United States Patent

Schultz

[15] **3,646,932**

[45] **Mar. 7, 1972**

[54] GROIN SUPPORT

[72] Inventor: **August L. Schultz,** 214 North Harmon Drive, Mitchell, S. Dak. 57301

[22] Filed: **Jan. 6, 1970**

[21] Appl. No.: **921**

[52] **U.S. Cl.** **128/95,** 128/165

[51] **Int. Cl.** **A61f 5/24**

[58] **Field of Search** ..... 128/95, 99, 100, 101, 102, 128/103, 105, 106, 157, 165, 169, 170, 171, DIG. 15

[56] **References Cited**

UNITED STATES PATENTS

3,256,882	6/1966	Huber	128/165
3,376,865	4/1968	Gamper	128/169
1,440,157	12/1922	Lawton	128/96

FOREIGN PATENTS OR APPLICATIONS

15,424	10/1905	Great Britain	128/96
186,954	1/1937	Switzerland	128/96

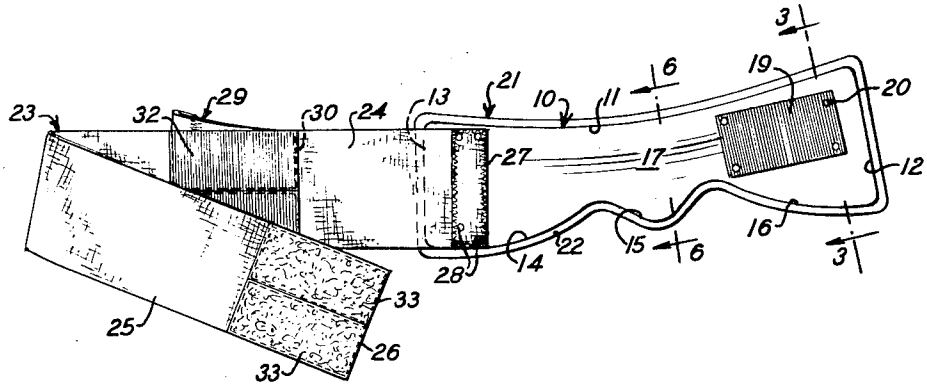
Primary Examiner—Robert W. Michell

Attorney—Kimmel, Crowell & Weaver

[57] **ABSTRACT**

This specification discloses a support intended for application to a leg immediately at or below the groin area to provide support for strained or pulled groin muscles. The support comprises a length of hard plastic covered on its inner face with a foam material and of a length to substantially encircle that portion of the leg to which it is applied. The inner face of this component is concave in a transverse direction and its edges are contoured to provide support for injured muscles when tightly applied. A piece of Velcro fastening material is provided on the outer face of the hard plastic adjacent to its free end and a band of elastic material has one end secured to the outer face of the hard plastic at its other end. Spaced from the joinder of the elastic to the hard plastic and secured to the inner face of the elastic along one edge is a flap carrying another piece of Velcro fastening material which cooperates with the piece aforesaid in establishing a tightly wound inner ply of the hard plastic about the leg. Another Velcro piece is carried by the elastic on its outer face at approximately the location of the flap on the inner face and cooperating therewith in a final Velcro fastener on the inner face of the elastic at its free end. After the inner ply is achieved, the elastic is wound in a taut stretched condition about the inner ply, and the Velcro fasteners joined to establish an outer elastic ply which applies pressure to the inner ply.

4 Claims, 10 Drawing Figures



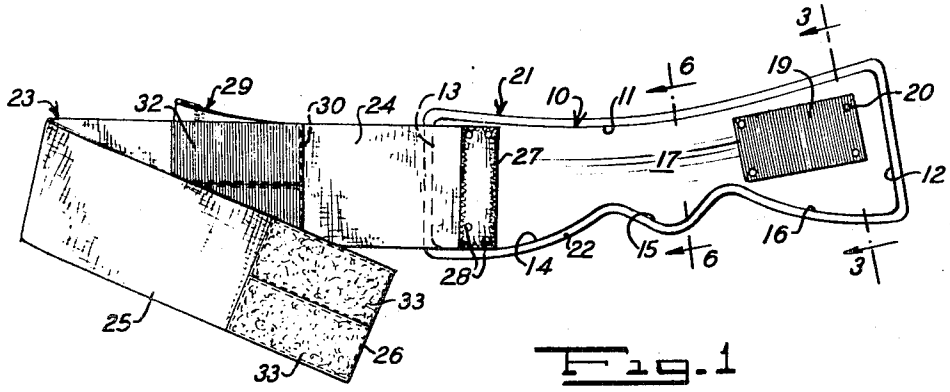


Fig. 1

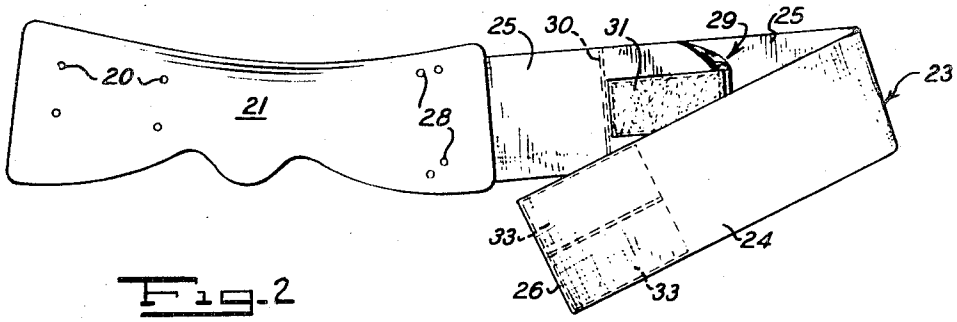


Fig. 2

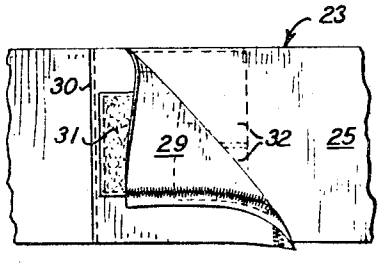


Fig. 4

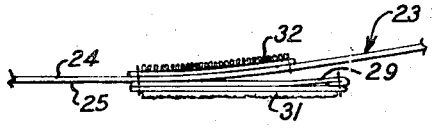


Fig. 5

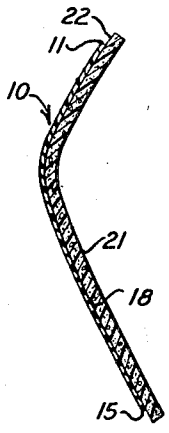


Fig. 6

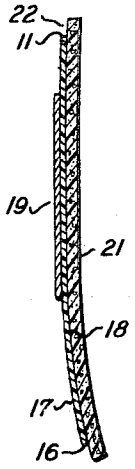


Fig. 3

INVENTOR.
AUGUST L. SCHULTZ
BY
Kimmel, Crowell & Weaver
ATTORNEYS

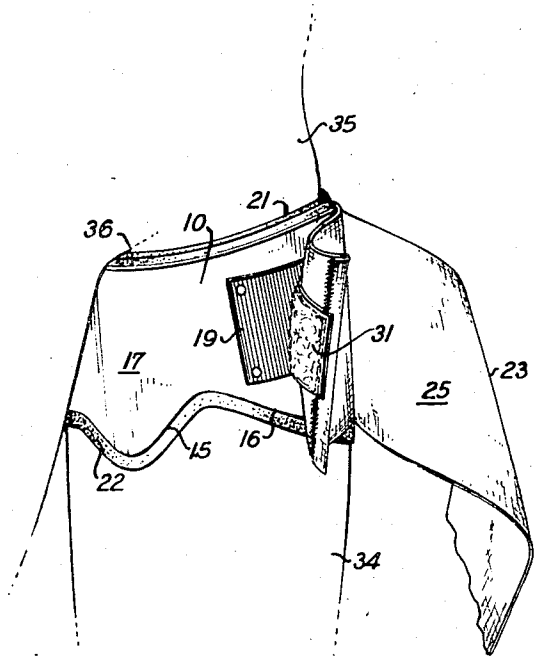


Fig-7

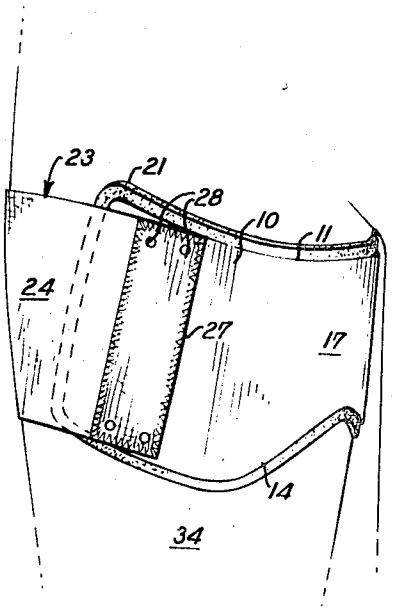


Fig-8

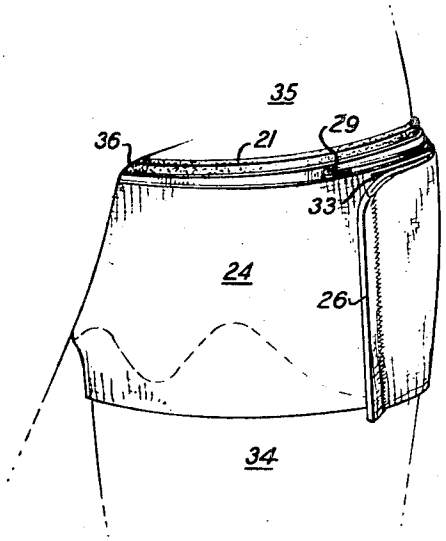


Fig-9

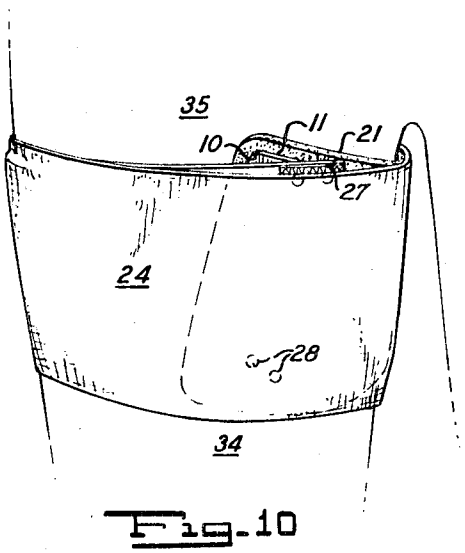


Fig-10

INVENTOR.
AUGUST L. SCHULTZ
BY
Kimmel, Crowell & Weaver
ATTORNEYS

GROIN SUPPORT

The present invention relates to a groin support intended to provide support for injured muscles in the groin area and is concerned primarily with a device which is held in supporting position solely by its application to the leg of a wearer and not by any supplemental means such as a belt and is concerned primarily with a support which may be comfortably worn while accommodating leg movement.

BACKGROUND OF THE INVENTION

At the present time, many people suffer from injuries in the groin area in the nature of pulled or strained muscles. The healing of such injuries can be greatly accelerated if the injured muscles are adequately supported during normal activities. A support for this purpose should be applied to the leg where it joins the torso and must be shaped and contoured, not only to provide the pressure necessary for aiding in healing, but also for comfortable wearing during normal activities.

An important requisite of a support of this character is that it be capable of maintaining its effective position entirely from properties built into the support itself and not from any extraneous device such as a belt.

OBJECTS OF THE INVENTION

With these conditions in mind, the invention has in view the following objects:

1. To provide a support for injured groin muscles that is applied to the leg of the wearer in such a manner that pressure is continuously effective on the groin area and the support is maintained in this position.

2. To provide a support of the type noted which is shaped and contoured to apply the pressure to the injured area in a manner that is most conducive to healing.

3. To provide a support of the character aforesaid which may be comfortably worn and which accommodates normal use of the leg on which it is worn.

4. To provide a groin support that is particularly designed for application to either the right leg or left leg of a user.

Various other more detailed objects and advantages of the invention such as arise in connection with carrying out the above-noted ideas in a practical embodiment will in part become apparent and in part be hereinafter stated as the description of the invention proceeds.

SUMMARY OF THE INVENTION

The foregoing objects are achieved by providing a groin support that consists essentially of two plies which encircle the leg. The inner ply comprises a length of hard plastic that is concave in a transverse direction with respect to its inner face and its longitudinal edges are contoured for the particular leg to which the support is to be applied. The inner face of this hard plastic is covered with a layer of soft foam material which is bonded thereto.

One end of an elastic band is secured to the outer face of the hard plastic adjacent to one end. A Velcro fastener is carried by a flap secured to the elastic on its innerface at a point spaced from its joinder to the hard plastic and another Velcro fastener that cooperates therewith is secured to the outer face of the hard plastic near its free end. The elastic also is provided with two additional Velcro fasteners. One is on the outer face at approximately the location of the flap on the inner face and the other is on the inner face at the free end.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawings wherein:

FIG. 1 is a front view looking at the outer face of the support in a partially opened position;

FIG. 2 is a rear view, similar to FIG. 1, looking at the inner face;

FIG. 3 is a transverse section taken about on the plane of line 3—3 of FIG. 1;

FIG. 4 is a detail depicting the flap on the elastic bond;

FIG. 5 is a view in edge elevation of that portion of the elastic bond having the flap on one face and the Velcro fastener on the other;

FIG. 6 is a transverse section showing the concave structure of the inner ply, being taken on the plane of the line 6—6 of FIG. 1;

FIG. 7 is a perspective looking at the front of a wearer illustrating the condition of the support as the inner ply is about to be established on the left leg;

FIG. 8 is another perspective looking from the rear with the support in the condition of FIG. 1;

FIG. 9 is a front perspective of the support as fully applied; and

FIG. 10 is a rear perspective of the finally applied position.

Referring now to the drawings wherein like reference characters denote corresponding parts, and first more particularly to FIG. 1 to 6 inclusive, a support of this invention which is designed for application to the left leg of a wearer will be described.

A length of a hard plastic that is flexible to a limited degree is designated 10. It has an upper edge 11 that is inwardly bowed, a free end edge 12, an inner end edge 13, and a bottom edge defined by curves 14, 15 and 16. Curved edge 15 defines a central lobe and the components of the curved edges thereof are fairly abrupt. Curved edge 14 extends between one end of curved edge 15 and end edge 13. Curved edge 16 extends from the other end of curved edge 15 to end edge 12.

Plastic piece 10 is of a concave-convex structure in a transverse direction as illustrated in FIG. 6. Thus, it has a convex outer face 17 and a concave inner face 18. A piece 19 of Velcro fastening material is secured to outer face 17 adjacent to free end 12 in any appropriate manner as by rivets 20. A layer 21 of a soft foam material such as that commonly known as a polyfoam has a contour similar to that of plastic length 10 but its dimensions in each direction are greater than those of plastic piece 10. This difference in dimensions results in a margin 22 (FIG. 1) about edges 11, 12, 13, 14, 15 and 16 of plastic length 10. Foam layer 21 is bonded to inner face 18 of plastic 10 as by an adhesive.

An elastic band is shown at 23. It is of a well-known woven composition having good properties of elasticity and is capable of having an appreciable amount of energy stored therein upon being stretched. Elastic 23 has an outer face 24 and an inner face 25. It also has a free end edge 26 and an inner end edge 27. Inner face 25 of elastic 23 is secured to the outer face 17 of plastic 10 at a location adjacent to inner end edges 13 and 27, respectively, of these members. The connection may be achieved in any preferred manner as by rivets 28.

A flap 29 is secured along edge 30 to inner face 25 of elastic 23 as by stitching. This connection is spaced from the joinder of elastic 23 to plastic 10. The exposed or inner face of flap 29 carries a piece 31 of Velcro fastener material which is intended for cooperation with Velcro fastener 19. The longitudinal dimension of plastic 10 and the spacing of flap 29 from edge 13 thereof, as well as the location of Velcro fastener 19, is such that when plastic 10 is applied about the leg of a wearer an inner ply is established with the plastic 10 being substantially coextensive with the full circular extent of this inner ply.

Secured to the outer face 24 of elastic 23, as by stitching, is a Velcro fastener made up of two pieces 32 of Velcro fastening material. These pieces are substantially at the location of flap 29. Attached to inner face 25 of elastic 23 adjacent to free end 26 is another Velcro fastener made up of the pieces 33 of this material. This attachment may also be by stitching.

Referring now to FIG. 7, the left leg of a wearer is shown at 34. The torso is indicated at 35 and the crotch where these members meet is represented by the line 36. The support described above is applied about leg 34 immediately below crotch 36 in the following manner.

The inner ply is first established by wrapping plastic 10 and soft layer 21 about the leg with layer 21 engaging the leg. As much tension as possible consistent with the nature of hard plastic 10 is created when Velcro fasteners 19 and 31 are

joined. As the inner ply is achieved, the lobe defined by curved edge 15 is disposed on the inner side of the leg.

It is evident that in this position, and due to the concave construction of the inner ply, edges 11, 14, 15 and 16 are urged against the leg under pressure with the engagement being softened by soft layer 21 immediately adjacent to margins 22.

Tension is now applied to the free end portion of elastic 23 to stretch it and build up energy therein. It is then wrapped about the inner ply and Velcro fasteners 32 and 33 joined to establish an outer ply. This final condition is depicted in FIGS. 9 and 10. The energy in elastic 23 when so wrapped continuously applied pressure to the inner ply which is rendered effective because of the concave construction of the latter.

The upper and lower edges of the hard plastic generate pressure where it is needed for healing purposes and at the same time the contour of these edges permits the wearer to exercise his leg in a normal manner without undue discomfort.

While a preferred specific embodiment of the invention is hereinbefore set forth, it is to be clearly understood that the invention is not to be limited to the exact constructions, mechanisms and materials illustrated and described because various modifications of these details may be provided in putting the invention into practice.

What is claimed is:

1. For use in supporting injured muscles in a groin area and intended for application to the leg of a wearer at said groin area, a support comprising: an inner ply consisting essentially of an elongated length of hard flexible plastic having contoured upper and lower edges, said plastic length being of concave-convex formation in a transverse direction presenting a convex outer face and a concave inner face; a layer of soft material bonded to the inner face of said plastic length and presenting margins extending beyond the edges of said plastic length; an element of a detachable connection carried by said plastic length adjacent one end thereof and on the outer face thereof; an outer ply in the form of an elongated elastic band having one end secured to said plastic length adjacent its other end and having inner and outer faces and a free end; a flap having one edge thereof secured to the inner face of said elastic band at a location spaced from that where the elastic band is secured to said plastic length; an element of a detachable connection complemental to that on said plastic length on the inner face of said flap; and complemental elements of a detachable connection on the inner face of said elastic band at its free end and on the outer face of said elastic band at the location of said flap; whereby pressure may be applied to the leg by wrapping the inner ply about the leg and joining the first mentioned complemental detachable connection elements, and additional compression may be applied against the leg by wrapping the outer ply about the leg and joining the last-mentioned complemental detachable connection elements.

2. The groin support of claim 1 in which the upper edge of the plastic length is inwardly bowed and the lower edge is defined by composite curves which define a vertical lobe.

3. The groin support of claim 1 in which the elements of the detachable connection between the plastic length and flap are pieces of Velcro fastener material.

4. The groin support of claim 1 in which the elements of the detachable connection on the elastic band are pieces of Velcro fastening material.

* * * * *