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Schultz

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[54] **AQUATIC PROTECTIVE GARMENT**

[76] Inventor: **Robert B. Schultz,** 26511 Dunwood Road, Rolling Hills Estates, Palos Verdes, Calif. 90274

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 111,301, Feb. 1, 1971, abandoned.

[52] **U.S. Cl.** ..... **2/2.1 R**

[51] **Int. Cl.** **B63c 11/04**

[58] **Field of Search** ..... 2/2.1 R, 2.1 A, 82, 2/168, 2

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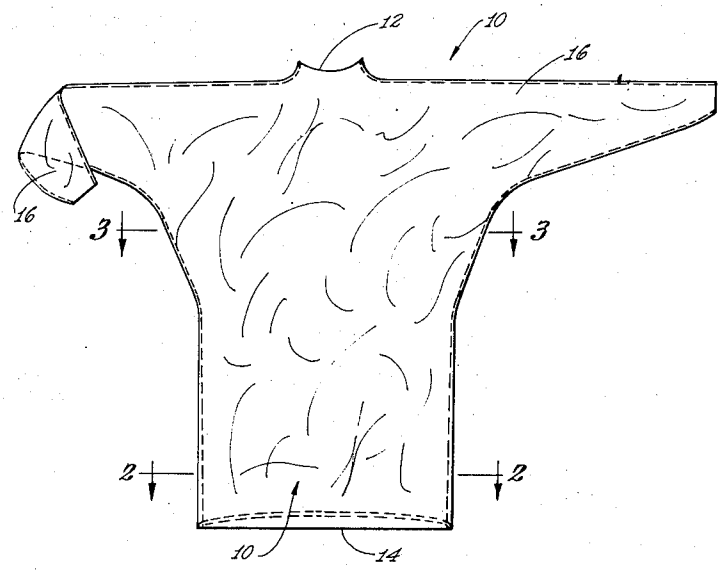
Primary Examiner—Alfred R. Guest

Attorney—Keith D. Beecher

[57] **ABSTRACT**

An improved seamless aquatic shirt of the "dry suit" type is provided for surfing, skin diving, water skiing, and the like. The shirt is composed of a latex material of a thickness which is tapered so as to have a maximum thickness at the waist which gradually decreases to a minimum thickness at the neck and sleeves. The tapered garment of the invention is easier to put on and take off as compared with the shirts of corresponding prior art dry suits, and it has other features as will be described. In a second embodiment of the invention, for example, mittens are formed integral with the sleeves as a molded extension of the shirt, so that the wearer's hands, like the rest of his body, will remain dry and warm.

3 Claims, 4 Drawing Figures



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SHEET 1 OF 2

Fig. 1

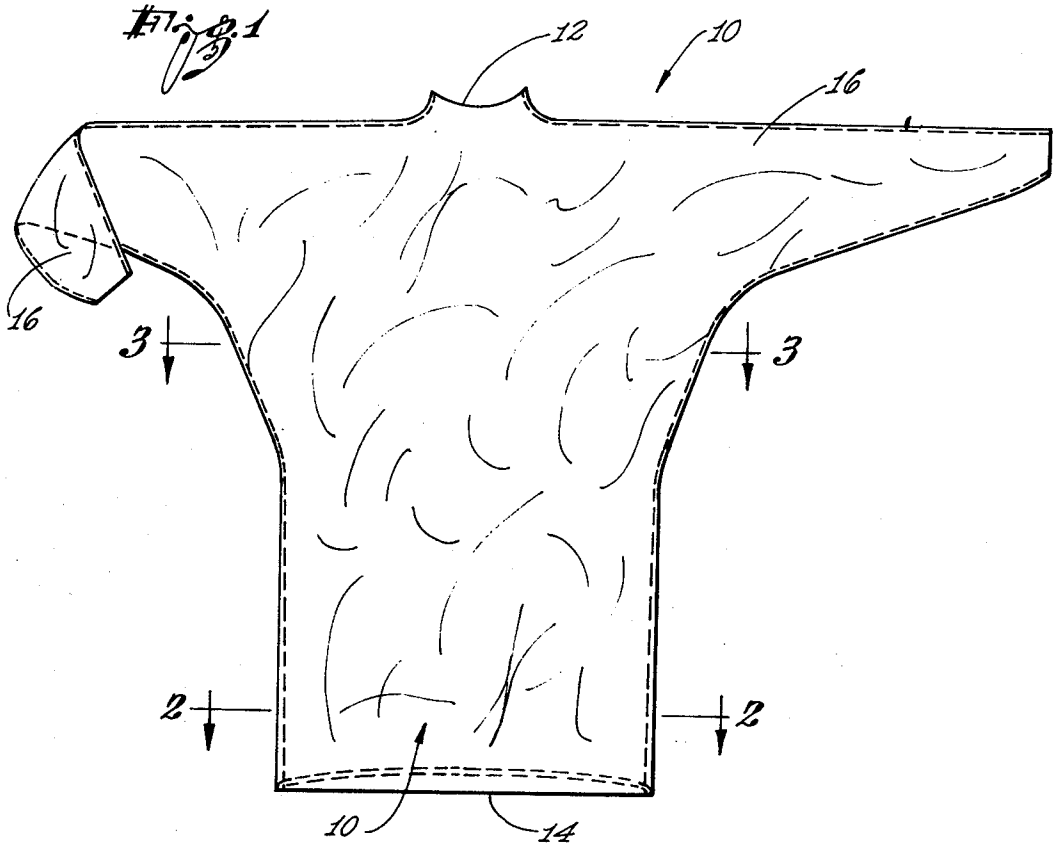


Fig. 3

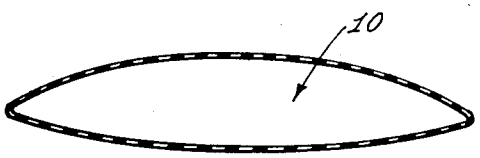
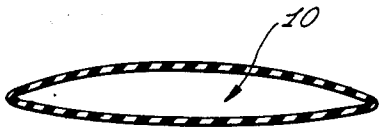


Fig. 2



INVENTOR:
Robert B. Schultz
Jessup and Beecher
By Keith D. Beecher
ATTORNEYS

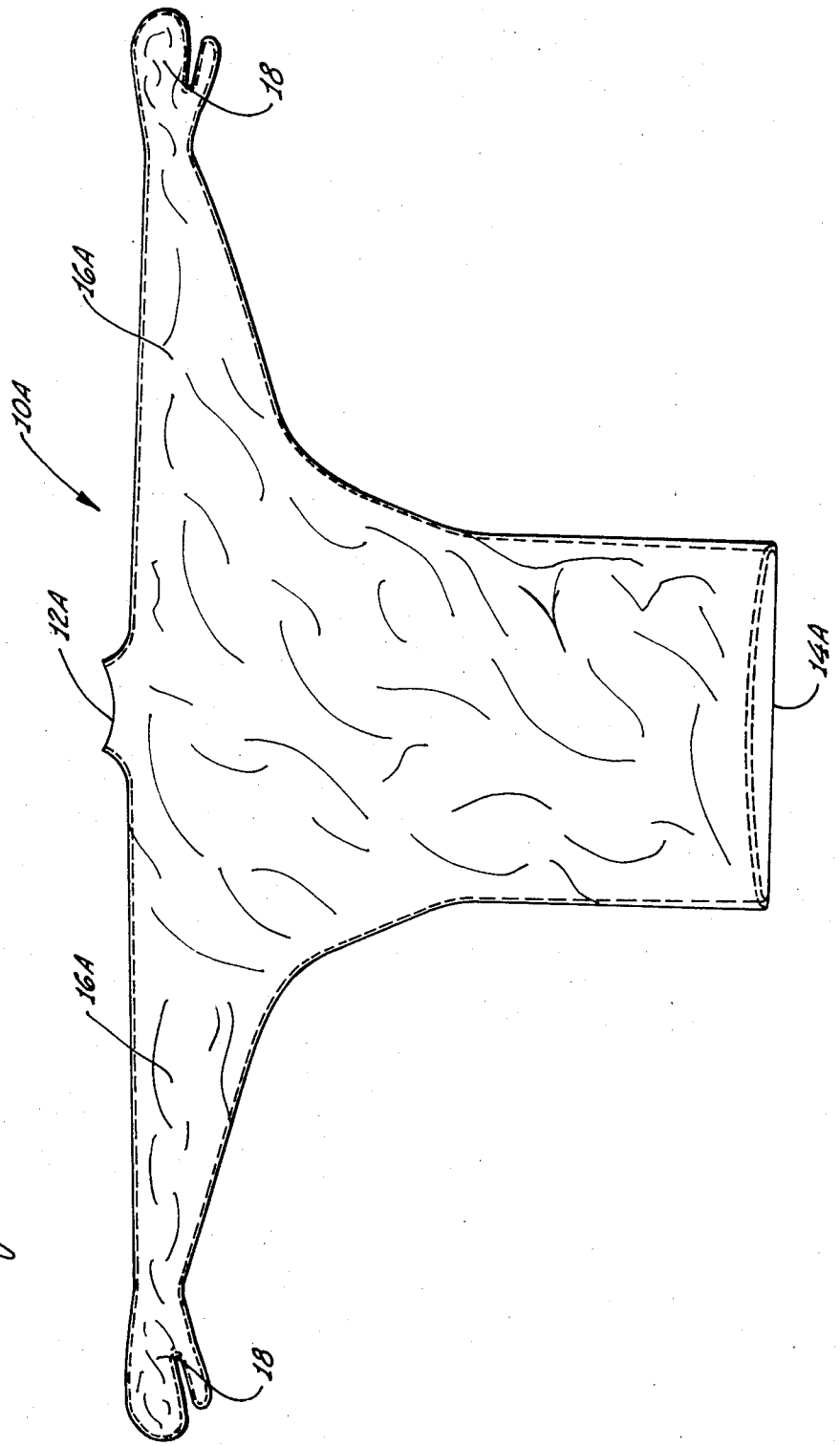


Fig. 4

AQUATIC PROTECTIVE GARMENT

This application is a continuation-in-part of Copending application, Ser. No. 111,301 which was filed Feb. 1, 1971 now abandoned.

BACKGROUND OF THE INVENTION

Latex "dry suits" are well known to the art, and are in general use in many aquatic sports, such as surfing, skin diving, water skiing, and the like, as mentioned above. The usual dry suit is composed of a latex material, and is of the two-piece type, composed of a shirt and pants. However, in the past, dry suits have proven to be impractical since the shirt must be of a sufficiently heavy construction to provide a watertight seal with the pants at the waist. In the past, such dry suits have proven to be tremendously awkward to get into and out of, and they also had a tendency to restrict breathing and circulation of the wearer.

The garment of the present invention comprises a shirt of a tepered thickness, as mentioned above, so that the disadvantages of the prior art dry suits are overcome. In addition, the warm and dry comfort of dry suits is realized.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a representation of a shirt for a dry suit fabricated in accordance with the concepts of the invention;

FIG. **2** is a section of the shirt taken along the line **2—2** of FIG. **1**;

FIG. **3** is a section of the shirt taken along the line **3—3** of FIG. **1**; and

FIG. **4** shows a modification of the shirt of FIG. **1**, and which incorporates integral mittens.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

As shown in FIG. **1**, for example, the protective garment of the present invention comprises a shirt **10** which is composed of seamless latex material, for example. The shirt **10** comprises a neck opening **12** at the top, and a waist opening **14** at the bottom. The garment also includes sleeves **16** which are formed integral with the sheath-like central part of the garment.

As best shown in FIGS. **2** and **3**, the material forming the garment **10** has a tapered thickness, which decreases uniformly from the waist opening **14** to the neck opening **12**, with the sleeves **16** having essentially the same thickness as the neck opening.

In a fabricated embodiment of the invention, for example, the material thickness of the shirt **10** at the neck and sleeves is a minimum, of the order of 0.015 inches to 0.020 inches, with this thickness increasing gradually and with a tapered configuration to a maximum at the waist opening **14**; and with the maximum thickness being of the order of 0.030 inches to 0.040 inches, for example.

The garment of the invention, as illustrated in FIGS. **1–3**, is advantageous as compared with the prior art garments of the same general type, in that it is easier to put on due to the thinner cross-section at the armholes and neck opening. In addition, tightness or restriction of breathing and circulation at the neck, as well as tightness of circulation to the arms of the wearer, are reduced in the garment of the invention by the reduced thickness of the material at the neck and sleeve openings.

The tapered thickness of the material forming the shirt **10** allows for a durable and heavy maximum thickness at the body and waist section of the garment, and yet enables the garment to retain the advantage of minimum neck and arm thickness. The durable maximum thickness of the body/waist section reduces the probability of puncture and tear over a large portion of the garment, and yet still permits easy donning and removal of the shirt. In addition, the increased material thickness at the waist provides heavy material at that section of the garment, enabling a watertight seal with the pants to be realized. This is because the thickness of the material at the waist provides a high circumferential tension at the joint interface between the shirt and the pants.

The garment shown in the drawing is relatively simple to manufacture by usual latex processes. The neck of the garment may be cut, for example, to any desired size, by a simple cutting operation.

The improved garment of the present invention provides, therefore, a warm and watertight shirt for dry suit wear, and one which is easy to put on and take off, and which exhibits no substantial restriction on breathing or circulation. In addition, the garment of the invention provides for complete freedom of movement of the wearer, with no underarm chafing, and serves to maintain the wearer in warm and dry comfort. Since the garment is not buoyant, it may be used for underwater use with a minimum of weights.

The garment of FIG. **4** is essentially similar to the garment of FIGS. **1–3**, and has been designated as a shirt **10a**. The shirt **10a** has a neck opening **12*a*** at the top and a waist opening **14*a*** at the bottom. The shirt of FIG. **4** also includes sleeves **16*a*** which are formed integral with the sheath-like central part of the garment, and mittens **18** which are formed at the end of each sleeve, and which are integral with the respective sleeves.

The mittens are molded into the shirt so that there is no seam, joint, or leakage path between the mitten and the shirt. This means that the wearer is assured that his hands will remain dry and warm. Although the mittens **18** are illustrated in FIG. **4**, they may also take the form of gloves, or other hand enclosures. It is to be noted that the garment is molded with the thumbs in the lower position to facilitate molding. It could be molded with the thumbs in the upper position, but the thumbs would then normally be thinner and weaker.

While particular embodiments of the invention have been shown and described, modifications may be made, and it is intended in the following claims to cover all modifications which fall within the spirit and scope of the invention.

What is claimed is:

1. A protective garment for aquatic use comprising: a torso aquatic member formed of a latex material in the form of a sheath having a neck opening at the top and a waist opening at the bottom, the material thickness of said sheath varying in the form of a gradual and uniform taper from a minimum thickness at said neck opening to a maximum thickness at said waist opening, and including sleeves integral with said sheath and having a material thickness corresponding to said minimum thickness, said sheath and said sleeves being formed of a seamless integral molded construction, and in which said material thickness at said neck opening and sleeves is approximately in a range of 0.015–0.020

inches, and said material thickness at said waist opening is approximately in a range of 0.030–0.040 inches.

2. The protective garment defined in claim 1, and which includes hand enclosures integral with the ends of said sleeves, and in which said sheath, said sleeves and said hand enclosures are all formed of a seamless integral molded construction.

3. The protective garment defined in claim 2, in which said hand enclosures are in the form of mittens.

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