H. W. COOEY.

PORTABLE LIFE BUOY.

APPLICATION FILED MAR. 28, 1914.

1,117,639. Patented Nov. 17, 1914.

Fig. 2.

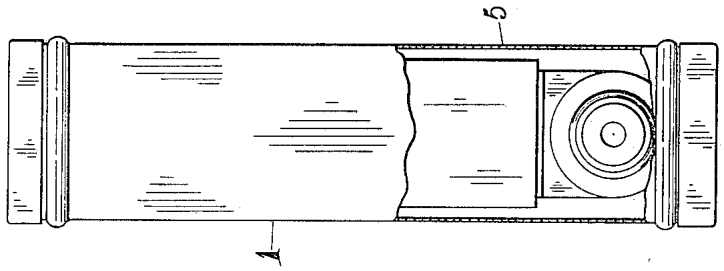
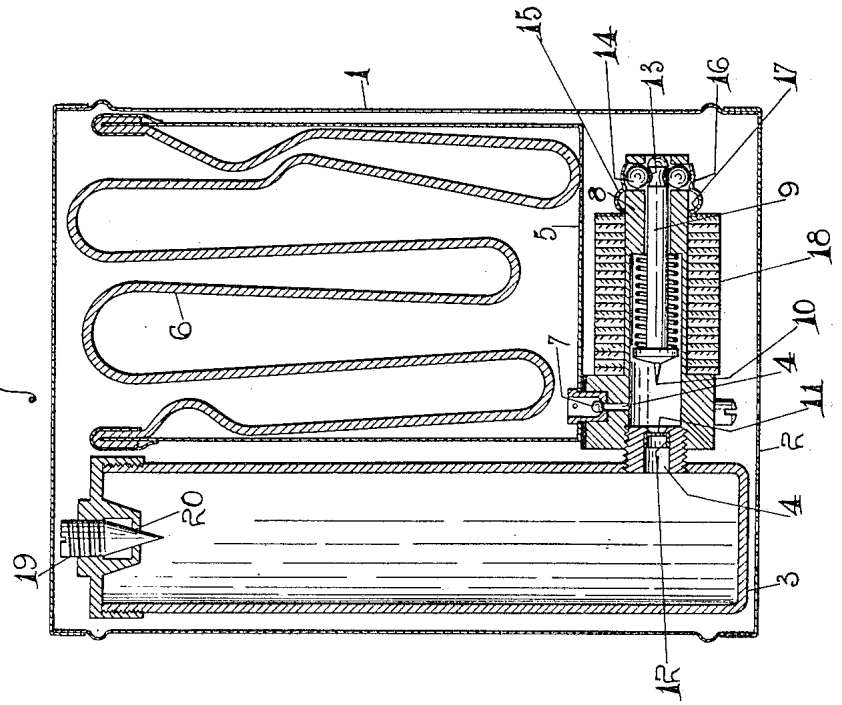


Fig. 1.



WITNESSES.

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PORTABLE LIFE-BUOY.

1,117,639. Specification of Letters Patent. Patented Nov. 17, 1914.

Application filed March 28, 1914. Serial No. 828,011.

To all whom it may concern:

Be it known that I, HERBERT W. COOEY, of the city of Toronto, Province of Ontario, Canada, have invented certain new and useful Improvements in Portable Life-Buoys, of which the following is a specification.

This invention relates to life buoys adapted to be carried on the person in a collapsed state, and which, when plunged into water, will be automatically inflated with gas carried in the apparatus in a condensed state, and my object is to devise apparatus of this kind which will not deteriorate under atmospheric conditions, and which will inflate with absolute certainty as soon as the apparatus is immersed or the control mechanism thereof thoroughly wet.

I attain my object by utilizing as my inflating medium an easily liquefiable gas such as carbon dioxid, and by using a puncturable diaphragm to close the communication between the gas container and the inflatable part of the apparatus. This diaphragm is puncturable by means of a spring-actuated, trigger-controlled bolt, and the trigger is controlled by means adapted on contact with water to effect the release of the same, substantially as hereinafter more specifically described and then definitely claimed.

In the drawings, Figure 1 is a vertical longitudinal section of my improved life buoy, and Fig. 2 an end elevation of the same partly broken away.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is a casing of any suitable shape, preferably of such a size that it may be placed in a pocket of a garment or anywhere conveniently secured to the person. This casing is preferably provided with perforations or apertures 2 through which water may gain access to the interior. In this casing is located a cylinder 3 adapted to contain a condensed or liquefied gas. Carbon dioxid is preferably employed. This cylinder is connected by a suitable passageway 4 with the interior of a chamber 5 which contains an inflatable gas envelop 6 of any suitable material. This gas envelop is preferably connected with the chamber near its upper end, which end is open so that the gas envelop may be stowed within the chamber and will be expanded and forced out of the same as soon as gas is admitted thereto through the passageway 4.

The opening of the passageway into the chamber 5 is preferably controlled by a ball check valve 7 which prevents any back flow of gas if pressure be applied to the inflated gas envelop. The passageway 4, it will be noticed, is in elbow form, and in alinement with the part leading into the cylinder 3 is a tube 8 containing a spring actuated bolt 9, the end of which is provided with the needle 10, or is otherwise adapted to puncture the diaphragm 11 which closes the passageway 4. This diaphragm is preferably formed by pressing a shell 12 of thin sheet metal into the passageway, which is counterbored to form a shoulder against which the shell is pressed and against which it is held by the pressure of the gas within the cylinder 3. The gas pressure being within the shell, its wall is expanded and a close contact formed with the passageway to prevent leakage of gas. An absolutely gas tight fit is thus formed.

The end of the bolt has a groove 13 formed therein with which engage the balls 14 lying in holes formed in the tube 8. A sleeve 15 serves as a trigger to control the release of the bolt 9. This sleeve, it will be noted, is formed with two annular grooves 16 and 17, the groove 16 being very shallow and the groove 17 comparatively deep. Normally the shallow groove is engaged with the balls 14, the trigger being thus held against any accidental endwise movement. The groove 17 being comparatively deep, when the sleeve is moved to bring this groove into alinement with the balls, the latter are pressed out by the wedging action of the groove 13 in the bolt and the latter is released to be forcibly projected against the diaphragm 11 to cause the needle 10 to puncture the latter. The groove 13 is made sufficiently deep so that the sleeve 15 may press the balls inward slightly as the sleeve is moved from the locking position to the releasing position.

To control the sleeve 15 of the trigger mechanism I provide means adapted to be acted on by the agency of water to cause the release. Preferably I employ the mass 18 of an absorbent paper. This mass of paper is in cylindrical form and is sleeved on the tube 8. At one end it engages a fixed part and at the other end the sleeve 15.

When this paper is immersed in water, it immediately expands and moves the sleeve 15 to release the bolt 9 as hereinbefore described. Preferably the paper mass is formed of a plurality of annular disks of paper cut out separately and pressed together in cylindrical form. This paper cylinder, I find, is not at all susceptible to atmospheric humidity, but almost instantly expands to almost double its length on immersion in water. It will thus be seen that I have provided means which will remain absolutely reliable under all weather conditions for effecting the automatic inflation of the gas envelop when the device is immersed in water.

The apparatus as described is not only useful for inflating the gas envelop contained within a casing, but may be used to inflate life belts or buoys of any kind. As the gas is hermetically sealed, it always remains in condition for use and cannot deteriorate. As no valve is used to control the flow of gas to the inflatable envelop, there can be no leakage and no possibility of valve corrosion preventing the proper operation of the device.

The cylinder is charged through a screw plug 19, the end of which is preferably formed as a needle valve engaging the seat 20. When this plug is properly screwed home leakage is impossible, though solder may be also employed if desired.

While this device is intended primarily to be used only once in a case of emergency, it can at any time be readily refilled, as the diaphragms 11 are easily renewable and also the paper cylinder for automatically causing the inlet.

What I claim as my invention is:—

1. A life buoy comprising means for containing a gas under pressure; a gas envelop normally collapsed; a normally closed communication between said container and the envelop; means tending to open said communication; a trigger normally preventing the operation of said means; and means expansible by contact with water adapted to release the trigger.

2. A life buoy comprising means for containing a gas under pressure; a gas envelop normally collapsed; a normally closed communication between said container and the envelop; trigger held means tending to open said communication; and means controlling the trigger adapted on contact with water to release the same comprising a mass of absorbent paper contacting the trigger and a relatively stationary part and adapted by its expansion to actuate the trigger.

3. A life buoy comprising means for containing a gas under pressure; a gas envelop normally collapsed; a normally closed communication between said container and the envelop; trigger held means tending to open said communication; and means controlling the trigger adapted on contact with water to release the same comprising a plurality of disks of absorbent paper contacting the trigger and a relatively stationary part and adapted by expansion to actuate the trigger.

4. A life buoy comprising means for containing a gas under pressure; a gas envelop normally collapsed; a communication between the container and the envelop; a puncturable diaphragm normally closing said communication; a spring actuated bolt adapted to puncture said diaphragm; a trigger normally releasably locking said bolt in its retracted position; and means adapted on contact with water to move the trigger to release the bolt.

Signed at Toronto, Ontario, Canada, this 14th day of March, 1914, in the presence of the two undersigned witnesses.

HERBERT W. COOEY.

Witnesses:
E. P. HALL,
GEO. P. MACKIE.