This invention relates to improvements in a foot covering and method of making the same, and more particularly to a thin, highly flexible foot covering that may be utilized either as a bedroom slipper or worn inside a shoe or other article of footwear, although the invention may have other uses and purposes, as will be apparent to one skilled in the art.

In the past, flexible foot coverings of the slipper type have been developed for wear both as a bedroom slipper and as a foot protector inside the shoe or other article of footwear. In most instances such devices were so costly to produce that adequate sales of them were prohibited. Most frequently known devices of this character required laborious and expensive assembling operations to fabricate the device from numerous pieces of material. It might also be mentioned that devices of this character made heretofore were frequently less durable than desired, particularly when stitching was employed, were not adapted to fit either a left or right foot, were not constructed to fit varying sizes of feet through a satisfactory range, and could not be laundered when necessary or desired.

With the foregoing in mind, it is an important object of the instant invention to provide a flexible foot covering of the slipper type in which a fabric slipper has a cushion sole therein bonded to the sole portion of the fabric slipper in a manner to form substantially a unitary structure which may be laundered at will.

It is also an object of this invention to provide a flexible slipper type foot covering which is extremely economical, yet long lasting, and which is adapted to fit either a left or right foot.

Still another object of the instant invention resides in the provision of a slipper type of a covering to be worn either within or without a shoe or similar article of footwear, and which comprises a fabric slipper having a cushion type sole or outsole bonded to the slipper with a thermoplastic adhesive permeating the sole portion of the fabric slipper partially but not entirely thereof to leave a sufficiently smooth surface on one side of the sole of the fabric slipper to permit ready insertion into and removal from a shoe or similar article of footwear.

A further feature of the instant invention resides in the provision of a flexible foot covering of the slipper type wherein a fabric slipper may be provided with a suitable insole or outsole made of substantially any desirable material, and which is affixed to the sole portion of the fabric slipper in an extremely economical manner yet so bonded thereto as to resist separation even though repeatedly laundered throughout the life of the slipper.

Still another object of the instant invention is the provision of a reversible flexible foot covering comprising a thin fabric slipper provided with a relatively thick, cushioning sole secured to the sole portion of the slipper, the fabric slipper being reversible so that the cushion sole may selectively be worn as an insole or an outsole.

It is also an object of the instant invention to provide a new and novel method of making a foot covering of the character set forth herein.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which

Figure 1 is a fragmentary perspective view of a foot covering embodying principles of the instant invention, showing the same in operative position on a human foot;

Figure 2 is a bottom plan view of the foot covering alone, with parts broken away to indicate structures thereunder;

Figure 3 is a greatly enlarged transverse vertical sectional view taken substantially as indicated by the line III—III of Figure 2, looking in the direction of the arrows, but showing the covering in upright position;

Figure 4 is a fragmentary sectional view of the same character as Figure 3, but showing the foot covering reversed;

Figure 5 is a plan view of a holder utilized in the making of the foot covering; and

Figure 6 is a central vertical sectional view through the holder of Figure 5, operatively associated with a last and illustrating an important step in the process of making the foot covering.

As shown on the drawings:

In the illustrated embodiment of the instant invention, there is shown a fabric slipper, generally indicated by numeral 1, which preferably comprises an upper 2 and an integral sole portion 3. The slipper itself is preferably of elastic or stretchable fabric, and preferably seamless and stockinette-like both in appearance and feel. It is not essential that rubber or equivalent material be utilized in the weaving or knitting of the fabric, since twisted yarn is quite satisfactory for the purpose, such yarn having immediate recovery after being stretched. Thus, the fabric slipper will accommodate various sizes of feet through a relatively wide range.

As seen best in Figure 1, the slipper is preferably cut to size that when worn inside a shoe or similar article of footwear, it will be substantially invisible. Any suitable form of binding 4 may be utilized around the foot opening of the slipper, if so desired, and preferably this binding encloses or is secured to an elastic band 5 or the equivalent, so as to insure a snug yet comfortable contact of the slipper with the upper part of the foot, as best illustrated in Figure 1, where the slipper is shown in operative position on a human foot 6. Where the upper and sole portion of the slipper are embodied in a single piece of fabric, as illustrated, economy of production is enhanced.

Connected to the sole portion 3 of the slipper is a cushion type sole which functions to protect the foot when the device is worn as a house slipper, and functions in the manner of a cushion type insole when the device is worn in an article of footwear such as a shoe. This cushion sole, which may function either as an insole or outsole, comprises a relatively thick layer 7 of cushioning material which is bonded by means of a thermoplastic adhesive 8 on one side thereof to a smooth cover 9 of more durable material than the slipper itself. This cover 9 may be of any suitable material such as a plastic film, a smooth surfaced fabric, a thin piece of leather, or any other substance suitable for the purpose. On the other side thereof, the layer 7 is bonded to the fabric of the sole portion 3 of the slipper by similar thermoplastic adhesive as indicated at 10. This adhesive or cementitious substance 10 permeates the fabric to at least partially, but preferably does not pass entirely through the fabric so that there is a smooth surface on the exposed side of the fabric sole portion which renders it easy to slip the foot into a shoe or similar article of footwear with the foot covering already on the foot.

The cushion layer 7 may be of any suitable material, sponge rubber, foam latex, polyvinyl chloride, polyurethane foam, and in some cases felt, all being satisfactory materials for this purpose. However, foam materials are preferred because of their shock absorbing
quality, lightness in weight, and their launderability. Also, vinyl foam or polyurethane foam is not affected adversely by foot acids and perspiration, and is immune to bacteria and fungi.

There are many satisfactory thermoplastic adhesives on the open market, vinyl compounds, polyvinyl acetate or chlorides, rubber compounds with gutta-percha, and similar cementitious substances being satisfactory for use for the adhesive layers 8 and 10. Preferably, the thermoplastic adhesive used should have a melting point above the temperature of boiling water so there will be no danger of the parts separating from each other even though the foot covering is washed or laundered in boiling water.

Where foam latex is utilized as the cushioning layer, it is preferable that the latex be cured to the covering 9 rather than bonded thereto by the thermoplastic adhesive, in order to enhance the flexibility of the finished foot covering.

When the fabric slipper is seamless, as is preferred, the user has a choice of using the cushion sole either as an insole as seen in FIGURES 1, 2 and 3, or as an outsole as seen in FIGURE 4, by merely reversing the slipper, or in other words turning the same inside out from the position it already is in. When the foot covering is worn inside a shoe or the like, it may be preferable to wear the device with the cushion sole as an insole, the outer covering or sole portion of the fabric slipper rendering it easy to slip the foot into a shoe. On the other hand, when the device is to be used as a household slipper, it may be preferable to wear the cushion sole as an outsole as seen in FIGURE 4, since the cover 9 is more durable for contact with the floor than is the fabric sole portion of the slipper. It is, of course, possible to wear the cushion sole either as an insole or outsole and still put on an article of footwear such as a shoe, since the cover 9 will also slide fairly freely within the shoe.

When the fabric slipper is made with seams therein in the manner of a full fashioned stocking or the like, it might still be reversed when desired, but will not present the appearance on one side as smooth and neat as on the other side, whereas the seamless slipper looks the same on either side.

The thermoplastic adhesive may be applied by spraying, coating, or otherwise to the cushion layer 7 at any desired time, and it is possible to purchase various foam materials upon the market where the thermoplastic adhesive is applied over one face or both faces of the foam.

In making the foot covering, a holder or form 11 shown in FIGURES 4 and 5, is utilized. This holder may comprise a base 12 having a platform 13 thereon with an opening 14 in the platform. This opening is generally of the shape of the plantar surface of the human foot, but is preferably symmetrical as illustrated, so the resultant foot covering may be utilized indiscriminately on either a right or left foot. The opening 14 is slightly larger, substantially an amount equivalent to the thickness of the fabric slipper, than the insole.

The cushion sole is precut from a stock strip, that is the cushion layer 7 with the covering 9 attached and with an exposed face covered by thermoplastic adhesive. The fabric slipper is also preformed before these parts are assembled. The cushion sole is placed within the opening 14 in the form 11 with the thermoplastic adhesive surface uppermost. The fabric slipper is engaged over a block or last 15, which may satisfactorily be made of wood or any other suitable material, this last having a notch 16 therearound on the upper portion in which the elastic band 5 of the slipper may engage to hold the slipper firmly upon the last. The form 11 with the cushion sole therein is heated to a sufficient temperature to soften the thermoplastic adhesive and render the same tacky. Then the last carrying the fabric slipper is telescoped into the opening 14 and pressed firmly upon the adhesive upper surface of the sole, as shown in FIGURE 5. The amount of pressure utilized is sufficient to cause a partial permeation of the sole portion 3 of the fabric slipper by the adhesive, but as stated above, it is preferable that the adhesive should not pass entirely through the sole portion of the slipper. The parts are then permitted to cool, after which the last may be lifted out of the form 11 carrying the cushion sole therewith, and the slipper is removed from the last with the cushion sole firmly bonded to the sole portion of the slipper.

In the event the fabric slipper is of the seamless type, and it is desirable to make a choice as to whether or not the cushion sole will be an insole or an outsole, it is a simple expedient to follow the method above described, and if the cushion sole is to be an insole, the fabric slipper is first inverted before being applied over the block or last 15 and then reversed after the cushion sole has been attached. If the cushion sole is to be an outsole, the fabric slipper is merely placed upon the block in its intended position for use.

The process of making the foot covering is exceedingly rapid and highly economical to practice, and the resultant foot covering is light in weight, long lived, affords ample protection for the foot when used as a household slipper, and provides a cushion sole when worn within a shoe or other article of footwear and may be easily put on and taken off, as well as easily slipped into and out of a shoe while on the foot, giving the user a choice as to whether the cushion sole functions as an insole or outsole.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

The method of making a flexible foot covering, including the steps of:

(a) preforming a fabric slipper and reversing it;
(b) preforming a cushion insole having a film of material cementiously responsive to elevated temperatures disposed over one smooth face thereof;
(c) heating only the cushion insole to a temperature sufficient to render the film tacky;
(d) thereafter pressing the inside face, now outwardly directed, of the sole portion of the slipper against the tacky film;
(e) cooling the film to a temperature where it is no longer tacky to thereby cement the cushion insole to the sole portion of the slipper; and
(f) restoring the slipper to its original position with the insole disposed in the interior thereof.

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