Jan. 1, 1957 M. SHAW 2,775,776

BUOYANT GARMENT

Filed Oct. 28, 1952 3 Sheets-Sheet 1

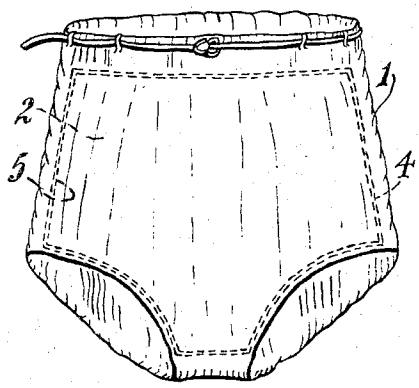


Fig.1.

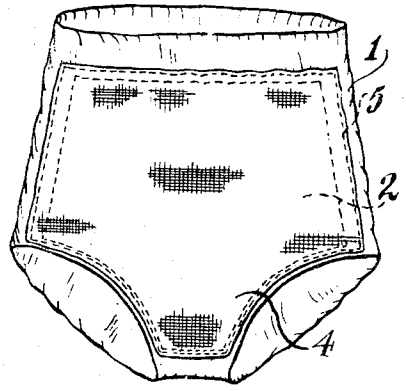


Fig.2.

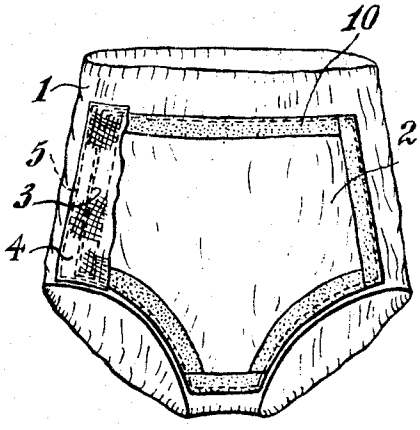


Fig.3.

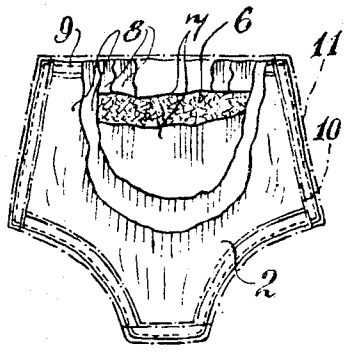


Fig.4.

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BUOYANT GARMENT

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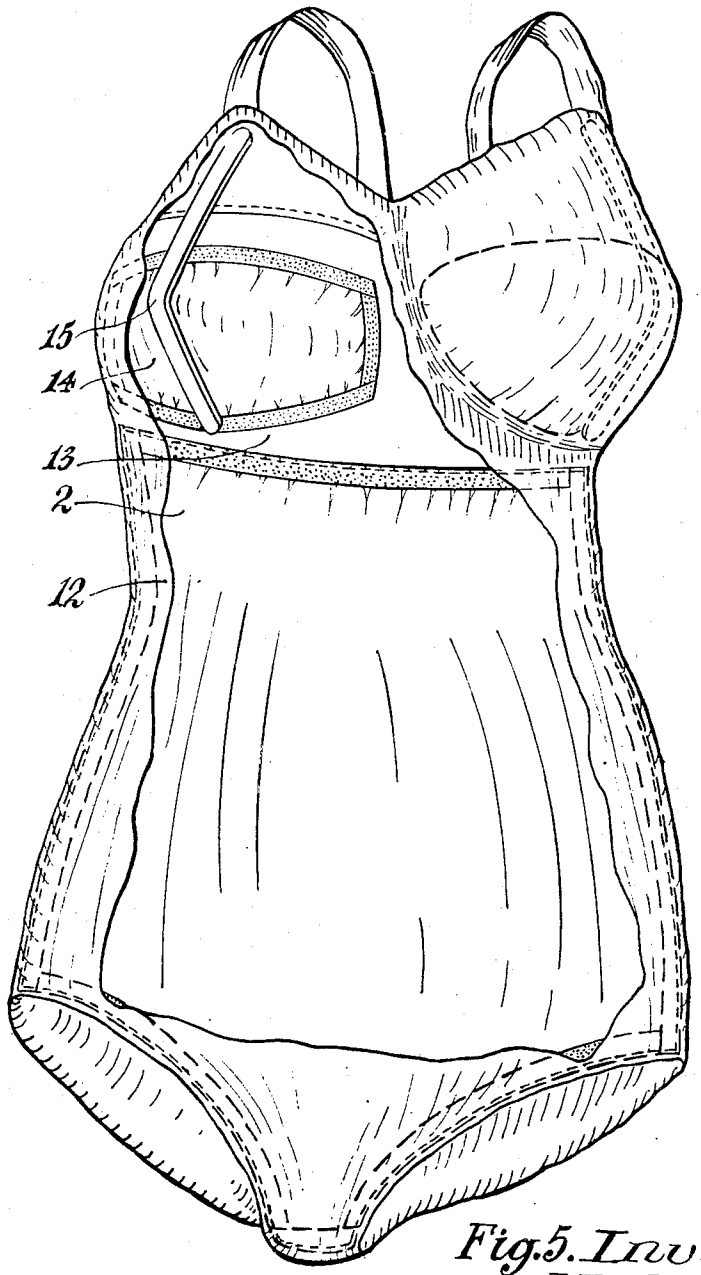


Fig. 5. Inventor
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BUOYANT GARMENT

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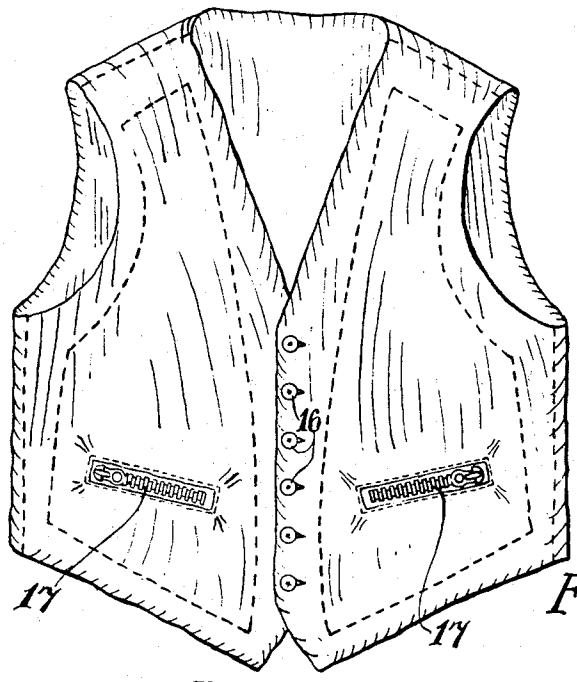


Fig.6.

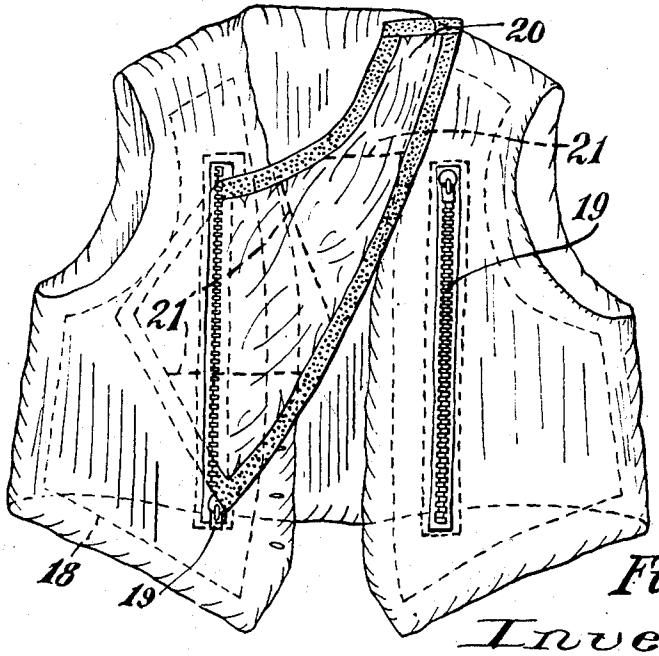


Fig.7.

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BUOYANT GARMENT

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Application October 28, 1952, Serial No. 317,176

Claims priority, application Great Britain June 27, 1952

4 Claims. (Cl. 9—20)

This invention relates to garments adapted to give the wearer buoyancy to enable him or her to float in water for an extended period.

According to the invention such garments incorporate material which is buoyant by virtue of air entrapped within it and which may of itself be buoyant, enclosed in sheet material which is permeable to air but impermeable to water.

The invention is applicable to garments of various kinds, and especially to swimming or bathing suits, costumes and trunks, and to one-piece garments, e. g. siren suits or waistcoats, suitable for wearing over other clothing and of a water-proof nature.

Suitable buoyant materials include kapok and foamed latex which have a natural buoyancy, and materials which, though not naturally buoyant, entrap sufficient air to give them adequate buoyancy, such as wool fibres preferably in the form of tops, cotton fibres, and nylon or other synthetic or artificial staple fibres.

Suitable woven textile materials which are permeable to air but impermeable to water are those which are available commercially and identified by the United States registered trademark "Drivent," and the trademark "Ventile" which is registered in other countries. In such materials protection against water is achieved by a self-sealing action due to the swelling of the fibres when exposed to the effect of water. The materials are woven from fine cotton yarns of two-fold construction, using a close weave with a high degree of interlacing.

The buoyant material is preferably disposed in pockets located at suitable points of the garment, the buoyancy being provided mainly or wholly by the air entrapped in the pockets and the shape of the pockets being preserved by the fibrous or other filling. Such pockets are located mainly or entirely at the sides and front of the garment, to ensure that the wearer will float face upwards.

The buoyant material may be placed in envelopes of ordinary cotton fabric to provide packages and the packages have at least one layer on each side thereof of a material which is permeable to air when dry and impermeable to air and water when wet, with such composite assembly located in pockets or enclosures formed in the garment. When the garment is dry, air may freely circulate throughout the package so that the wearer is entirely comfortable but as soon as the garment is wetted, the packages become impermeable to air and water thus trapping the air in the packages to render the same highly buoyant and enable the wearer to float in the water over extended periods of time.

The materials may be secured where necessary by stitching or by means of adhesive. Stitching will generally be preferred as giving greater strength, but where the stitching would allow access of water to the buoyant material it is essential that the seams should be made waterproof. This may be effected by means of a waterproof varnish, e. g. a cellulose acetate or nitrate varnish or a rubber solution, or by means of a film of thermoplastic material or a fabric coated with thermoplastic material placed over the seam and caused to adhere by means of a hot iron.

Where it is desired that the garment as a whole should be waterproof as well as buoyant, material which is permeable to air when dry and impermeable to air and water when wet will be used for the structure of the garment and all seams will be effected by means of an adhesive or by stitching and sealing. This applies particularly in the case of garments for wear over other clothing for life-saving purposes, where it is essential for the sake of warmth as well as buoyancy to keep said other clothing dry.

In the case of swimming costumes the buoyant material may be placed at the front and sides only, preferably in the form of kapok or wool tops enclosed in cotton envelopes and located in pockets formed between two layers of "Ventile" type fabric. The back of the costume may if desired be of ordinary fabric and may be elasticated. The outer "Ventile" fabric layer may be of an ornamental nature or may be covered with an ornamental fabric.

It is found that approximately six ounces of wool fibres incorporated in a swimming costume or trunks is sufficient to keep a normal wearer afloat, and does not make any substantial difference to the appearance of the garment.

Referring to the accompanying drawings:

Figure 1 is a front view of a pair of bathing trunks according to the invention.

Figure 2 shows the trunks from the front but turned inside out.

Figure 3 shows the same, partly broken away.

Figure 4 shows the buoyant structure, partly broken open.

Figure 5 shows a lady's swimming costume according to the invention.

Figure 6 shows a waistcoat according to the invention.

Figure 7 shows the waistcoat inside out, with a buoyant structure exposed.

Referring to Figures 1–4, a pair of bathing trunks 1, made of any suitable material such as a wool-nylon knitted fabric, is fitted at the front and on the inside with a buoyant pad 2. The pad 2 is secured at its edges by stitches 3 to a piece of cotton cloth 4, the edges of which are stitched at 5 to the front of the garment. The pad 2 contains a filling of kapok 6 enclosed in a cotton fabric envelope 7, the envelope 7 being enclosed within a two-layer covering 8 of water-impermeable fabric of the "Ventile" type. The two layers of cotton fabric 7 and the four layers of fabric 8 are stitched together along their edges at 9, and are further secured and sealed by means of waterproof adhesive tape 10, shown in chain dot in Figure 4, which is folded over the edges and covers the stitching. An extra strip 11 of adhesive tape is placed over the strip 10 and folded a short distance from the edge of the strip 10 and stuck to itself, to provide a narrow strip through which the stitches 3 can pass without interfering with the sealing of the buoyant structure.

Figure 5 shows a lady's swimming costume, in which a buoyant structure 2 similar to that shown in Figures 1–4 is secured between the outer layer 12 of the front of the costume and the lining 13, and further pads 14 constructed in the same way as the pads 2, are inserted between the outer layer 12 and the lining 13 in the upper part of the front of the costume. The outer layer 12 may be of any suitable fabric, which may be of an ornamental nature. Stiffeners 15 are shown, but these may be omitted if not required.

Figures 6 and 7 show a life-saving garment in the form of a waistcoat. This is constructed of and lined

with a fabric of the "Ventile" type and has buttons **16** and pockets closed by sliding clasp fasteners **17** on the outside. On the inside there are further pockets **18** closed by fasteners **19**, in which are placed pads **20** constructed like the pads **2** in Figures 1–5 but shaped to fit the pockets. Figure 7 shows the garment inside out with one pad **20** partly withdrawn from its pocket. There are lines of stitching **21** across the fibre filling and the cotton fabric layers enclosing it, but not passing through the waterproof layers enclosing the cotton fabric, to keep the fibrous material in position.

What I claim is:

1. A garment adapted to give the wearer buoyancy to enable the wearer to float in water for an extended period of time comprising a body portion covering at least a part of the wearer's body, means secured to the body portion to form at least one enclosure in the front of the body portion, an envelope of a woven textile material positioned in the enclosure, and a flexible fibrous mass within the envelope spacing the walls of the envelope apart, the material of the envelope being permeable to air when dry so that air may freely enter the envelope and impermeable to air and water when wet whereby the air within the envelope is entrapped to impart buoyancy to the garment.

2. A garment adapted to give the wearer buoyancy to enable the wearer to float in water for an extended period of time comprising a body portion covering at least a part of the wearer's body, means secured to the body portion to form at least one enclosure in the front of the body portion, a fabric envelope, a flexible fibrous mass within the envelope spacing the walls of the envelope apart, at least one layer of woven textile material covering the fabric envelope, with the envelope positioned within said enclosure, and means securing the envelope in the pocket, the woven textile material being permeable to air when dry so that air may freely enter the envelope and impermeable to air and water when wet whereby the air within the envelope is entrapped to impart buoyancy to the garment.

3. A garment as defined in claim 1 wherein the body portion is provided with inner and outer faces and said enclosure being secured to the inner face of the body portion.

4. A bouyant swimming suit comprising a textile body portion having a bust embracing section and a lower section embracing the wearer's body between the waist and the crotch, means secured to the inside of the bust embracing section to form a pair of spaced apart enclosures in the front of said bust embracing section, an envelope of a woven textile material positioned in each enclosure, and a flexible fibrous mass within each envelope spacing the walls of the envelope apart, the material of each envelope being permeable to air when dry so that air may freely enter each envelope and impermeable to air and water when wet whereby the air within each envelope is entrapped to impart buoyancy to the swimming suit.

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