

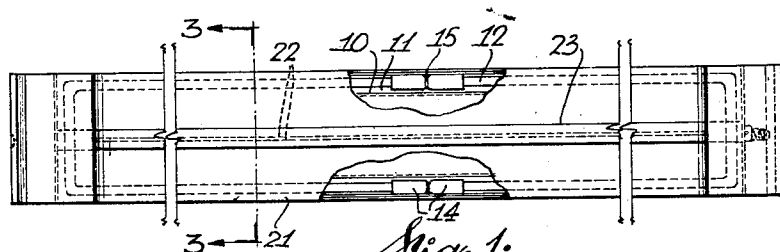
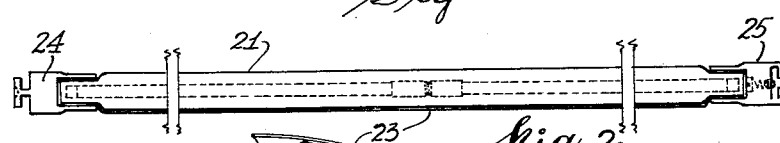
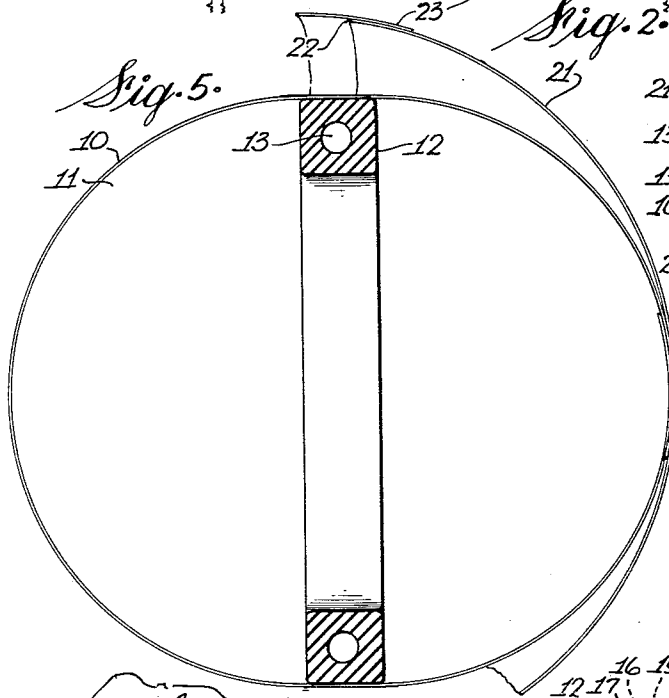
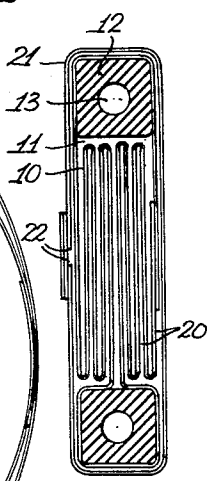
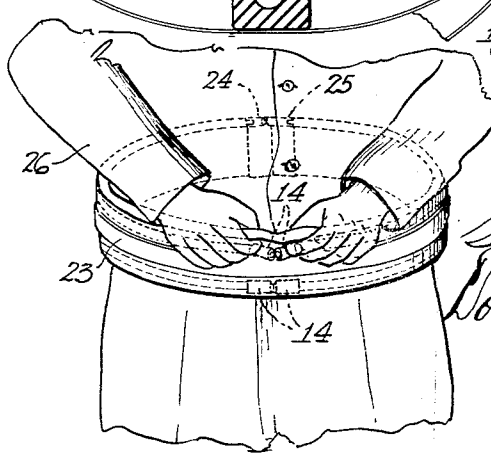
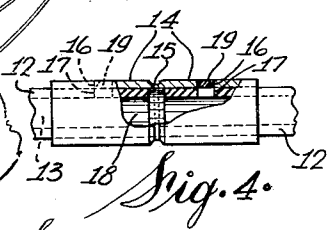
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WATER SAFETY BELT

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WATER SAFETY BELT

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4 Claims. (Cl. 9-316)

This invention relates to water safety belts.

It has heretofore been proposed to provide life preserver belts of the type which is adapted to simulate a conventional garment belt whereby it is inconspicuous and non-bulky in form but which may be readily inflated in case of emergency. However, such belts are not in widespread use largely because, it is believed, their structures are cumbersome, of impractical manufacture, and of unsatisfactory operation in use.

It is an object of this invention to provide a life preserver or water safety belt having a width and thickness closely simulating a conventional garment belt in size and design, which may constitute an attractive piece of wearing apparel, which is subject to convenient and relatively inexpensive manufacture, which has a readily actuatable inflating means requiring no moving parts or mechanical linkages, and which is inflatable to a degree and in a manner such that the belt will always be effective in case of emergency.

The invention resides in an elongated inflatable tubular member having a closed, flexible, waterproof wall and a first chamber enclosed by such wall and an elongated, endless, tubular member also enclosed within the first wall and having a second chamber therein, the major length of the endless member is constituted by a flexible section of uniform cross-section, such section having a wall thickness substantially greater than that of the wall of the inflatable member whereby the section is semi-rigid. A rigid section of minor length joins the ends of the flexible section, such rigid section being pressure-fracturable to place the first and second chambers in communication. A gas-forming substance is disposed in the second chamber and is adapted to inflate the first chamber in response to fracture of said rigid section. The inflatable member has a transverse wall extent substantially in excess of that of the endless member and the endless member forms a continuous frame within which is adapted to be folded portions of the wall of the inflatable member.

The invention will be described with reference to the accompanying drawings, in which—

FIGURE 1 is a side elevation of a belt in accordance with the invention,

FIGURE 2 is another side elevation of the belt,

FIGURE 3 is a section on line 3-3 of FIGURE 1,

FIGURE 4 is a sectional elevation of a fracturable wall portion,

FIGURE 5 is a transverse sectional view showing the belt in inflated condition, and

FIGURE 6 is a perspective view of the belt in position on a wearer.

In the drawing, 10 is an elongated, folded, tubular member formed of flexible sheet material of water-proof character such as rubberized fabric. Member 10 constitutes a wall completely enclosing a chamber 11.

Disposed within chamber 11 is a second tubular member 12. Member 12 is preferably formed of semi-rigid flexible material such as relatively thick-walled rubber or plastic composition tubing. Member 12 constitutes a wall completely enclosing a chamber 13. In the modification illustrated, the member 12 is separated into two sections, the end portions of which are joined by rigid wall portions 14. Each wall portion 14 may comprise a light metal ferrule in which end portions of the tube member 12 are sealingly fixed as by frictional, swaged, or adhesive engagement therewith. The ferrule is readily

fracturable into two longitudinal sections by providing a circumferential weakened line or groove 15 substantially midway between the ends of the ferrule and between the enclosed ends of the tubular member 12.

Chamber 13 is provided with charging holes 16 in the ferrule and registering charging holes 17 in the tubular member 12. The chamber is charged through such holes with a gas forming substance 18 such as liquid CO₂. Following such charging step, the holes 16 and 7 are sealed with suitable pressure seal members 19.

The tubular member 12 may have any suitable cross-sectional shape. For instance, it may have a substantially square cross-sectional contour, as shown. As illustrated in FIGURE 1, the member 12 has a continuous substantially rectangular form and serves to impart such form to the belt. As shown in FIGURE 3, the tubular member 10 which encloses member 12 has its excess wall area folded in accordion folds 20 within the rectangular frame provided by the semi-rigid member 12.

The structure thus far described is preferably housed within an outer casing 21 of tubular form and which is also formed of flexible sheet material such as rubberized fabric. Casing 21 has edge portions 22 extending longitudinally of the belt and joined together by an overlying tape 23 adhesively secured to such edge portions.

The ends of the belt are provided with suitable interlocking buckle members 24 and 25 adhesively or otherwise attached, as by swaging, to the casing 21.

In use, the belt is applied to a wearer 26, as shown in FIGURE 6, with the buckle members interlocked at the back of the wearer. When it is desired to inflate the belt, the wearer applies a bending pressure to each ferrule 14 to fracture the same. As a result, gas is formed in the chamber 11 and the tubular member 10 expands. Such expansion causes the edge portions 22 of the casing 21 to separate against the action of the joining tape 23 and eventually the member is fully expanded into the condition shown in FIGURE 5.

Location of the buckle at the back of the wearer, with the fracturable wall portions diametrically opposite and conveniently accessible to the hands of the wearer, is of substantial significance. Thus, the fully expanded section of the belt will be located at the front of the wearer which will tend to support the face of the wearer out of the water.

Since the gas-forming substance is sealed within the tubular member 10, it is always ready to use as the inflatable means when occasion arises. There are no moving parts or mechanical linkages which could give rise to failure in operation. Rather, a simple manual fracturing step is only required to institute the inflating action.

In FIGURE 6, the belt has been shown in exaggerated size for clarity of illustration. The belt, in accordance with the invention, need not necessarily exceed 1¾ inches in width nor ¼ inch in thickness. It will, of course, be made in appropriate lengths.

I claim:

1. A water safety belt comprising an elongated inflatable tubular member having a closed, flexible, waterproof wall and a first chamber enclosed by said wall, and an elongated, endless, tubular member also enclosed within said first wall and having a second chamber therein, said endless member having a flexible longitudinal section of major length and uniform cross-section, said section having a wall thickness substantially greater than that of said wall of said inflatable member whereby said section is semi-rigid, and a rigid longitudinal section of minor length joining the ends of said flexible section, said rigid section being pressure-fracturable to place said first and second chambers in communication, and a gas-forming substance in said second chamber adapted to inflate said

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first chamber in response to fracture of said rigid section, said inflatable member having a transverse wall extent substantially in excess of that of said endless member, said endless member forming a continuous frame within which is arranged to be folded portions of said wall of said inflatable member.

2. A water safety belt as defined in claim 1, including a casing housing said tubular members, said casing having edge portions extending longitudinally of said belt, and a tape adhesively and releasably joining said edge portions.

3. A water safety belt as defined in claim 2, including a buckle member attached to each end of said casing, said rigid wall portion of said second tubular member being located within said casing substantially midway between said buckle members.

4. A water safety belt comprising a first elongated, tubular member having a closed, flexible, waterproof wall and a chamber enclosed by said wall, a second elongated, flexible, tubular member also enclosed within said wall and having a chamber therein, and a rigid fer-

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rule joining the ends of said second member and closing said second chamber, said second member having a wall thickness substantially greater than that of said wall of said first member whereby said section is semi-rigid, said ferrule having a continuous, transversely extending weakened wall area and being pressure-fracturable at said area to place said first and second chambers in communication, and a gas-forming substance in said second chamber adapted to inflate said first chamber in response to fracture of said ferrule, said first member having a transverse wall extent substantially in excess of that of said second member, said second member forming a continuous frame within which is arranged to be folded portions of said wall of said first member.

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