

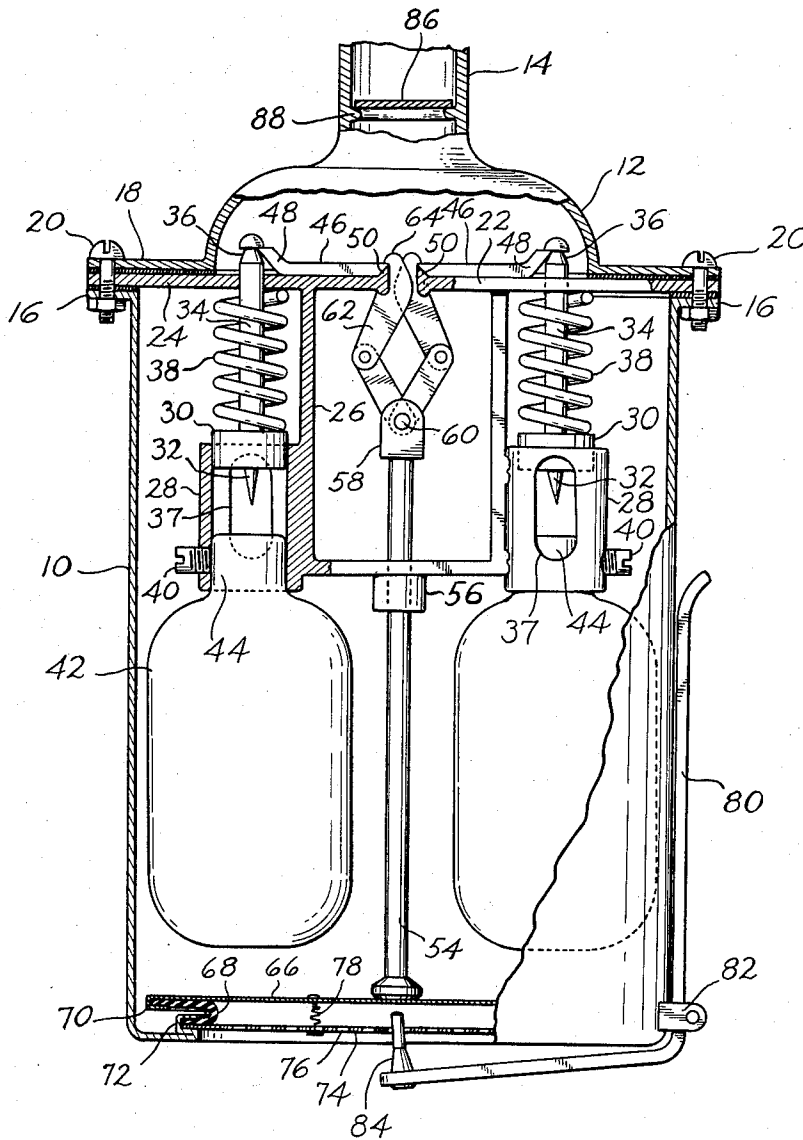
Sept. 8, 1964

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3,147,885

INFLATING DEVICE FOR LIFE PRESERVERS

Filed Aug. 21, 1961



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3,147,885
INFLATING DEVICE FOR LIFE PRESERVERS
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Filed Aug. 21, 1961, Ser. No. 132,875
3 Claims. (Cl. 222-5)

This invention relates to an inflating device for life preservers.

A principal object of the present invention is to provide an inflating device which when combined with an inflatable type life preserver is adapted automatically to inflate the preserver when the latter is immersed in water.

A further object is to provide an inflating device for life preservers utilizing replaceable compressed gas capsules and improved means associated therewith for releasing the gas from such capsules upon the immersion of the life preserver in water.

Another object is to provide an inflating device for life preservers which is compact in structure and which can be combined therewith without adding any bulkiness or hinder the use of the preserver.

Another object is to provide a device of the type described which is readily recharged after use, which is positive in operation to insure safety in its automatic use, and which employs auxiliary manually operable means capable of use independently of the automatic means.

Briefly stated, the present inflating device embodies a waterproof housing which contains one or more compressed gas capsules and which has outlet means leading to the interior of an inflatable type life preserver. Also incorporated in the housing are support means for removably holding the compressed gas capsules, spring pressed puncturing means adapted to puncture the capsules, and trigger means engageable with the puncturing means and being in turn associated with a trip mechanism operable by water pressure.

The invention will be better understood and additional objects thereof will become more apparent from the accompanying specification and claims considered together with the accompanying drawing comprising a view in elevation with some parts broken away and some parts in section better to illustrate internal structure and where-in like numerals of reference indicate like parts.

Referring now particularly to the drawing, the present inflating device comprises a housing 10 having a cap 12 which terminates in a neck 14 communicating interiorly with an inner chamber of an inflatable type life preserver, not shown. Housing 10 has a top flange 16 and cap 12 has a peripheral flange 18, such flanges providing for suitable removable connection of the parts as by bolts 20. Disposed interiorly of the housing is a holder 22 having upper lateral extensions 24 clamped between flanges 16 and 18 and having a depending body portion 26. Body portion 26 has a pair of open-ended cylinder portions 28 slidably receiving plungers 30 through their upper ends having downwardly projecting spurs 32 and upwardly projecting shanks 34 notched at their upper end at 36. Cylinder portions 28 are provided with side openings 37.

Compression springs 38 are mounted on the shanks 34 and are confined between plungers 30 and the under surface of extensions 24. These springs serve to urge the plungers forcefully downwardly into the lower end of cylinder portion 28. Such lower end portions of each cylinder are adapted to receive and hold by means of set screws 40 capsules 42 containing a compressed gas such as carbon dioxide. These capsules are commercially available and have a necked portion 44, and a top closing wall on the neck adapted for puncturing. The lower end

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of cylinder portions 28 of the holder may assume appropriate dimension for the reception of the necked portion of the gas capsules.

The plungers are arranged to be held in an upper retracted or cocked position by means of trigger bars 46 having an angular portion 48 engageable with notches 36 in the shanks 34. The inner end of each lateral extension 24 has an upwardly extending projection 50 adapted for engagement with one end of an insertable trigger bar 46, the interengaging edge portions of the trigger bars and projections 50 being inclined to permit ready release of the trigger bars from their position on the extension.

Trigger bars 46 are associated with a trip assembly adapted to hold the trigger bars in engageable position with the plungers or to release the bars and permit the plungers to be projected downwardly in a puncturing operation. The trip assembly comprises a rod 54 slidably mounted in a bearing 56 supported on the frame 22. Rod 54 has an upper head 58 on which is pivotally mounted, by means of a pin 60, a pair of toggle arms 62 controlling the functioning of trigger bars 46. For this purpose the upper ends of the toggle arms have hook portions or catch means 64 adapted to engage the adjacent ends of the bars when the rod 54 is in a lowered or set position but which are adapted to be disengaged from the bars upon upward movement of the rod 54.

Rod 54 extends downwardly toward the bottom end of the housing but terminates short of such end. This end of the housing is open and such opening is closed by a wall 66 connected to a flexible, reversely bent gasket 68, the connecting joints in the wall 66 and housing comprising reversely bent edge portions 70, 72 respectively, which may be crimped on the gasket to form a watertight connection. Also mounted in the joint 72 is a false bottom wall 74 having perforations 76 which permit water to reach the wall 66. Wall 74 serves to prevent accidental tripping movement of wall 66 but since it is perforated it does not affect operation of the wall 66 by water pressure.

To charge the present device for use, the plungers are retracted and set in such retracted position by trigger bars 46 and then the gas capsules 42 are mounted in the lower ends of cylinder portions 28, the trip rod 54 being moved to its lower position whereby hooks 64 of toggle arms 62 engage and hold the trigger bars 46 in their set positions. When the life jacket is immersed in water, water pressure against the bottom wall 66 moves this wall upwardly, gasket 68 flexing to permit such movement. Rod 54 moves upwardly with the wall 66 and hooks 64 thus become disengaged from the trigger bars 46. Plungers 30 are thus released and are forcefully projected downwardly under the action of springs 38 whereby spurs 32 puncture the gas capsules for releasing the compressed gas. The gas moves through the apertures 37 in the cylinders 28 and through the neck 14 to inflate the life preserver.

To increase the force necessary to effect operation of the trip rod 54, as when it is desired that the device be submerged a greater distance below the surface than for normal use before it is set off, one or more tension springs 78 may be connected between the bottom wall 66 and false bottom 74. The strength of spring used may be varied to vary the depth at which the trip mechanism is operated.

The present device also incorporates safety means for manual operation of the trip mechanism, comprising an angular lever 80 pivoted in a bracket 82 and having a projection 84 extending upwardly through the apertured wall 74 and adapted for engagement with the wall 66 immediately adjacent the trip rod 54. Thus, if it is desired that manual operation of the trip mechanism be ac-

complished, the lever 80 is grasped by the operator and pivoted sufficiently to trip the mechanism.

The present device also incorporates a flap valve 86 seated on a rib 88 in neck 14. The valve is arranged to prevent any pressure which may exist in the preserver proper from entering the housing, and thus operation of the present inflating device is not influenced by conditions within the preserver.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. An inflating device for life preservers comprising a housing having an open bottom, a flexible gasket secured to the housing around the bottom opening, a wall portion secured to the gasket for closing the opening, the wall portion being movable inwardly of the housing by water pressure upon immersion of the housing and receiving its movement by flexing of the gasket, a holder in the housing adapted to support a puncturable compressed gas capsule, spring pressed puncturing means slidably mounted in the holder for movement between a retracted position and a puncturing position for releasing gas from a compressed gas capsule, a rod slidably mounted in the holder and disposed in engagement at one of its ends with the movable wall for inward movement therewith, catch means mounted pivotally at one end on the other end of the rod and pivotally engaging the housing at its opposite end for pivotal movement between released and catch positions, the catch means being movable to released

position by inward movement of the rod, and an insertable trigger bar freely supported on the holder and engaged at one end releasably by the spring pressed puncturing means when in retracted position and at its opposite end releasably by the catch means when in catch position to hold the puncturing means in retracted position, the trigger bar being arranged to be released from the holder and puncturing means and catch means upon movement of the catch means to its released position by inward movement of said wall portion.

2. The inflating device of claim 1 including a perforated bottom wall fixed to the housing, and spring means interconnecting the bottom wall and the movable wall portion for resisting movement of the movable wall portion under the force of water pressure.

3. The inflating device of claim 1 wherein the catch means comprises a pair of toggle links connected together pivotally at one of their ends, one of the links being connected pivotally to the rod, and the other link having a catch notch at the end opposite its connection to the said one link, said other link pivotally engaging the holder in said notch and being pivotable by the rod between a catch position freely overlying one end of the trigger bar and a released position disengaging the trigger bar.

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