Feb. 7, 1950 W. B. KOCHNER ET AL 2,496,479

LIFEBELT PROJECTILE

Filed June 7, 1945 2 Sheets-Sheet 1

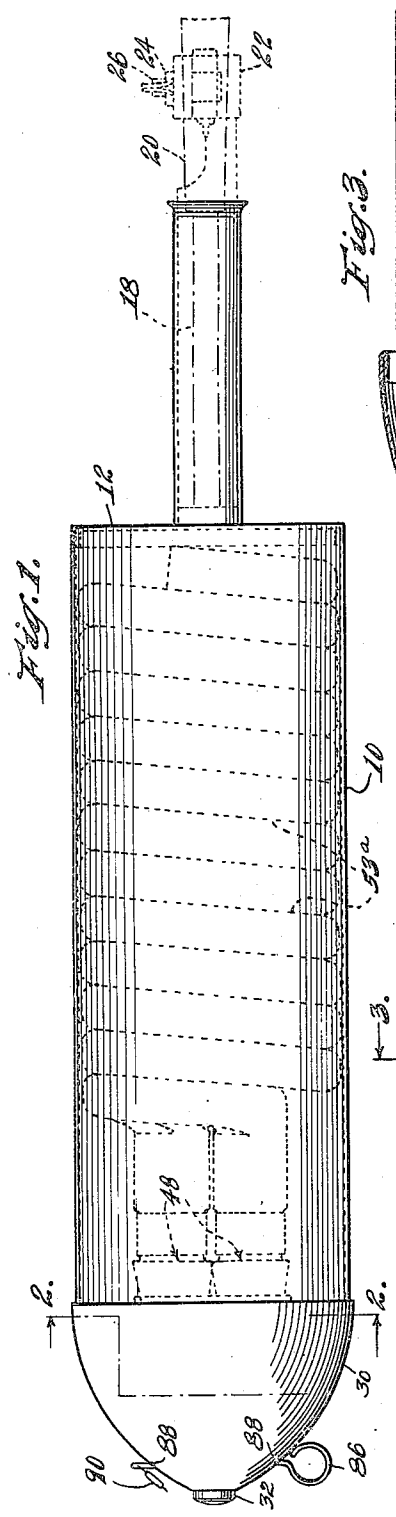


Fig. 1.

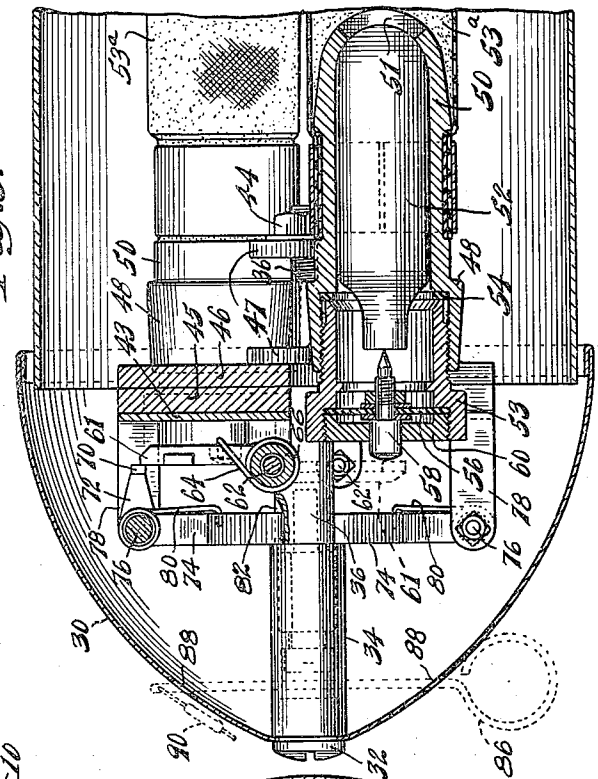


Fig. 3.

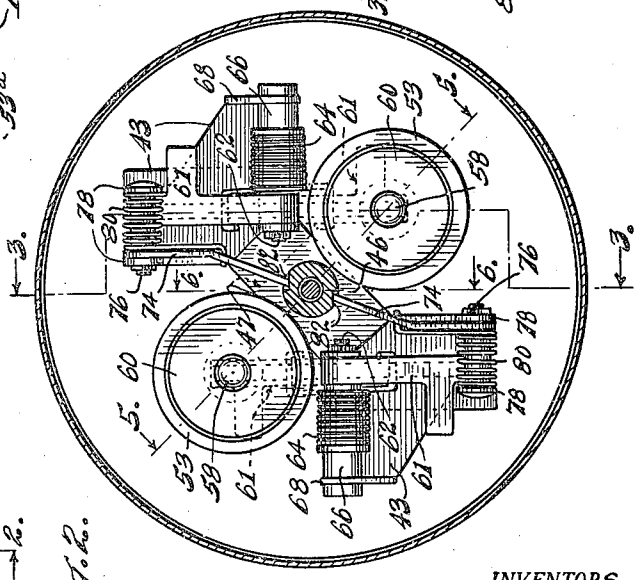


Fig. 2.

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Feb. 7, 1950 W. B. KOCHNER ET AL 2,496,479

LIFEBELT PROJECTILE

Filed June 7, 1945 2 Sheets-Sheet 2

Fig. 4.

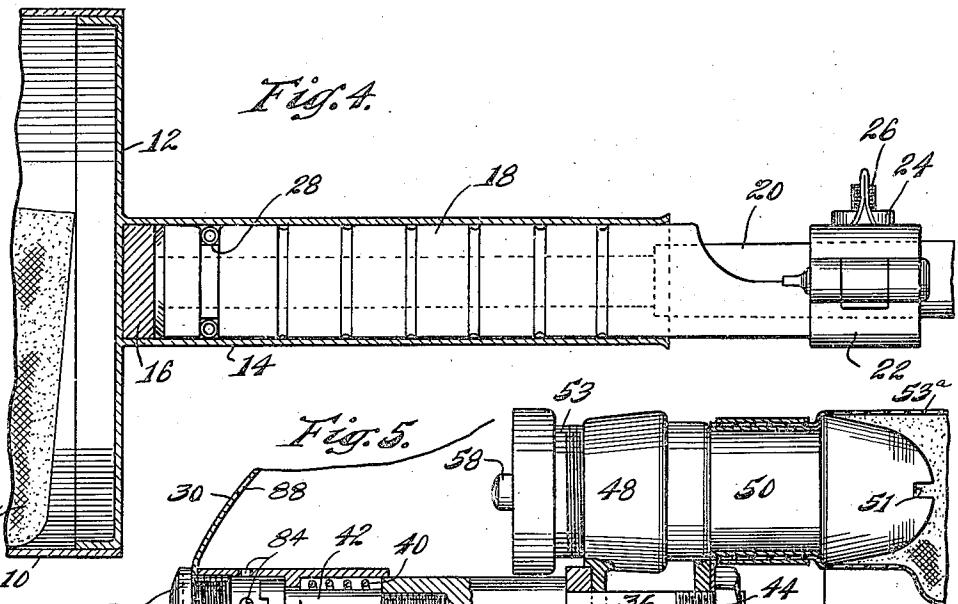


Fig. 5.

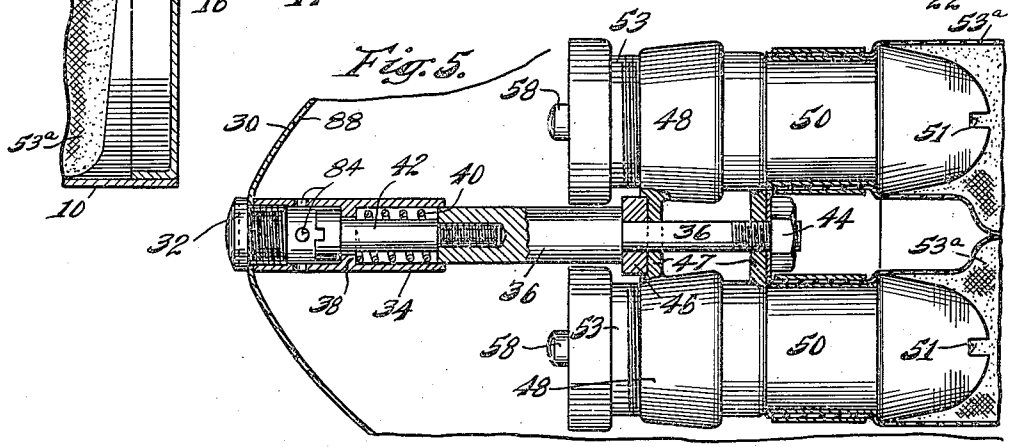


Fig. 6.

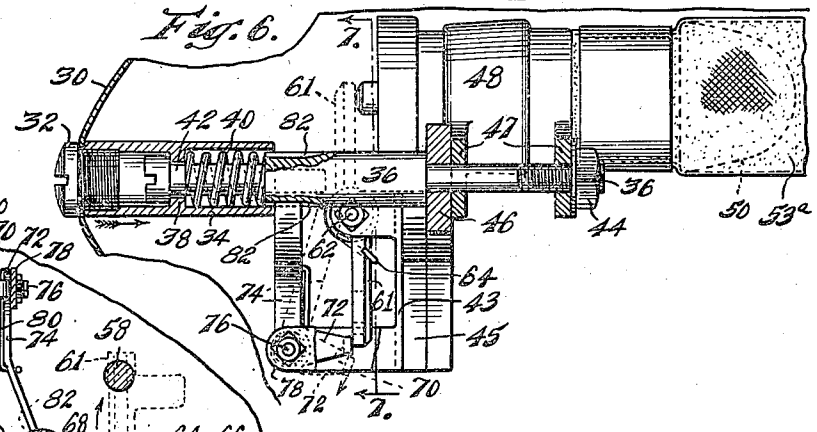
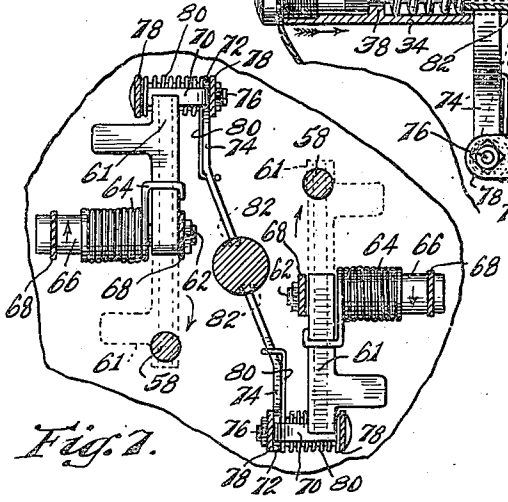


Fig. 7.



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LIFE BELT PROJECTILE

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Application June 7, 1945, Serial No. 598,100

7 Claims. (Cl. 102—89)

1

Our present invention relates to a projectile that can be fired from a grenade launcher or the like, the projectile containing a life belt which is automatically inflated by means of bulbs containing gas under high pressure.

One object of the invention is to provide a projectile that is so designed that it can be used in connection with a grenade launcher of the kind that may be clamped to a rifle barrel.

Another object is to provide a projectile containing a life belt which is self-inflatable upon the projectile striking the water.

Still another object is to provide a projectile in the form of a container, in which a collapsible life belt may be packed, with bulbs of carbon dioxide or the like associated therewith in such manner that the projectile upon striking the water operates a mechanism for releasing the gas from the bulbs and permitting it to escape into the life belt for inflating it.

A further object is to provide a life belt projectile which can be projected a considerable distance over the water to a man overboard whereby it is feasible to provide him with a life belt even though the ship may have proceeded a considerable distance beyond his position.

Still a further object is to provide a projectile having spring wound mechanisms for operating piercing pins for the inflating bulbs, catches being provided for the mechanisms so that they are normally held in retracted positions and may be released for operating the piercing pins by the nose of the projectile striking the water.

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

Figure 1 is a side elevation of a projectile of the kind here under consideration showing it mounted on a grenade launcher and ready for firing upon removal of a safety pin therefrom.

Figure 2 is an enlarged sectional view on the line 2—2 of Figure 1, this figure being approximately full scale.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is an enlarged, sectional view of the rear end of the projectile showing it associated with the grenade launcher.

Figures 5 and 6 are sectional views on the lines 5—5 and 6—6 respectively of Figure 2; and

2

Figure 7 is a sectional view on the line 7—7 of Figure 6 showing a release mechanism.

On the accompanying drawings, we have used the reference numeral 10 to indicate a housing formed of cardboard or similar light material which is capable of disintegration by contact with water and capable of being torn apart by pressure produced therein by means of a life belt being inflated by gas under high pressure. The housing 10 has an end plate 12 secured thereto in any suitable manner, a tube 14 being secured to the end plate 12. A reinforcement at the joint between the tube 14 and the end plate 12 is shown at 15.

The tube 14 is of such size that it can fit over a grenade launcher 18 of the kind usually provided for clamping to a rifle barrel 20. The clamp is shown at 22 and the clamp action is usually effected by a wing nut 24 on a bolt 26. These grenade launchers are designed for the purpose of launching grenades by means of the high gas pressure produced by a rifle as distinguished from hand launching the grenades and serve admirably in the present instance as a means to launch the housing 10 through the air from a ship to a man overboard. A grenade launcher is usually provided with a coil spring 28 which serves to frictionally engage the tube 14 and hold the housing 10 against accidentally falling off the grenade launcher.

The housing 10 at its forward end has a cap-like cover 30 which is secured by a screw 32 to a sleeve 34. The sleeve 34 is slidable on a rod 36 and has an internal shoulder 38 between which and the rod, a spring 40 is positioned. A screw 42 is threaded into the rod 36 with its head against the shoulder 38. This provides for limiting the outward telescoping of the tube 34 on the rod 36 and permits its inward telescoping against the action of the spring 40.

The rod 36 is secured as by a nut 44 to a frame 46 with a pair of cross members 47 against the frame and the nut. The cross members 47 are part of a pair of hubs 48. These hubs terminate in housings 50 for bulbs 52 which fit loosely therein and which are adapted to contain gas such as CO_2 or the like under high pressure.

Screwed into the hubs 48 are sleeves 53, gaskets 54 being interposed between the two for sealing purposes. Each sleeve 53 is sealed relative to atmosphere by a diaphragm 56 carrying a piercing pin 58. A diaphragm retainer disc 60 backs up the diaphragm 56.

Each piercing pin 58 has an operating mechanism which will now be described. A lever 61

is pivoted on a pin 62 and is constrained from the full line position to the dotted line position of Figure 3, by means of a spring 64 coiled around a hub 66 supported by ears 68 extending from a plate 43. The plate is secured to the frame 46 with a spacer 45 between the two.

The lever 61 is adapted to be manually moved from the dotted line position to the full line position and then latched by a latch finger 70 of a bell crank lever having arms 72 and 74. The bell crank lever is pivoted on a pin 76 carried by ears 78 extending from the frame 46 and is normally constrained to the latched position shown in Figure 3 by a spring 80. The lower end of the lever 74 enters a notch 82 in the rod 36 and is located back of the inner end of the sleeve 34.

The sleeve 34 is provided with an opening 84 through which a safety locking pin 86 is normally positioned. The cap 30 has a pair of openings 88 to accommodate the pin and the pin has a wire and lead seal 90 to normally retain it in position.

Practical operation

In the operation of my life belt projectile, it is placed on the grenade launcher as shown in Figure 1 and the seal 90 then broken and the pin 86 removed. The pin normally serves as a safety means to prevent accidental inflation of the life belt as by pushing the cap 30 inwardly on the tubular housing 10.

The rifle barrel 20 is aimed toward the person to receive the life belt and the rifle fired which builds up high pressure due to the exploding gases within the grenade launcher 18, thereby driving the tube 14 off the launcher and projecting the entire device a considerable distance or a short distance depending upon the aim. When the cap 30 strikes the water the concussion causes the cap to move rearwardly, thereby causing the sleeve 34 to press inwardly on the levers 74, causing them to assume the dotted position in Figures 2, 6 and 7.

This releases the levers 61 so that they are driven by the springs 64 through a half revolution and end up at the dotted position shown in Figure 6. This operation drives the piercing pins 58 into the bulbs 52 thereby releasing the gas which escapes from the bulb housing 50 through slots 51 into the life belt sections 53*a*. Two of these sections are provided so that if one fails there is still a chance for the other one to inflate.

The life belts 53*a* are usually made of canvas and may be wound as shown in Figure 1 to fit compactly within the cardboard tube 10. The water tends to disintegrate the cardboard and the inflating life belt tears it apart thereby releasing the belt which can thereupon be procured by the man overboard and he can strap it around himself.

The sleeves 53 can be removed for replacing the bulbs when adjusting the device for subsequent use after it has served its purpose. The life belt may then be associated with a new assembly of the housing 10 and its attached parts 12, 14 and 16, and the locking pin 86 is placed in position and sealed.

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

We claim as our invention:

1. In a life belt projectile of the character described, a tubular container of disintegratable material, an inflatable life belt secured in one end of said container and normally collapsed and fitted in said container, a compressed gas bulb secured in said end of said container and adapted to have communication with said life belt, a swingable lever mounted adjacent and adapted to pierce said bulb, latch means for normally retaining said lever in inoperative position, a rod secured adjacent said latch means and extending longitudinally of said container, and a cap slidable on said rod, said cap being adapted to slide on said rod and release said latch means upon the projectile striking a body of water.

2. In a life belt projectile of the character described, a tubular container of disintegratable material, a plurality of inflatable life belt sections secured in one end of said container and normally collapsed and fitted in said container, a compressed gas bulb for each of said belt sections secured in said end of said container and adapted to have communication with their respective belt sections, a swingable lever mounted adjacent and adapted to pierce each of said bulbs, latch means for normally retaining said levers in inoperative position, a rod secured adjacent said latch means and extending longitudinally of said container, and a cap slidable on said rod, said cap being adapted to slide on said rod and release said latch means upon the projectile striking a body of water.

3. In a life belt projectile of the character described, a tubular container of disintegratable material, an inflatable life belt secured in one end of said container and normally collapsed and fitted in said container, a compressed gas bulb secured in said end of said container and adapted to have communication with said life belt, a swingable lever mounted adjacent and adapted to pierce said bulb, a rod secured adjacent said swingable lever and extending longitudinally of said container, a sleeve slidable on said rod, a cap secured on said sleeve and telescoping over said container, and latch means for normally retaining said lever in inoperative position, said latch means comprising a bell crank lever having one arm adapted to engage said swingable lever and the other arm adjacent said rod and adapted for engagement by said sleeve, said cap being movable telescopically over said container and thereby sliding said sleeve on said rod, said sleeve on sliding on said rod adapted to rock said bell crank lever and release said swingable lever.

4. In a life belt projectile, a housing of disintegratable material, means extending from one end of the housing for association with a grenade launcher, a collapsible life belt within said housing, mounting means on said life belt adjacent the other end of said housing, a bulb of compressed gas on said mounting means and adapted to have communication with said life belt, a piercing pin movably mounted in said mounting means and arranged for puncturing said bulb, means movably mounted on said mounting means for striking said piercing pin, latch means for retaining said striking means in inoperative position, spring means biasing said striking means to operative position, and a cap movably mounted on said mounting means and telescopically asso-

ciated with said housing and adapted to release said latch upon the cap striking the water.

5. In a life belt projectile, a housing of disintegratable material, means extending from one end of the housing for association with a grenade launcher, a collapsible life belt within said housing, mounting means on said life belt adjacent the other end of said housing, a container mounted on said mounting means and extending into said life belt, said container having an opening communicating with said life belt and being sealed to the exterior, a bulb of compressed gas in said container, a piercing pin movably mounted in said mounting means and extending into said container adjacent said bulb and adapted to puncture said bulb, means movably mounted on said mounting means for striking said piercing pin, latch means for retaining said striking means in inoperative position, spring means biasing said striking means to operative position, and a cap movably mounted on said mounting means and telescopically associated with said housing and adapted to release said latch upon the cap striking the water.

6. In a life belt projectile of the character disclosed, a tubular container, a tube extending therefrom in which gases of explosion may expand and cause projection of the projectile to a distant point, a cap on said container and movable relative thereto, an inflatable life belt within said tubular container, a compressed gas bulb also in said container, means enclosing said bulb and communicating with said life belt, whereby on puncturing said bulb the gas therefrom flows into said life belt, movable piercing means mounted in said container adapted to puncture said bulb, a pivoted lever mounted in said container, a latch for said lever, a spring for propelling said lever about its pivot when said latch

is released, and an operative connection between said cap and said latch for releasing the latch when the cap moves relative to said tubular container by impingement of the cap with a body of water.

7. In a life belt projectile, a housing of disintegratable material, a collapsible life belt within said housing, a bulb of compressed gas in said housing, means enclosing said bulb and communicating with said life belt, whereby on puncturing said bulb the gas therefrom flows into said life belt, means for piercing said bulb, means for actuating said piercing means, said actuating means being movable to inoperative position and to operative position, latch means for retaining said actuating means in inoperative position, means biasing said actuating means to operative position, and a cap movably mounted on said housing, said cap having operative connection with said latch means, said cap on striking the water being adapted to release said latch means.

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