June 20, 1944. H. G. MÖRNER 2,351,777

LIFE SAVING SUIT

Filed Dec. 24, 1942

Fig. 1

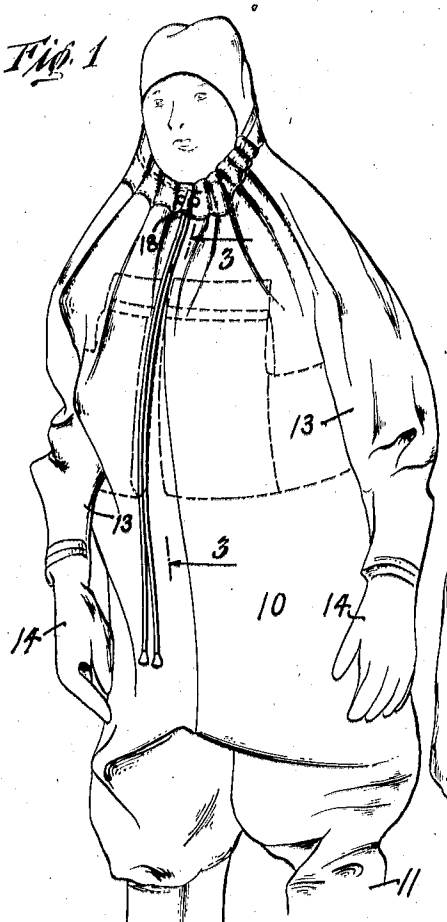


Fig. 2

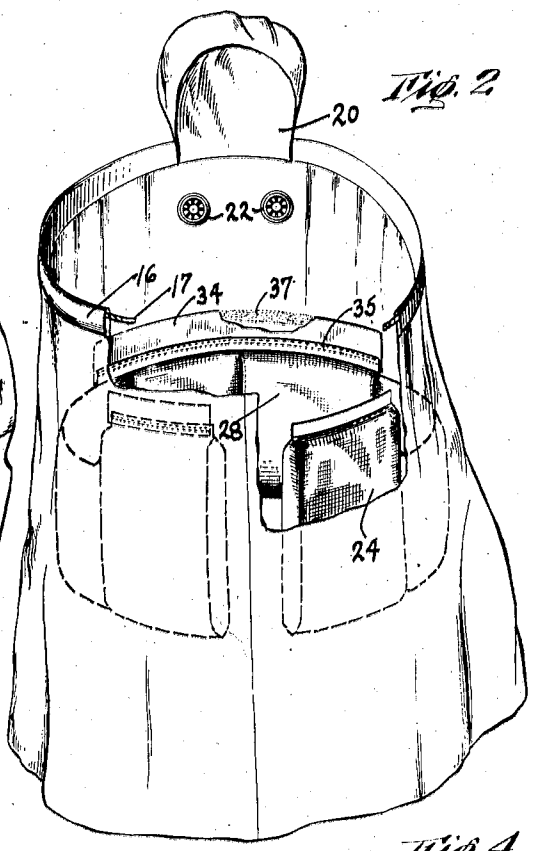


Fig. 3

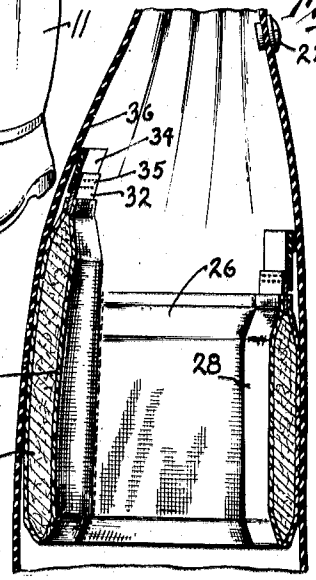
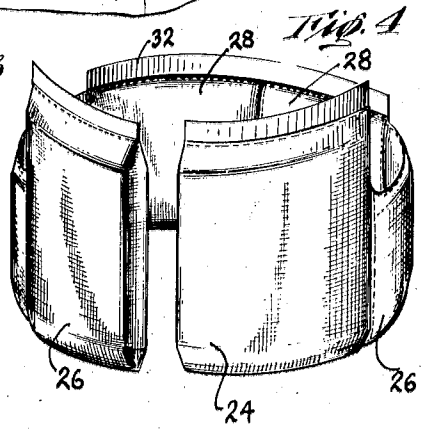


Fig. 4



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LIFESAVING SUIT

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6 Claims. (Cl. 9—20)

The present invention relates to new and useful life saving suits and more particularly to improvements in self-buoyant waterproof life saving suits.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

Of the drawing.

Figure 1 is a general perspective view showing the present preferred embodiment of the invention as worn by a person ready to abandon ship;

Figure 2 is a fragmentary perspective view of the upper portion of the suit shown in Figure 1, opened to show the interior of the suit;

Figure 3 is a detailed sectional view taken on the line 3—3 of Figure 1; and

Figure 4 is a detail perspective view of the buoyant members to be attached to the interior of the suit.

The present invention has for its object the provision of an improved, new self-buoyant life saving suit which may be worn with or without the regulation life saving jacket. A further object is the provision of an improved self-buoyant life saving suit which will hold an injured seaman in the water with less danger of drowning. The invention also provides an improved means and method of securing self-buoyant members to the interior of the suit.

In accordance with the illustrative embodiment of the invention there is provided a waterproof garment substantially completely enclosing the body of the wearer, except for his face and preferably having leg, arm and glove portions permanently attached to the body portion, and having means for tightly closing the garment about the wearer's neck after it has been donned. Interiorly of the garment, and about the lower chest portion are self-buoyant members which are permanently attached to the interior of the garment at their upper edges, and are interconnected so that they are held in place as the garment is donned. These self-buoyant members are principally at the front and back so that they do not interfere with the regulation life saving vest, but permit free movement of the arms.

The self-buoyant members preferably comprise kapok filled bags which are relatively thin and comparatively flat, and are divided into suitable compartments to prevent bunching of the kapok filling. At the upper edge of each of the bag portions is provided a fabric strip which is securely sewed to a strip of rubber, while the rubber strip is securely cemented to the interior of the rubberized fabric of which the garment is made. This method of attaching enables the inserts to be readily attached, even to used garments, and insures that the inserts will lie snugly on the interior of the garment and hang properly and not be bulky and interfere with the free movements of the garment portions while the garment is being donned.

Preferably the inserts at the front of the garment are of greater buoyancy than those at the rear so as to avoid the possibility of an injured seaman being drowned through inability to keep his face out of the water, and by positioning the inserts substantially around the lower chest portion, the seaman is floated indefinitely with his shoulders well out of water, and the inserts do not lose their buoyancy by becoming water-soaked. Therefore, a smaller volume will suffice to provide the desired buoyancy.

Additionally, air venting means are provided, each comprising a one-way valve adjacent the upper shoulder portions of the garment, and preferably at the back of the neck portion. These valve members are preferably of relatively large aperture, easily opened by slight air pressure so that the garment is quickly deflated as the wearer jumps into the water, thereby avoiding the possibility of incorrect distribution of buoyancy which might otherwise tend to hold the wearer face down in the water.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the drawing showing the preferred and an illustrative embodiment of the invention, the garment comprises a waterproof body portion 10, of heavy rubberized fabric to which are permanently attached the leg portions 11, the waterproof boot portions 12, the arm portions 13 and glove portions 14. The neck portion is preferably full and may be opened sufficiently to allow the wearer to step through it into the garment. About the neck

portions is a hem-like neck band 16 in which runs a cord 17 by which the fullness of the neck portion may be gathered to draw the neck portion tightly about the wearer's neck, the cord being held in closing position by a sliding clip 18. A hood 20 is permanently attached to the neck band portion so as to cover the head of the wearer leaving his face exposed.

At the rear of the neck portion are provided two one-way valves 22, of relatively large aperture which provide for the easy escape of air from the interior of the garment, at the same time preventing entry of water into the interior of the garment, and these valve members permit the ready deflation of the garment as the wearer jumps into the water.

Figure 4 shows in detail the construction and arrangement of the self-buoyant inserts which are of rectangular or oblong rectangular form and are arranged to cooperatively form a split band or belt to encircle the body of the wearer, and as illustrated they comprise a pair of front relatively long, thin, substantially flat somewhat narrow, kapok filled fabric bags 24 each of which is attached to a shorter, wider and thinner side or intermediate self-buoyant kapok filled bag 26, the two bags 26 being joined to two rear self-buoyant members 28 of equal height, of somewhat greater thickness and somewhat wider but of less height than the front members 24 and somewhat greater height than the members 26. Each of the self-buoyant members, shown in section in Figure 3 comprises a fabric covering 29 and a kapok filling 30, and at the upper edges of the members 24 and 28 they are sewn to fabric strips 32 extending the full width of the individual members. The fabric strips 32 are each securely attached to a rubber strip 34 by lines of stitching 35, and the rubber strips 34 are securely fastened to the interior of the suit fabric 36 by cement 37. The front buoyant members 24 are preferably considerably larger in volume than the rear buoyant members 28, and the members 26 are preferably lesser in volume than either the members 24 or 28, thereby placing the greater buoyancy at the front of the wearer. Strips 34 are attached to the interior of the suit so that the self-buoyant members hang adjacent the lower chest portion of the wearer.

By reason of the fact that the intermediate or side members 26 are thinner than the front and rear members, and consequently more flexible, these members 26 serve as buoyant links flexibly joining the members 24 to the members 28 to adapt the buoyant band to conform to and fit snugly about the body of the wearer and allow the band to flex freely under the body movements of the wearer.

It will be observed that the bags 24 are arranged at the front of the garment on opposite sides of the vertical center thereof; that the bags 28 are arranged at the rear of the garment on opposite sides of the vertical center thereof, and that the bags 26 are arranged at the sides of the garment beneath the sleeve portions of the garment so as to lie below the armpits of the wearer. Also, it will be observed that each bag has an independent filling of the buoyant material and that at their adjacent edges the bags are suitably united, as by vertical lines of stitching through portions separating their buoyant material filled spaces from each other, and which portions form flexible or hinge-like connections between the bags, allowing the bags to adjust themselves to lie smoothly and snugly between the garment and body of the wearer and to freely flex and accommodate themselves to the body movements of the wearer. By this construction and arrangement of the bags they may be readily and variably proportioned in size and filled with buoyant material to the exact degrees required to give the amounts of buoying effects desired to sustain the wearer in the water and to keep his head erect and from being forced down into the water.

By the expressions "vertical center" and "vertical front-to-rear center" as employed in the claims to set forth the relative arrangement of the buoyant bags in the garment, I mean, respectively, an imaginary vertical line passing through and bisecting the front or rear portion of the garment as the case may be, and an imaginary vertical line passing centrally through the garment from front to rear thereof. In other words, there may be considered to be two sets of bags included in the buoying band, one set comprising a front bag 24, a rear bag 28 and an intermediate bag 26, arranged at the right hand side of the garment, and a similar set of bags 24, 28 and 26 arranged at the left hand side of the garment; that is to say, at the right and left hand sides of such a vertical front-to-rear center line.

After the inserts shown in Figure 4 have been completely assembled and sewn to the strips 34 they are readily inserted in the interior of the suit by applying a line of cement 37 at the proper position in the suit, preferably applying additional cement to the outer face of the strip 34, and thereafter bringing the strip 34 into firm contact with the cement on the interior of the fabric 36.

Due to the suspension of the self buoyant members, they can easily be folded out of the suit for drying in case they are accidentally wet.

The regulation life saving jacket need not be removed before donning the suit of the present invention, as it overlaps the self-buoyant members for only a short distance, and adds principally to the bulk at the front of the wearer where it does not interfere with easy, free movement of the arms. The jacket does not adversely affect the center of buoyancy so as to hold the wearer in a dangerous or uncomfortable position.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A life saving suit comprising a waterproof body enclosing garment having buoying means arranged therein and about the inner surface thereof, said buoying means embodying a pair of self-buoyant members arranged at the front of the garment on opposite sides of the vertical center thereof, a pair of flexibly joined self-buoyant members arranged at the rear of the garment on opposite sides of the vertical center thereof, and a pair of self-buoyant members arranged at the sides of the garment between the front and rear members, said pairs of members being attached at their upper marginal edges to the interior of the garment and being of progressively decreasing degrees of buoyancy in the order named, and said side members being of relatively greater flexibility than the front and

rear members and forming links each freely flexible upon itself and each extending between and flexibly connecting the adjacent edges of the front and rear members at the same side of the vertical front-to-rear center of the garment.

2. A life saving suit comprising a waterproof body enclosing garment having buoying means arranged therein and about the inner surface thereof, said buoying means embodying a pair of self-buoyant members arranged at the front of the garment on opposite sides of the vertical center thereof, a pair of flexibly joined self-buoyant members arranged at the rear of the garment on opposite sides of the vertical center thereof, and a pair of self-buoyant members arranged at the sides of the garment between the front and rear members, each member consisting of an oblong rectangular substantially flat bag secured at its upper marginal edge to the interior of the garment and provided with a filling of buoyant fibrous material of substantially uniform thickness, said pairs of members being of progressively decreasing degrees of buoyancy in the order named, and said side members being of relatively greater flexibility than the front and rear members and forming links each freely flexible upon itself and each flexibly connecting the adjacent edges of the front and rear members at the same side of the vertical front-to-rear center of the garment.

3. A life saving suit comprising a waterproof body enclosing garment having buoying means arranged therein and about the inner surface thereof, said buoying means embodying a pair of self-buoyant members arranged at the front of the garment on opposite sides of the vertical center thereof, a pair of flexibly joined self-buoyant members arranged at the rear of the garment on opposite sides of the vertical center thereof, and a pair of self-buoyant members arranged at the sides of the garment between the front and rear members, each of said members being in the form of an oblong rectangular bag secured at its upper marginal edge to the interior of the garment and enclosing a substantially uniformly thick filling of buoyant fibrous material, the front pair of members being of maximum height and thickness and the respective pairs of members being of relatively decreasing heights and thicknesses and degrees of buoyancy in the order named, and said side members forming comparatively wide links each flexibly connecting the adjacent edges of the front and rear members at the same side of the vertical front-to-rear center of the garment.

4. In a life saving suit of the character described, a waterproof body enclosing garment having a self-buoyant split sustaining belt extending interiorly about the sides and back and at the front thereof and comprising a plurality of receptacles each in the form of a bag having a filling of buoyant material, said receptacles being flexibly interconnected at their adjacent side edges and having their lower marginal edges arranged at a common level, the receptacles at the sides, rear and front of the garment being of relatively increasing heights and having their upper marginal edges terminating at successively higher levels in the garment, and fastening means for suspending the belt from the garment embodying a fabric strip inserted between and secured to the upper marginal edges of the inner and outer walls of each receptacle and a rubber strip secured to the fabric strip and cemented to the inner surface of the garment.

5. A life saving suit comprising a waterproof body-enclosing garment, and a split buoyant sustaining band arranged within the garment so as to extend around the lower chest portion of the wearer, said band consisting of a pair of bags disposed at the rear of the garment, a pair of bags disposed at the front of the garment and a pair of bags disposed at the sides of the garment, each bag having an independent filling of buoyant material, adjacent edges of adjoining bags being interconnected along vertical lines between their fillings with each other to form portions flexibly hinging them to each other, said bags having flexible strips secured to and extending along and projecting above their upper marginal edges, the projecting portions of said strips being cemented to the interior of the garment.

6. A life saving suit comprising a waterproof body-enclosing garment, and a split buoyant sustaining band arranged within the garment so as to extend around the lower chest portion of the wearer, said band consisting of a plurality of bags disposed at the back, front and sides of the garment, each bag having an independent filling of buoyant material, adjacent edges of adjoining bags being interconnected along vertical lines between their fillings with each other to form portions flexibly hinging them to each other, said bags having flexible strips secured to and extending along and projecting above their upper marginal edges, the projecting portions of said strips being cemented to the interior of the garment.

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