

Nov. 5, 1929.

W. KRAUSE

1,734,864

SUBMARINE SAFETY DEVICE

Filed April 5, 1928

2 Sheets-Sheet 1

Fig. 1.

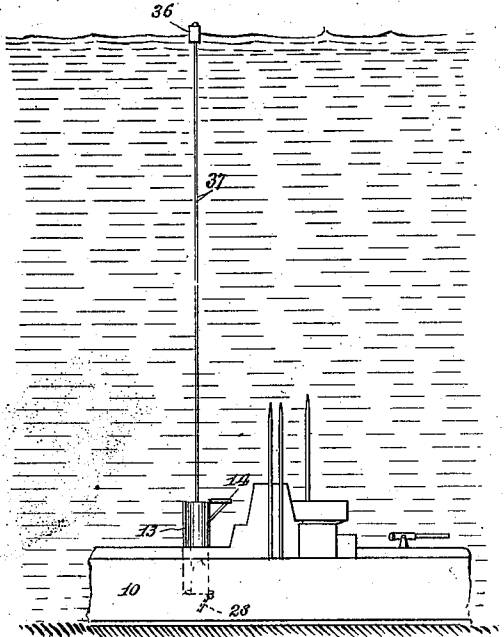


Fig. 2.

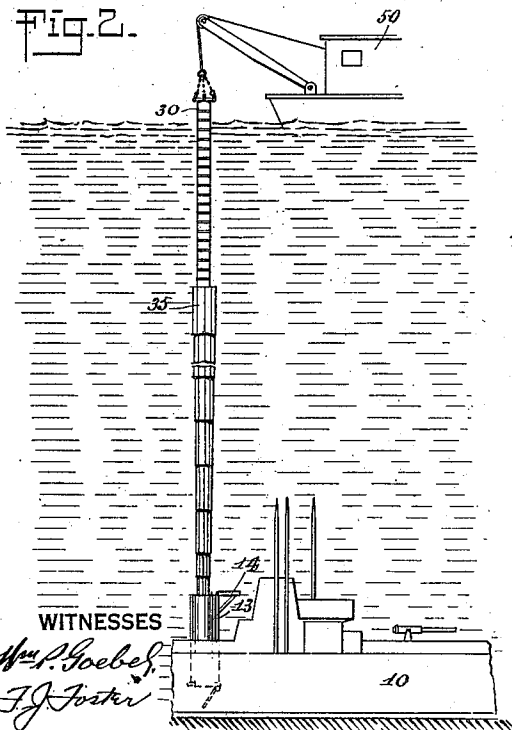


Fig. 3.

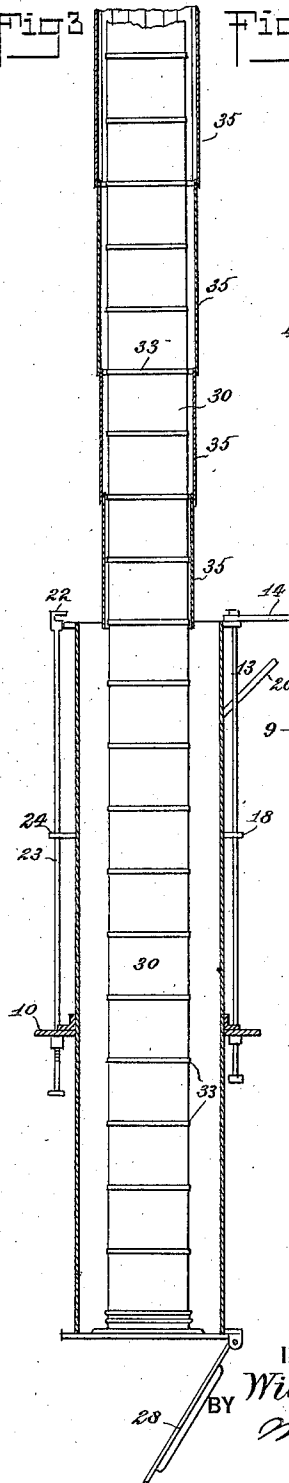


Fig. 4.

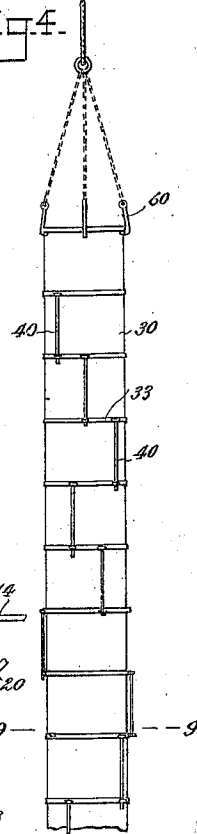
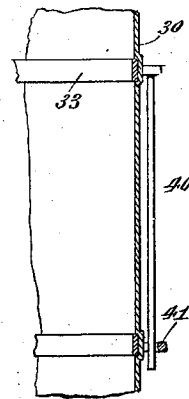


Fig. 5.



INVENTOR

Willy Krause

BY

Mum & Co.
ATTORNEY

Nov. 5, 1929.

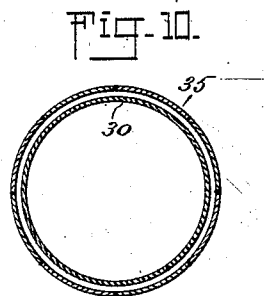
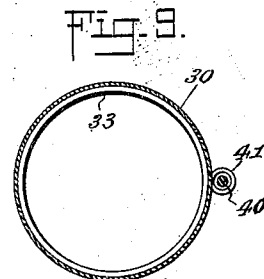
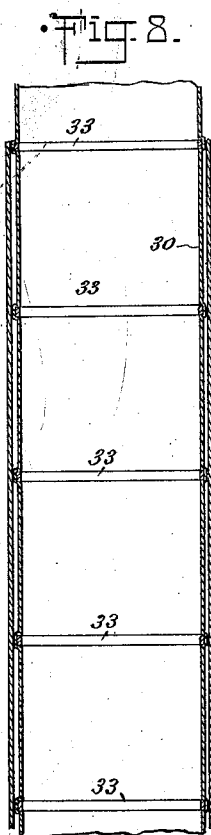
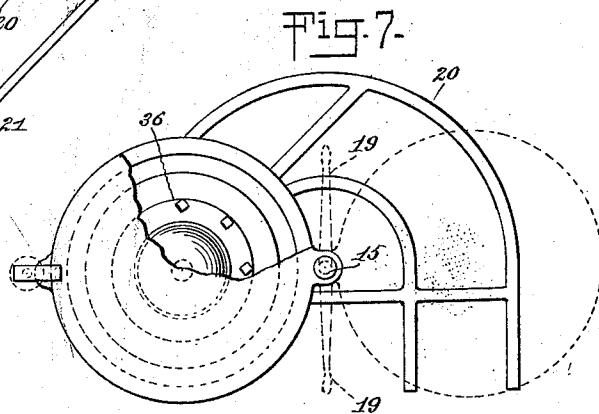
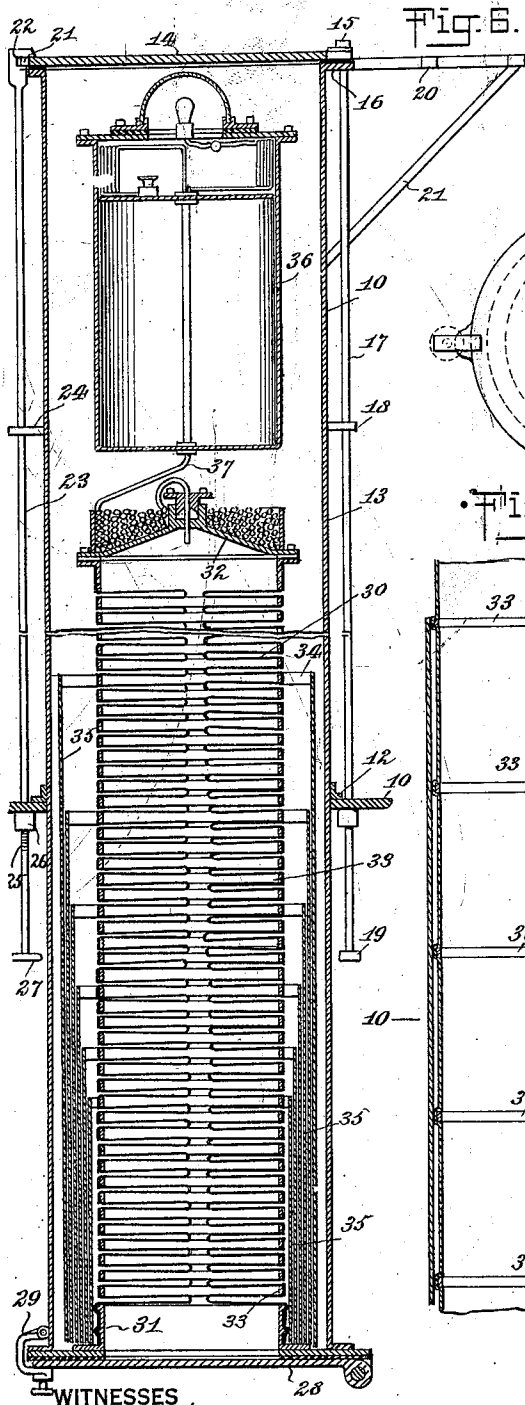
W. KRAUSE

1,734,864

SUBMARINE SAFETY DEVICE

Filed April 5, 1928

2 Sheets-Sheet 2



WITNESSES
William P. Goebel
Franklin J. Foster

INVENTOR
Willy Krause
BY
Crum & Co.
ATTORNEY

UNITED STATES PATENT OFFICE

WILLY KRAUSE, OF PROSPECT PARK, NEW JERSEY

SUBMARINE SAFETY DEVICE

Application filed April 5, 1928. Serial No. 267,639.

The present invention is concerned with the provision of a safety device primarily intended for use with submersible vessels, and adapted to permit the removal of the entrapped crew of a submarine when the latter is disabled.

An object of the invention is to provide a safety apparatus of this type which includes a marking buoy and communication buoy, the release of which is controlled from the interior of the vessel. After this buoy has floated to the surface, it may be picked up by a rescue ship, and the cable which is attached to the buoy drawn upwardly to extend a normally collapsed hose to the surface. After this hose has been fully extended and its sealing cap removed at the surface of the water, the crew of the submarine may be removed through the hose.

Objects of the invention are to provide an apparatus of this character which may be conveniently attached to any conventional type of submersible vessel, and which may be conveniently manipulated from the interior of the vessel to release the marking buoy.

With the above noted and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully set forth and pointed out in the claims. The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein—

Fig. 1 is a somewhat diagrammatic view showing a submarine resting on the bottom of the sea, and the released marking buoy floating on the surface.

Fig. 2 is a similar view, but showing the marking buoy picked up by a derrick, and the hose or tube fully extended preparatory to removing the hose cap and withdrawing the crew of the vessel through the hose.

Fig. 3 is an enlarged longitudinal sectional view through the hose-receiving shell and the hose-protecting sheathing, the hose being shown in elevation.

Fig. 4 is a similar view showing the upper unsheathed portion of the hose.

Fig. 5 is a fragmentary longitudinal sec-

tional detail through the section of hose shown in Fig. 4.

Fig. 6 is an enlarged vertical sectional view through the cylinder which contains the hose and the marking buoy, and showing the apparatus for manipulating the cylinder covers.

Fig. 7 is a top plan view of Fig. 6.

Fig. 8 is an enlarged vertical sectional view through a section of the extended hose.

Fig. 9 is an enlarged transverse sectional view on the line 9—9 of Fig. 4.

Fig. 10 is a transverse sectional view on the line 10—10 of Fig. 8.

In the drawings I have used the reference numeral 10 to designate a submarine having an opening 12 in its deck within which is accommodated a vertical metal cylinder 13, the upper end of which projects above the deck of the ship, and the lower end of which projects into the interior of the ship. The top of the cylinder 13 is normally sealed by a cover 14 swivelly connected at 15 to a flange 16 on the cylinder. A vertically disposed operating shaft 17 for the cover 14 extends downwardly through bearings 18 and terminates within the submarine; the lower end of this shaft carrying a pair of crank handles 19. As the handles 19 are rotated to swing the cover 14 about its pivot 15, the cover moves on to a supporting framework 20 so that it will not be snapped off by the water pressure. Framework 20 is preferably braced as at 21 by bracing members which are connected to the cylinder 10.

In order to break the seal at the cover 14, which otherwise might make it difficult to manipulate the handles 19, the cover is provided with a projecting lug 21 received within a notch 22 in the upper end of a shaft 23 preferably disposed on the opposite side of the cylinder from the shaft 17, and mounted in bearings 24. Shaft 23 has a threaded connection at 25 with a bushing 26 secured to the under face of the submarine deck, and by turning the handle 27 at the lower end of the shaft 23, this shaft may be raised, forcing the free edge of the cover 14 slightly upwardly and breaking the seal, so that the cover may be conveniently swung to the dotted line position of Fig. 7 by the handles

19. The lower end of the cylinder 14 is closed by a hinged cover 28, the free edge of which is releasably held by any suitable clamping means 29 manipulable from the interior of the ship.

8 Housed within the cylinder 10 is a collapsible hose 30 of fairly large diameter. The lower end of this hose is connected to a collar 31 fixed to the bottom of the cylinder 10 and the upper end of the hose is closed by a sealing cap 32. The hose is braced by a spaced series of stiffening rings 33, certain of which may, if desired, carry spiders 34 on which are mounted protective shells 35. As the hose is collapsed, the shells 35 nest or telescope one within the other as seen in Fig. 6, and as the hose is extended, the nested shells 35 are drawn out as illustrated in Figs. 2 and 3 to protect the hose.

20 Arranged within the cylinder 10 above the collapsed hose 30 is a marking buoy 36 attached to a cable 37 which may carry light wires, telephone wires, air lines, etc. The cable 37 is preferably coiled upon the top of the hose cap 32 as seen in Fig. 6.

25 The upper portion of the hose 30 which is not protected by the telescoping shells 35 may be reinforced if desired by a staggered arrangement of rods 40, each rod being mounted upon one ring of the hose and working through an eye 41 on an adjacent ring. By staggering the rods they do not interfere with each other as the hose is collapsed.

30 The operation of the device is substantially as follows. With the submarine disabled and resting on the bottom, as shown in Fig. 1, the crew of the vessel open the cover 14 by turning the handles 19, the cover being previously loosened or unsealed if necessary by manipulating the handle 27.

35 As the cover is swung to one side and rests on the frame 20, the marking buoy 36 will float to the surface. When a rescue ship, such for instance as the floating derrick 50 reaches the scene, they may pick up the marking buoy 36 and communicate with the crew of the vessel by telephone wires, etc., which are carried by the buoy. Obviously also, the buoy may carry means for providing the submarine with light, power and fresh air. Such means consisting of power cables, air lines, etc., arranged within the main cable 37.

40 Having picked up the marking buoy 36, the dredge hauls on the cable 37 and gradually extends the hose 30 until the hose cap 32 reaches the surface and can be engaged by grappling hooks 60. Picking up the hose cap with the hooks, as seen in Fig. 2, the cap is removed, and the crew of the submarine is notified to open the lower cover 28; after which, by the simple expedient of lowering lines into the ship, the crew may be removed through the hose. Obviously, the combination of the stiff rings 33 with the protective shells 35 will serve to prevent collapse of

the hose or injury to the hose by engagement with extraneous objects. Inasmuch as the water pressure near the surface is much less than near the bottom, the simpler and lighter arrangement of reinforcing rods 40 may replace the shells at this point.

70 Various changes and alterations might be made in the general form and arrangements of the parts described without departing from the invention. Hence I do not wish to limit myself to the details set forth, but shall consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

80 1. A safety device for submersible vessels including a cylinder adapted to be mounted in the deck of a vessel with its upper and lower ends disposed respectively without and within the vessel, covers for the upper and lower ends of the cylinder independently manually manipulable from the interior of the vessel, a collapsible hose arranged in the cylinder and communicating with the interior of the vessel when the lower cover is open, a cap sealing the other end of the hose, a cable attached to the cap for distending the hose, the upper cylinder cover being swivelly connected to the cylinder, and means acting on the free edge of the swivel cover to elevate the same against water pressure and admit water to the cylinder prior to movement of the cover to fully open position.

85 2. A safety device for submersible vessels including a cylinder adapted to be mounted in the deck of a vessel with its upper and lower ends disposed respectively without and within the vessel, covers for the upper and lower ends of the cylinder independently manually manipulable from the interior of the vessel, a collapsible hose arranged in the cylinder and communicating with the interior of the vessel when the lower cover is open, a cap sealing the other end of the hose, a cable attached to the cap for distending the hose, said cable being attached to a marking buoy adapted to float to the surface when the upper cylinder cover is removed, means reinforcing said collapsible hose against compression when in distended condition comprising spaced reinforcing rings, and nested cylindrical sheathing members connected to certain of the rings.

90 3. A safety device for submersible vessels including a cylinder adapted to be mounted in the deck of a vessel with its upper and lower ends disposed respectively without and within the vessel, covers for the upper and lower ends of the cylinder independently manually manipulable from the interior of the vessel, a collapsible hose arranged in the cylinder and communicating with the interior of the vessel when the lower cover is open, a cap sealing the other end of the hose, a cable attached to the cap for distending the hose, said cable

being attached to a marking buoy adapted to float to the surface when the upper cylinder cover is removed, means reinforcing said collapsible hose against compression when in distended condition comprising spaced reinforcing rings, and rods rigidly connected to certain of the rings and slidably connected to adjacent rings.

4. A safety device for submersible vessels including a cylinder adapted to be mounted in the deck of a vessel with its upper and lower ends disposed respectively without and within the vessel, covers for the upper and lower ends of the cylinder independently manually manipulable from the interior of the vessel, a collapsible hose arranged in the cylinder and communicating with the interior of the vessel when the lower cover is open, a cap sealing the other end of the hose, a cable attached to the cap for distending the hose, said cable being attached to a marking buoy adapted to float to the surface when the upper cylinder cover is removed, means reinforcing said collapsible hose against compression when in distended condition comprising spaced reinforcing rings, and rods rigidly connected to certain of the rings and slidably connected to adjacent rings, said rods being staggered relatively to each other.

5. A safety device for submersible vessels, including a collapsible hose, means reinforcing said collapsible hose when in distended position, comprising spaced reinforcing rings, and nested cylindrical sheathing members connected to certain of said rings.

6. A safety device for submersible vessels, including a collapsible hose, means reinforcing said collapsible hose when in distended position, comprising spaced reinforcing rings, and rods rigidly connected to certain of said rings and slidably connected to adjacent rings.

7. A safety device for submersible vessels, including a collapsible hose, means reinforcing said collapsible hose when in distended position, comprising spaced reinforcing rings, and rods rigidly connected to certain of said rings and slidably connected to adjacent rings, said rods being staggered relatively to each other.

WILLY KRAUSE.