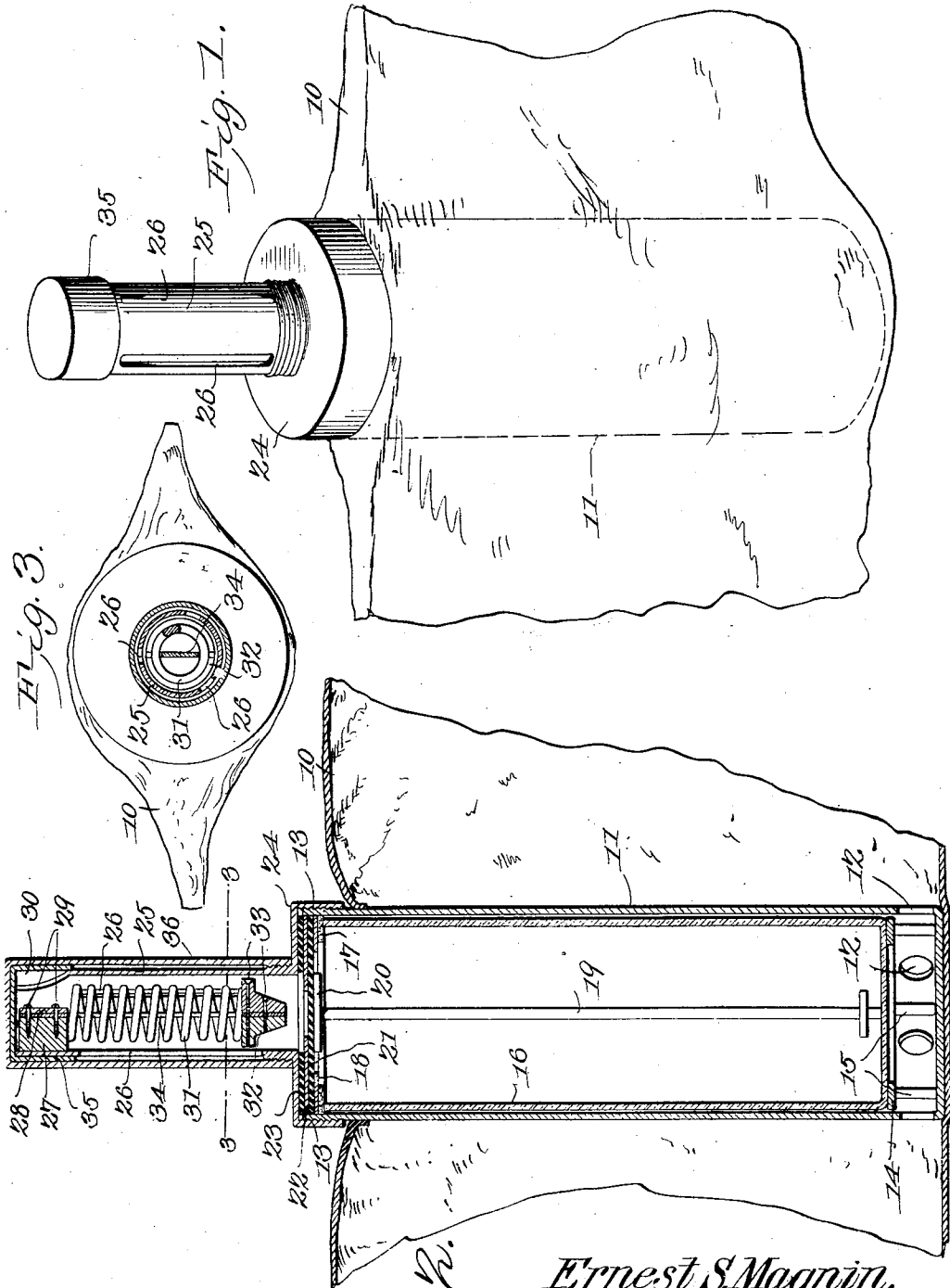


No. 826,342.

PATENTED JULY 17, 1906.

E. S. MAGNIN.
AUTOMATICALLY INFLATABLE BUOY.
APPLICATION FILED SEPT. 15, 1905.



Witnesses
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Fig. 2.

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UNITED STATES PATENT OFFICE.

ERNEST SALVATOR MAGNIN, OF CHICAGO, ILLINOIS.

AUTOMATICALLY-INFLATABLE BUOY.

No. 826,342.

Specification of Letters Patent.

Patented July 17, 1906.

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To all whom it may concern:

Be it known that I, ERNEST SALVATOR MAGNIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Automatically-Inflatable Buoy, of which the following is a specification.

This invention relates to buoys, and while primarily intended for use as life-buoys is applicable to other purposes with equally satisfactory results.

It is well known that many deaths from drowning occur which would be averted by a properly-constructed and applied life-buoy. Without discussing the merits of buoys already in use it is well known that many persons are precipitated into the water with no life-buoy, either from their inability to procure one or from a mental or physical incapacity to properly adjust it to the person.

It is an object of this invention to provide a device which in the form of a belt, jacket, waist, or other garment may be continually and without inconvenience worn by persons liable to immersion and with improved means to instantly inflate the device when thrown into the water.

A further object of the invention is to provide an improved device which may be readily attached to or placed within a sunken vessel and which will become automatically inflated to displace the water and with enough capacity applied float the vessel.

A further object of the invention is to provide an improved device which may be carried in any of the compartments of a boat, ship, or other vessel and which in case of leakage will automatically inflate and fill the compartment with a gas-inflated envelop to force out and exclude the water.

Specifically, the object of the invention is to provide improved means for automatically commingling within an envelop materials which combine chemically and liberate a permanent gas, which fills the envelop to thereby render it buoyant to a degree dependent upon its water-displacing ability.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made without departing from the spirit or sacri-

ficing any of the advantages of this invention.

In the drawings, Figure 1 is a perspective view of the improved buoy. Fig. 2 is a sectional view longitudinally of the casing. Fig. 3 is a transverse sectional view taken on line 3 3 of Fig. 2.

Like characters of reference indicate corresponding parts in all of the figures of the drawings.

In its preferred embodiment the improved buoy forming the subject-matter of this application comprises a bag or envelop 10, composed of any material impervious to gas and of any desired size and shape. In the drawings the envelop has been shown proportioned as for a belt; but such form is shown only for the purpose of illustration. Within and extending without the envelop is secured a casing 11 of any size and form and here shown as tubular. The casing 11 is provided about one end, which in the description will be called the "lower" end, with openings 12, communicating with the envelop and about the top and without the envelop with screw-threads 13. Within the bottom of the casing is disposed an annular ring 14, spaced from the bottom, as by legs 15. Resting upon the ring 14 is a frangible reservoir 16, proportioned to substantially fill the casing and to extend adjacent the upper end and composed of any approved material, as glass, wax, or the like. Upon the upper end of the reservoir is placed an elastic gasket 17 and thereon a rigid washer 18, and a plunger 19 is disposed longitudinally within the reservoir, with a head 20 within the opening of the washer 18 and its end opposite bearing against the opposite end of the reservoir. Upon the washer 18 and the head 20 is disposed a flexible diaphragm 21, composed of any material, such as rubber, which is both flexible and impervious to gas. Upon the diaphragm is disposed a rigid washer 22, upon which again is placed an elastic gasket 23, and a screw-cap 24 is engaged upon the screw-threads 13 and bears upon the several gaskets and washers 17, 18, 22, and 23 to clamp the diaphragm 21 firmly upon the reservoir 16 to prevent the escape of gas.

The cap 24 has a central opening, and a tube 25 is erected thereover, provided with any approved form of openings through the walls, as the longitudinal slits 26. Within the upper end of the tube 25 is secured the semicylindrical block 27, upon which is se-

cured the plate 28, as by the clamping-screws 29, operated through an aperture 30 in the tube 25. Within the tube below the block is a spring 31, below which is a hammer 32, composed of independent halves held together by the clamping-screws 33. Clamped at its opposite ends between the halves of the hammer 32 and by the plate 28 is a strip 34 of paper of a length to hold the hammer under tension of the spring. To protect the open end of the tube 25 and associated parts, a cap 35 is placed thereover, and an auxiliary cap 36 is provided, which may be used to prevent the introduction of water into the tube 25 when desired.

For operation as a life-buoy or for use as in compartments of a vessel the cap 36 will not be employed, but will be used when, for instance, a sunken vessel is to be floated, as by its use the device may be taken into the water by divers and placed within or secured about the hulk. When a sufficient number have been applied, the caps are removed and the following action is the same as when used as a life-buoy.

To charge the device, the screw-cap 24 and the gaskets, washers, and reservoir are removed and a carbonic salt introduced into the envelop through the casing and the openings 12. The salt may be an alkaline carbonate, calcium carbid, or other salt capable of liberating a gas upon chemical combination with a liquid. The reservoir is then replaced within the casing and filled with the liquid possessing the necessary chemical affinity for the salt—as, for instance, for the alkaline carbonate an acidulated water may be used, while for the calcium carbid water only is necessary. When the reservoir has been filled, the plunger 19 is introduced and the washers, gaskets, and diaphragms clamped thereon by the cap. With the parts assembled as shown the water will enter the slits 26 and moisten the paper strips, thereby reducing its tensile strength, so that it is overcome by the tension of the spring 31 to drive the hammer 32 against the diaphragm 21 and head 20 of the plunger, driving the opposite end of the plunger through the bottom of the reservoir and permitting the contained liquid to flow into contact with the salt, which, flashing instantly into gas, inflates the envelop.

Having thus described the invention, what is claimed is—

1. In a device of the class described an en-

velop, a casing connected with the envelop, a frangible reservoir within the casing and closed by a flexible diaphragm a plunger disposed within the reservoir in contact with the diaphragm and the end opposite, a hammer and means whereby the introduction of moisture to the case releases the hammer to strike the diaphragm upon the head of the plunger.

2. In a device of the class described, an envelop, a casing connected and communicating with the envelop, a frangible reservoir within the casing and closed by a flexible diaphragm, a plunger disposed within the reservoir in contact with the diaphragm and the end opposite, a spring, a hammer carried by the spring and means to hold hammer under tension of the spring and whereby the hammer is released upon the introduction of moisture to strike the diaphragm upon the head of the plunger.

3. In a device of the class described, an envelop, a casing connected and communicating with the envelop, a frangible reservoir within the casing and closed by a flexible diaphragm, a plunger disposed within the reservoir in contact with the diaphragm and the end opposite, a spring, a hammer carried by the spring, a body capable of becoming weakened by the application of moisture arranged to hold the hammer under tension of the spring and means to admit moisture to release the hammer to strike the diaphragm upon the head of the plunger.

4. In a device of the class described, a tubular casing, a frangible tube within the casing and closed at one end by a flexible diaphragm, a plunger disposed longitudinally within the tube and with one end in contact with the diaphragm and the opposite end bearing upon the end of the tube opposite, a spring within the casing, a hammer carried by the spring, a paper member arranged to hold the hammer under tension of the spring, and means to admit moisture into contact with and to reduce the tensile strength of the paper to release the hammer to strike the diaphragm upon the head of the plunger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ERNEST SALVATOR MAGNIN.

Witnesses:

J. B. HUTCHINSON,
FRANKLIN A. MILLER.