

H. A. DUC, Jr.  
Life-Preserving Apparatus.

No. 164,818.

Patented June 22, 1875.

Fig. 1.

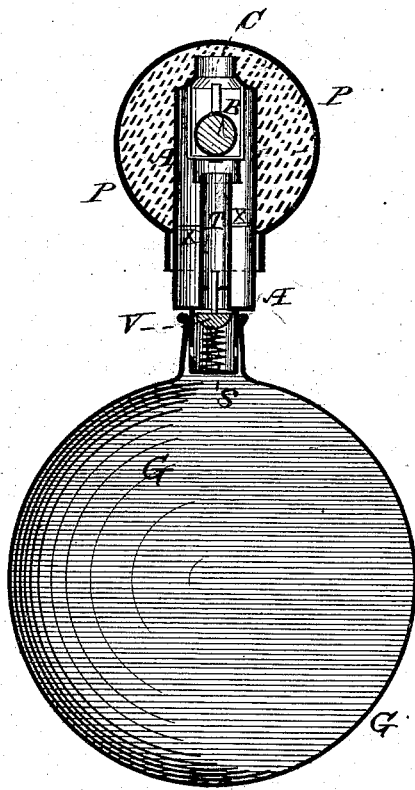
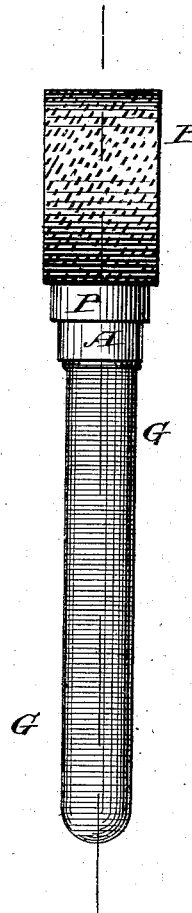


Fig. 2.



WITNESSES.

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## IMPROVEMENT IN LIFE-PRESERVING APPARATUS.

Specification forming part of Letters Patent No. **164,818**, dated June 22, 1875; application filed May 17, 1875.

*To all whom it may concern:*

Be it known that I, HENRY A. DUC, Jr., of Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Life-Preserving Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in a self-acting life-preserver, which can be worn at all times when on the water, and will inflate itself as soon as it gets wet, as will be hereinafter more fully set forth.

In the annexed drawing, Figure 1 is a central vertical section, and Fig. 2 is a side elevation.

G represents a bag, made of india-rubber, to be secured around the body by suitable straps, in such a manner as to allow the bag to hang between the binding of the waistcoat or other garment that is worn all the time. The bag G is provided with a tube or flask, A, for containing suitable chemicals, which flask is enveloped by a perforated case, P, as shown. Inside of the flask A is a tube, T, provided with a valve, V, at its lower end, to prevent the water from filling the bag G. S is a spiral or other spring, to hold the valve V to its seat against the pressure of water in the flask. Below the mouth C of the flask A is a suitable cage for holding a cork ball, B, which is covered with india-rubber, and made light enough to float.

The flask A is charged with tartaric acid and supercarbonate of soda, which will occupy about the space *x x*. The perforated case P is then placed over the flask, to prevent anything from closing the mouth C.

The flask is to be strapped to the body, with the bag G hanging between the clothing. If the wearer falls or gets into the water, the water passes through the perforated case, and enters the flask at the top C, which is always open.

As soon as the water rises high enough in the flask it floats the cork ball B, and closes the mouth of the flask. The valve V is kept closed by the spring S, and prevents the water from entering the bag G.

The water now in the flask dissolves the chemicals, and generates carbonic-acid gas

rapidly, which will force the ball B tight against the opening C, and not allow it to escape. The pressure will then be increased, and overcome the strength of the spring S, and open the valve V and inflate the bag G, which will not allow the wearer to sink.

Other suitable chemicals may be used to generate gas instead of those mentioned above.

I do not confine myself to the above-described form of flask or bag, as they may be modified to suit the different wants; or the chemicals may be put into the bag, or may be incorporated in a sponge, which will absorb the water, and bring it in contact with the chemicals; or a sponge wall or partition may be used to protect them while they remain dormant. Nor do I confine myself to the saving of life alone with the above-described apparatus, as the same may be made large and put into boats and vessels, in such a manner that when they sink to a certain depth the bags would swell out and displace the water, and prevent the total sinking.

Diving-bells, submarine boats, &c., may be fitted with the same, and, in case of leak or accident, would come to the surface as soon as the water got inside and dissolved the chemicals, as the bags would be inflated, and diminish the specific gravity of the boat and machinery.

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

1. A life-preserving apparatus which shall become automatically inflated and buoyant by its immersion in water, substantially as set forth.
2. The combination of an inflatable bag and a receptacle containing chemicals that will generate gas by being dissolved in water, substantially as and for the purposes herein set forth.
3. The combination of an inflatable bag, G, flask A, valves V B, and exterior perforated case P, substantially as and for the purposes herein set forth.

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

HENRY A. DUC, JR.

Witnesses:

JACOB C. WIENGES,  
EDWARD S. BENARD.