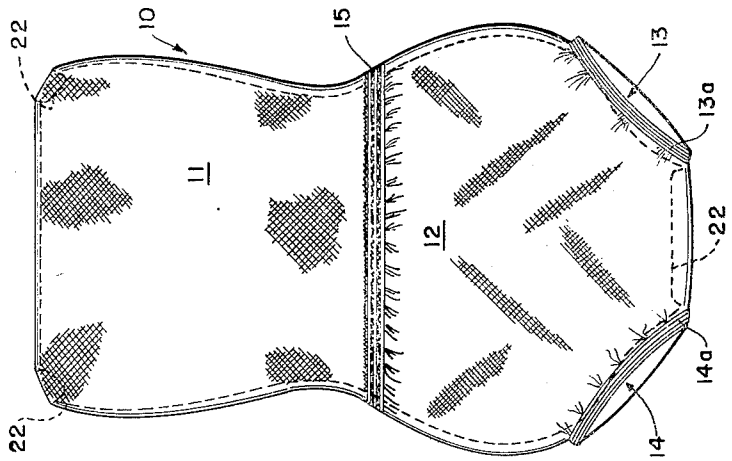
Aug. 24, 1965 M. H. GLASS 3,201,808

BUOYANT UNDERGARMENT

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FIG. 3



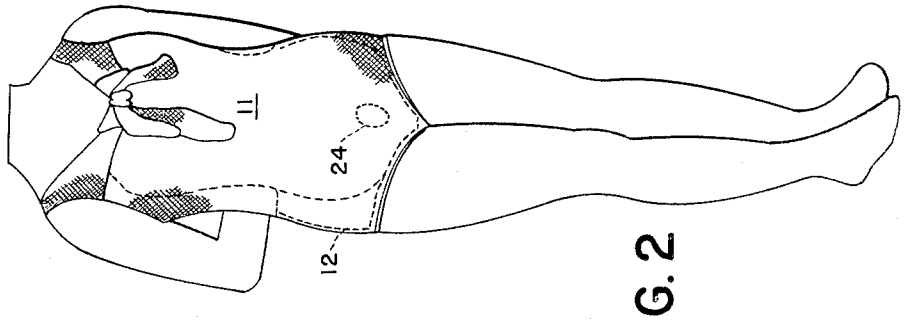


FIG. 2

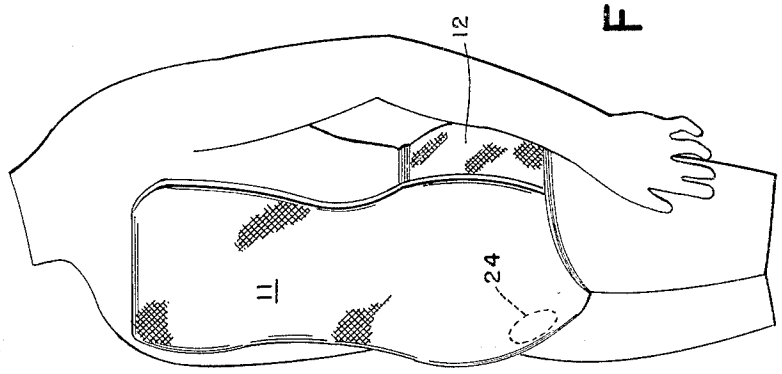


FIG. 1

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BUOYANT UNDERGARMENT

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FIG. 4

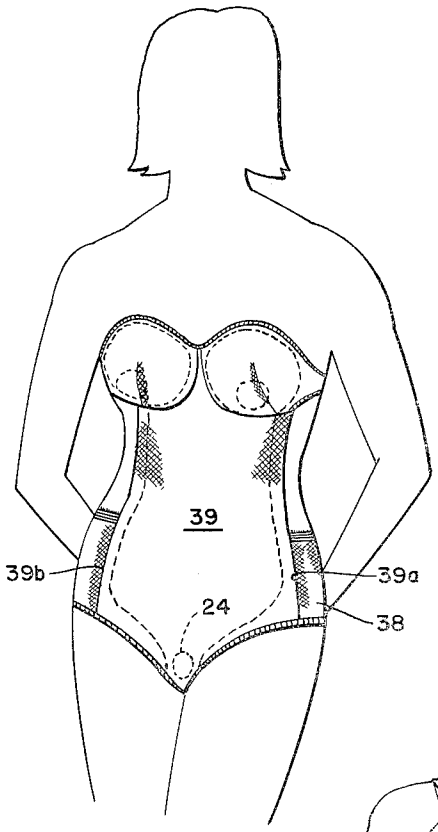


FIG. 5

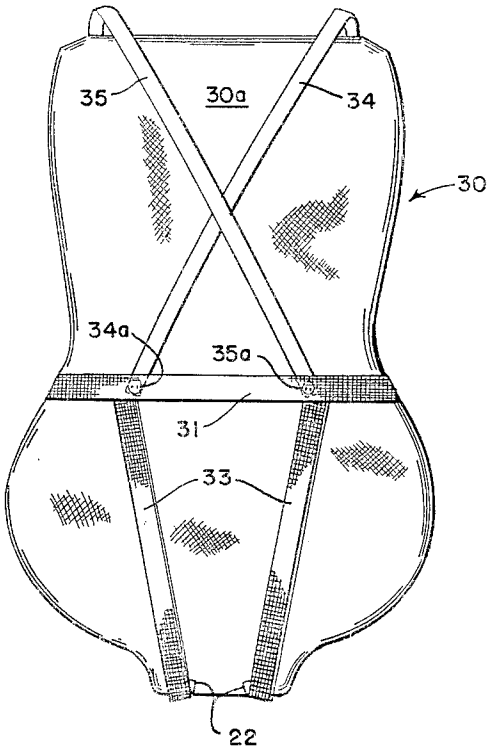
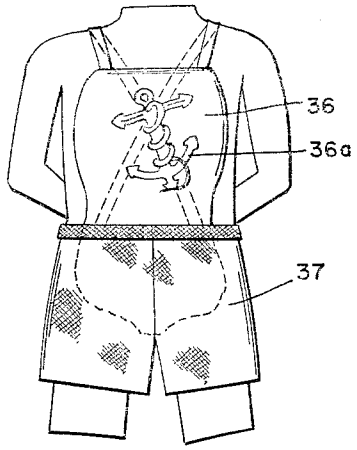


FIG. 6



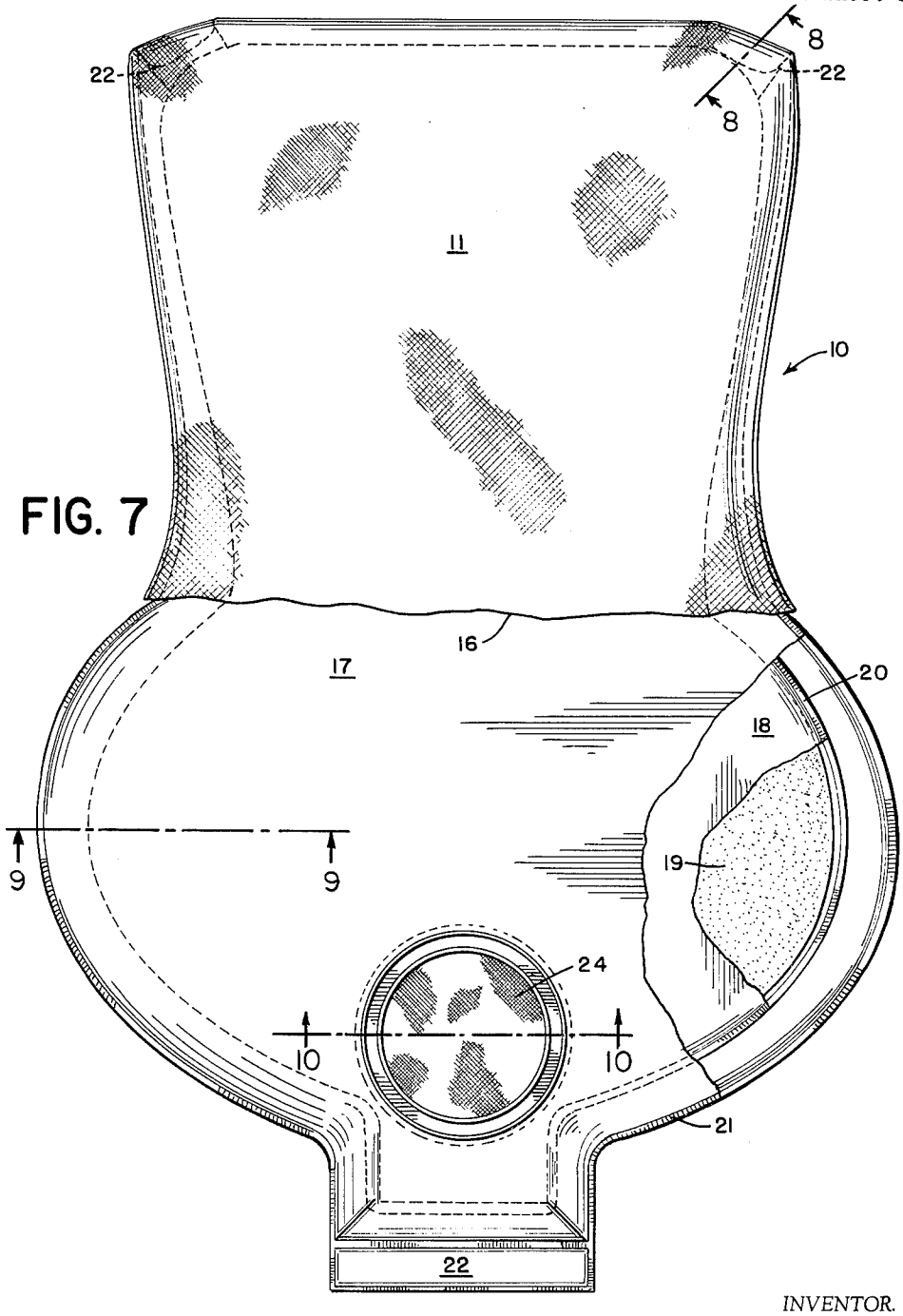
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FIG. 7



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BUOYANT UNDERGARMENT

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FIG. 8

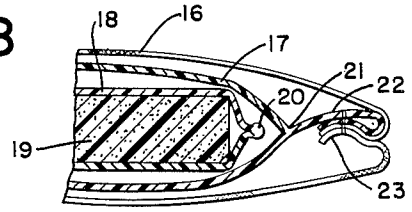
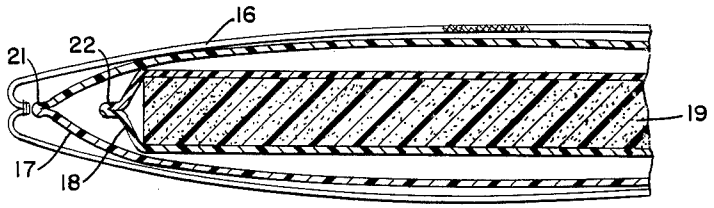


FIG. 9



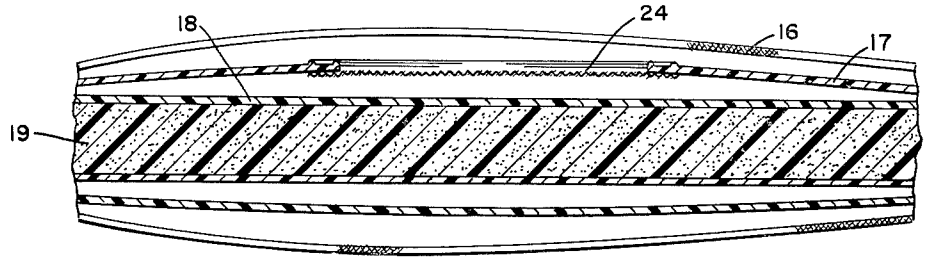


FIG. 10

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United States Patent Office 3,201,808 Patented Aug. 24, 1965

3,201,808

BUOYANT UNDERGARMENT

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Filed Mar. 11, 1963, Ser. No. 264,290
8 Claims. (Cl. 9—334)

This invention relates generally to buoyant clothing and specifically to a buoyant undergarment for wear under conventional outer clothing or under swimsuits.

Garments are known which have been provided with buoyant capabilities by means of attaching thereto buoyant pads or buoyant compartments. One difficulty with this arrangement is that the individual garment must be altered in some manner to accommodate the buoyant sections, which necessarily increase the cost of manufacture of the garment. Another difficulty is that the buoyant compartments tend to alter the shape of the garment by padding the figure in a manner not altogether pleasing or natural, such that the buoyant compartments or sections are thus rendered more or less visible. Another difficulty has been the tendency for buoyant sections within a garment to shift causing the garment to "ride up" when the wearer becomes immersed.

In order to overcome the above-mentioned deficiencies of the prior art, I have devised a buoyant garment for wear as an undergarment completely separate from clothing worn thereover, which may be a swimsuit or conventional outer clothing. The new undergarment comprises a close fitting buoyant member which follows the contour of the human form in each of the several embodiments and which is anchored firmly by a rear undergarment section worn below the waist. The buoyant undergarment may be worn beneath a swimsuit for example (which need not be increased in size to accommodate the buoyant undergarment), and when so worn, is very nearly or completely invisible. Because of the firm anchoring support provided to the buoyant section of the undergarment and the relatively tight engagement of the overlying swimsuit fabric, the buoyant portion of the new garment is prevented from shifting.

Alternatively, the new undergarment may be worn beneath conventional clothing such as might be worn during a boating excursion, for example. The undergarment, therefore, provides a simple and inexpensive way to protect children from the dangers of boating during family outings. In this connection, the amount of buoyancy provided in each of the new undergarments will be sufficient to permit even non-swimmers to float for extended periods of time by utilizing the natural floating capability of the human body which is augmented by a sufficient amount to compensate for any tendency which individuals may have not to float when assuming the standard face-up swimmers' floating position.

More specifically, I have devised a buoyant undergarment comprising a buoyant pad, which in the several configurations thereof, extends across the lower abdomen of the wearer, and therefrom to cover the chest or a major portion of the chest, as will be understood by specific reference to the drawing and description hereinafter. Advantageously, the side edges of the pad may be attached to a rearwardly extending section of undergarment to be worn below the waist, having conventional openings for the legs of the wearer surrounded by bands of elastic material and having at the upper perimeter an elastic waist band. The buoyant section of the pad may in one form be constructed according to our U.S. Patent No. 3,047,889 or may assume other forms of construction.

In the following description reference is made, by way of non-limiting examples, to various forms of construction of buoyant undergarments devised in accordance with the invention and illustrated in the accompanying drawing in which:

FIGS. 1–3 illustrate the outer form of the new buoyant undergarment for use by small girls;

FIG. 4 illustrates a construction of the new buoyant undergarment when worn by a woman;

FIGS. 5 and 6 illustrate the construction of the new undergarment for wear by small boys; and

FIGS. 7–10 illustrate a specific fabrication of the buoyant section of the new undergarment.

Referring now to the drawing, and initially to FIG. 3 thereof, there has been illustrated a buoyant undergarment **10** constructed according to the principles of the present invention. The undergarment **10** comprises generally a buoyant section in the form of a pad **11**, the detailed construction of which will be described presently. The buoyant section **11** is shaped to fit the front contours of the body of the wearer, in this case, a small child. As such, the pad **11**, as shown in FIGS. 1 and 2 will fit across the lower abdomen flaring outwardly toward the hips, inwardly at the waist and extending upwardly therefrom across the major portion of the chest.

Along the side edges below the waist, the pad **11** is attached to a rear garment or panty section **12** having leg openings **13** and **14** surrounded by elastic bands **13***a*, **14***a*, and having along the upper perimeter an elastic waist band **15**.

The undergarment **10**, as shown in FIG. 2, may be worn beneath a swimsuit and because of the close, bodily contoured fit achieved by the shape of the undergarment, the swimsuit renders effectively invisible the outline of the buoyant undergarment. The thickness of the buoyant section **11** is sufficient to provide an increase in buoyancy of the wearer above that generally required to assure floating upon the back, and will in fact, tend to turn the wearer upon his or her back so that the mouth and nose will be maintained out of the water. The thickness of the buoyant section **11**, however, is such that the normal swimsuit size for the person wearing the undergarment need not be increased. Furthermore, the buoyant section **11** is anchored securely by the rear garment section **12** so that the buoyant pad cannot "ride up" or shift position under the swimsuit.

A specific fabrication of the buoyant section **11** has been illustrated in FIG. 7 and in the sectional views shown in FIGS. 8–10. The construction shown in these figures follows substantially the aforementioned U.S. Patent No. 3,047,889 and is one commercial form which the new undergarment may assume. Accordingly, the buoyant section **11** of the new undergarment **10** has facing outer layers of nylon cloth **16** and successive inner layers of water impervious plastic material **17** and **18** with an innermost layer of open-celled material **19** such as polyurethane foam. As best seen in FIGS. 8–10, the innermost open-celled layer **19** is hermetically enclosed within the plastic layers **18**, which may be for example of polyvinyl or some similar substance. This is accomplished by heat sealing the ends of the opposing facing layers **18** as indicated at **20**. The combined layers **18** and **19** are permitted a certain very limited freedom of movement within the encompassing facing layers **17** and these layers themselves are heat sealed at their ends as indicated at **21**. At spaced locations, the layers **21** form tabs **22** which are attached by stitching to portions **23** formed by laminating the ends of the outermost nylon layer **16**. The layers **17** are thus restrained from movement respective of the outer cloth layers **16** and since the innermost layers **18**, **19** are given only very limited freedom within the encompassing layers **17**, the innermost layers **18** and **19** are also thus effectively restrained against movement. In an alternate embodiment (not

shown) a single tab **22** may be used at the crotch for attaching the outer nylon layers **16** to the inner plastic layers **17** and by this means attachment is effected between the buoyant internal layer **19** and the layers **18** to the outer cloth layer of the undergarment.

The upper layer **17** has been provided with a window **24** which is heat sealed about the outer edge thereof to the layer **17**. The material of the window **24** is cloth woven to be air pervious when dry, but water and air impervious when wet. One primary purpose of the window **24** is to permit the relatively free interchange of air from within the space internally of the layers **17** so that air may be evacuated therefrom or admitted thereto until such time as the window **24** becomes wetted due to the immersion of the wearer of the garment. Thereafter, the air within the interior of the layers **17** will be trapped to augment the buoyancy provided by the open-celled material **19**, which is itself hermetically contained within the layers **18**.

With reference now to FIGS. 5 and 6, a modification of the buoyant undergarment shown specifically in FIGS. 2–3, has been illustrated and is suitable particularly for wear by small boys. In this form of the undergarment, the buoyant section **30** has again the general contour and shape of the body for wear across the lower abdomen and cross the chest. Waist and leg straps **31–33** anchor the buoyant section **30** to the wearer in a manner similar to that provided by the rear section garment **12** of the embodiment illustrated in FIGS. 1–3. Additionally provided are shoulder and back straps **34**, **35** attached at **34*a***, **35*a*** to the waist strap **31**. In this form of the undergarment, the chest portion **30*a*** extends and is visible above the trunks **37** and has been provided therefore with a decorative emblem **36*a*** as indicated.

In yet another form of the new buoyant undergarment, shown in FIG. 4 for wear by women, the undergarment again comprises a panty section **38** and a forward buoyant section **39** connected along its side edges **39*a***, **39*b*** to a panty section **38**. The buoyant section covers the lower abdomen and extends upwardly therefrom to cover the bust. In an alternative embodiment (not shown) the buoyant section may extend generally about the bust but to a position covering only the lower half thereof. In the illustrated form, the dotted outline indicates the layer of open-celled material which is made integral throughout. However, it would be possible in an equivalent embodiment to discontinue the layer of open-celled material extending from the abdomen and across the lower chest at a position directly below the bust line, with a separate foam section about the bust. The configuration is therefore basically similar to the previous embodiments and when a swimsuit is worn over the embodiment of FIG. 4, the buoyant section will be for all practical purposes, invisible.

Although, in each of the embodiments specifically described, the buoyant undergarment has been discussed or shown as worn beneath a swimsuit, it will be obvious that the undergarment may be worn generally beneath conventional outer clothing. This will provide, particularly in the case of small children when taken on boating outings, reasonable assurance against accidental drowning. In this connection, the amount of buoyancy provided in each size of the undergarment is calculated according to that size to provide sufficient buoyancy for individuals wearing the undergarment to effect floating.

It will be further understood that although in specific forms of the new undergarment, the construction shown in FIGS. 7–10 will be followed generally, other possible constructions may be used without departing from the teachings of the invention. For example, it may be preferable in some instances to make a buoyant section which is entirely sealed and contains only trapped air or gas since the latter will presumably have the closest weight to buoyancy ratio. Alternatively, the buoyant section may comprise a container filled with flat open-celled material without the specific segregated sealed and air breathing capability shown in the illustrated embodiment. A further variation within the principles of the invention would be to construct the forward buoyant section of an undergarment internally having separate buoyant sections as such, or separate sections wherein the central layer or open-celled material is not made integral necessarily throughout the entire buoyant section.

Since therefore, the foregoing description merely represents embodiments of the invention, various forms may be made therefrom without departing from the clear teachings of the invention. In order to appreciate fully the spirit and scope of the invention, reference should be made to the appended claims in which, I claim:

1. A buoyant undergarment for wear by a human comprising:

(a) a single buoyant contoured pad section having a relatively small thickness relative to its breadth and length constructed generally to conform to the front contours of a human body and including a chest portion, a waist portion, and an abdomen portion, said buoyant pad having outer layers of cloth joined at their perimeter, intermediate water impervious plastic layers also joined at their perimeter with tap portions thereof extending and joined to spaced portions of the outer cloth layers, inner hermetically sealed plastic layers forming a container within said intermediate layers, and a layer of flat open-celled material within said container, and

(b) a rear garment section attached to said pad section which includes crotch attaching means extending from said abdomen portion for positioning between the legs of the human, and waist attaching means extending from said waist portion and attached to said crotch attaching means for positioning about the waist of the human, whereby said rear garment section anchors said buoyant section to the front contour of the body of the human to prevent shifting thereof.

2. A buoyant undergarment for wear by a human comprising:

(a) a single buoyant contoured pad section having a relatively small thickness relative to its breadth and length constructed generally to conform to the front contours of a human body and including a chest portion, a waist portion, and an abdomen portion which extends substantially to the crotch, said buoyant pad having outer layers of cloth joined at their perimeter, intermediate water impervious plastic layers also joined at their perimeter with tap portions thereof extending and joined to spaced portions of the outer cloth layers, inner hermetically sealed plastic layers forming a container within said intermediate layers, and a layer of flat open-celled material with said container, and

(b) a rear garment section of panty-like configuration attached to said pad section which includes leg openings having adhesive bands about the periphery and a waist band connected to the upper periphery thereof, whereby said rear garment section anchors said buoyant section to the front contour of the body of the human to prevent shifting thereof.

3. A buoyant undergarment according to claim **1** in which said crotch attaching means consist of leg straps and said waist attaching means consist of waist straps.

4. A buoyant undergarment according to claim **2** in which said pad section has a chest portion contoured in the shape of a woman's bust.

5. A buoyant undergarment for wear by a human comprising:

(a) a single buoyant contoured pad section having a relatively small thickness relative to its breadth and

length constructed generally to conform to the front contours of a human body and including a chest portion, a waist portion and an abdomen portion, said buoyant pad having outer layers of cloth joined at their perimeter, intermediate water impervious plastic layer also joined at their perimeter with tap portions thereof extending and joined to spaced portions of the outer cloth layers, inner hermetically sealed plastic layers forming a container within said intermediate layers, and a layer of flat open cellular material within said container,

(b) a window in one of said intermediate plastic layers formed from a layer of cloth having the characteristic of remaining air pervious when dry and air and water impervious when wet, and means for sealing said cloth window to said intermediate plastic layer, and

(c) a rear garment section attached to said pad section which includes crotch attaching means extending from said abdomen portion for positioning between the legs of the human, and waist attaching means extending from said waist portion and attached to said crotch attaching means for positioning about the waist of the human, whereby said rear garment section anchors said buoyant section to the front contour of the body of the human to prevent shifting thereof.

6. A buoyant undergarment for wear by a human comprising:

(a) a single buoyant contoured pad section having a relatively small thickness relative to its breadth and length constructed generally to conform to the front contours of a human body and including a chest portion, a waist portion and an abdomen portion, said buoyant pad having outer layers of cloth joined at their perimeter, intermediate water impervious plastic layers also joined at their perimeter with tab portions thereof extending and joined to spaced portions of the outer cloth layers, inner hermetically

sealed plastic layers forming a container within said intermediate layers, and a layer of flat open cellular material within said container,

(b) a window in one of said intermediate plastic layers formed from a layer of cloth having the characteristic of remaining air pervious when dry and air and water impervious when wet, and means for sealing said cloth window to said intermediate plastic layer, and

(c) a rear garment section of panty-like configuration attached to said pad section which includes leg openings having adhesive bands about the periphery and a waist band connected to the upper periphery thereof, whereby said rear garment section anchors said buoyant section to the front contour of the body of the human to prevent shifting thereof.

7. A buoyant undergarment according to claim 6 in which said crotch attaching means consists of leg straps and said waist attaching means consists of waist straps.

8. A buoyant undergarment according to claim 6 in which said pad section has a chest portion contoured in the shape of a woman's bust.

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