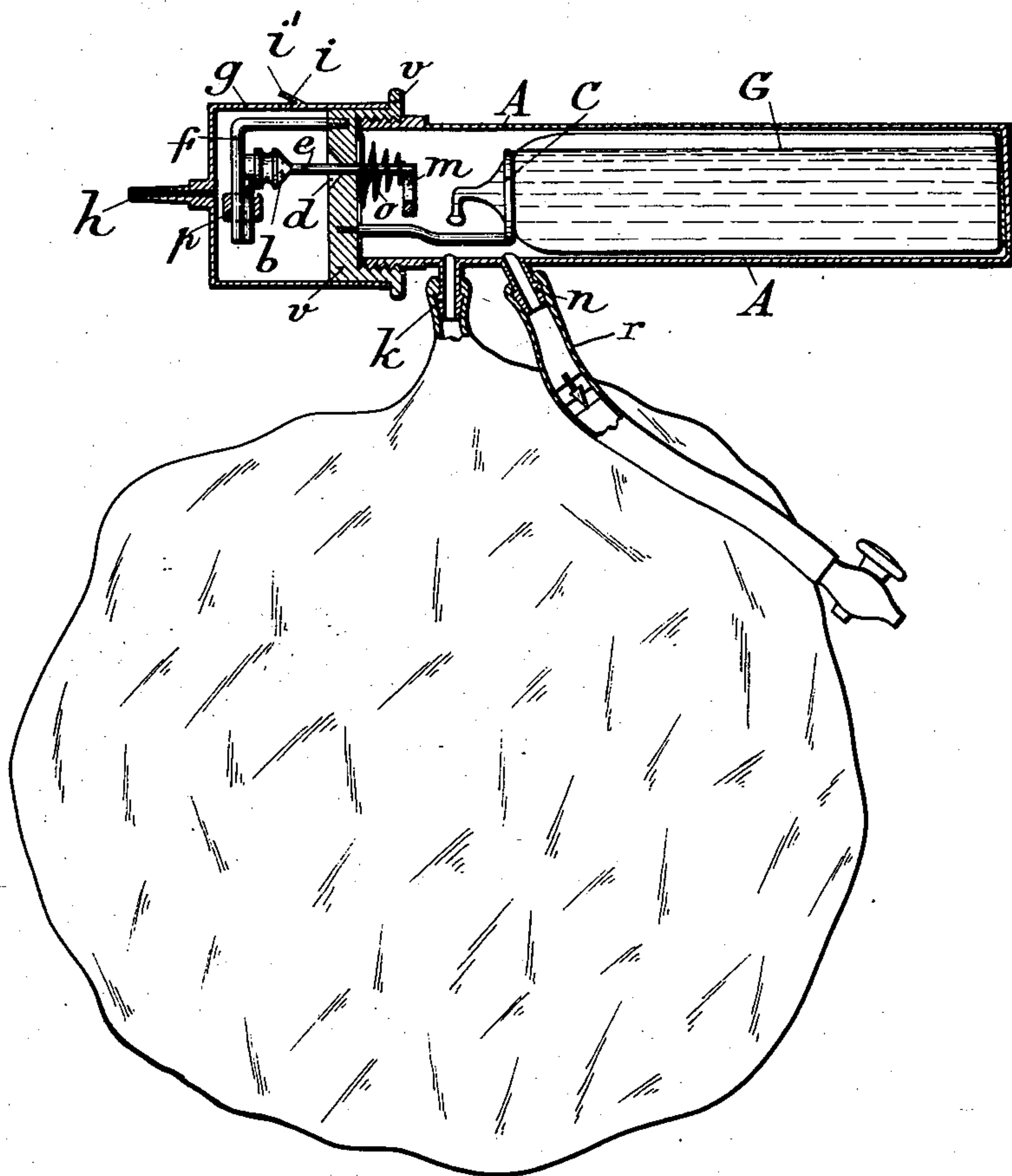


(No Model.)

A. VON DER ROPP.
LIFE PRESERVER.

No. 547,808.

Patented Oct. 15, 1895.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER VON DER ROPP, OF BERLIN, GERMANY.

LIFE-PRESERVER.

SPECIFICATION forming part of Letters Patent No. 547,808, dated October 15, 1895.

Application filed June 21, 1895. Serial No. 553,589. (No model.) Patented in England April 2, 1894, No. 6,550; in Austria April 2, 1894, No. 44/6,219; in Italy April 30, 1894, LXX, 475; in France June 20, 1894, No. 237,466; in Belgium November 15, 1894, No. 112,401, and in Norway December 14, 1894, No. 3,613.

To all whom it may concern:

Be it known that I, ALEXANDER VON DER ROPP, a subject of the Russian Emperor, residing at Berlin, Germany, have invented certain new and useful Improvements in Apparatus for Preventing the Drowning of Persons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Letters Patent for this invention have been obtained in the following countries: France, No. 237,466, dated June 20, 1894; Austria, No. 44/6,219, dated April 2, 1894; Norway, No. 3,613, dated December 14, 1894; Italy, Vol. LXX, No. 475, dated April 30, 1894; England, No. 6,550, dated April 2, 1894, and Belgium, No. 112,401, dated November 15, 1894.

This invention relates to life preservers; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

Experience has in numberless cases shown that apparatus which are intended for saving persons from drowning must fulfill the following conditions in order that they may effectually serve for the intended purpose: First, the apparatus must be sufficiently small and light to enable it to be worn on the body, either underneath the garments or otherwise, without inconveniencing the movement of the wearer; second, the apparatus must operate without requiring the person in danger of drowning to do anything to it; third, the apparatus must be capable of operating any number of times. These conditions are best fulfilled by those life-saving apparatus in which at the moment of drowning, either by chemical reaction or other means, a bladder is filled with gas, which bladder previously was carried on the person in a folded condition. None of the known apparatus, however, combine all the said described qualifications.

The present invention has for its object to combine all these properties in a single apparatus; and it consists, essentially, in causing a glass tube filled with a liquefied gas and closed by melting, to be broken by the action

of the water upon a suitable mechanical device, so as to cause the liquid gas to expand in voluminous gaseous form into the bladder.

The entire apparatus is so constructed that in its folded condition it can be carried, if necessary, under the clothing of a person, and that it is only put in operation when it is entirely immersed under water.

I will describe the apparatus with reference to the accompanying drawing, which shows one mode of construction thereof in sectional elevation.

A is a cylindrical receptacle, of brass or other suitable material, which carries two lateral branches provided with a number of grooves. One of these branches *k* serves for the attachment of a caoutchouc or other air-tight bladder, while the other *n* serves for the attachment of an emergency-tube, to be presently described. The receptacle A serves for containing a glass tube G, filled with a suitable compressed or liquefied gas, the long drawn-out point of which is bent downward at the end. The vessel A is closed at one end and open at the other, where it is provided with an external screw-thread. On this is screwed a cover *v*, in which is screwed an angularly-bent loop *f*, and in which cover is also formed a coned hole *d*, through which is passed loosely a striking-pin *e*, that can slide longitudinally. The striking-pin *e* is bent into hook form at its inner end and has a coned collar *b*, which fits accurately into the conical hole of the cover *v*. A spiral spring *o* tends to throw the pin inward when set free. The hook-shaped outer end of the pin can be drawn so far backward as to bear against the loop *f* of cover *v* and is connected to this by means of a ring *p*, made of a material, such as paper, that will soften and lose its strength when coming in contact with water. At its inner end the striking-pin carries a ring *m*, which serves to break the point of the glass tube opposite to it, so as to allow the liquefied or compressed gas in the tube to expand in escaping from the tube as soon as the paper ring *p* has become softened by contact with water. Over the cover *v* is fitted a cap *g*, which has a small tube *h* on its lower side serving to admit water to the apparatus. The cap *g* is provided

with a hole *i*, through which the air can escape, and which is protected outside by a small shield *i'*. The swimming-bladder terminates in a mouthpiece, which is secured on the grooved branch *k* of the vessel A. The second branch *n* has attached to it a flexible tube *r*, closed by a cock and check-valve, which serves to enable the person carrying the apparatus to blow air into the bladder in addition to the expanded gas should this be necessary.

For introducing the glass tube G readily into or for removing it from the vessel A, the cover *v* is made removable, for example, by screwing it on, as shown.

The glass tube G is held in position in any suitable manner—such as, for instance, by a wire loop C fixed to the cover *v*.

The action of the apparatus is as follows: The striking-pin *e* is pushed back until its hooked outer end touches the hook *f* of the cover *v*, whereby the spring *o* will be put in compression. A paper ring *p* is then fitted over the hook of the striking-pin and the hook *f*, so as to hold the pin in that position. The glass tube G is then introduced into the vessel A, and the open end of the latter is closed by the cover *v*. The bladder is then fixed to the branch *k* and the flexible tube *r* is also fixed on the branch *n*, after which the cap *g* is fitted over the cover *v*. The apparatus is then ready for operating and can be suitably packed up in such manner that the bladder hangs downward.

The only entrance for the water is the small tube *h*, so that the person carrying the apparatus should secure it in such a position that the opening of the tube is directed downward, in order that it may be exposed to rain without risking the entrance thereof into the cap and thus putting the apparatus in action. As soon, however, as the apparatus is immersed in water, this will penetrate through the tube *h*, while the air can escape from the cap through the opening *i*, so that the paper ring *p* in becoming wet and soft will give way to the pressure of the spring *o*, which will throw the striking-pin forward and cause it to break by means of the ring *m* the point of the glass tube. The compressed gas in the latter will now be free to expand and escape, flowing into the bladder, so as to expand it. As the pin *e* moves forward, the conical collar *b* fits

into the coned hole of the cover *v*, and thus prevents the escape of gas through the hole thereof.

It will be obvious that the above-described apparatus may be variously modified as regards the details of construction without departing from the essential feature of the invention. Thus instead of constructing the apparatus so as to fracture the glass tube automatically, the striking-pin might be arranged so as to be operated by hand by means of an external handle.

What I claim is—

1. In a life preserver, the combination, with a closed vessel, and an inflatable gas bag communicating therewith, of a tube of fragile material inclosed in the said vessel and containing gas under pressure, and a slidable pin projecting from the said vessel and operating to break the said tube when forcibly pressed against it, substantially as set forth.

2. In a life preserver, the combination, with a closed vessel, and an inflatable gas bag communicating therewith, of a tube of fragile material inclosed in the said vessel and containing gas under pressure, a loop *f* secured to the vessel, a pin projecting from the said vessel, a paper ring *p* normally connecting the said pin to the loop *f*, and a spring operating to force the said pin against the said tube to fracture the same when the ring *p* is fractured, substantially as set forth.

3. In a life preserver, the combination, with a closed vessel, a tube of fragile material inclosed therein and holding gas under pressure, and an inflatable gas bag communicating therewith; of a cover *v* closing the said vessel and provided with the conical hole *d*, the pin passing through the said hole and having a conical portion *b*, a spring for forcing the said pin against the said tube to fracture the same, the loop *f* projecting from the said cover, a paper ring connecting the said pin to the loop, and a cap secured to the said cover, inclosing the said paper ring and provided with water and air holes, substantially as set forth.

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

ALEXANDER VON DER ROPP.

Witnesses:

MAX WAGNER,
EMIL KOLLINER.