

Dec. 18, 1962

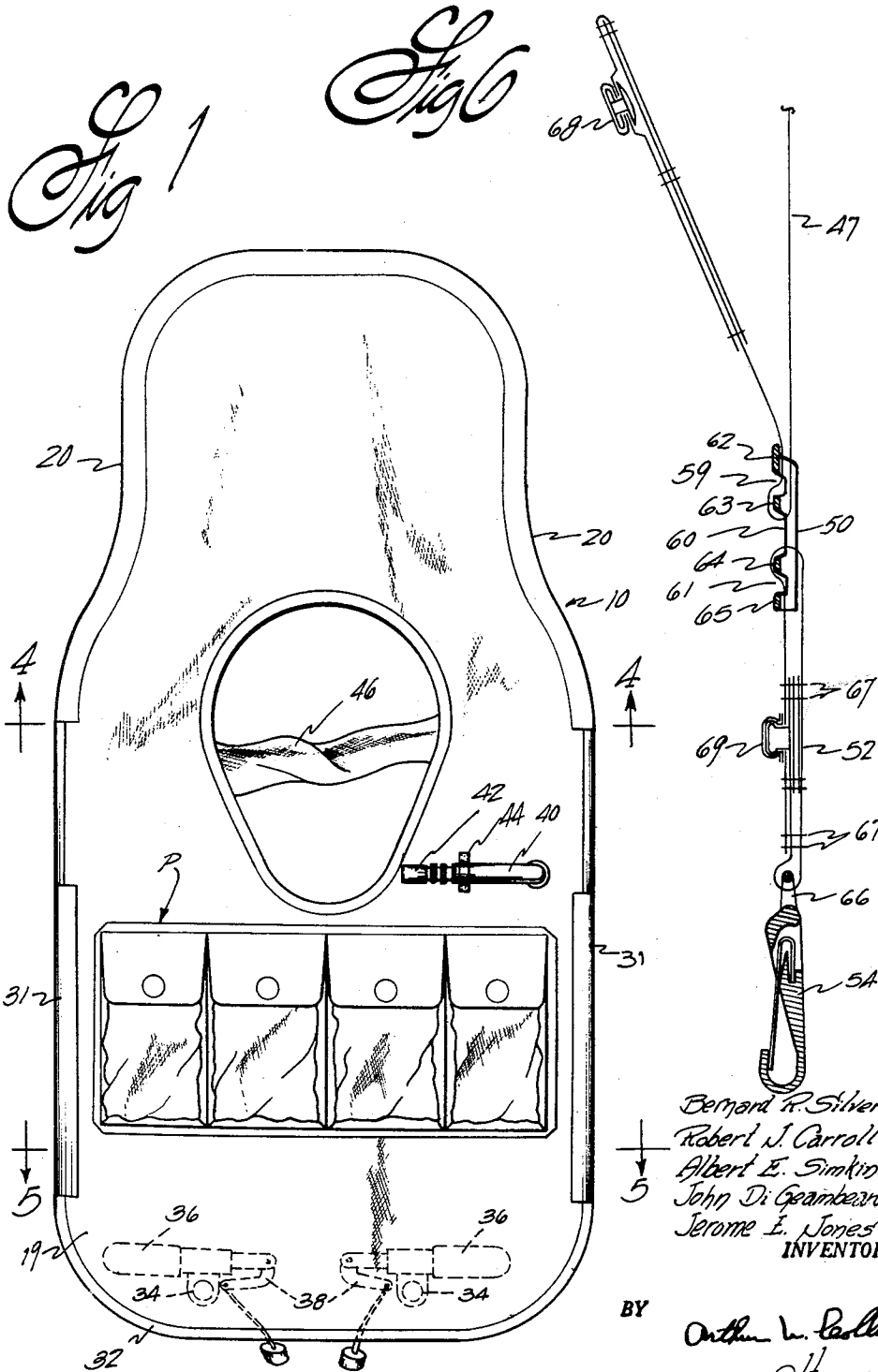
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LIFE VEST PRESERVER

Filed Oct. 7, 1960

3 Sheets-Sheet 1



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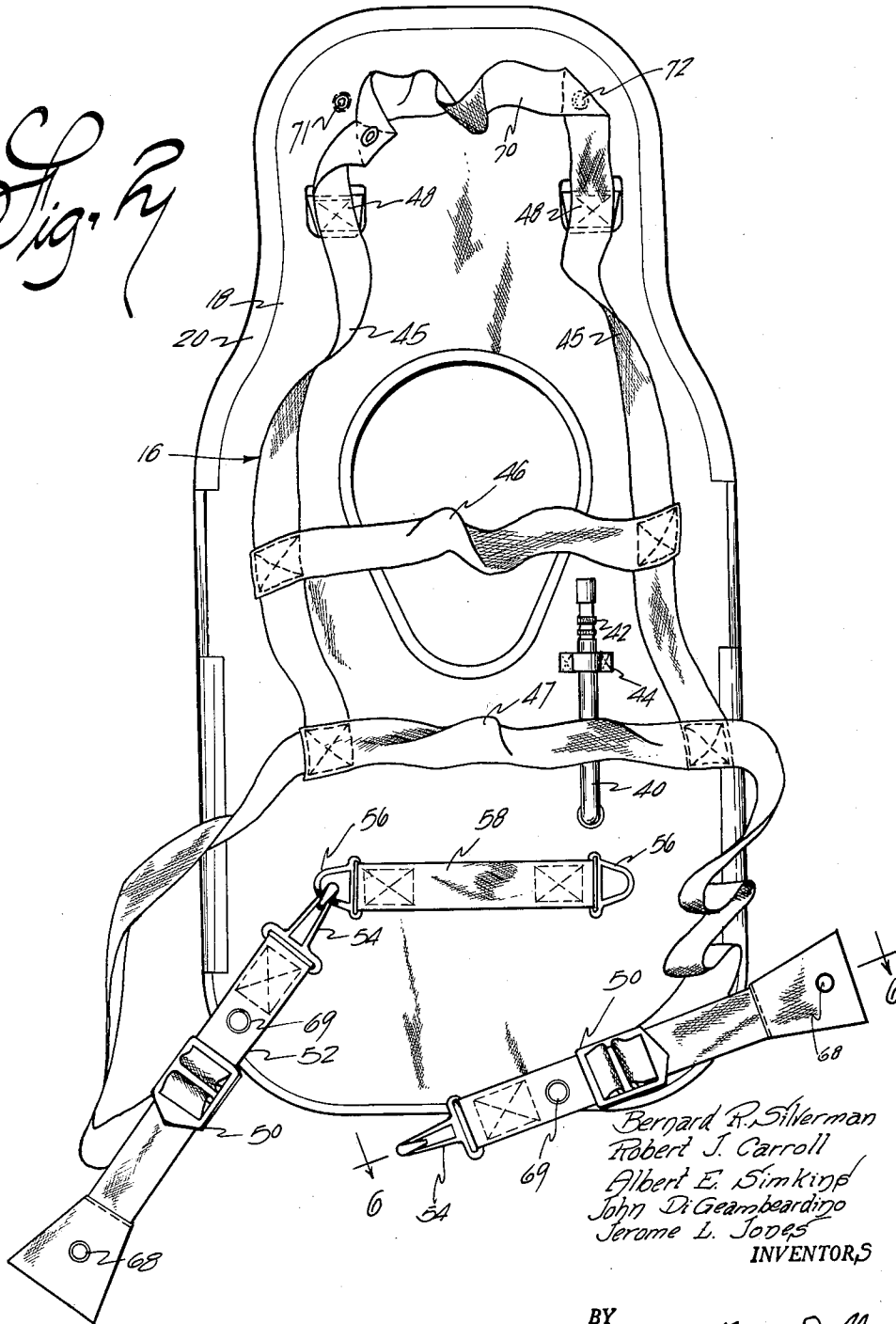
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Fig. 2



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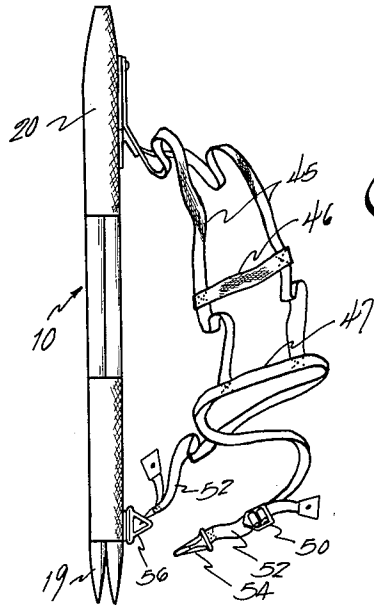


Fig 3

Fig 4

Fig 5

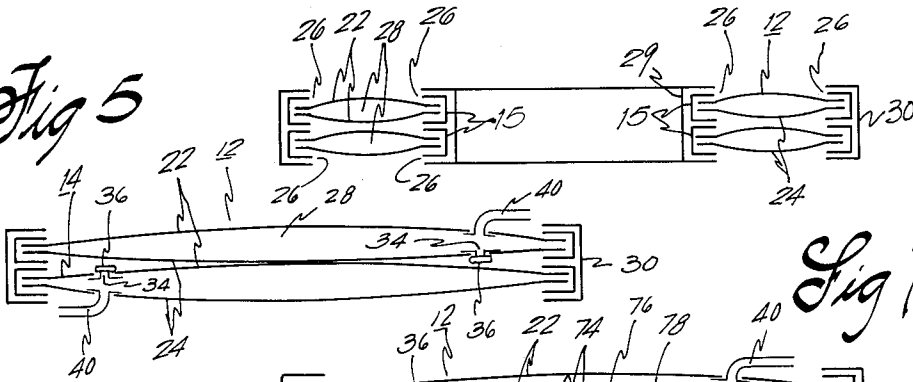


Fig 7

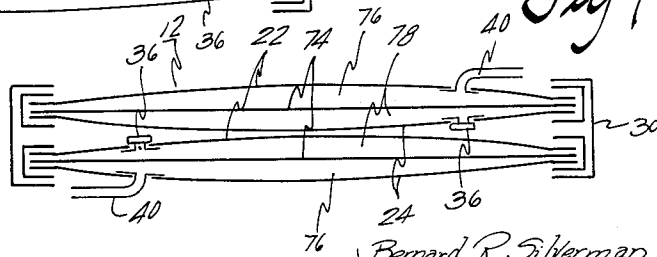
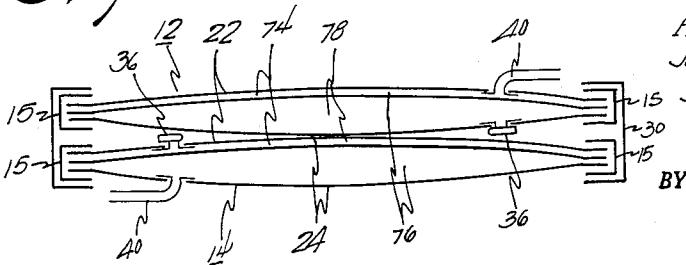


Fig 8



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LIFE VEST PRESERVER

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5 Claims. (Cl. 9—338)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to pneumatic life preservers having special use for aviators and particularly to those preservers which when inflated at the moment of need will keep a wearer's head and shoulders afloat.

An inflatable vest opening down the chest and having a collar at the back of the neck is a construction common to such life preservers. They are, in effect, U-shaped inflatable tubes that drape around the neck so that their legs pass over the shoulders and extend downwardly on the chest to about the waist of the wearer. Straps are utilized for joining the legs together and for keeping the vest on the wearer.

In these preservers, the opening defined by the neck hole and the separation between the legs, which is connected to the neck hole, is, thus, in the form of a key hole, that is, a circle, through which the head extends, with a radial slot extending from it. The edges that outline the junctures of the circle and slot are rather pointed and disposed at the throat; with inflation of the vest they are forced toward the throat tending to choke the wearer. The choking condition is aggravated by the propensity of the legs to roll inwardly toward each other under inflation which also reduces the size of the neck hole. A partial solution is obtained by use of a larger neck hole and rounding of the points. This, however, is at the expense of neck snugness and at the risk of losing the preserver by its rising over the head.

The present invention has a purpose of providing a life preserver which will obviate the disadvantages alluded to; which has similar, independently inflatable compartments; which is comfortable to wear whether deflated or inflated; which has a novel quick-adjusting fastening harness that avoids chest restriction and permits lifting thereby of the wearer; which requires no casing to hold bladders therein and thus has no problem of keeping them in any desired fixed relationship and is not hampered with water logging of the casing; which has an unbroken frontal portion on which pockets for holding accessories, or a buoyant material for added buoyancy, can conveniently be located; which has a construction that permits seclusion of the inflating containers to the protective area between the compartments and yet allows ready accessibility for their actuation; and which requires no unusual manufacturing techniques and on the contrary lends itself to easy production.

Other features of the invention will become apparent from the following description of the embodiments selected for illustration.

In the drawings,

FIGURE 1 is a front or plan view of one embodiment of the invention;

FIGURE 2 is a back view of the preserver of FIG. 1 showing the anchoring harness;

FIGURE 3 is a side view;

FIGURE 4 is a sectional view taken along the line 4—4 of FIGURE 1;

FIGURE 5 is a sectional view taken along line 5—5 of FIGURE 1;

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FIGURE 6 is a sectional view along line 6—6 of FIGURE 2;

FIGURE 7 is a transverse sectional view of a modification of the invention;

FIGURE 8 is a view similar to FIGURE 7 showing one compartment orally inflated and the other mechanically.

Referring to the drawing in general, 10 designates the life preserver, which is shown to have two overlying, individually inflatable envelopes or lobes (FIG. 3), a top lobe 12 and a bottom lobe 14, respectively, with aligned neck holes, 15 and 15, through which the head is inserted, and a fastening harness 16 (FIG. 2). The preserver is designed to be worn on the shoulders and over the chest, apron fashion, and to be held in position by the harness which is disposed along the wearer's back and around his waist.

Describing the structure in detail, it should be noted that the lobes 12 and 14 are of similar size and shape and that each has, what may be termed, a collar portion 18 and a chest portion 19. The general shape is rectangular, in plan view, with rounded corners, though this is modified by a narrowing at the collar portion by side indentations 20 and 20 and further varied by the neck hole 15 which is disposed in it. The narrowing is meant to permit comfort and freedom of arm motion to the wearer; nevertheless, it is not pronounced to the extent that there is an extreme lack of firmness at the connection between the collar and chest portions, otherwise there would be little resistance to twisting between them and, under certain conditions, the wearer may be strangled should twisting take place.

The shape of the neck hole is an oval that has its trough directed forward. This shape is preferred because of its lack of angularity and its smooth conformity around the neck and throat to provide snugness without choking. When the lobe is deflated, the neck hole has sufficient size to pass a wearer's head.

Each lobe (FIGS. 4 and 5), 12 or 14, has a front panel 22 and a back panel 24 of flexible, gas impermeable material, such as a chloroprene coated nylon or a rubber coated fabric. The marginal edges around the outer periphery and the neck hole of the panels 22 and 24 are joined together by a suitable adhesive and covered with tapes 26. A continuous compartment 28 is thus formed between the chest and collar portion in the lobe.

The lobes 12 and 14 are held to one another in their overlying arrangement by means of a gusset 29 that circumscribes the neck hole, a gusset 30 around the outer margin of the collar, and a pair of side gussets, 31 and 31 at the chest portion 19. The gussets are rectangular strips of fabric or other material that are lapped over the edges of the lobes and adhered thereto, as shown in FIGURE 4 with respect to the gusset around the neck hole. It is preferred that side gussets 31 and 31 do not extend along the whole vertical side of the chest portion; instead, they should cover only its center third as seen in FIG. 1. This permits access to the area between the lobes. No gussets are presented at the horizontal front side 32 of the panels, since it is desirable that the lobes be permitted to expand to their full extent at this location to give added stability in water.

It is apparent that the upper surface of the chest portion of the preserver is clear and thus is a ready space for the provision of pockets, such as P, for carrying accessories.

The compartment 28 in each of the lobes 12 and 14 may be inflated either mechanically from a cylinder of compressed carbon dioxide or orally. For the first mentioned purpose, the back panel 24 of the top lobe 12 has a tubular inflation stem 34 affixed to its inner surface and projecting through it. On the outer surface of the

back panel, in the space between the lobes, the stem 34 carries a carbon dioxide cylinder 36 which can be made to release its contents into the compartment 28 upon actuation by a pull on lever 38. The mechanism by which actuation takes place is conventional and therefore a description is believed unnecessary. The front panel 22 of the bottom lobe 14 is similarly provided with a carbon dioxide inflating device. It is apparent that the carbon dioxide inflating apparatus for both lobes 12 and 14 are hidden between them, yet they are accessible for actuation from the open forward side 32 of the preserver.

For oral inflation, each lobe has a rubber tube 40 with a valve 38. The tubes 40 and 40 are disposed on the outer surfaces of the lobes as distinguished from the position of the mechanical carbon dioxide inflator. Thus, in the case of the upper lobe 12 the tube 40 is on top of panel 22 where it is held in the ready position by a keeper 44. The bottom panel 24 of lower lobe 14 is similarly provided.

The preserver is held in place on the wearer by a harness 16 which has two parallel vertical back straps 45, and 45, a horizontal cross strap 46 and a horizontal waist strap 47. The back straps, which are of about the same length as that of the chest portion of the preserver's lobes, extend down the sides of the wearer's back and are secured, by stitching 48, at one end to the underside of the lower lobe 14 at points near the rear corners of the preserver's collar portion. The other ends of the back straps are stitched to the waist strap 47 intermediate its ends and at a spaced distance from each other. The cross strap 46 is similarly stitched at its ends to the back straps; it keeps the back straps properly located by preventing their separation.

Each end of the waist strap 47 is joined through a buckle 50 to a buckling strap 52 that carries an ordinary swivel type snap hook or connector 54. The connector 54 is attachable to a D-ring 56 carried on the end of an anchor strap 58 that is horizontally stitched to the underside of the lower lobe 14 near the side 32.

The buckle 50 (FIG. 6) is a piece of commercial hardware that is a metal plate having three cut-outs 59, 60, and 61 which separate four crossbars 62, 63, 64 and 65. The end of the waist strap 47 and that of the buckling strap 52 are joined to the buckle in the usual manner. Thus, in the case of the waist strap the end is passed through the central cutout 60 from the underside of the buckle, over the outer side of the central crossbar 63 through the cut-out 59 and under the crossbar 62. A similar connection is made between the buckling strap 52 and the buckle 59 utilizing the cut-outs 60 and 61.

The other end of the buckling strap 52 is looped through an eye 66 of the hook or connector 54. Both ends of the buckling strap are stitched securely as shown at 67 and 67 to prevent their unreeving.

The ends of the waist strap 47 are free. A pull on either or both of them shortens the effective length of the waist strap. The reverse is obtained by working the strap back through the buckles. To avoid dangling, snap buttons 68 and 68 are positioned on the waist strap 47 which cooperate with studs 69 and 69 on the anchor strap. In FIGURE 2 both waist straps are shown unbuttoned from the studs on the anchor strap and dangling freely.

In addition to the harness described, a hoist strap 70 is furnished by which a wearer may be lifted or towed. This comprises a strap secured at its ends at the same points on the collar portion of the preserver to which the ends of the harness' back straps are fastened. The strap has sufficient length to form a loop which will normally extend beyond the end of the preserver's collar portion to about the middle of the wearer's back. As in the case of the ends on the waist strap, dangling of the hoist strap is avoided by snaps 71 and 72 by which it may be held in position under the preserver.

In use, the preserver, deflated, is donned by the wearer who slips his head through the neck hole and permitting the harness to hang down his back. The snap hooks 54 and 54 are then joined to the anchoring D-rings 56 and 56. The waist belt 47 will pass loosely around the waist and under the rib cage. Proper adjustment is obtained by pulling an end of the waist strap outwardly through the buckle 50. As the preserver is inflated by either of the means shown, it will assume a shape that conforms to the wearer's configuration. The size of the neck opening will decrease with inflation but without a choking effect.

In FIGURES 7 and 8, a modification of the invention is presented with equivalent elements identified by the same reference characters. It is essentially similar to that described and differs only in the provision of an inner panel 74 in each of the inflating lobes 12 and 14. The panel 74 is formed from a gas impermeable, flexible, extensible material, for instance, rubber. It is disposed between the lobes' panels 22 and 24 so as to form two superimposed inflation compartments 76 and 78 within each lobe. The mechanical inflating devices 36 and 36 are communicatively connected to the inner compartments 78 and 78. The oral inflating tubes 40 and 40, on the other hand, communicate with the outer compartments 76 and 76.

With this construction inflation of a compartment 78 mechanically or by the carbon dioxide device will cause the dividing panel 74 to stretch into the compartment as shown with respect to the lobe 12 in FIGURE 8. Similarly, the panel 74 will occupy the position shown by the lobe 14 in FIGURE 8 should a compartment 76 be orally inflated. Inflation of the preserver may be produced mechanically, orally or by use of both methods.

The advantage offered by the modification lies in the protection to the walls forming the inner compartments 78 and 78. Puncture of the panel 22 of the top lobe 12 or panel 24 of the lower lobe 14 does not reduce the preserver to uselessness, and this is obtained without any reduction in buoyancy to the preserver.

Obviously various changes in the details, materials and arrangement of parts, which have been described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

What is claimed is:

1. A life preserver comprising an overlying lobe and an underlying lobe, each having an inflation compartment and a collar portion and a chest portion, each of said lobes including a pair of superimposed wall forming panels substantially rectangular in shape of flexible non-extensible gas impermeable material having a head inserting opening of oval shape and being sealed together at their marginal edges, gussets securing said lobes together around the periphery of the head opening, on the outer periphery of the collar portion and sides of said chest portion, mechanical inflation means disposed between said lobes for inflation thereof through their opposed inner panels, oral inflation means disposed on the outer sides of said preserver for inflation of said lobes through their outer panels, and a harness including a waist strap adapted to pass around the back of a wearer beneath the rib cage and to be removably secured at its ends to the chest portion of said preserver, a pair of vertical back straps secured at one end to the underside of said underlying lobe at said collar portion and at the other end to said waist strap intermediate its ends, and a cross strap secured at its ends to said back straps intermediate their ends for restraining their separation.

2. The preserver of claim 1 including accessory pockets secured to the top side of said preserver across the chest portion thereof.

3. The preserver of claim 1 including a buckle adjustably securing the ends of said waist strap to said chest portion.

4. The preserver of claim 1 wherein each of said lobes

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includes a longitudinal wall of flexible extensible gas impermeable material dividing said compartment into oral and mechanical inflation portions so that either lobe may be inflated mechanically in the event of a punctured outer panel of said preserver.

5. The preserver of claim 1 including a hoist strap secured at its ends to the underside of said underlying lobe at said collar portion.

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