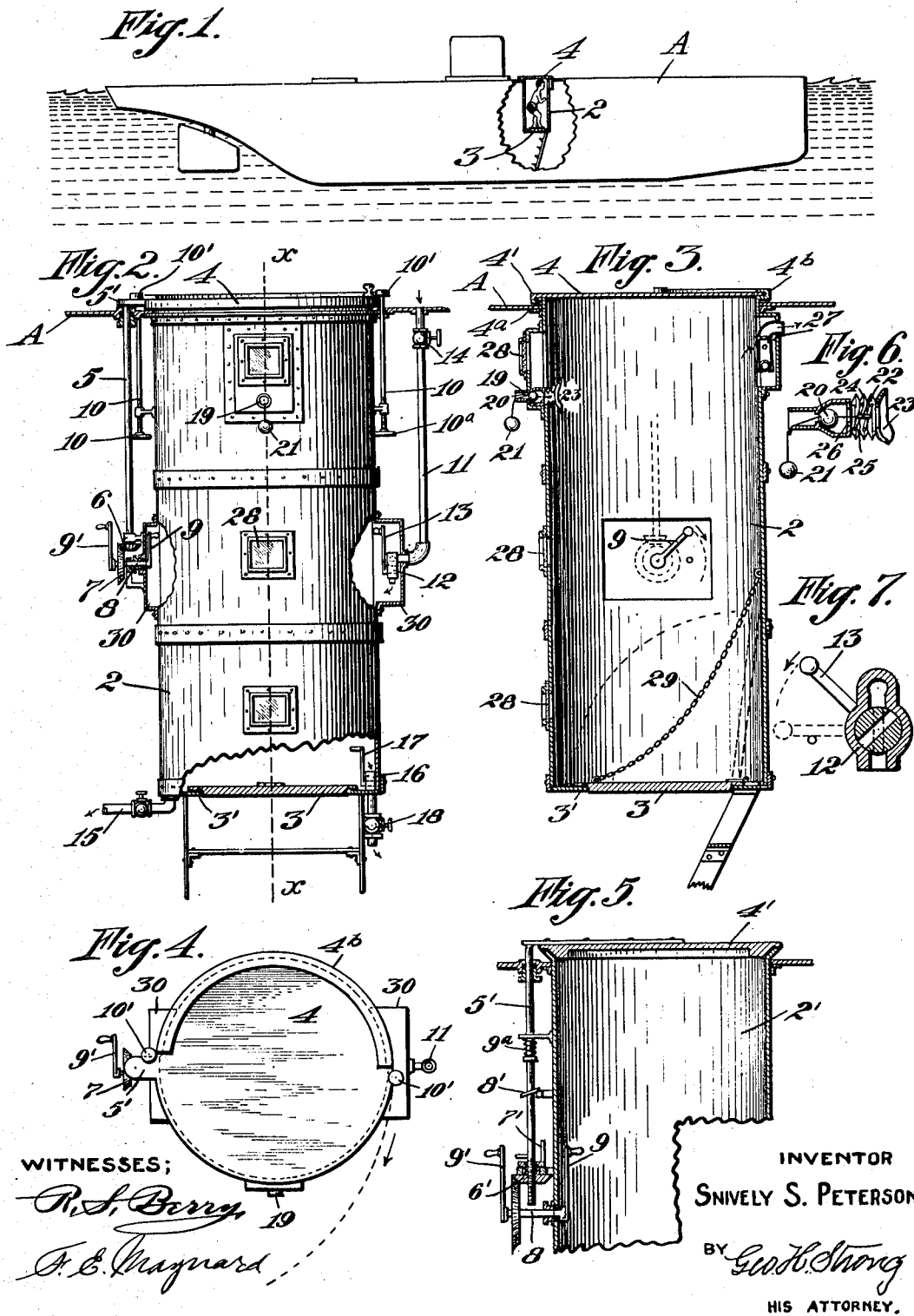


S. S. PETERSON.
LIFE SAVING ATTACHMENT FOR SUBMARINES.
APPLICATION FILED SEPT. 27, 1909.

974,516.

Patented Nov. 1, 1910.



UNITED STATES PATENT OFFICE

SNIVELY S. PETERSON, OF SAN FRANCISCO, CALIFORNIA.

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974,516.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed September 27, 1909. Serial No. 519,704.

To all whom it may concern:

Be it known that I, SNIVELY S. PETERSON, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Life-Saving Attachments for Submarines, of which the following is a specification.

This invention relates to a means by which one may escape from a submerged vessel.

It is the object of this invention to provide a safe and reliable means of egress from submerged submarine vessels and the like.

A further object is to provide an apparatus by means of which the inmates of a submerged vessel can escape in the event of possible accident or the derangement of machinery which would cause the vessel to sink or remain submerged, and which apparatus is also so designed that ingress may be had to the interior of the submerged vessel, without endangering the lives or jeopardizing the safety of those aboard.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a view of a submarine boat with parts broken away showing the invention applied. Fig. 2 is a front elevation of the invention. Fig. 3 is a vertical section on the line X—X, Fig. 2. Fig. 4 is a plan view. Fig. 5 is a detail view showing a modified form of closing the escape port. Fig. 6 is a detail in section of the safety air inlet valve. Fig. 7 is a detail of the water inlet valve.

In the drawings, A is the shell or hull of a submarine boat which may be of any desired type or construction. Suitably connected to the upper part of the shell of the submarine and within the vessel and at a point preferably near the conning tower, is a downwardly projecting cage 2 which may be opened to the interior or exterior of the vessel so as to allow one to enter the cage from inside the vessel and thence escape without letting any water into the vessel, all as will be described shortly. The cage 2 is shown in the form of a metal cage and

is designed in such proportions as to comfortably hold a person. The cage or compartment 2 incloses a chamber which is normally closed by a trap-door 3 in the bottom, and a cover 4 which opens outside the vessel. Entrance to the chamber or compartment 2 is made from the interior of the vessel, through the trap-door 3 which is hinged in the bottom of the chamber 2 and opens upwardly therein. A flange is provided around the edge of the door 3, and a gasket or packing material placed on the underside thereof, which bears on a small rib 3' on the rim of the opening, so as to form a perfectly water-tight closure. The exit or escape opening is closed by the cover or gate 4, Figs. 2—3—4, mounted to swing sidewise on shaft 5. Gate 4 is provided with a packed groove 4' on one-half of its periphery which fits snugly over a projecting flange 4^a on the mouth of the cylinder 2. The inner half of the periphery of the gate 4 enters a corresponding packed groove 4^b on the rim of the cylinder 2, so as to form a water-tight closure.

The opening and closing of the door 4 from inside of the vessel and either outside compartment 2 or inside of compartment 2 is accomplished by the following mechanism: Shaft 5 is fixed to a projection 5' on the door 4 and passes through a suitable stuffing-box in the shell A and is provided with a pinion 6 on its lower end. This pinion 6 meshes with a gear 7 on a shaft 8 which projects through a stuffing-box into the interior of the chamber 2. Cranks 9—9' are mounted on each end of the shaft 8, one inside chamber 2 and the other outside, so that whichever crank is worked, the door 4 is caused to swing outward to open the mouth of the chamber 2.

In order to lock door 4 and prevent its opening accidentally, threaded shafts 10 extend through the shell A and have each a projecting flange 10' on their outer ends adapted to be drawn down on the edge of the door 4 by means of hand-wheels 10^a and thus bind the gate against free movement. These flanges are raised free from the gate previous to operating the opening mechanism, so as to let the door swing sidewise.

11 is a pipe for gradually flooding the chamber 2 prior to a man's releasing himself therefrom by opening the door 4. Pipe 11 opens outside the hull A and connects with the inside of the chamber 2 at any suitable point. A valve 12 is provided at the inner end of the pipe 11 and is operated from inside chamber 2 by crank 13. A cut-off valve 14 is provided on the pipe 11 at a point near its inlet and outside chamber 2.

The chamber 2 is emptied through an outlet pipe 15 which may connect with a suitable pump, not necessary to be here shown, by which the water may be forced outside of the shell A.

16 is an emergency valve operated by a foot-lever 17 and provided in the floor of the chamber 2, so that an inmate may empty the chamber in case of necessity and before gate 4 is opened. A stop valve 18 is inserted near the point of discharge from valve 16; valve 18 being closed when the apparatus is not in use.

A breathing port 19 is provided in the upper portion of the chamber 2, whereby one may draw in sufficient air to exist while preparing to open the door 4. Port 19 is normally closed by a counterweighted ball 20. As shown, the weight 21 flexibly connected with valve 20 normally maintains the latter on its packed seat. Valve 20 is opened by means of a mouth-piece 22 which may be grasped and held between the teeth of the operator in chamber 2, by placing the face against a padded mask 23 which fits over the mouth and nostrils of the operator, and is provided with accordion folds 24, so that it may be compressed to permit of the mouth-piece 22 being properly grasped by the teeth. A coil spring 25 retains the padded mask tight against the face of the operator, and a spider 26 limits the opening movement of the ball 20.

27 is a normally open vent cock to allow the escape of air as the chamber 2 is filled with water through pipe 11, as will be later described.

In operation, it being desired to make an escape from a submerged submarine in which the foregoing apparatus is installed, the person to make the exit enters the chamber 2 through the trap-door 3 which is then allowed to close, thus incasing the person in a water-tight compartment. The subject then places his face within the mask 23 and grasps the mouth-piece 22 between his teeth, thus pulling the ball 20 out of its seat and opening the air inlet port 19, and permitting him to breathe freely. The handles 9 and 13 are then grasped in the right and left hands, respectively, and downward pressure upon the latter admits water into the chamber 2 through the pipe 11, the valve 14 being previously opened. Valve 18 is also opened before he enters, but valve 16 is

closed. As the compartment 2 fills, the air within the compartment escapes through the valve 27. As soon as the compartment becomes full or nearly full of water, the inmate bears down upon the crank 9, thus opening the door 4; the clamps 10 being previously released, thereupon permitting him to escape and float to the surface. The air port 19 closes as soon as the mouth-piece 22 is released, and the outlet valve 27 is closed by a floating ball when the compartment fills, so that no water enters the vessel on the opening of door 4. Life preservers or other buoyant means may be used to hasten the rise of the subject to the surface. To prepare the chamber for the next person, the door 4 is closed from inside the vessel by means of the crank 9', and the water within the chamber is removed through the pipe 15. Glass peep-holes or windows are provided in the walls of chamber 2 so that the attendant can observe the conditions within the chamber or look out into the vessel. By reversing the operation, that is, first closing trap-door 3 and filling the chamber 2 through the pipe 15, the cover 4 may be opened by the crank 9' to allow a person from the outside to enter the chamber. The mask 23 being placed over his face allows him to breathe, after opening valve 20 to let the mask drain, while the cover 4 is being closed and the water being discharged from the chamber. The trap 3 can then be opened by means of the chain 29, thus allowing the subject to enter the vessel.

The hand-levers 9-13 and valve 12 are cased in pockets 30, so that the interior walls of the chamber will be smooth and free of projecting obstructions that would be liable to hinder the exit of a person from the chamber.

In Fig. 5 is shown a different style of cover 4' which in some cases may be more desirable than that described, but in which the general operation is the same. The shaft 5' is threaded at its lower end and screws into a pinion 6' in such manner that as the pinion 6' is rotated, the shaft 5' is raised so as to lift the cover 4' out of its conical seat over the top of the chamber 2'; a pin 7' on the pinion 6' engaging a lug on the shaft 5' turns the latter at the proper moment so as to swing the cover clear of the chamber. A cam collar 8' on the shaft bearing on a fixed point retains the cover clear of the chamber and permits of its swinging back into position, whereupon a spring 9" acts to insure the shaft screwing into the pinion 6'.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with a vessel adapted to be submerged, of a compartment in the vessel, said compartment having a door in its bottom which opens upwardly into the

compartment, said compartment having, also, an opening outside of the vessel, edgewise swinging door for opening and closing the last-named opening, means for closing said opening so as to render the compartment water tight, means independent of said opening for admitting water into the compartment, independent means controllable from within the compartment, for draining said compartment, and means for operating the closure which controls the opening outside of the vessel.

2. The combination with a vessel adapted to be submerged, of a compartment in the vessel, said compartment having an opening in its bottom, a door controlling said opening and mounted to swing in an upward direction into the compartment, and said compartment having an opening leading to the outside of the vessel, an edgewise swinging door for opening and closing the last-named opening, means whereby the openings are rendered water tight, means independent of said openings for admitting water therinto, independent means for draining the compartment, said last named means being controlled from within the compartment, and means by which the closure controlling the opening leading exterior to the vessel may be operated from within said compartment.

3. The combination with a vessel adapted to be submerged, of a compartment in the vessel, and having ingress and egress door controlled openings, an edgewise swinging closure for the egress opening, means independent of said openings for admitting water into the compartment, and independent means controlled from within the compartment for draining the compartment.

4. The combination with a vessel adapted to be submerged, of a compartment within the vessel having an opening therinto and an opening outside the vessel, said openings being in line and in the top and bottom respectively of the compartment, and an upwardly opening closure for the bottom opening, a trap-door for said inside opening and a cover for said outside opening, said compartment capable of being rendered water-tight when said openings are closed, said outside cover mounted on a shaft to swing horizontally, and means for operating said shaft to turn the door from within the compartment.

5. The combination with a vessel adapted to be submerged, of a compartment within the vessel having an opening in its bottom therinto and an opening outside the vessel, a trap-door for said inside opening, said trap door opening upwardly into the compartment and a cover for said outside opening, said compartment capable of being rendered water-tight when said openings are closed, said outside cover mounted on a

shaft to swing horizontally, means for operating said shaft to turn the door from within the compartment, means independent of said openings controllable from within the compartment for flooding the compartment, and independent means for draining the compartment, said means being controlled from within the compartment.

6. The combination with a vessel adapted to be submerged, of a compartment within the vessel having an opening therinto and an opening leading outside the vessel, closures for said openings, the closure leading into the compartment comprising a door adapted to open upwardly into the compartment and the other closure comprising a horizontally swinging door and mechanism leading therefrom into the compartment for operating the closure from inside the compartment, means controllable from within the compartment independent of either closure for flooding said compartment, and means independent of said closures for draining the compartment, said last-named means being controlled from within the compartment.

7. The combination with a vessel adapted to be submerged, of a compartment within the vessel having an opening therinto and an opening leading outside the vessel, closures for said openings, the closure for the outlet opening being mounted on a vertical pivot so that it may swing edgewise, means for operating the closure for the exit opening from within the compartment, means controllable from within the compartment independent of said closures for flooding the compartment, and independent means for draining the compartment, said last named means being controlled from within the compartment.

8. The combination with a life-saving drum adapted to be rendered water-tight, of a breathing attachment therefor, said attachment including a flexible member adapted to fit the face and a valved port, and means operative from within the drum for opening said valve.

9. The combination with a life-saving drum adapted to be rendered water-tight, of a breathing attachment therefor, said attachment including a valved port, and means operative from within the drum for opening said valve, said port having on the inside of the drum a flexible mask to fit the face of the occupant.

10. The combination with a sealed drum, of a breathing attachment therefor consisting of a port having a normally closed valve, a bellows within the drum having a mask portion to fit around the face of the occupant of the drum, and means for operating the valve in said port from within the drum.

11. The combination with a sealed drum of a breathing attachment therefor consist-

ing of a port having a normally closed valve,
a bellows within the drum having a mask
portion to fit around the face of the occu-
pant of the drum, and means by which the
5 occupant of the drum may operate the valve
in said port by his teeth when his face is
placed against the mask.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

SNIVELY S. PETERSON.

Witnesses:

CHARLES A. PENFIELD,
R. S. BERRY.