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PATENTED JAN. 27, 1903.

J. EWING, JR.
INFLATING DEVICE FOR LIFE BELTS.

APPLICATION FILED AUG. 1, 1902.

NO MODEL.

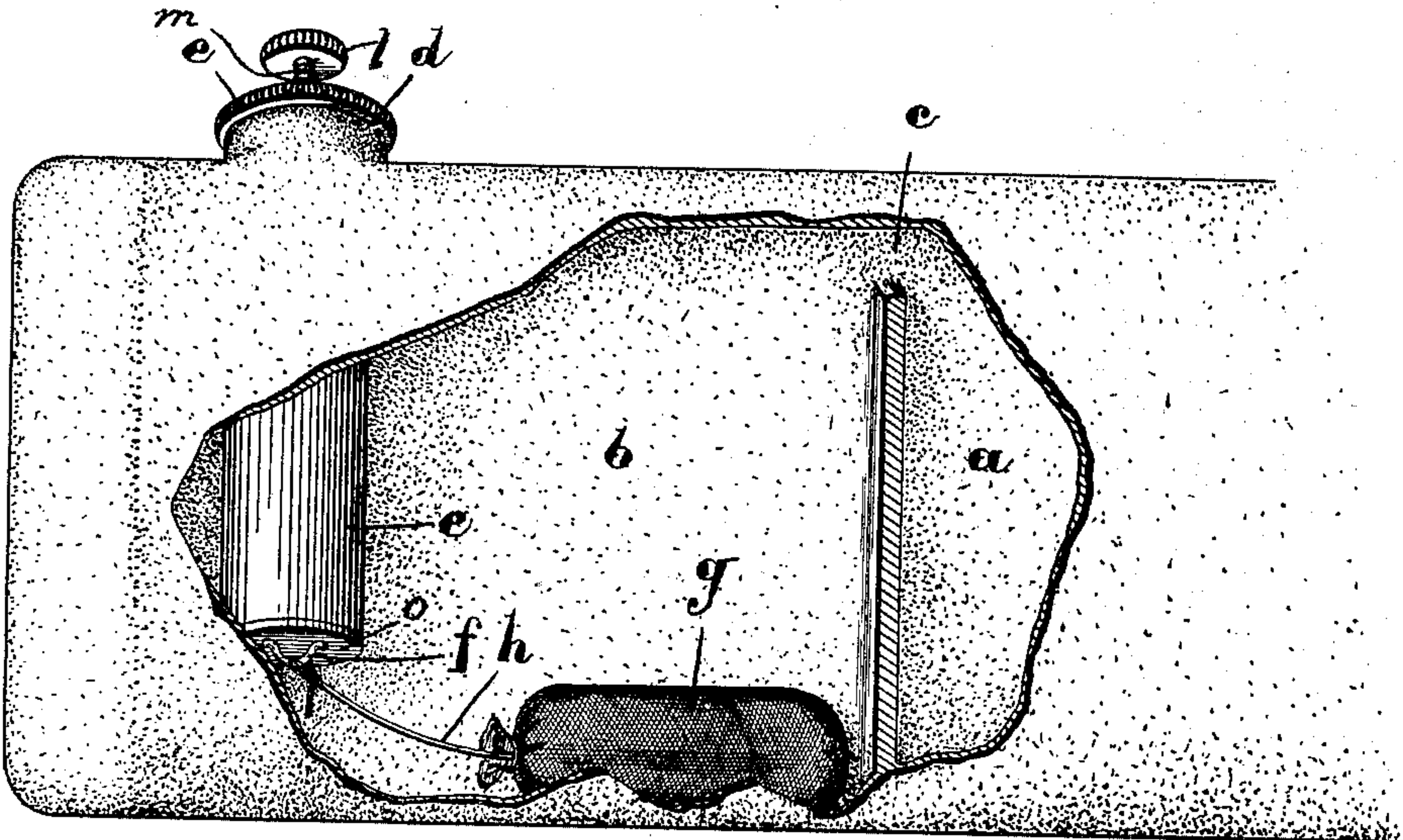


Fig. 1.

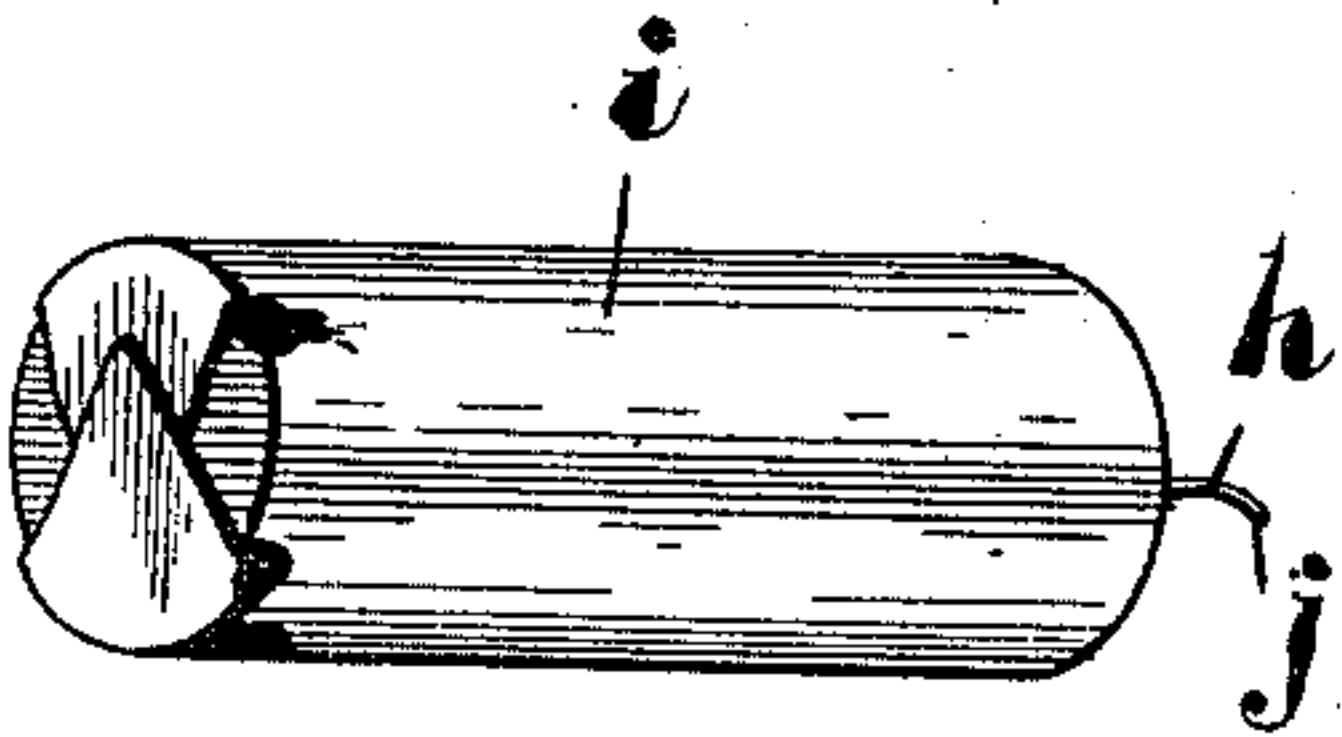


Fig. 2.

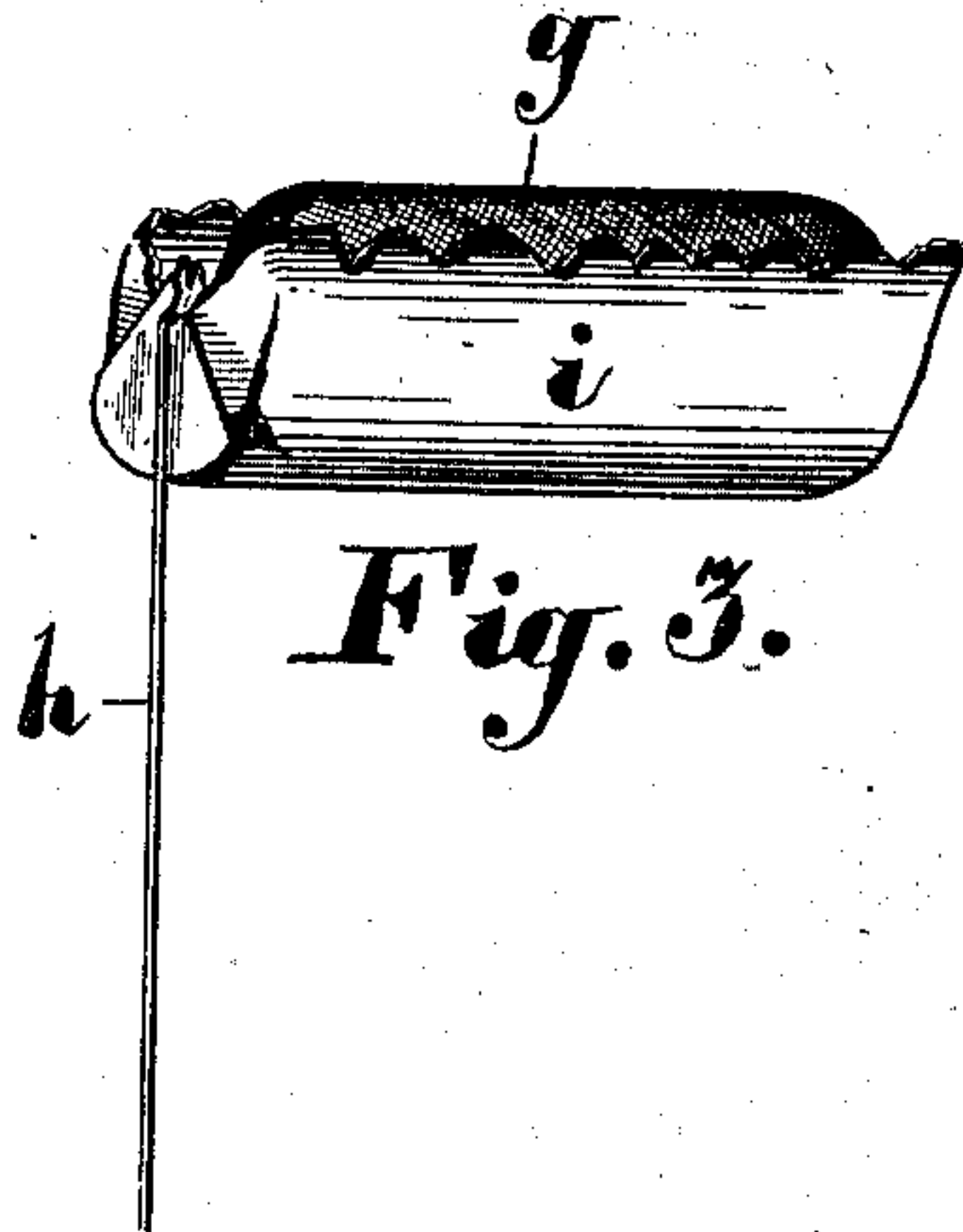


Fig. 3.

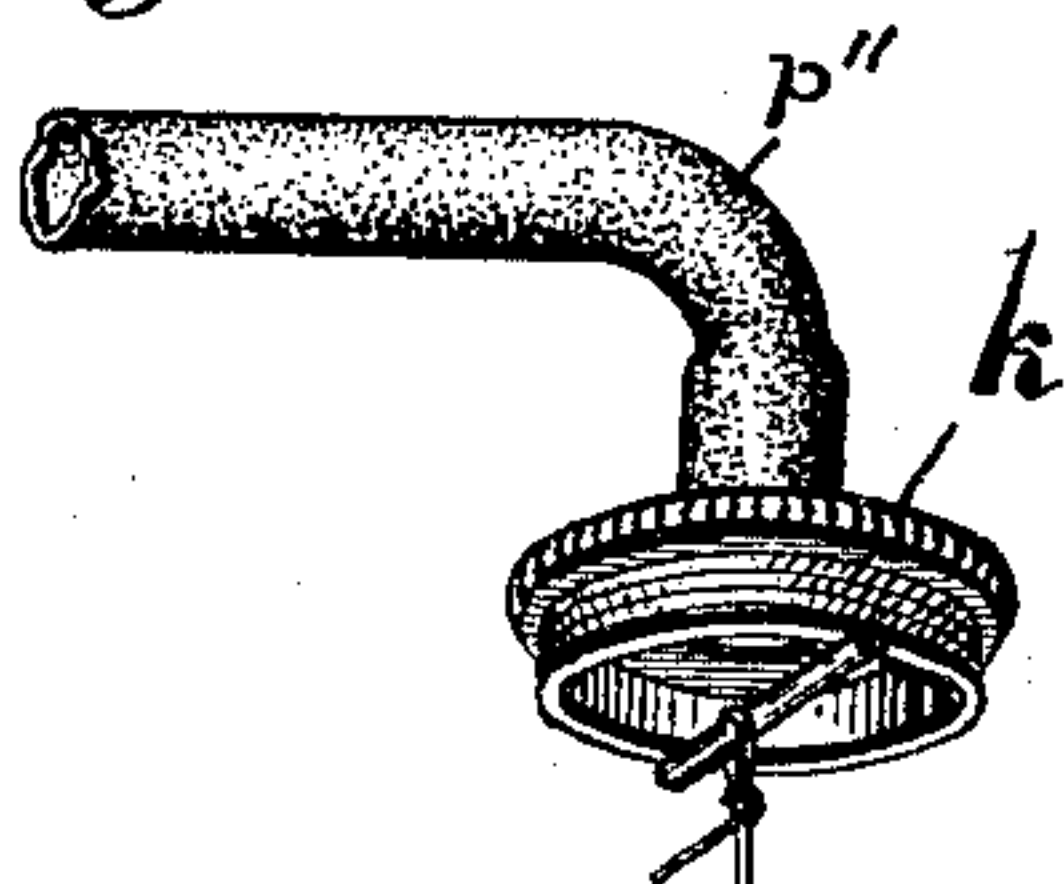


Fig. 4.

Witnesses.

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JOHN EWING, JR., OF RICHMOND, CANADA.

INFLATING DEVICE FOR LIFE-BELTS.

SPECIFICATION forming part of Letters Patent No. 719,316, dated January 27, 1903.

Application filed August 1, 1902. Serial No. 118,018. (No model.)

To all whom it may concern:

Be it known that I, JOHN EWING, Jr., a subject of the King of Great Britain, residing at Richmond, in the county of Richmond, Province of Quebec, Canada, have invented certain new and useful Improvements in Instantaneous Inflating Devices for Collapsible Life-Belts, of which the following is a specification.

My invention relates to improvements in instantaneous inflating devices for collapsible life-belts, and particularly to the arrangement of the devices to contain the constituents employed to generate the gas; and the object of the invention is to devise a means of connecting the receptacles for the constituents in such a manner that the removal of one will cause the removal of the other and whereby no sediment will be left in the life-preserver to destroy or foul the same; and it consists, essentially, of a bag or tube of porous material closed at each end and designed to contain the powdered or solidified constituents and having securely attached to one end thereof a string or wire, the said string being connected at the other end to the receptacle designed to contain the other constituent toward the formation of the gas, and a casing of tin-foil covering the aforesaid bag and the length of string when not attached to the second receptacle, the various parts being constructed in detail, as hereinafter more particularly described.

Figure 1 is a perspective view of the generating end of a life-belt with the outer covering broken away to show the arrangement of the constituents. Fig. 2 is a view of the constituent-bag in the tin-foil casing. Fig. 3 is a view of the constituent-bag, showing the tin-foil casing subsequent to the pull of the string. Fig. 4 is a view of the constituent-bag attached to another form of stopper.

Like letters of reference indicate corresponding parts in each figure.

a is the belt, having one end divided into a generating-bag *b*, with the passage *c* connecting the bag *b* and the main portion of the belt.

d is an opening in the top of the generat-

ing-bag *b*, into which is inserted the receptacle *e*, designed to serve as a stopper for the opening *d* and provided at its bottom with a ring or eye *f*. The receptacle *e* is designed to hold a fluid or other suitable constituent toward the formation of a gas.

g is a bag or cartridge designed to contain calcium carbide or other suitable constituent toward the formation of a gas. The cartridge *g* has for a covering a porous material, such as cheese-cloth, which will readily allow any fluid to pass through and mix with the contents of the cartridge.

h is a string attached to one end of the cartridge *g* and at its other end attached to the eye *f* at the bottom of the receptacle *e*.

i is an outer casing of tin-foil, which is designed to protect the cartridge from moisture before it is placed in the belt—for example, as during shipment from the factory. It is carefully wrapped around and about the cartridge *g* and covering the string *h*, which is turned back longitudinally with the cartridge, leaving a small end *j* protruding through the said casing.

k is another form of stopper in which the fluid-receptacle is entirely outside the belt.

It must be understood that this device may be used with any suitable form of stopper, as the salient features of the invention are the arrangement of the constituents and the facility with which the same may be put in place.

l is a thumb-disk securely attached to the top of the spindle *m*. The spindle *m* is threaded at its upper end and is inserted in a correspondingly-threaded orifice in the top end of the receptacle *e*.

o is the bottom cover of the receptacle and is suitably attached to the lower end of the spindle *m* in order that the turning of the thumb-screw *l* will raise or lower the said bottom cover *o*.

The stopper *k* is attached to any suitable form of water-chamber by means of the tube *p*.

In order to more clearly explain my invention, I shall describe the method of using. I shall here confine myself in my description to the formation of acetylene gas for inflation purposes. The cartridge *g*, which, as before

stated, is made of a material of substantially the texture of cheese-cloth, is filled with powdered or small lumps of carbid. This bag being closed at one end is securely tied at the other by the string *h*, the other end of the string *h* being, as heretofore explained, attached to the bottom of the receptacle *e*. The receptacle *e* being full of water, the device is now ready for use. The cartridge *g* when in the generating-bag *b* and attached to the receptacle *e* is absolutely free from the influence of the moisture in the air and may be retained in the said generating-bag for a considerable length of time; but previous to being placed in the bag it must have a suitable outer casing which will prevent the carbid from disintegrating, so I have provided a wrapper or outer casing of tin-foil, which covers over the string *h*, leaving a protruding end of the said string at the opposite end of the cartridge to the end at which the string is fastened. When it is desired to use the cartridge, the end of the string is pulled, which action separates the tin-foil wrapper down the middle, and on a further pull of the string the cartridge is removed from its outer wrapper and attached, as herein explained, to the eye *f*. After the foil wrapper has been removed and the cartridge placed in the generating-bag *b* and the receptacle *e* filled with water the belt is ready for use. Then when the bottom of the receptacle is opened in a suitable manner the water is allowed to flow freely from the said receptacle into the generating-bag *b*, where it is absorbed by the carbid in the cartridge *g* and generates the gas, which passes through the passage *c* into the main portion of the belt. The turning of the thumb-screw *l* loosens the bottom cover *o* and releases the water contained in the receptacle.

It must be understood that I do not wish to confine myself to any particular form of stopper, for many other forms may be used in which the carbid-cartridge is attached in a similar manner—for instance, the stopper *k*, which is connected to a suitable water-supply by means of the tube *p*, the water passing through the tube and through a suitable orifice in the said stopper.

After the belt has been used and it is desired to allow the gas to escape therefrom the receptacle *e* is removed, leaving the opening *d* clear for the gas to escape, and in removing the receptacle *e* the cartridge *g*, being attached thereto, is removed with the same, and consequently all the sediment of the carbid, leaving the bag clean and ready for the next charge.

This means of charging not only facilitates matters as regards the cleanliness of the bag, but adds greatly to the clear and uninterrupted passage of the gas and also insures a much steadier generation, thereby causing much less strain on any one part of the belt.

For instance, the generating-bag *b* is a com-

paratively small part of the belt, and where a quantity of carbid is scattered over the bottom of said bag and the water thrown in the inflation will be altogether too quick and cause too great an expansion of the bag portion before the gas can find an opening into the main part of the belt. The cleanliness of the opening between the main belt and the generating-bag is also an essential feature in a device of this kind, and if the carbid is not in some manner kept from blowing into said opening the belt is apt to become more or less useless from the choking of the passages. It has also been found that if the carbid is left in for a sufficient time after inflation the moisture in the generating-bag will be absorbed, leaving it perfectly clean and dry for the next charge.

In the foregoing I have confined my description of this device entirely to collapsible life-belts; but it must be understood that inflatable tubes of all kinds may be operated by substantially the same arrangement. I desire to also emphasize the fact that the heat developed in generating acetylene gas and with a somewhat different arrangement may be used to replace the ordinary hot-water bag.

What I claim as my invention is—

1. In an inflating device for collapsible life-belts, the combination with the gas-generating chamber having a suitable opening thereinto, of a stopple having an eyelet or staple attached to its under side and designed to close the said opening, a bag or tube of porous material closed at each end, and designed to contain a gas-producing constituent, a string attached to the bag at one end and to the said staple at the other, as and for the purpose specified.

2. In an inflating device for collapsible life-belts, the combination with the gas-generating chamber having an opening thereinto provided with a suitable stopple designed to form a part of a fluid-receptacle, of a bag or tube of porous material closed at each end, and designed to contain a gas-producing constituent, a string connecting the said bag to the said stopple, as and for the purpose specified.

3. A gas-generating device for collapsible life-belts, comprising a stopple having a staple or eye attached to its lower side, and suitably connected with a fluid-receptacle, a bag of porous texture closed at both ends and designed to contain a powdered or solidified form of constituent, and a string connecting the said bag to the said stopple, as and for the purpose specified.

4. In a device of the class described having a generating-chamber, a water-containing receptacle combined with a porous carbid-containing receptacle, and an impervious removable cover therefor, as and for the purpose specified.

5. In an inflating device for collapsible belts, the combination with the hollow belt,

of a stopple closing an opening in said belt and provided with means for admitting fluid to the interior of the belt and a cartridge containing gas-producing material, said cartridge
5 being connected to the stopple so as to be removable therewith.

Signed at Montreal, in the district of Mon-

treau, in the Province of Quebec, Canada, this
25th day of July, 1902.

JNO. EWING, JR.

Witnesses:

LLOYD BLACKMORE,
ROBERT TROTTER.