

Sept. 19, 1939.

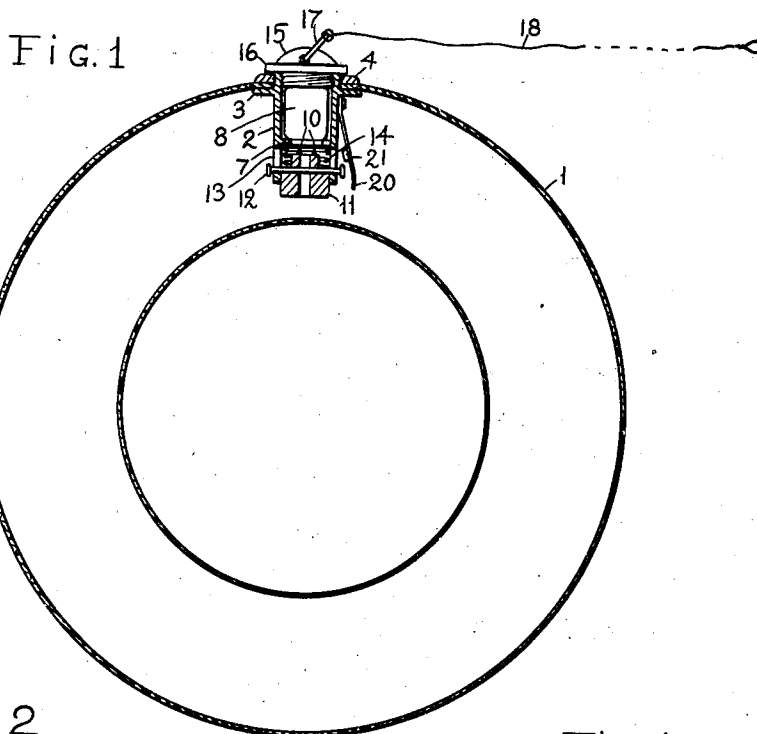
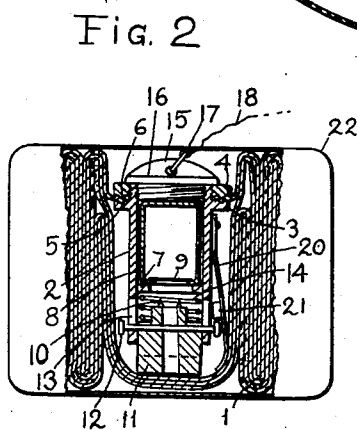
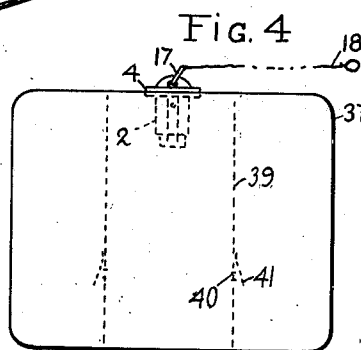
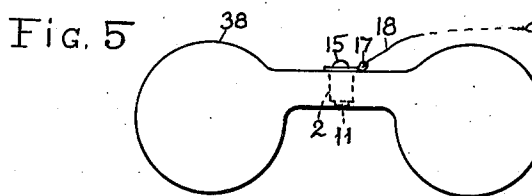
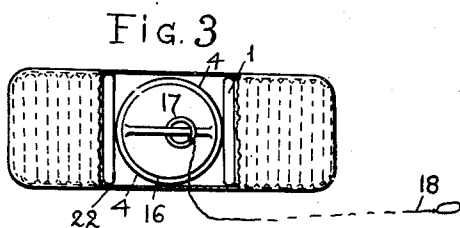
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2,173,567

SAFETY SWIMMING APPLIANCE

Filed June 29, 1938

2 Sheets-Sheet 1



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SAFETY SWIMMING APPLIANCE

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2 Sheets-Sheet 2

Fig. 6

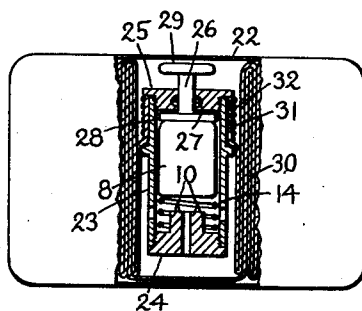


Fig. 7

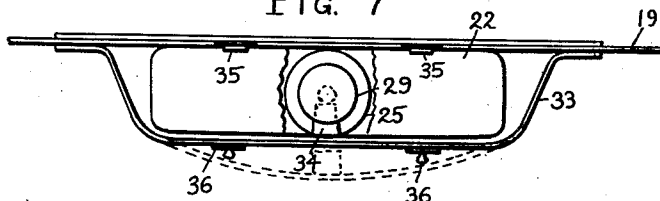


Fig. 8

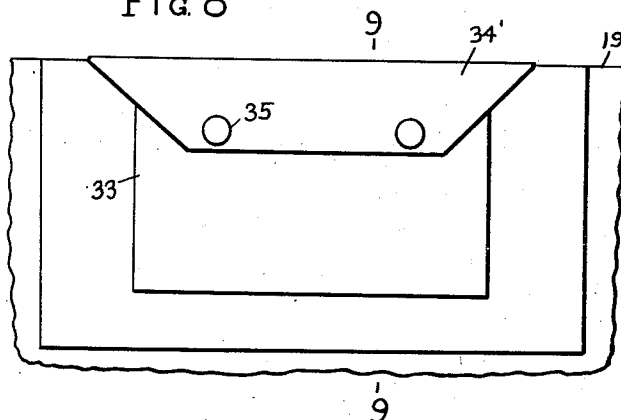


Fig. 9

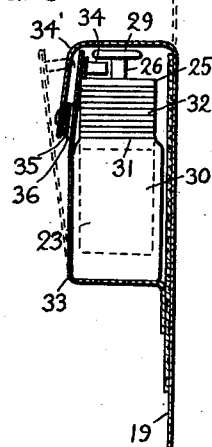
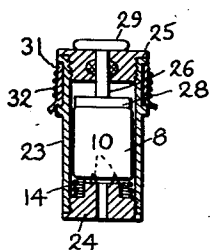


Fig. 10



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## UNITED STATES PATENT OFFICE

2,173,567

## SAFETY SWIMMING APPLIANCE

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Application June 29, 1938, Serial No. 216,482

3 Claims. (Cl. 9-19)

My invention relates to safety swimming appliances and has particular reference to flexible air filled devices in the form of bags, belts or similar articles.

My invention has for its object to provide a safety inflatable appliance made of a light waterproof material which can be folded into a compact package when deflated, to be kept in the pocket of a bathing suit or swimming trunks until needed or wanted, when it can be easily removed and inflated.

Another object of my invention is to provide means for inflating the bag of my safety device. I have found that chemical means for producing gas in the bag are not satisfactory, the formation of the gas being too slow, and the amount of gas produced being difficult to control, and that much more satisfactory results can be obtained by using metal cartridges with highly compressed air or other gas. I, therefore, provide the bag of my appliance with a suitable tubular holder fitted in the wall of the bag for the cartridge with a sealing plug for retaining the cartridge inside the holder and effectively sealing the opening in order to prevent the escape of the gas to the outside when it is released from the cartridge.

Another object of my invention is to provide means to release the gas from the cartridge when it is desired to use the safety appliance. For this purpose, I provide a plunger in the holder adapted to be manually moved against the cartridge and provided with a sharp point or points adapted to pierce the cartridge thereby releasing the gas into the bag.

Another object of my invention is to provide means to render the cartridge piercing device inoperative when the bag is folded into a package and placed in the user's pocket. For this purpose, I provide locking device which is interposed between the plunger and cartridge when the bag is folded and placed tightly in the pocket of a bathing suit.

Another object of my invention is to provide means to retain the safety device flexibly attached to the bathing suit in order to prevent the device from escaping from the bather when the bag is inflated. This is accomplished in my device by the provision of a cord attached at one end to the bag or to the cartridge holder, the other end being attached to a suitable place on the bathing suit, as, for instance, to a button, button hole, etc.

Some of the representative preferred embodiments of my invention are described in the ac-

companying specification and drawings in which—

Fig. 1 is a sectional elevational view of my safety appliance in the form of a tubular belt with a cartridge holder.

Fig. 2 is a front view partly in section of the appliance in a deflated and folded condition.

Fig. 3 is a top view of the same.

Fig. 4 is a sectional elevational view of a modified appliance.

Fig. 5 is a sectional elevational view of another modification.

Fig. 6 is a sectional view of a modified device.

Fig. 7 is a top view of a folded appliance placed in a pocket of a bathing suit, the covering flap of the pocket being opened.

Fig. 8 is an outside view of the same with the cover of the pocket being closed.

Fig. 9 is a sectional view taken on the line 9-9 of Fig. 8.

Fig. 10 is a sectional view of a cartridge holder with the cartridge inside and with the plunger pushed all the way down for piercing the cartridge.

My appliance in one of the preferred forms, as shown in Figs. 1, 2 and 3, comprises a bag or container 1 in the shape of a tubular ring, made of a thin flexible waterproof material, which must be sufficiently strong to support a man in water when the bag is fully inflated. I have found that a fine silk cloth impregnated with a suitable elastic or flexible composition insoluble in water or unaffected thereby is quite satisfactory for this purpose. Good results are obtained with a rubber composition vulcanized into the silk fabric, or with one of the several cellulose compounds, such as nitro-cellulose, Celluloid, cellulose acetate, etc. An aperture is cut in the fabric through which a tubular holder 2 is inserted into the bag with a flange 3 on the inside. The fabric around the edge of the aperture is clamped to the flange 3 by a flat nut 4 threaded on the exposed end of the holder 1. The flange and the nut may be provided with complementary grooves 5 and ridges 6 as shown in Fig. 2 in order to hold the fabric more securely and to insure an air tight joint. The fabric at the aperture must be resiliently stretched in order to admit the flange 3 into the bag. This can be easily accomplished with a rubberized cloth. With other impregnating compounds, if they do not possess sufficient elasticity when dry, the cloth can be clamped immediately upon application of the compound;

or the compound may be applied after the holder has been clamped in the aperture of the fabric.

The holder or socket 2 has a rib 7 inside against which a cartridge 8 is placed. This cartridge is made of metal and holds a gas under high compression, so that when it is released into the bag, the latter becomes fully inflated to a pressure slightly above the atmospheric so as to retain its distended form in water. Such cartridges are now being manufactured in various sizes for various purposes and they can be made to hold a gas compressed to a very high pressure so that a small cartridge of the size of a thimble will be sufficient to inflate a tubular belt to hold the gas at a pressure slightly above the atmospheric. The bottom of the cartridge has an opening closed by a tin plate 9 which can be punctured by sharp points 10 on a plunger 11 slidably fitted in the lower portion of the holder. A pin 12 passes through the plunger and extends at the sides through slots 13 in the walls of the holder. A spring 14 is placed in the holder, resting at one end against the rib 7 and against the plunger 11 at the other end, tending to keep the plunger away from the cartridge. The outer end of the holder is closed by a plug 15 threaded into the holder with an air-tight gasket between the nut 4 and the flange 16 of the plug. The latter has a small hole for a ring 17 to which a cord 18 is attached, the other end of the cord being secured to a bathing suit 19 a fragment of which is shown in Figs. 7, 8 and 9. The cord retains the bag attached to the bathing suit when inflated, this feature being important in order to safeguard against losing the bag in water when a swimmer is exhausted, gets cramps or is otherwise weakened or disabled, and must, therefore, rely on the support of the inflated bag. In order to release the gas, the holder 2 is compressed between the fingers so as to push the plunger 11 inside for puncturing the cartridge. The plunger can be pressed through the wall of the bag 1.

In order to prevent the plunger from being accidentally forced into the cartridge when the bag is folded and placed in a pocket in the bathing suit, a safety device is provided in the form of a flat spring 20 attached at one end to the holder 2 and having a lug 21 adapted to engage the outer end of the pin 12 when the spring 20 is pressed against the holder, the resiliency of spring tending to keep it normally away from the holder, as shown in Fig. 1. The spring 20 is brought into the locking engagement with the pin 12 by the pressure from the folded sides of the bag when the latter is deflated, folded and placed in an envelope 22. In order to inflate the bag, it is only necessary to remove it from the envelope 22 and to press the plunger 11 into the holder for puncturing the cartridge. The compressed gas, escaping from the punctured cartridge, will immediately inflate the bag 1, forcing it out of the envelope if the latter has not been removed, or tearing the envelope apart if the latter is made of a sufficiently weak material such as, for instance, thin fabric or impregnated paper. The holder may be pushed sideways from its place between the folded portions of the bag 1 in order to release the locking spring from the pin 12.

A modified device is shown in Figs. 6 to 10 inclusive. The socket or holder 23 is permanently closed at the bottom by a threaded plug 24 with the piercing points 10 and the spring 14 which supports the cartridge 8 above the points 10.

The upper or outer end of the holder is closed by a screw plug 25 with an aperture in the center in which a rod 26 is slidably fitted. A packing 27 provides a gas-tight joint between the rod and the plug. The rod has a disc 28 at the inner end resting against the cartridge, the upper end having a flat head 29. The bag 30 has a sleeve 31 at the opening fitted against the holder and tied in place with a string or wire 32. The bag with the holder is folded as shown in Fig. 6 and placed in an envelope 22, the whole assembly being then placed in a pocket 33 attached to a bathing suit 19 as, for instance, to the belt of a pair of swimming trunks. The upper front edge of the pocket has a locking piece 34 which fits between the head 29 of the plunger rod 26 and the plug 25 thereby preventing the plunger to be moved into the holder for piercing the cartridge when the device is placed in the pocket. A flap cover 34' is provided for the pocket attached to the upper edge of the belt 19 and provided with snap fasteners 35 adapted to engage corresponding fasteners 36 on the outer side of the pocket. For removing the safety appliance, the flap 34' is opened and turned outwardly as shown in dotted lines in Fig. 9. The front side of the pocket is pulled out as shown in dotted lines in Figs. 7 and 9 so as to remove the locking plate 34 for releasing the plunger head 29. By pressing on the latter, the cartridge is punctured and the bag filled by the released gas, forcing the bag out of its enclosure and pocket 33. Fig. 10 shows the plunger in the operative position when the cartridge is punctured by the points 10.

The bag may be made of different shapes such as a pillow or rectangular bag 37, Fig. 4, or a pair of wings 38, Fig. 5. The cartridge holder may be also further modified, as well as the safety locking device, all such modifications being within the scope of my invention as set forth in the appended claims.

The bag may be made with several compartments as shown in Fig. 4, the compartments being formed by providing inner walls 39 with connecting apertures 40 enclosed by one-way valves 41.

I claim as my invention:

1. A safety swimming device comprising an inflatable flexible container, a tubular socket fitted in the wall of the container and having an opening in the outer end for receiving a cartridge with a compressed gas, a gas-tight closure in the outer end of the socket for retaining the cartridge, a sharp-pointed member in the socket, the member being adapted to be moved relatively to the cartridge by squeezing the socket endwise between a user's fingers thereby piercing the cartridge and allowing the gas to escape into the container, the socket having a slot in its wall between the member and the cartridge, a part movably supported on the socket and adapted to be moved into the slot thereby preventing the member from being moved in relation to the cartridge, a yieldable retrieving means for the part, the container being adapted to be gathered in folds at the opposite sides of the socket thereby forming a compact package, and means to releasably retain the container in the folded condition, the part being adapted to be retained in the slot in the socket by the pressure from the folded container thereby rendering the cartridge piercing means inoperative.

2. A safety swimming device comprising an inflatable flexible container, a tubular socket

5 fitted in the wall of the container, and having  
an opening in the outer end for receiving a car-  
tridge with a compressed gas, a gas-tight closure  
in the outer end of the socket for retaining the  
cartridge, a sharp-pointed member in the socket,  
the member being adapted to be moved relatively  
to the cartridge by squeezing the socket endwise  
between a user's fingers thereby piercing the car-  
tridge and allowing the gas to escape into the con-  
tainer, the socket having a slot in its wall between  
0 the member and the cartridge, a part movably  
supported on the socket and adapted to prevent  
the member from being moved in relation to the  
the cartridge, a yieldable retrieving means for  
the part, the container being adapted to be gath-  
5 ered in folds at the opposite sides of the socket  
thereby forming a compact package, and means to  
releasably retain the container in the folded con-  
dition, the part being adapted to be retained in  
engagement with the member by the pressure  
0 from the folded container thereby rendering the  
cartridge piercing means inoperative.

3. A safety swimming device comprising an  
inflatable flexible container, a tubular socket  
fitted in the wall of the container and having an  
opening in the outer end for receiving a car-  
tridge with a compressed gas, a gas-tight closure  
5 in the outer end of the socket for retaining the  
cartridge, a sharp-pointed member in the socket,  
the member being adapted to be moved relatively  
to the cartridge by squeezing the socket endwise  
between a user's fingers thereby piercing the car-  
tridge and allowing the gas to escape into the con-  
tainer, a yieldable means to prevent the relative  
10 movement between the cartridge and the member,  
the container being adapted to be gathered in  
folds at the opposite sides of the socket, thereby  
forming a compact package, and means to render  
15 the movement preventing means operative by the  
pressure from the folded container.

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