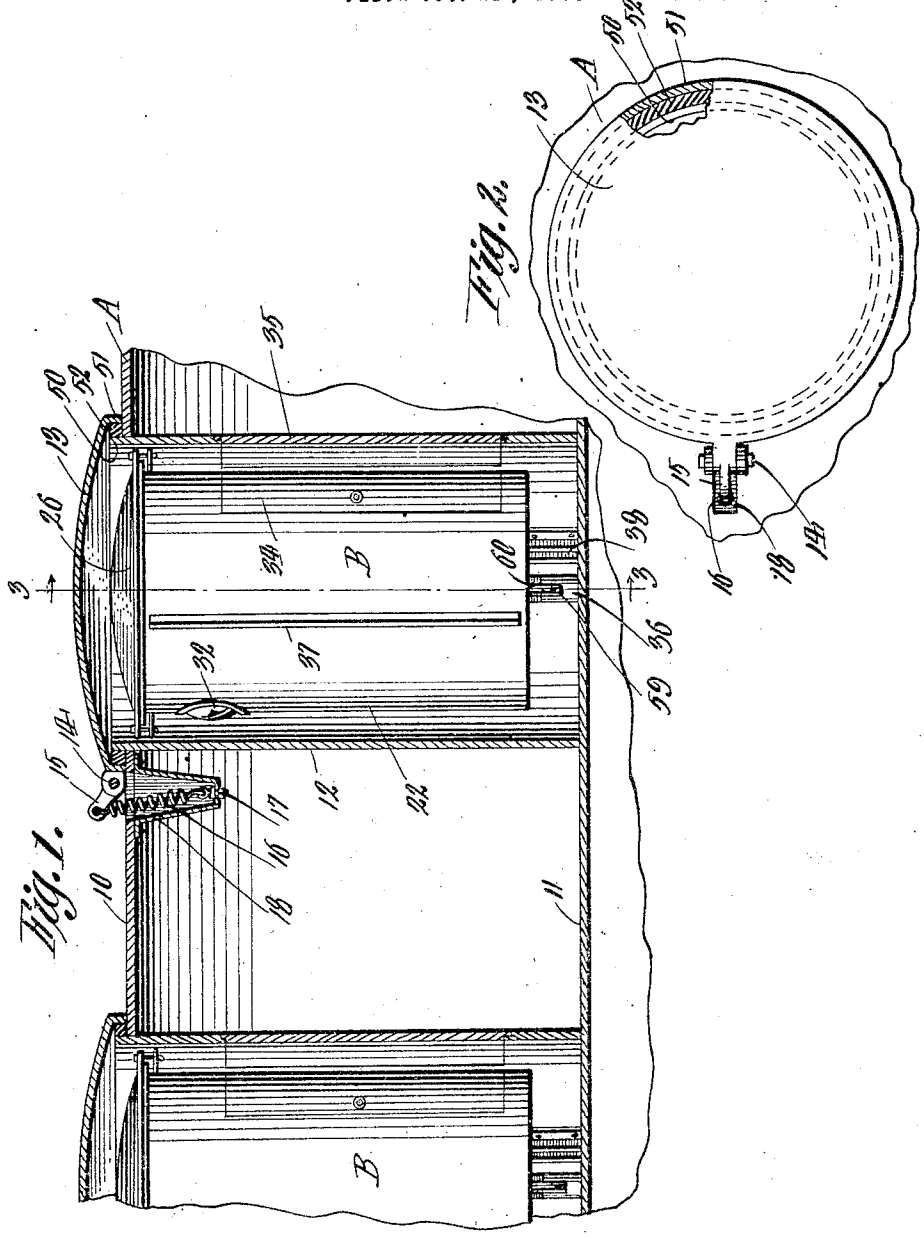
April 7, 1925 1,532,281

J. B. VAN TINE

SUBMARINE LIFE SAVER

Filed Oct. 21, 1924 2 Sheets-Sheet 1



WITNESSES

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Fig. 3.

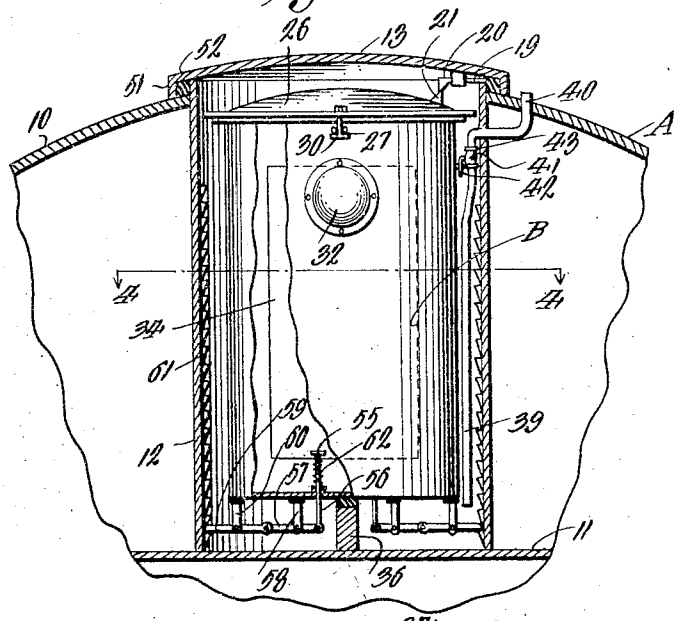


Fig. 7.

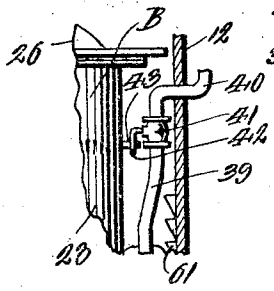


Fig. 4.

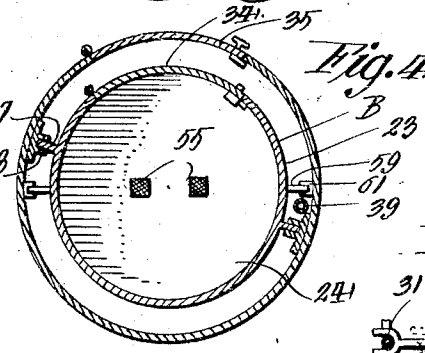


Fig. 6.

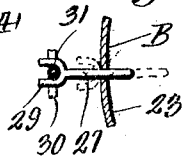
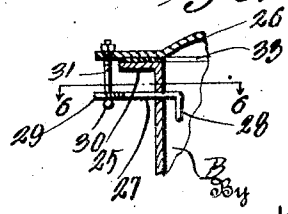


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN B. VAN TINE, OF LAMBERTVILLE, NEW JERSEY.

SUBMARINE LIFE-SAVER.

Application filed October 21, 1924. Serial No. 744,958.

To all whom it may concern:

Be it known that I, JOHN B. VAN TINE, a citizen of the United States, residing at Lambertville, in the county of Hunterdon and State of New Jersey, have invented certain new and useful Improvements in Submarine Life-Savers, of which the following is a specification.

This invention appertains to submarines and the primary object of the invention is to provide novel means for permitting the escape of the crew of a submerged submarine boat therefrom in case of an accident or the like.

Another object of the invention is to provide novel escape cars or tanks disposed at predetermined points in suitable compartments formed in the sides of the submarine and novel means for releasing the cars or tanks from the compartments after members of the crew are safely disposed in the tanks or cars.

A further object of the invention is to provide novel means for permitting the gradual flow of water into a compartment, when it is desired to permit the release of a tank or car therefrom.

A further object of the invention is to provide novel means for automatically operating the closures or covers of the compartments by the tanks or cars as the cars are initially moved upward in the compartments.

A still further object of the invention is to provide novel means for permitting the escape of the crew from a submarine in case of an accident, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be incorporated with a submarine at a comparatively small cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a fragmentary longitudinal section through a submarine showing the novel life saving means incorporated therewith,

Figure 2 is a fragmentary plane view of a submarine with the invention incorporated therewith illustrating one of the closure plates for one of the compartments, parts of the closure plate being broken away and in section,

Figure 3 is a transverse fragmentary section through a submarine showing one of the novel compartments and escape cars or tanks taken on the line 3—3 of figure 1,

Figure 4 is a horizontal section taken on the line 4—4 of figure 3 looking in the direction of the arrows,

Figure 5 is a detail vertical section taken through one of the escape cars or tanks illustrating the means employed for holding the cover of the tank or car in place,

Figure 6 is a horizontal section taken on the line 6—6 of Figure 5 showing the novel means utilized for holding the cover of a tank or car in place,

Figure 7 is a detail fragmentary section through one of the compartments illustrating the automatic means for operating the valve of the water inlet pipe.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts through the several views, the letter A generally indicates a submarine and B the improved life saving device.

The submarine A is of the usual conventional construction and comprises an outer shell 10 below which is arranged a companion way or floor 11.

In accordance with this invention, a series of cylindrical compartments 12 are arranged in the submarine A at predetermined spaced points and these compartments 12 communicate with the exterior of the submarine and extend slightly above the shell to form flanges 50. As clearly shown in Figures 1 and 3 of the drawing the side walls of the compartments 12 are connected with the outer shell 10 and rest upon the floor or companion way below.

In order to normally prevent the entrance of water into the compartments 12, each compartment is provided with a relatively heavy closure plate 13, which is hingedly connected by hinges 14, which are riveted or otherwise connected to the exterior surface of the shell 10. The plates 13 are provided with depending annular flanges 51, which receive the flanges 50 of the compartments 12 and suitable gaskets 52 which can be disposed between the flanges to form a water closure.

These closure plates 13 can be lifted to

their open position by any preferred means, as shown each closure is provided with a radially extending lug 15 at its pivot point to which is secured a contractile coil spring 16. These springs 16 have their lower ends anchored as at 17, in the low ends of pockets 18 formed in the shell 10, and normally tend to swing the closure plates to a raised position. In order to normally hold the closure plates 13 in a closed position, sliding latches 19 are carried by the plates and these latches are adapted to fit in keeper openings formed in the flanges 50. The inner ends of the latches 19 are provided with cam heads 20, which are adapted to be engaged by mating cam lugs 21 carried by the escape cars 22, and it is obvious that as the cars are raised by means which will be hereafter more full described, the latches will be automatically pulled inward to their released position.

Each compartment 12 has arranged therein one of the novel life saving tanks or cars 22, and these tanks or cars are preferably made from sheet metal of the desired gauge and as shown include the cylindrical side wall 23 and a bottom wall 24. The upper end of the side wall 23 is provided with an annular flange 25 on which is adapted to rest the cover or cap 26 for the life saving tank or car 22. This cap 26 is detachably held in place by the use of sliding bolts 27 carried by the side wall 23 of the said car or tank. The inner ends of these bolts are provided with handles 28, while the outer ends thereof are provided with yokes 29 which are adapted to straddle the heads 30 of depending T-shaped keeper bolts 31 carried by the outer edge of the cover or cap 26.

Suitable glass portholes 32 are arranged in the side wall 23 of the escape car or tank 22 in order to permit the occupant thereof to see out of the car when the same is released from the submarine and rides to the surface of the water. Any preferred type of signalling means can be employed by the occupant of the car or tank for calling the attention of passing boats to the tank or car.

Any desired means can also be used for permitting the car to ride upright in the water.

In order to prevent entrance of water into the life saving car or tank between the cap 26 and the flange 25 during the passage of the car or tank through the water, a gasket 33 is inserted between the cap and the said flange 25.

The side wall of the compartment 12 is provided with a hinged door 35 so as to permit entrance to be had to the compartment and the side wall 23 of the life saving car or tank 22 is likewise provided with a door 34 and the tank is so arranged in the compartment that the door 35 will be directly in front of the door 34, so that a person by opening the doors 34 and 35 can step directly into the said tank or car.

The car is held from off of the bottom wall of the compartment by means of brackets 36 and the bottom wall of the car rests directly upon the said brackets as clearly shown in Figures 1 and 3 of the drawing.

Guide strips 37 are carried by the opposite sides of the escape car or tank and these guide strips 37 are adapted to slidably fit within guide tracks 38 carried by the inner surface of the side wall of the compartment and these guide tracks and guide strips prevent turning movement of the car or tank within the compartment, so as to insure the proper aligning of the doors 34 and 35 at all times.

In order to permit the initial raising of the escape cars or tanks in their respective compartments each tank is provided with a pair of foot pedals 55 carried by the upper ends of operating rods 56, which slidably extend through packing boxes carried by the lower wall 24 of the car. The lower ends of the rods 56 are pivotally and slidably connected to the inner ends of operative levers 57 which are pivotally mounted at a point intermediate their ends upon depending brackets 58 secured to the lower wall 24 of the escape car or tank. The outer ends of levers 57 are pivotally and slidably mounted to pawls 59 which are pivotally connected at a point intermediate their ends to the depending brackets 60 which are carried by the bottom wall of escape car. The outer toothed ends of the pawls 59 are adapted to engage rack bars 61 carried by the inner surface of the compartment 12 at the opposite sides thereof. The pedals 55 can be provided with clamps or straps to receive the feet of the operator in order that the rods can be raised or returned to normal position or expansion springs 62 can be used for this purpose which can be coiled about the rods between the pedals and the packing boxes.

It can be seen that by first pressing down on one pedal then on the other that the escape cars may be raised in a step-by-step movement. It is to be understood, however, that the car only has to be raised a slight distance before the water is introduced into the compartment, then the closure plate will be swung open which will permit the automatic releasing of the said car. It can be seen that as the car is raised slightly that the cam lug 21 will engage the incline portion of the cam head 20 and thus automatically operate the latch 19 after which the cover will be swung to its raised position by the spring 16.

Now after a person is in the tank and the

doors 34 and 35 have been properly closed and it is desired to allow the escape of the car or tank from the submarine the water is permitted to gradually flow into the compartment, so that there will not be a great rush of water when the cover 13 is swung open. As clearly shown in figure 3 of the drawing an inlet water pipe 39 is arranged in the compartment and has its lower end terminating directly below the bottom of the escape car or tank 22. The upper end of the said pipe 39 is provided with an angular terminal 40 which extends through the skin 10 of the submarine and the flow of water through the pipe is controlled by the use of a suitable hand valve 41, which is automatically operated by the initial upward movement of the car by the pedals. The valve 41 is provided with a handle 42 which is in the path of a rigid lug 43 formed on the escape tank. It is thus obvious that when the tank is initially raised that the valve 41 will be opened permitting the water to flow into the tank.

In use of the improved submarine escape, the person desiring to escape from the submarine opens the doors 34 and 35 and steps within the escape car or tank 22 after which the doors 35 and 34 are tightly closed. The pedals 65 are now operated, and the tank will be slightly raised which will first cause the opening of the valve 41, and then the manipulation of the bolt 19. Thus the water is allowed to flow into the compartment both from the top and bottom of the compartment. The escape car or tank will now rise from out of the compartment by its own buoyancy, and will float to the top of the water.

From the foregoing description, it can be seen that I have provided novel means for permitting the escape of the crew in submarines in case of accidents or the like when the submarine is submerged.

Changes as to details may be made without departing from the spirit or the scope of this invention, but:—

What I claim as new is:—

1. The combination with a submarine having a cylindrical compartment therein, a water tight closure for the compartment, means for moving the closure away from the compartment, a door for the compartment for permitting communication to be had with the interior of the compartment from the interior of the submarine, of an escape car disposed in said compartment including a removable cover, a door for said escape car disposed in normal alignment with the door of the compartment, means for initially raising the escape car in the compartment, means holding the car in spaced relation to the floor of the compartment, a pipe extending into the bottom of the compartment below the lower wall of the tank and communicating with the exterior of the submarine, a control valve in said pipe, and means for automatically releasing the closure of the compartment and the operation of the control valve upon the initial raising movement of the car within said compartment.

2. In a submarine including an exterior shell, a compartment in the submarine supported by the shell, a pivoted closure for the compartment, spring means normally urging the closure to a raised position, a sliding bolt for holding the closure against movemment, a door for the compartment for permitting communication to be had with the compartment from the interior of the submarine, of an escape car mounted within the compartment having a door therein communicating with the door in the compartment, a removable cover for the car, bolts operated from the interior of the car for releasing the cover, port holes in the car, guide tracks carried by the side wall of the compartment, guide strips carried by the car mounted within said guide tracks, means for initially raising the car in the compartment in a step by step movement including rack bars carried by the compartment, pawls carried by the escape car engaging the teeth of the rack bars, and foot pedals for operating the pawls, means carried by the top of the escape car for actuating the sliding bolt to permit the automatic raising of the closuse for the compartment, means for permitting the entrance of water into the compartment below the escape car including a pipe having communication with the exterior of the submarine, a valve in said pipe including an operating handle, and means carried by the side of the car disposed in the path of the handle for operating the valve upon the initial movement of the escape car.

3. The combination with a submarine having a compartment therein, a water tight closure for the compartment, means for moving the closure away from the compartment, of an escape car disposed in said compartment including a removable cover, means for permitting access to the car through the compartment, means for initially raising the escape car in the compartment, a pipe extending into the compartment communicating with the exterior of the submarine, a control valve in said pipe, and means for automatically releasing the closure of the compartment and for operating the control valve upon the initial raising movement of the car within said compartment.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN B. VAN TINE.

Witnesses:

JOSEPH A. REEVES,

CHARLES F. SHAW.