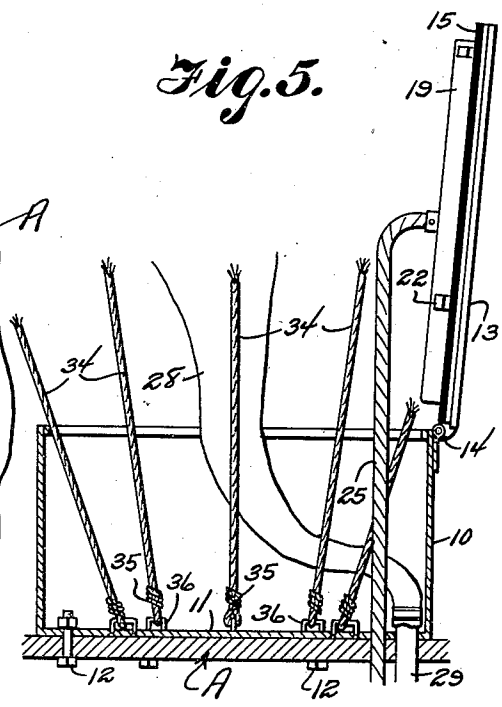


Fig. 6.

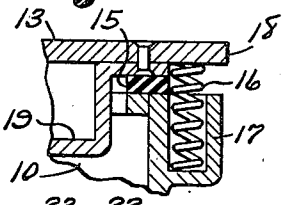
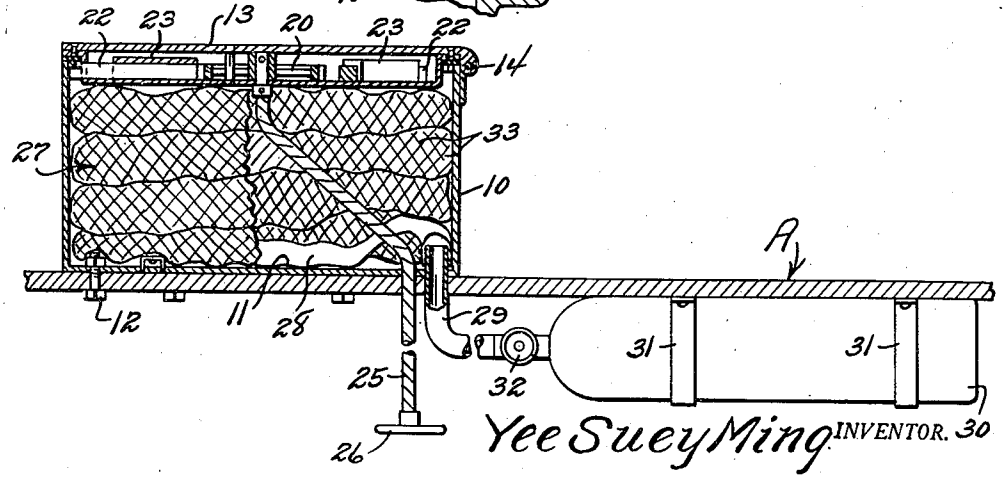


Fig. 4.



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Patented Apr. 24, 1945 2,374,296

UNITED STATES PATENT OFFICE

2,374,296

SUBMARINE EMERGENCY SAVER

Yee Suey Ming, Los Angeles, Calif.

Application October 8, 1943, Serial No. 505,549

1 Claim. (Cl. 114—54)

The invention relates to a safety appliance for submarines, and more especially to an emergency device for watercrafts or the like.

The primary object of the invention is the provision of a device of this character, wherein a disabled watercraft can be maintained substantially afloat so as to save the same from sinking to the bottom and also the occupants, the device being adaptable especially to submarines either to raise submarines from the bottom when sunk, or to maintain a submarine substantially afloat when damaged, and does not require in its adaptation any change in the structural make-up of the craft, requiring no space within for the storing of such device, yet being accessible to the occupants so that it can be operated instantly for life and craft saving purposes.

Another object of the invention is the provision of a device of this character, wherein its construction and manner of operation is unique and novel, it being confined exteriorly of the craft and when liberated will safeguard life in that the craft will be sustained substantially afloat until rescued, and the salvaging obtained.

A further object of the invention is the provision of a device of this character, which is simple in construction, thoroughly reliable and efficient in operation, readily and easily handled, strong, durable, conveniently applied and removed to and from the craft, and inexpensive to manufacture and install.

With these and other objects in view the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention, and pointed out in the claim hereunto appended.

In the accompanying drawings:

Figure 1 is a side elevation of a submarine showing the same submerged and the device constructed in accordance with the invention applied but inactive.

Figure 2 is similar view with the device active.

Figure 3 is a fragmentary plan view partly in section showing one of the devices.

Figure 4 is a fragmentary sectional view taken on the line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a vertical sectional view showing the container for the device in open position.

Figure 6 is a detail sectional view on the line 6—6 of Figure 3 looking in the direction of the arrows.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail A designates generally a watercraft, in this instance a submarine which is merely shown to illustrate one example of the application and use of the device constituting the present invention and hereinafter set forth.

The device, which may be of any number required, comprises a cylindrical metallic container 10 having its bottom closed by a flooring 11 superimposed upon the deck of the hull of the craft A exteriorly thereof at the selected location, by fasteners 12. The container 10 is equipped with a vertically swinging closure lid or cover 13, the hinge therefor being indicated at 14, and coacting with this lid or cover is a gasket 15 so that when the lid or cover is closed the container is fluid-tight. Pocketed in the lid or cover end of the container 10 is a coiled expansion spring 16, which acts on the said lid or cover 13 so that when released it will be forced open from closing position. The pocket for the spring 16 is identified at 17 and such spring contacts with a lip 18 on the cover or lid 13 and is compressed when the said lid or cover is in closed latched position.

Mounted in a housing 19 on the lid or cover 13 is a bolt throwing gear 20, its teeth meshing with gear 21 on the series of latching bolts 22 slidably fitted in guides 23 within the housing 19 and these bolts engage keepers 24 at the lid or cover mouth of the container 10 when the lid or cover is closed for latching the same.

The gear 20 is operated from within the craft A through the medium of a flexible shaft 25 having at its end within the craft a hand wheel 26, so that the bolts 22 can be conveniently released for the unlatching of the lid or cover in a quick and easy manner.

Confined within the container 10 is a normally collapsed balloon 27 having an air-hose 28 which is of the required length and is joined with an air outlet nipple 29, extending from within the hull of the craft A to the interior of the container 10, and this nipple communicates with a compressed air tank 30 interiorly of the said hull, it being preferably supported at 31 close to the latter. The nipple 29 is fitted with a hand operated valve 32 which on opening the same air from the tank is supplied to the balloon, the latter being let out from the container 10 on the opening of its lid or cover.

The balloon 27 is within a net sheathing 33 which constitutes a carrier therefor, and this

sheathing has a plurality of suspension cables **34** equally distributed about the balloon **27** and secured at their ends **35** to anchoring eyes **36** fixed to the bottom flooring **11** of the container **10**.

The craft is preferably provided at two or more points in its length, with similar devices, as before described, and these when the balloons are freed, will safely hold the craft substantially afloat to enable the occupants to be rescued and also to aid in recovery of the craft if damaged insufficiently for navigation, so that it may be salvaged.

As has been stated the balloon **27** is normally stored collapsed within the container **10** and when the craft becomes damaged against navigation, an occupant or occupants within the craft release the latching bolts to free the lid or cover to said container, and thereafter the balloon **27** is inflated, simultaneously it frees itself from within the container **10** and rises to the atmosphere and holds through the cables suspended therefrom and its net bag the craft to maintain the latter substantially afloat, thus the occupants will be safe. These balloons **27** when above the surface of the water will enable another craft to locate the disabled ship for rescuing purposes.

The bolts **22** are arranged tangentially of the gear **20** and are operated in unison by the latter for the latching and unlatching of the cover or lid **13**, as should be apparent.

What is claimed is:

A submarine flotation device comprising a compartment for a balloon casing attached to the shell of a submarine and having a hinged lid provided with a watertight joint with the body, a balloon casing connected within the compartment and having connection with a source of compressed air supply to be inflated to provide buoyant support for the submarine if sunk, or to sustain the same substantially afloat if damaged to permit rescue, said lid having radially slidable pins having toothed parts engaging an operating gear to be moved to locking position with respect to the wall of the compartment, and pockets on the outside of the compartment, and springs in the pockets and engaging the cover to urge the same to opening position.

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