March 14, 1967 E. J. WEGLEY 3,309,447

METHOD FOR MAKING FOOT SUPPORTS

Filed Feb. 17, 1964 2 Sheets-Sheet 1

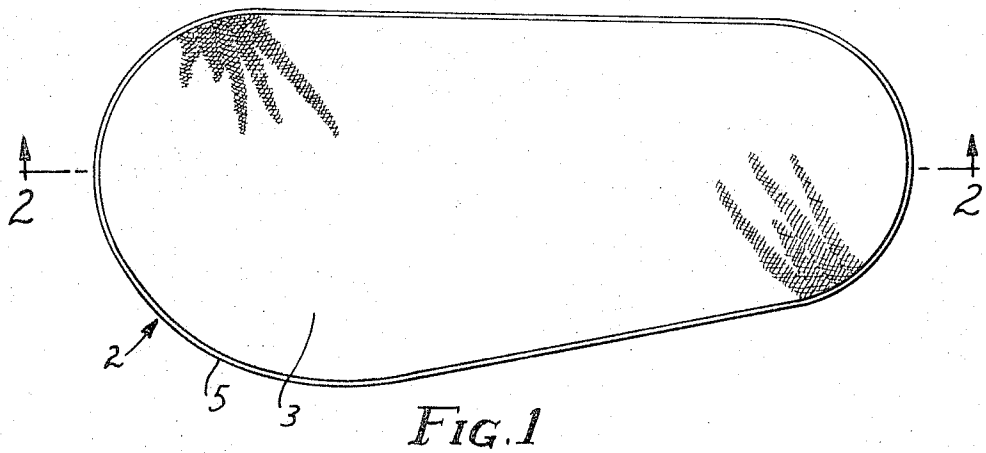

FIG. 1

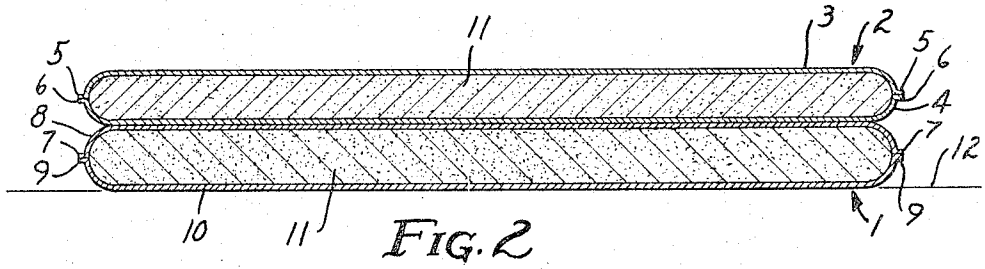

FIG. 2

FIG. 3

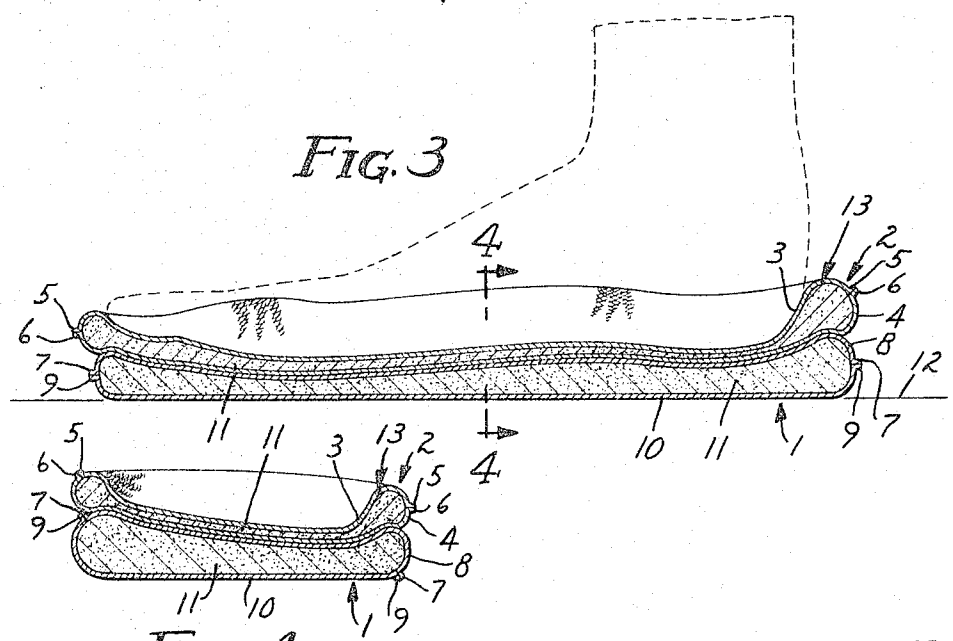

FIG. 4

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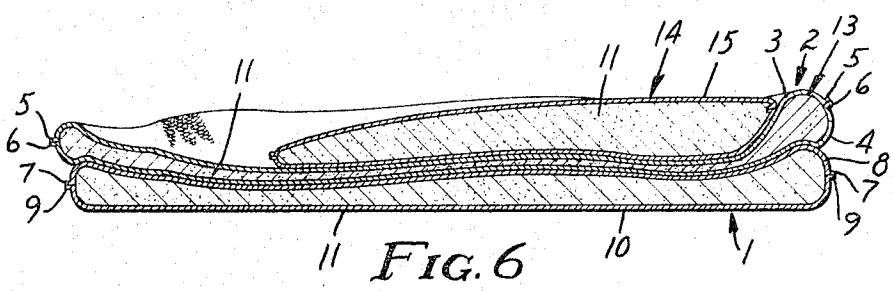

FIG. 6

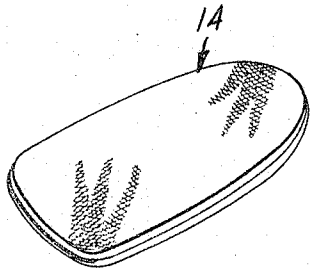

FIG. 5

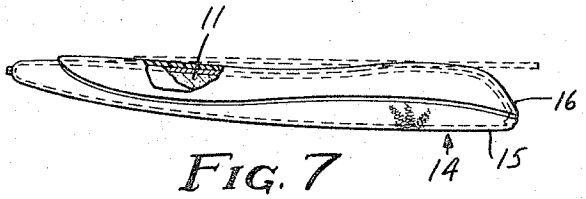

FIG. 7

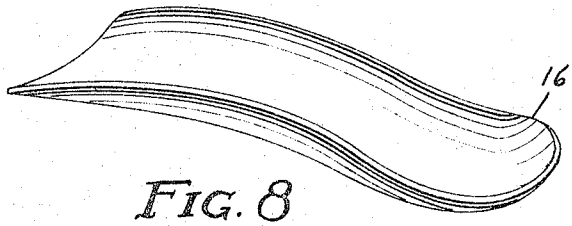

FIG. 8

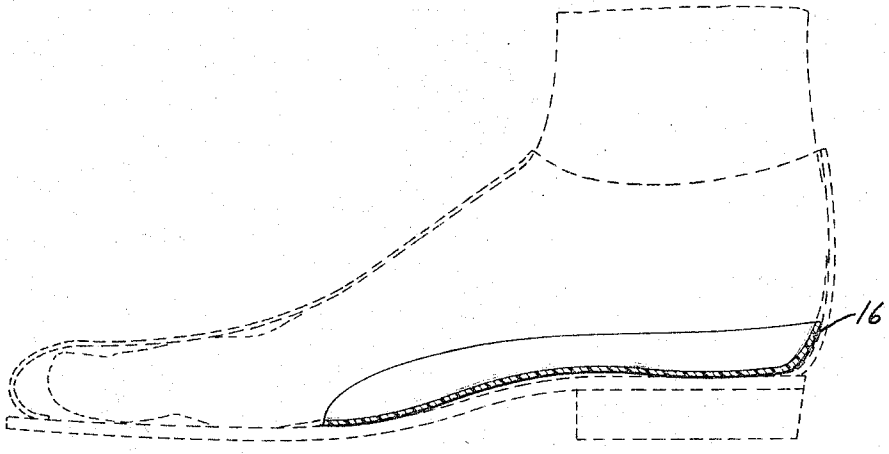

FIG. 9

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METHOD FOR MAKING FOOT SUPPORTS

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3 Claims. (Cl. 264—223)

This invention relates generally to a novel method for the formation of supports for body extremities, and more particularly it relates to a method for making foot supports.

An important object of the present invention is a provision of a convenient method for the formation of a foot support which accurately conforms to the surface contours of the foot.

Another object of the present invention is the provision of a method of taking the impression of a person's foot by using a pair of flexible bags filled with a plastic hardenable material and disposed on a supporting surface in generally flat face-to-face relation with one of the bags on top of the other and with the impression being taken in the upper bag.

It is noted that when taking the impression of a person's foot preparatory to the making of a support therefor, varying degrees of foot pressure applied by the person upon the molding element will produce varying contours in the mold. With this in mind, the present method and apparatus is particularly useful in the taking of an accurate impression of the person's foot, even when a relatively great pressure is applied by a person to the molding element, such as for example a pressure applied equal to that used when walking. More particularly, the present invention utilizes a pair of generally flat flexible bags filled with a plastic hardenable material and placed in generally flat face-to-face relation on a supporting surface and with one of the bags on top of the other, whereby the impression is taken in the upper bag with the lower bag acting as a cushion for and being deformed generally with the impressed upper bag. In this manner, a generally even cushion is provided for the impression so as to prevent untrue or uneven reproductions.

A further object of the present invention is the provision of a method utilizing a molding element comprising a bag having generally similar and spaced apart walls formed from a flexibe cloth material and having their perimetric portions disposed adjacent one another, with stitch means securing together the perimetric portions of the walls, and further comprising a plastic hardenable material filling the interior of the bag.

Still further objects of the present invention reside in the provision of a novel method of taking the impression of a person's body extremity which is quick, simple and accurate in its quality of impression; and which may be adapted for use in the preparation of a socket or support for a stump resulting from leg amputations and the like, particularly when the person's weight or bearing load is an important factor so that the accurateness and quality of the impression taken is an important consideration.

The above and still further objects and advantages of the present invention will become apparent from a consideration of the following specification, attached claims and appended drawings.

Referring to the drawings, wherein like reference characters indicate like parts or elements throughout the several views:

FIG. 1 is a view in top plan showing the upper bag of a pair of bags utilized in this invention, and showing the same before the first step of the method of this invention:

FIG. 2 is a view in section taken on the line 2—2 of FIG. 1;

FIG. 3 is a view in section corresponding generally to

FIG. 2 but showing a second step of the method wherein the person's foot (dotted lines) has been impressed into the upper bag;

FIG. 4 is a view in transverse section taken on the line 4—4 of FIG. 3;

FIG. 5 is a view in perspective of a third bag utilized in a further step of the method of this invention;

FIG. 6 is a view in section showing a further step of the present invention;

FIG. 7 is a view in elevation showing further steps in the practice of the method of the present invention;

FIG. 8 is a view in perspective of a foot support provided according to the method of the present invention;

FIG. 9 is a view in section of the foot support shown in FIG. 8, with the person's foot and shoe being shown in dotted lines.

Referring to the drawings, and particularly FIGS. 1 and 2 thereof, a pair of molding elements or bags are provided in accordance with the present invention. The lower bag is represented generally by the reference numeral **1**, and the upper bag is represented by the reference numeral **2**. The upper bag **2** comprises upper and lower generally similar and spaced apart walls **3**, **4**, respectively. The perimetric portion **5** of the upper wall **3** is secured, as by stitching or the like, to the perimetric portion **6** of the lower wall **4**. The lower bag **1** is constructed in a similar manner with the perimetric portion **7** of the upper wall **8** thereof secured, as by stitching or the like, to the corresponding perimetric portion **9** of the generally similar lower wall **10**. The bags **1**, **2** are preferably formed from a flexible cloth material, although other suitable materials may be substituted. Prior to the complete closing of the bags **1**, **2**, the same are filled with a plastic hardenable material **11**, such as for example a molding plaster or the like made from gypsum. Preferably, and as shown in FIG. 2, the upper bag **2** is slightly smaller in thickness or transverse dimension than is the bottom or lower bag **1**.

Referring now to the method of the present invention disclosed herein, the first step is to place the pair of flexible bags **1**, **2** filled with the material **11** in generally flat face-to-face relation on a supporting surface **12**, in the manner illustrated in FIG. 2. Of course, it will be understood that the bags **1**, **2** have previously been soaked in water or other wetting agent so as to place the bags **1**, **2** in a plastic or moldable condition. It is preferable to prepare the bags **1**, **2** so that the plaster material **11** will be of a relatively thin consistency therein.

Referring to the next step of the present invention illustrated in FIG. 3, the person places his foot upon the upper wall **3** of the upper bag **2** and exerts bodily weight or pressure upon the bags **1**, **2**. It will be understood that varying degrees of foot pressure produce varying contours of the bottom portion of the foot. However, it has been determined that it is preferable for the person to apply the pressure, by use of his bodily weight, to the bags **1**, **2** corresponding to the pressure most often applied normally by the person, such as for example when walking. In this manner, an impression is taken of the bottom portion of a person's foot in the upper bag **2** to form a female mold, represented by the reference numeral **13** in FIGS. 3–6. The lower bag **1** acts as a cushion for and is deformed generally with the impressed upper bag **2**, as illustrated particularly in FIGS. 3 and 4 of the drawing. This is a very important feature of the present invention since it provides a true and accurate impression of the bottom of the person's foot. In this connection, it will be noted in the illustration of FIGS. 3 and 4 that the cushioning provided by the lower bag **1** has prevented the upper and lower walls **3**, **4** of the upper bag from meeting one another.

After the impression has been made to form the female mold **13**, as illustrated in FIG. 3, the person's foot is removed and the bags **1**, **2** are cured, such as for example by merely permitting the molding plaster **11** to set or harden.

Referring to FIG. 5, a third bag **14** formed from a flexible material, such as cloth, in a manner similar to the bags **1**, **2** is shown therein. The third bag **14** is also filled with the plastic hardenable material **11**, in a manner similar to the construction of the bags **1**, **2**. This third bag **14**, which is somewhat smaller than the pair of bags **1**, **2**, is soaked or otherwise treated to place the same in a plastic condition, and then the third bag **14** is inserted within the cured female mold **13**, as illustrated in FIG. 6. The bag is then pressed into the impresion of the female mold **13** to form a male mold, represented generally by the reference numeral **15** in FIGS. 6 and 7. The male mold **15** is then cured or permitted to harden and thereafter removed from the female mold **13**.

As illustrated in FIGS. 7 and 8, the next step of the method disclosed herein is to transfer the impression or configuration of the male mold **15** to form a foot support of a relatively thin rigid material, such as for example a thermoplastic resin material. As shown by dotted lines in FIG. 7, this may be done by placing a sheet of the thermoplastic material over the desired surface or contour of the male mold **15**, after which heat may be applied thereto to form or bend the sheet material to conform to the configuration of the desired portion of the male mold **15**. In this manner, the foot support, shown by full lines in FIGS. 7–8, may be formed. FIG. 9 illustrates a placement of the foot support **16** within a shoe with the person's foot bearing thereagainst.

It will be appreciated that the novel method disclosed herein is useful for the making of supports for other body extremities, and the above disclosure with respect to the making of a foot support is intended to be only illustrative of the principles of the present invention. For instance, it will be appreciated that the present invention is useful in preparing sockets or supporting elements for the stump of a person's leg resulting from an amputation or the like, particularly where weight bearing is a factor.

This invention has been tested and found to be completely satisfactory for the performance of the above objects and advantages; and while preferred embodiments of the present invention have been disclosed above, it will be understood that the same may be modified without departure from the scope and spirit of the appended claims.

What is claimed is:

1. A method of making a foot support, said method comprising:

(a) placing a pair of generally flat flexible bags filled with a plastic hardenable material in generally flat face-to-face relation with one of said bags on top of the other,

(b) taking the impression of the bottom portion of a person's foot in the upper bag to form a female mold with the lower bag acting as a cushion for and being deformed generally with the impressed upper bag,

(c) transferring the impression of said female mold to a foot support of thin generally rigid material formed to the configuration of said female mold.

2. A method of making a foot support, said method comprising:

(a) placing a pair of generally flat flexible bags filled with a plastic hardenable material in generally flat face-to-face relation with one of said bags on top of the other,

(b) taking the impression of the bottom portion of a person's foot in the upper bag to form a female mold with the lower bag acting as a cushion for and being deformed generally with the impressed upper bag,

(c) curing the female mold formed by said pair of bags, and

(d) transferring the impression of said female mold to a foot support of thin generally rigid material formed to the configuration of said female mold.

3. A method of making a foot support, said method comprising:

(a) placing a pair of generally flat flexible bags filled with a plastic hardenable material in generally flat face-to-face relation on a supporting surface with one of said bags on top of the other,

(b) taking the impression of the bottom portion of a person's foot in the upper bag to form a female mold with the lower bag acting as a cushion for and being deformed generally with the impressed upper bag,

(c) curing the female mold formed by said pair of bags,

(d) inserting a third bag filled with a plastic hardenable material within the cured female mold to form a male mold corresponding to the impression of said female mold,

(e) curing said male mold, and

(f) transferring the impression of said male mold to a foot support of thermoplastic sheet material formed to the configuration of said male mold.

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