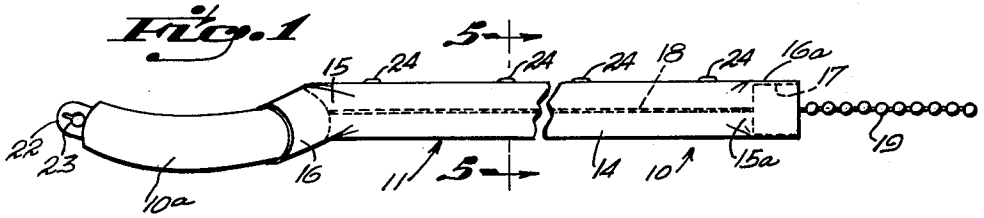
Aug. 18, 1964 D. G. DOBBS 3,144,667

INFLATABLE NECK BAND LIFE PRESERVER

Filed July 19, 1963

Fig. 1



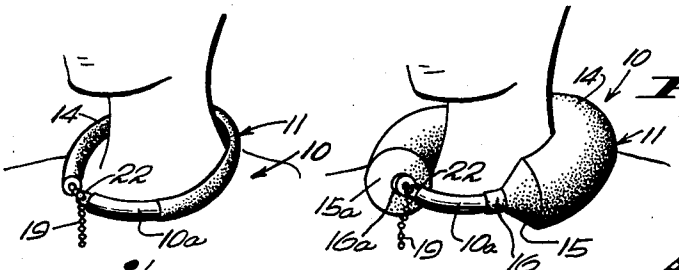


Fig. 3

Fig. 2

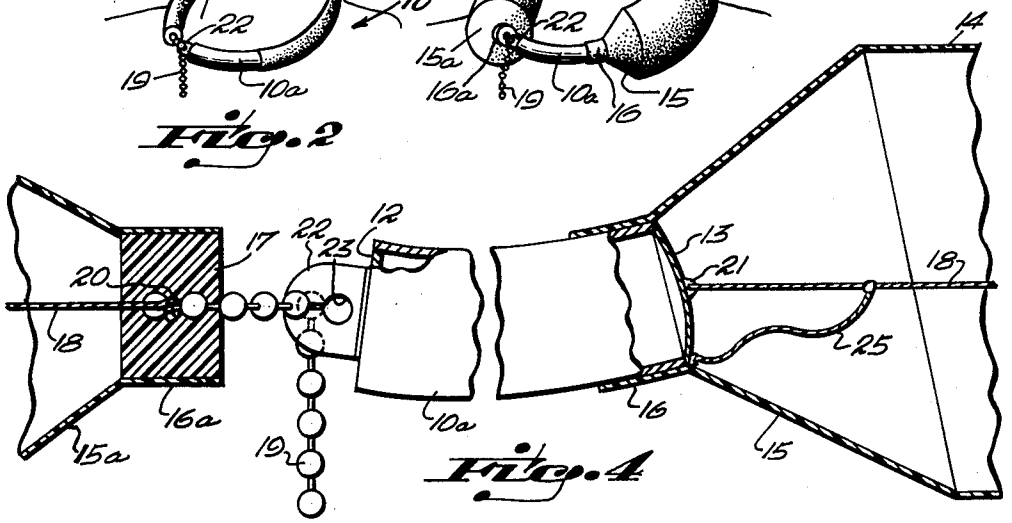


Fig. 4

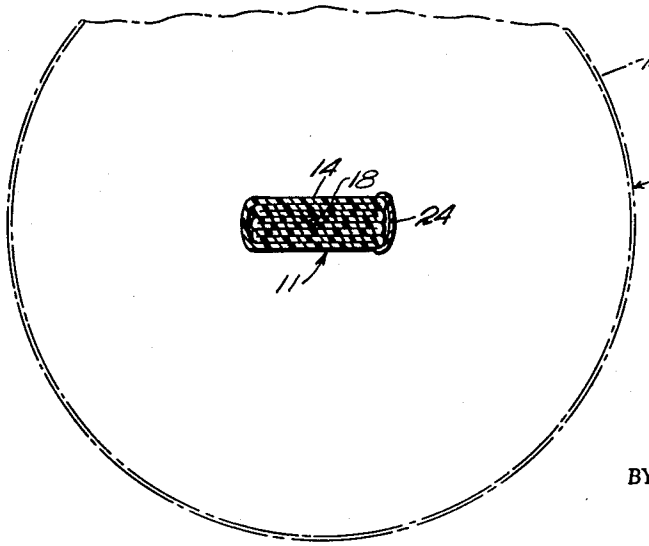


Fig. 5

INVENTOR.
DONALD G. DOBBS
BY E. H. Schmidt, Atty.

United States Patent Office 3,144,667 Patented Aug. 18, 1964

3,144,667

INFLATABLE NECK BAND LIFE PRESERVER

Donald G. Dobbs, 4011 NW. 189th Terrace, Carol City, Fla.

Filed July 19, 1963, Ser. No. 296,198
7 Claims. (Cl. 9—316)

My invention relates to self-inflating life preservers and is directed particularly to a life preserver which can be worn comfortably and inconspicuously around the neck while in or near water, such as when swimming, boating or otherwise engaged in water sports.

The principal object of my invention is to provide a self-inflatable life preserver which can be worn loosely attached about the neck as a necklace, and wherein inflation can be instituted, when a drowning emergency arises, simply by grasping and pulling any part of the neck band that can conveniently be reached by either hand.

A more particular object is to provide an inflatable neck band of the above nature including a gas-filled tubular cartridge fitted at one end to an inflatable flexible tube normally compactly folded along its length and removably attachable at its other end to the other end of the cartridge.

Yet another object is to provide an inflatable neck band of the character described wherein the inflation actuating means comprises a cable disposed coextensively within the inflatable tube and secured at one end to a frangible diaphragm seal at one end of the cartridge, and anchored at the other end to the other end of the cartridge.

Yet another object of the invention is to provide an inflatable neck band of the above nature wherein accidental rupture or leakage of the inflating cartridge will be self-evident, by virtue of inflation of the tube, thereby minimizing the possibility of failure of the device in service.

Still another object is to provide an inflatable neck band which will be simple in structure, corrosion resistant, especially to the effects of salt water, fool-proof in operation, economical, and durable in use.

Other objects, features and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawings.

In the drawings, wherein like reference numerals denote corresponding parts throughout the several views:

FIG. 1 is a side view of an inflatable neck band embodying the invention, shown separately and with a central portion broken away;

FIG. 2 illustrates the device attached around the neck of a person in the manner of a necklace, ready for use;

FIG. 3 is a view similar to FIG. 2, but showing the device in inflated condition;

FIG. 4 is an enlarged view, partly in longitudinal cross-section and with portions broken away, of the inflating cartridge and the tube ends connected thereto; and

FIG. 5 is a transverse cross-sectional view, taken along the line 5—5 of FIG. 1 in the direction of the arrows and illustrating in full-line representation how the inflatable tube is normally held in compactly folded condition, and, in broken-line representation, the greatly enlarged circular cross-sectional shape upon being inflated.

Referring now in detail to the drawings, **10** in FIGS. 1, 2 and 3 designates generally an improved neck band life preserver embodying the invention, the same comprising a tubular, arcuate cartridge **10***a* and an inflatable, flexible tube **11** permanently attached at one end to one end of the cartridge, and removably attachable at the other end to the other end of the cartridge.

The tubular, arcuate cartridge **10***a* is preferably of a strong, lightweight metal, such as aluminum or stainless steel, and has one end sealed off as by an end-wall **12**

which is preferably welded in place (see FIG. 4). The cartridge **10***a* is filled with an inflating gas under pressure. Any relatively inert, non-toxic gas could be used, but dichlorodifluoromethane, commonly known by the trade name Freon, because of its ready availability and high ratio of expansion at ambient temperatures, is preferred. The cartridge **10***a* is capped at its other end with a relatively thin, frangible diaphragm **13**, which may be of aluminum, for example, The diaphragm **13** is preferably welded in place, and is provided with rupturing means for gas release, as is hereinbelow more fully described.

The inflatable tube **11** is preferably of a synthetic plastic tubing, such as a vinyl tubing, and comprises a central portion **14** to each end of which is attached, as by heat-sealing, a frusto-conical size-reduction portion **15**, **15***a*, the outer ends of which are sealed to small-diameter sleeve end portions **16**, **16***a*. As best illustrated in FIGS. 1 and 4, the sleeve end portion **16** fits snugly over the diaphragm end of the gas-filled cartridge **10***a*, and is sealed and secured thereon by a suitable cement, such as epoxy resin. The sleeve end portion **16***a* is cemented and sealed over a cylindrical plastic plug **17**. Anchored by molding into the plug **17** is one end of actuating cable **18** and one end of a ball chain **19**, said cable extending axially inwardly of the tube **11** and said ball chain extending axially outwardly of said tube. The cable **18** is preferably of braided stainless steel wire strands, for strength, resistance to corrosion and flexibility. The inner ends of the cable **18** and chain **19** are preferably attached together as indicated at **20** in FIG. 4. The actuating cable **18** extends axially through the inflatable tube **11** and is attached by spot welding, as indicated at **21** in FIG. 4, to the outside of the frangible cap diaphragm **13**.

Means is provided for adjustably securing the ball chain **19** to the free end of the cartridge **10***a*. To this end, the end wall **12** of the cartridge has secured thereagainst, as by welding, a bracket member **22** having a slotted opening **23** for hookingly engaging said ball chain at any position along its length (see FIG. 4).

As best illustrated in FIG. 5, the flexible inflatable tube **11** is normally compactly folded inwardly upon itself and so held in place by a plurality of thin plastic tie strips **24** lightly heat-sealed at each end to outside opposed portions of said tube and spaced along its length (see FIGS. 1 and 5).

In use, the neck band life preserver **10***a* will be loosely attached around the neck in the manner of a necklace as illustrated in FIG. 2, the hooked length of the ball chain being adjusted to suit neck size. If an emergency arises and it becomes necessary to inflate the life preserver, it is only necessary for the wearer to grasp the neck band at any place along its length and pull sharply, this being a natural reaction, especially in instances of panic. Pulling on the preserver results in a tensile force upon the actuating cable **18** which is transmitted to the spot weld **21** on the frangible diaphragm **13**, causing a rupture thereat for release of the gas in the cartridge **10***a*. The gas contained in the cartridge is of sufficient quantity to completely fill the flexible tube **11**. The internal pressure of gas filling the tube **11** causes tearing away of the external tie strips **24**, to allow unfolding of the normally collapsed tube **11**, permitting it to assume the enlarged tubular shape illustrated by the broken-line representation thereof in FIG. 5. FIG. 3 illustrates the life preserver as it appears in use and inflated.

In order to eliminate the possibility of breakage of the flexible tube tube **11** in case of the wearer pulling too strongly upon it, as may happen, for example, in panic, a short, somewhat loose anchor cable **25** is securely welded between the edge of the cartridge **10***a* and the actuating cable at a position close to its diaphragm end. Upon

separation of the cable **18** from the diaphragm **13**, the anchor cable permits only slight relaxation of the actuating cable **18**, thereby preventing any damaging stretching of the flexible tube **11**.

While I have illustrated and described herein only one form in which the invention may conveniently be embodied in practice, it is to be understood that this form is presented by way of example and not in a limiting sense. The invention, in brief, comprises all the embodiments and modifications coming within the scope and spirit of the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. In an inflatable neck band life preserver, the combination comprising, a tubular cartridge, said cartridge being sealed at one end and having a frangible closure cap at the other end, a quantity of gas under pressure contained in said cartridge, an elongated a flexible inflatable tube, one end of said tube being secured to and sealed about the closure cap end of said tubular cartridge, means sealing the other end of said tube, means for adjustably connecting the other end of said tube to said sealed end of said cartridge, and means controlled by longitudinally stretching said inflatable tube of said life preserver when worn in necklace fashion about the neck of a person for rupturing said frangible closure cap to permit the gas under pressure in said cartridge to inflate said flexible tube.

2. In an inflatable neck band life preserver, the combination comprising, a tubular cartridge, said cartridge being sealed at one end and having a frangible closure cap at the other end, a quantity of gas under pressure contained in said cartridge, a flexible inflatable tube, one end of said tube being secured to and sealed about the closure cap end of said tubular cartridge, means sealing the other end of said tube, means for adjustably connecting the other end of said tube to said sealed end of said cartridge, and means controlled by pulling upon said life preserver when worn in necklace fashion about the neck of a person for rupturing said frangible closure cap to permit the gas under pressure in said cartridge to inflate said flexible tube, said closure cap comprising a thin metal diaphragm and said closure rupturing means comprising a flexible metal actuating cable disposed within said tube and secured at one end to said diaphragm and at the other end to said connecting means.

3. An inflatable neck band life preserver as defined in claim 2 and wherein said inflatable tube is normally compactly folded along its length to present a minimal cross-sectional size.

4. An inflatable neck band life preserver as defined in claim 3 and including a plurality of tie strips secured in spaced relation along the length of said folded tube to hold said tube in folded condition until inflation commences.

5. An inflatable neck band life preserver as defined in claim 2 wherein said means sealing the other end of said tube comprises a molded plastic plug, said other end of said cable being molded in said plug.

6. An inflatable neck band life preserver as defined in claim 5 and wherein said adjustable connecting means comprises a length of chain molded at one end within said plug and secured to said other end of said cable, and means at said one end of said cartridge for hookingly engaging said chain adjustably along its length.

7. An inflatable neck band life preserver as defined in claim 2 and including a relatively short anchoring cable fixed between said cartridge and said actuating cable at a position near said one end of said actuating cable for limiting the separation of said actuating cable from said cartridge upon the rupturing of said diaphragm.

References Cited in the file of this patent

UNITED STATES PATENTS

2,165,300	Peterson	July 11, 1939
2,371,863	White	Mar. 20, 1945