

July 20, 1943.

L. T. WARD

2,324,744

LIFE BELT INFLATING MECHANISM

Filed Feb. 10, 1942

2 Sheets-Sheet 1

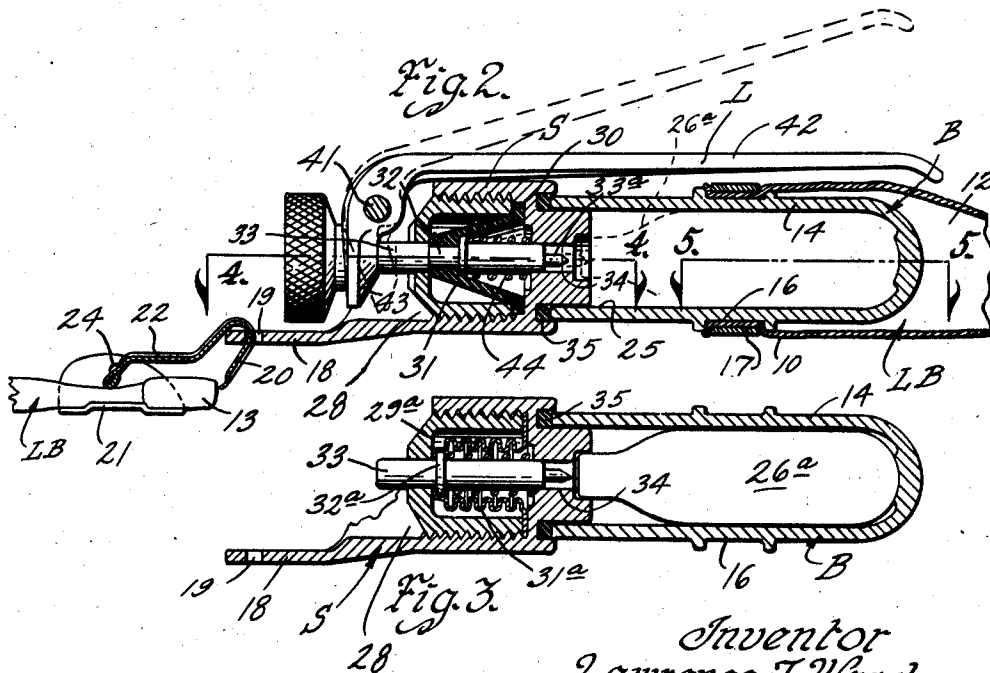
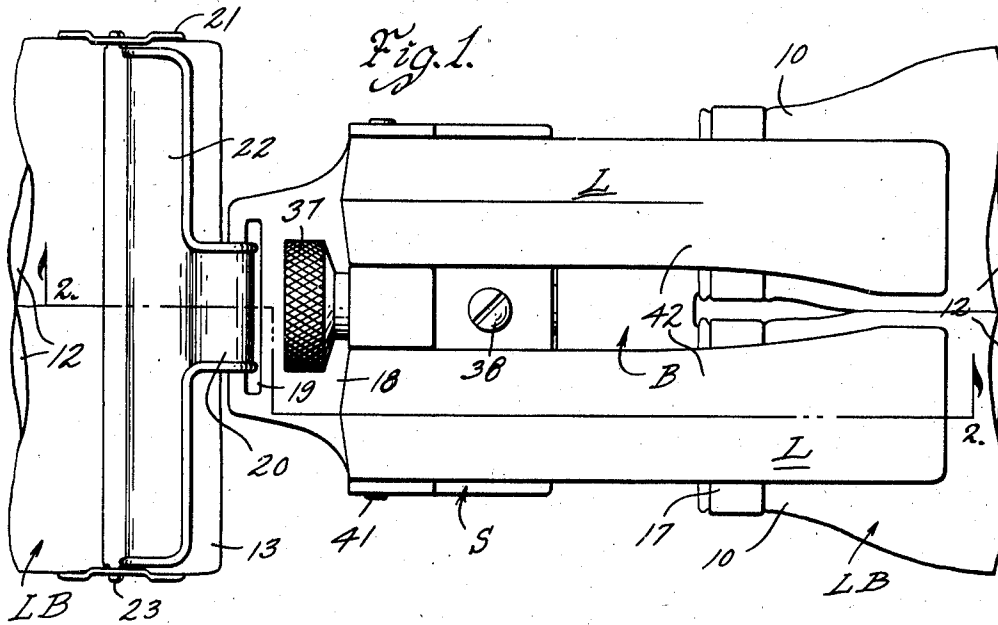


Fig. 3.

Inventor
Lawrence T. Ward
by Bair & Freeman
Attorneys

July 20, 1943.

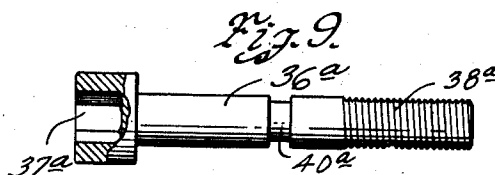
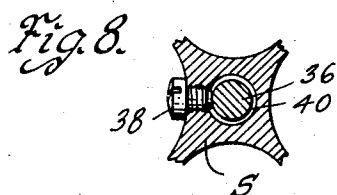
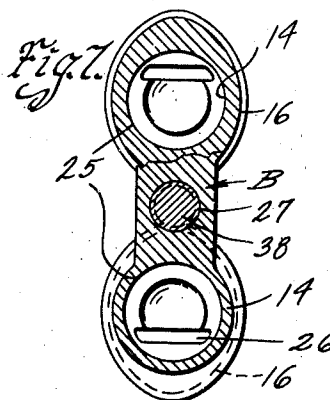
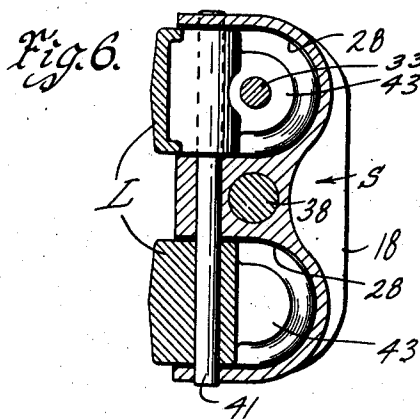
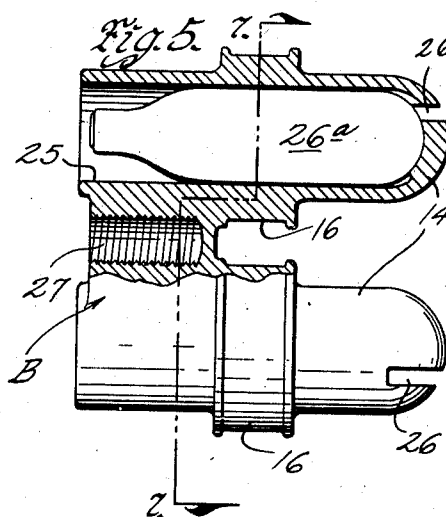
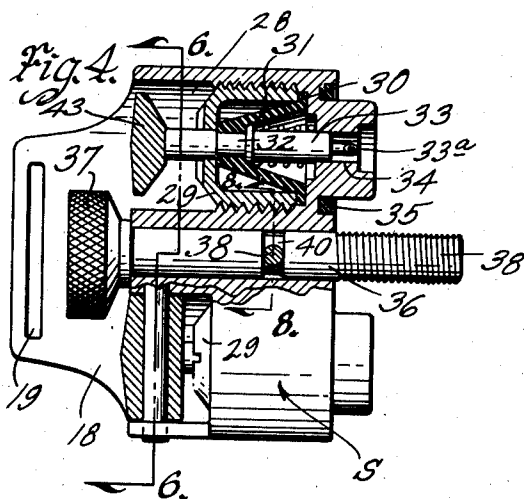
L. T. WARD

2,324,744

LIFE BELT INFLATING MECHANISM

Filed Feb. 10, 1942

2 Sheets-Sheet 2



Inventor
Lawrence T. Ward
by Bair & Freeman
Attorneys

UNITED STATES PATENT OFFICE

2,324,744

LIFE BELT INFLATING MECHANISM

Lawrence T. Ward, Philadelphia, Pa., assignor to
Knapp-Monarch Company, St. Louis, Mo., a
corporation of Missouri

Application February 10, 1942, Serial No. 430,205

11 Claims. (Cl. 9—19)

My present invention relates to life belt inflating means of the compressed gas bulb type, a two-part holder being provided for the bulbs whereby the holder parts may be disassociated for renewing the bulbs.

One object of the invention is to provide a simple arrangement whereby the bulbs are receivable in a body member having nipples communicating with individual compartments of an inflatable life belt, a piercing pin supporting member being connectable with the body member and including piercing pins, sealing means and actuating levers for the piercing pins.

Another object is to provide a life belt inflating means which may be readily connected with a life belt, with the body member having nipples received in the necks of the life belt compartments at one end of the life belt, and the piercing pin supporting member being connected with the other end of the life belt.

Another object is to provide a connecting means for the supporting member and the body member which compresses a gasket between the two to provide a seal, the piercing pins in the supporting member having cone-shaped rubber diaphragms or bellows means for sealing the movable piercing pins.

Still another object is to provide convenient operating means in the form of bell crank levers, one for each piercing pin.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 is a front elevation of my life belt inflating mechanism attached to a life belt;

Figure 2 is a sectional view on the line 2—2 of Figure 1;

Figure 3 is a similar sectional view showing a modified construction;

Figure 4 is a sectional view partially on the line 4—4 of Figure 2;

Figure 5 is a sectional view partially on the line 5—5 of Figure 2, Figures 4 and 5 showing the two parts of the inflating mechanism disconnected, said parts being shown connected together in Figure 1;

Figure 6 is a sectional view on the line 6—6 of Figure 4;

Figure 7 is a sectional view on the line 7—7 of Figure 5;

Figure 8 is a sectional view on the line 8—8 of Figure 4; and

Figure 9 is a side elevation, partly in section, of a modified bolt for securing the piercing pin supporting member to the body member.

On the accompanying drawings I have used the reference character LB to indicate generally a life belt. The life belt shown is of the type adapted to pass around the waist of a person, the two ends thereof only being shown in Figure 1. One end of the life belt is provided with a pair of necks 10, the belt being of the type divided into a pair of compartments 12. The other end of the life belt LB is sealed off with a transverse bead, indicated at 13.

My life belt inflating mechanism includes a body member B and a supporting member S, shown respectively in Figures 5 and 4. The body member B has a pair of nipples 14 received in the necks 10 and connected therewith in leak-proof manner by the necks fitting into elliptical grooves 16 around the nipples. Clamp bands 17 are finally passed around the necks 10 to retain them in the grooves, 16, and the necks are preferably vulcanized in the grooves. The life belt, of course, may be made of rubber or rubberized fabric, in the usual manner.

The supporting member S has a web 18 provided with a slot 19. The slot 19 is adapted to receive a hook 20 of a buckle member having complementary parts 21 and 22. The part 22 is pivoted to the part 21 in the usual manner, by pintles 23 of the member 22 passing through perforations 24 of the member 21.

The body member B is provided with a pair of bores 25 to loosely receive compressed gas bulbs 26^a, such as "Sparklet" bulbs. The nipples 14 are provided with slots 26 to permit passage of gas from the bulb 26^a between the bulb and the bore 25, and finally through the slots and into the compartments 12 of the life belt, as will hereinafter appear. The body member B further includes a threaded opening 27.

The supporting member S includes a pair of bores 28 receiving diaphragm retainers 29. The retainer 29 is screwed down against a flange 30 of a cone-shaped diaphragm 31 which is vulcanized at its upper end in a groove or reduced portion 32 of a piercing pin 33. The piercing pin 33 has one end slidable in the top member of the sleeve 29 and its other end slidable in a bore 34 of the supporting member S. A gasket 35 is received in a groove of the supporting member to contact with one end of the body member B to

seal the two relative to each other, as shown in Figure 2.

For effecting such seal a bolt 36 is provided having a knurled head 37 and screw threads 38. The screw threads 38 are adapted to be received in the threaded opening 27 of the body member B, and the bolt is retained against dislocation from the supporting member S by set screw and groove means 33-40. The parts may be separated, as in Figures 4 and 5, for inserting the bulbs 26^a, and then secured together by turning the bolt 36 into the threaded opening 27 so that, finally, the positions of Figures 1 and 2 are assumed. In these positions the gasket 35 is compressed to effect a seal.

For actuating each piercing pin 33 I provide a lever L pivoted on a pivot pin 41 extending transversely through the supporting member S, as best shown in Figure 6. The lever L has a handle end 42 and an actuating end 43 disposed substantially at right angles to each other. The handle end 42 extends along the body member B.

As shown by dotted lines in Figure 2, the handle 42 of the lever L may be pulled away from the life belt to depress the piercing pin 33 to the dotted position shown. In this position a piercing end 33^a of the pin enters the bulb 26^a to release the gas therefrom in the usual manner. The cone-shaped diaphragm 31 maintains an effective seal while permitting the piercing pin to move to piercing position. Finally, when the lever 42 is released, a spring 44 returns the piercing pin to initial position, thereby permitting free passage of gas from the bulb 26^a.

Where the life belts are to have the gas bulbs 26^a renewed at a central depot instead of being renewed by the wearer, a modified form of bolt 36^a, as illustrated in Figure 9, may be used. Instead of a knurled head, the bolt 36^a has a socket 37^a adapted to be engaged by a special tool for the purpose.

In Figure 3 I show a modification wherein, instead of the cone-shaped diaphragm 31, a bellows 31^a is used to effect a seal between the supporting member S and the piercing pin 33. In this instance, one end of the bellows may be soldered to the sleeve 29^a and its other end soldered to a flange 32^a of the piercing pin.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. Life belt inflating mechanism comprising a body member having a pair of nipples at one end of and received in individual compartments of an inflatable life belt and adapted to receive compressed gas bulbs, said body member having a threaded opening between said bulbs, a piercing pin supporting member having means of connection with the other end of said life belt, said supporting member having a pair of piercing pins slidable therein and a bore between said piercing pins, a bolt extending through said bore and into the threads of said body member to secure the supporting member to the body member, a lever for operating each of said piercing pins, each lever being pivoted to said supporting member and having a handle extending along the outside of the body member, and means for sealing each piercing pin relative to said supporting member.

2. Life belt inflating mechanism comprising a

body member having nipples received in individual compartments of an inflatable life belt and adapted to receive compressed gas bulbs, said body member having a threaded opening between said bulbs, a piercing pin supporting member having a pair of piercing pins slidable therein and a bore between said piercing pins, a bolt through said bore and into the threads of said body member to secure the supporting member to the body member, a lever for each of said piercing pins, each lever being pivoted to said supporting member and having a handle extending along the outside of the body member, and means for sealing each piercing pin relative to said supporting member.

3. Life belt inflating mechanism comprising a single body member having a pair of nipples received in individual compartments of an inflatable life belt and adapted to receive compressed gas bulbs, a single piercing pin supporting member having detachable means of connection with said body member, a lever for each of said piercing pins, each lever being pivoted to said supporting member and having a manually operable handle, and means for sealing each piercing pin relative to said supporting member.

4. Life belt inflating mechanism comprising a single body member having hollow nipples received in individual compartments of an inflatable life belt and adapted to receive compressed gas bulbs, a piercing pin supporting member, a piercing pin supported thereby for each of said hollow nipples, means for connecting said supporting member to said body member, means for operating each of said piercing pins, and means for sealing each piercing pin relative to said single supporting member.

5. Inflating mechanism for an inflatable life belt comprising a body member having a plurality of nipples for individual compartments of the belt, said nipples being secured in necks of the compartments at one end of the life belt and each adapted to receive a compressed gas bulb, a piercing pin supporting member having means of connection with the other end of the life belt, said supporting member having a piercing pin slidable therein for each of said nipples, means for detachably securing said supporting member to said body member, means for actuating each of said piercing pins, a sealing cone of resilient material vulcanized to each of said piercing pins and connected with said supporting member in leak-tight manner, and gasket means between said supporting member and body member to seal the two relative to each other, a spring being provided for each of said piercing pins to return it after the means for operating the pin has been released.

6. Inflating mechanism for a life belt comprising a body member having a plurality of nipples received in individual compartments of the belt and each adapted to receive a compressed gas bulb, a piercing pin supporting member having means of connection with one end of the life belt, said supporting member having a piercing pin slidable therein for each of said nipples, means for detachably securing said supporting member to said body member, means for actuating each of said piercing pins, a sealing cone of resilient material on each of said piercing pins and connected with said supporting member in leak-tight manner, and gasket means between said supporting member and body member to seal the two relative to each other.

7. Inflating mechanism for an inflatable life belt comprising a body member having a plurality of nipples received in individual compartments of the belt, said nipples being secured in necks of the compartments at one end of the belt, a piercing pin supporting member having means of connection with the other end of the life belt, said supporting member having a piercing pin slidably therein for each of said nipples, means for detachably securing said supporting member to said body member, means for actuating each of said piercing pins, and a sealing diaphragm of resilient material around each of said piercing pins and connected with said pins and said supporting member in leak-tight manner.

8. Life belt inflating mechanism comprising a body member having a pair of nipples received in individual compartments of an inflatable life belt at one end of the belt, each of said nipples being adapted to receive a compressed gas bulb, a supporting member, a bolt for securing said supporting member to said body member, said supporting member being detachably secured to the opposite end of the life belt, a piercing pin for each bulb slidably carried in said supporting member, a bellows for sealing each of said piercing pins with respect to said supporting member, a lever for each of said piercing pins, a pivot pin for said levers, said levers having handle portions extending along the outside of the body member and actuating portions extending inwardly across the ends of the piercing pins.

9. Life belt inflating mechanism comprising a body member having a pair of nipples, each of said nipples being adapted to receive a compressed gas bulb, a supporting member, a single means for securing said supporting member to said body member, a piercing pin for each bulb

slidably carried in said supporting member, means for sealing each of said piercing pins with respect to said supporting member, said last means being located on opposite sides of said single securing means, and operating means for said piercing pins.

10. Life belt inflating mechanism comprising a body member having hollow nipples received in individual compartments of an inflatable life belt, each of said nipples being adapted to receive a compressed gas bulb, a supporting member, means for securing said supporting member to said body member, a piercing pin for each bulb slidably carried in said supporting member, a lever for each of said piercing pins, a pivot pin for said levers, said levers having handle portions extending along the outer side of said body member and actuating portions extending inwardly across the ends of the piercing pins, said levers being operable to actuate said piercing pins by movement of said handle portions toward said outer side of said body member.

11. Life belt inflating mechanism comprising a body member having a pair of nipples received in necks of individual compartments of an inflatable life belt at one end of the belt, each of said nipples being hollow to receive a compressed gas bulb, a supporting member, means for detachably securing said supporting member to said body member, said supporting member being secured to the opposite end of the life belt, a piercing pin for each bulb slidably carried in said supporting member, diaphragm means for sealing each of said piercing pins with respect to said supporting member, and operating means for said piercing pins.

LAWRENCE T. WARD.