F. C. W. KLUSMEYER.

LIFE PRESERVER.

APPLICATION FILED JAN. 26, 1912.

1,037,495. Patented Sept. 3, 1912.

Fig. 1.

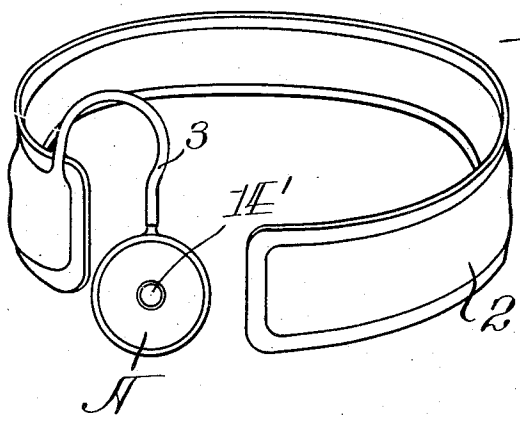


Fig. 3.

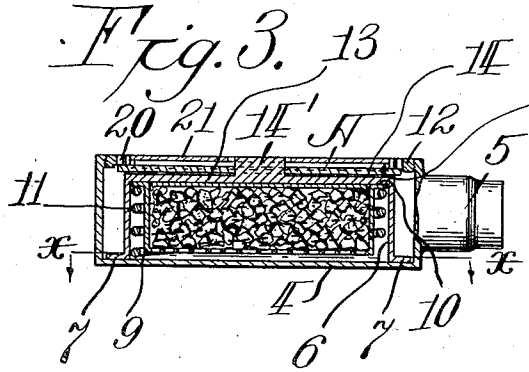


Fig. 2.

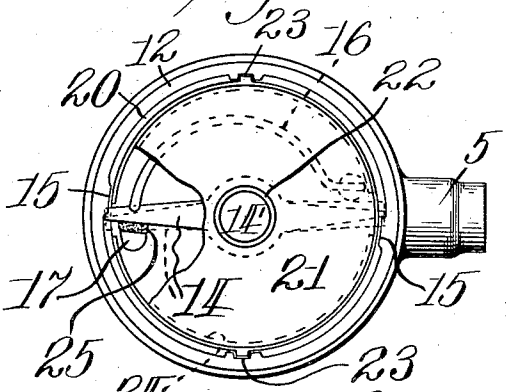


Fig. 4.

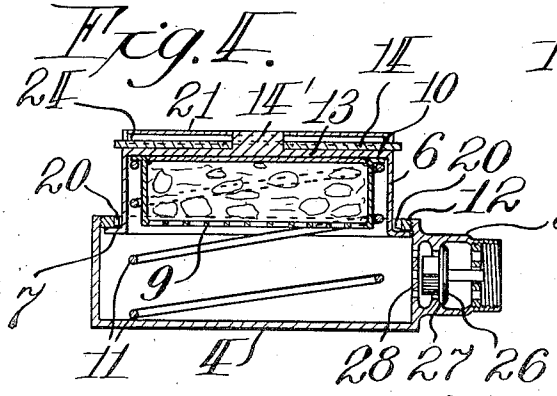
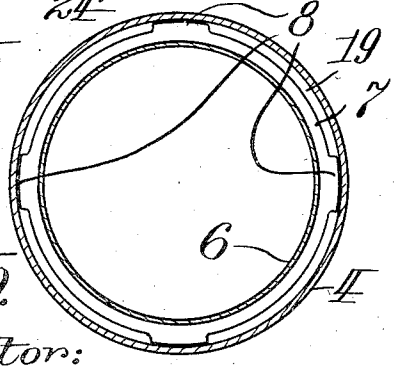


Fig. 5.



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UNITED STATES PATENT OFFICE.

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LIFE-PRESERVER.

1,037,495. Specification of Letters Patent. Patented Sept. 3, 1912.

Application filed January 26, 1912. Serial No. 673,636.

To all whom it may concern:

Be it known that I, FREDERICK C. W. KLUSMEYER, a subject of the Emperor of Germany, residing at Mankato, in the county of Blue Earth and State of Minnesota, have invented a new and useful Improvement in Life-Preservers, of which the following is a specification.

My invention relates to improvements in life preservers and has for its object the design of a life preserver that can be normally worn in deflated condition and which is automatically inflated upon coming into contact with water. In apparatus of this kind it is necessary to have a gas producer in which the gas producing element is sealed from direct contact with air and water.

My device is designed to keep said element completely isolated normally and produce quick, sure action when released by contact with water.

This improvement provides an apparatus in which, a solid gas producing element such as calcium carbid is held and no water is carried.

This invention is simple in construction and efficient and effective in operation. It is not liable to get out of order and is not ordinarily affected at or below freezing temperature.

In the accompanying drawings with which I have illustrated my device and which form part of this specification, Figure 1 is a perspective of a belt to which is attached my gas producer; Fig. 2 is a plan of the gas producer partly in section; Fig. 3 is a longitudinal section of the gas producer when charged and set ready for action; Fig. 4 is a view similar to Fig. 3 showing the position the parts assume after the device has been released by contact with water, and Fig. 5 is a horizontal section of the gas producer taken upon the line X—X, Fig. 3.

In the above drawings I have shown an inflatable life saving belt 2 which is adapted to be attached to a vest or other garment by sewing or other suitable means. The belt is normally deflated and can be worn without inconvenience. The gas producer A is attached to the belt by means of a flexible tube 3 and designed to be worn in the garment to which the belt is attached. The gas producer shown is designed for the use of calcium carbid which develops gas by coming into contact with water but the gas producer is adapted for use with any other suitable substances. The belt and tube are made of rubber or any other suitable gas proof material.

The gas producer A is made of metal or any other suitable material and is formed of a cup shaped housing 4 which has an outlet stem 5 through which the tube 3 is adapted to be connected. Placed within this housing is an inverted cup shaped casing 6 the lower end of which is formed with a flange 7 which is free to move up and down in the housing but has its edge spaced from the side wall of the housing by means of lugs 8 which are formed integral with said flange. The inner casing 6 contains a basket 9 made of open work material which is adapted to hold a charge of carbid. The basket has an upper laterally extending shoulder 10 passing circumferentially around its edge below which a coil spring 11 supports the basket against the top of said receptacle. This spring has its lower end resting upon the floor of the housing and is of sufficient strength to lift the receptacle 6 and its basket of carbid into superior position as illustrated in Fig. 4 with the flange 7 of the receptacle impinged tightly against a removable shoulder in the form of a ring 12 which is threaded into the upper end of the housing. The spring 11 is compressible so that the casing 6 may be collapsed into the housing (see Fig. 3).

A gudgeon is centrally disposed on the top 13 of the casing 6 and a latch bar 14 is centrally pivoted thereon having its ends adapted to engage below shoulders 15 projecting inwardly from the ring 12. A spring 16 is secured on said top 13 with its free end pressing against one end of the latch 14 and tending to disengage said latch by turning it out of engagement with the lugs 15. For the purpose of holding the latch locked against the tension of the spring 16 and engaged below the lugs 15 in the normal condition of the device a stop 17 is mounted on the top 13 of the casing. Between this stop and the latch, a trigger 25 soluble in water is inserted. The stop 17 is positioned so as to permit suffi-

cient movement of the latch when the trigger is dissolved as will free the casing and cause the spring 11 to raise it into superior position as illustrated in Fig. 4. The spaces 19 between the flange 7 and the side wall of the housing and the space 20 between the inner edge of the ring 12 and the side wall of the casing 6 allow water to enter the chamber and unite with the calcium carbid in the basket during movement of the casing from depressed into superior position or in other words while the housing and casing are in median position.

The casing 6 is provided with a cover 21 which is secured above the top 13 by a spring flange 24 on its edge pinched into the casing leaving the latch free to turn but limiting its movement vertically. The central portion of the cover has an opening 22 spaced around the gudgeon 14′ permitting water on the outside passing freely to the soluble trigger 25. Water also has ready access to the trigger through the spaces left in the casing in which the ends of the latch have free movement. The casing is keyed in notches 23 in the ring 12 to prevent turning of the latch from below the shoulders 15 after the latch has been set with the trigger in place. The lower surface of the flange 7 is a ground fit where joining the flooring of the housing and the upper surface of said flange has also a ground fit where joining the lower surface of the ring 12 thus forming air and gas tight joints when the device is in normal condition and after it has been expanded when the latch is released.

The connection 5 is provided with an automatic check valve 26 which automatically closes by its own weight upon the valve seat 27 when the device is in vertical position as illustrated in Fig. 1, this part of my invention being of ordinary construction as any form of check valve may be employed for the purpose desired to prevent air and moisture from entering the device through said connection. A screen 28 is formed over the valve passage to prevent any of the residue from the carbid entering the tube 3.

In operation the device is charged with calcium carbid or other suitable material and the latch is set below the shoulders 15 where it is held by means of the soluble trigger. Upon the device becoming immersed in water the trigger is instantly dissolved and the latch released from below the shoulders 15 whereupon the spring 11 raises the casing 6 from the position shown in Fig. 3 to the position shown in Fig. 4. During this movement only sufficient water is drawn into contact with the carbid in the chamber as will slack the entire charge and develop gas. The ingress of water is checked and the chamber sealed closed while the parts are fully extended except for the passage leading into the life belt through which the gas passes and inflates the belt.

The soluble trigger may be made of any suitable material and may be of any suitable shape. I have found in practice that a composition made of one part of morphine to seven parts of sugar of milk thoroughly mixed and dried, forms a very efficient and instantly effective material out of which the soluble trigger may be made.

In accordance with the patent statutes I have described the principles of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof but I desire to have it understood that the construction shown is only illustrative and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a gas producer adapted for use in connection with an inflatable life preserver, two coöperating elements, one a housing and the other a casing said parts being collapsibly united and adapted to form an air tight chamber for holding carbid when collapsed and to form a gas tight chamber when extended and being so united as to form a passage for water thereinto when in median position, a latch acting against tension to lock said parts together when collapsed and a soluble trigger holding said latch locked.

2. In a gas producer adapted for use in connection with an inflatable life preserver, two coöperating elements, one a housing and the other a casing collapsibly secured in said housing and forming therewith a sealed carbid chamber when in either extreme position and freely connected to form a passage for water thereinto when in median position, means for releasably holding said parts in collapsed position and soluble means sustaining said holding means in engaging position.

3. In a gas producer adapted for use in connection with an inflatable life preserver, two coöperating elements, one a housing and the other a casing expansively secured to said housing under spring pressure and forming therewith a sealed carbid chamber when collapsed or extended and freely connected to form a passage for water thereinto when in intermediate position, a latch releasably holding said parts in collapsed position and automatically movable out of engaging position and soluble means for sustaining said latch in engaging position.

4. In a gas producer adapted for use in connection with an inflatable device, two co-

operating elements one a housing and the other a casing, said elements being expansively joined together and forming an air tight chamber when closed and a gas tight chamber when expanded and freely connected to form a passage for water thereinto when expanding, an expansible spring interposed between said elements, a latch carried by said casing and adapted to engage said housing to hold said elements closed, a spring tending to disengage said latch from said housing, and a soluble element interposed in the path of said latch and holding it normally engaged with said housing.

5. In a gas producer adapted for use in connection with an inflatable device, two cooperating elements one a housing and the other a casing, said elements being expansively joined together and being seated to form an air tight chamber when closed and also seated to form a gas tight chamber when extended, a passage connection leading to said inflatable device, a basket adapted to hold a charge of carbid in said chamber, a spring interposed between said basket and housing serving to expand said elements and hold said basket impinged against said casing, a latch pivoted upon said casing and adapted to engage said housing to hold said elements locked closed, a spring bearing against said latch and tending to disengage it and a soluble element sustaining said latch in locked position and adapted when dissolved to release said latch and cause said elements to expand, said elements being freely joined to form a passage leading into said chamber when said elements are in median position whereby water is drawn into said chamber when said device is immersed and said elements expand.

6. In an automatically inflatable life preserver, having a gas producer in connection therewith, a valve between said gas producer and said inflatable life preserver adapted to pass gas from said gas producer into said life preserver and to prevent moisture and air from entering said gas producer from said life preserver, said gas producer comprising a housing, a casing telescopically held in said housing and forming therewith a holder for a gas producing element and adapted to admit water while in intermediate position, a latch engaging said casing under tension with said housing when in normal position, a spring interposed between said casing and housing to extend said parts when said latch is released, and a soluble trigger holding said latch normally engaged.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FREDERICK C. W. KLUSMEYER.

Witnesses:
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