

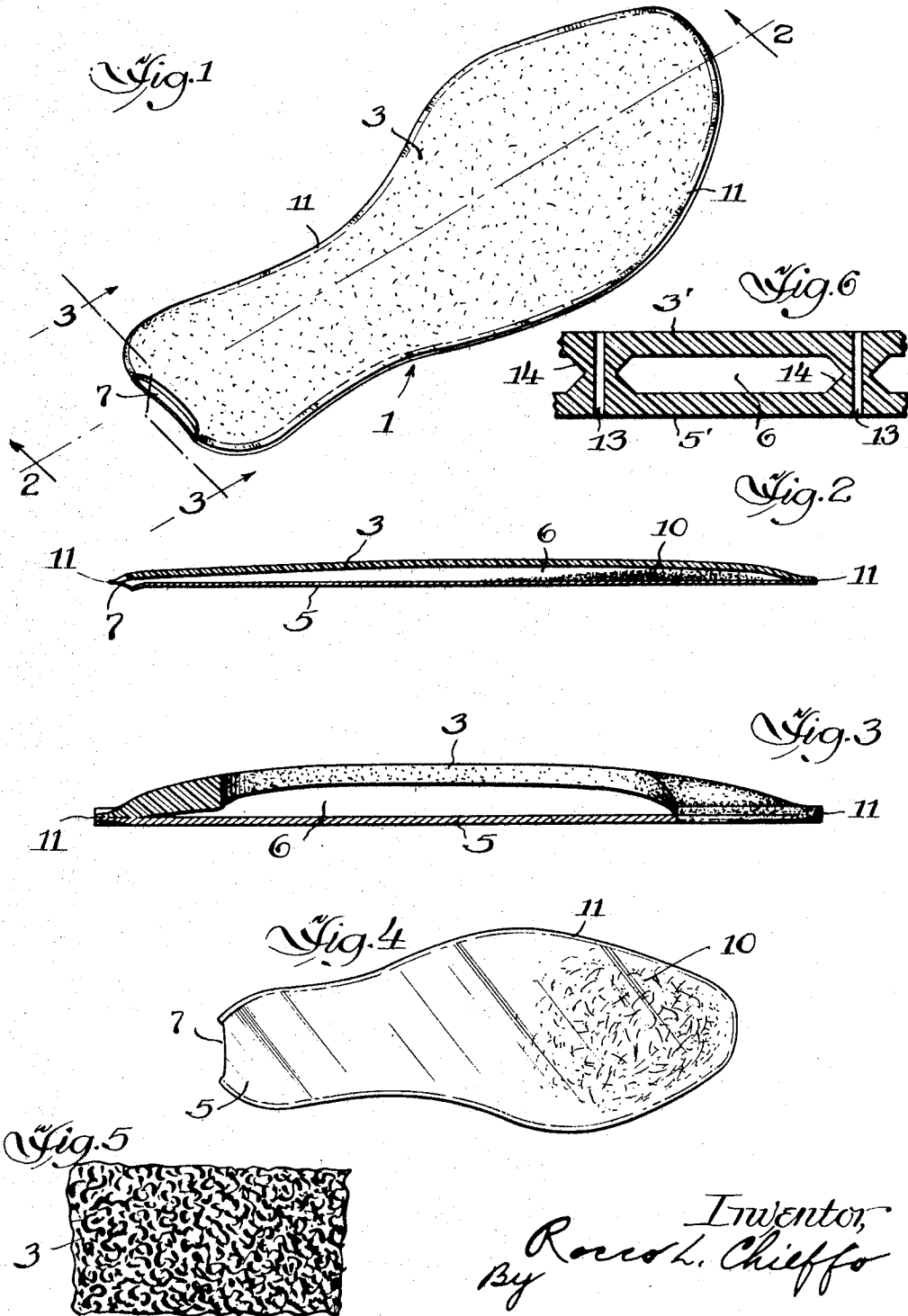
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INNERSOLE

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INNERSOLE

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This invention relates to innersoles, foot pads, or the like for dispensing foot powders.

The conventional means for treating various diseases of the feet, such as athlete's foot, include the use of creams, salves and powdered preparations. Cream and salves are unsatisfactory in that they are messy to apply and they rub off easily upon the socks of the user. Foot powders are usually unsatisfactory because they do not adhere well to skin, so that it is difficult to maintain a satisfactory quantity of the powder over the affected areas of the foot.

One solution to the above problem heretofore proposed utilizes a disposable foot cap or sock formed of a gauze material impregnated with foot powder. The gauze sock is fitted over the toes of the foot, and the powder is apparently shaken loose from the interstices of the gauze and dispensed by the movement of the foot during walking.

It is one of the objects of this invention to provide a means for dispensing foot powder which in addition to its function as an efficient dispenser of foot powder resembles and serves the function of a cushioning inner-sole.

It is still another object of this invention to provide a foot pad, innersole, or the like which during walking automatically and frequently dispenses appreciable supplies of powder to the user's foot.

It is another object of this invention to provide a foot pad for dispensing foot powder wherein the pad is so designed that when placed beneath the user's foot the compression and expansion characteristics of the pad dispense appreciable amounts of foot powder under sufficient force to cover all contiguous areas of the foot, such as the spaces between the toes where athlete's foot is normally found.

It is a further object of this invention to provide a foot pad or the like which is designed to receive large quantities of foot powder so that the pad is usable without refilling for an appreciable period of time. An ancillary object of this invention is to provide a foot pad of the type described above wherein the foot pad may be refilled with fresh supplies of foot powder by the simple expedient of pouring the foot powder into a relatively large opening in the pad.

It is a still further object of the invention to provide a foot pad as just described wherein the user may view the unused powder in the pad so that he may quickly and easily determine when refilling of the pad is required.

It is a still further object of this invention to provide an insert for a shoe, sock, or the like for dispensing foot powder wherein the powder is prevented from infiltrating through the pad in a downward direction where the powder is not needed, but where substantially all of the powder is dispensed upward to cover the contiguous areas of the foot.

Another object of this invention is to provide a foot pad as above described which is sufficiently rigid that it

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retains its position and shape in the bottom of the user's sock and yet is soft and resilient to cushion against shock.

A still further object of this invention is to provide a foot pad as above described which may be inexpensively manufactured to reach a mass market and which is constructed to last an indefinite period of time.

Other objects, features and advantages of the invention will become apparent upon making reference to the specification to follow, taken in conjunction with the accompanying drawings wherein:

Fig. 1 is a perspective view of an innersole constructed in accordance with the invention;

Fig. 2 is a longitudinal section through the innersole of Fig. 1, taken along section line 2-2;

Fig. 3 is an enlarged end view at the heel end of the innersole of Fig. 1, and partially in section, as taken along section line 3-3;

Fig. 4 is a bottom view of the innersole of Fig. 1;

Fig. 5 is an enlarged section through the foam material constituting the upper portion of the innersole; and

Fig. 6 is an enlarged fragmentary section through a modified form of innersole.

Reference should now be made to the drawings where like reference numerals indicate like elements throughout.

In accordance with a preferred form of the invention, the foot pad forms an insert for a sock, slipper, or the like, in the form of an innersole following generally the outline of the user's foot bottom. The innersole is constructed of a pair of similarly shaped, superimposed layers 3 and 5 which are fastened together only at their extremities to form a pouch or pocket 6 therebetween. A filling opening 7 is left at the heel end of the innersole which opening communicates with the pocket.

The upper layer 3 of the innersole is made of a highly resilient and compressible, open-cellular or porous material. By open-cellular is meant a foam-like material having a number of small, interconnecting cells through which foot powder may readily pass. One material found far superior to all other materials of this type is a thermoplastic, heat-sealable material known as polyurethane. The latter material is a diisocyanate compound. In one sample, the foam material was one-eighth inch thick and had a density of 2.3 pounds per cubic foot. Densities of the polyurethane material ranging up to twenty pounds per cubic foot could be used.

The bottom or base layer 5 of the innersole is preferably a thermo-plastic transparent material which is impervious to foot powder. It forms a backing or base for the innersole, and may be made of a polyvinyl chloride material (as polymer or copolymer) $\frac{1}{32}$ inch thick which is sufficiently rigid to maintain the desired shape of the innersole. The requisite rigidity is obtained by the elimination of certain portions of the total plasticizer content normally found in such vinyl materials. The transparency of the latter layer enables the user to view the unused powder 10 in the pocket 6 of the innersole, as seen in Fig. 4. The thermo-plastic nature of the backing layer enables it to assume a shape with use which conforms to the shape of the user's foot bottom.

The thermo-plastic superimposed layers of the innersole may be secured together in a single heat sealing operation to form a continuous powder-impervious seal 11 extending about the entire extremities thereof except where the opening 7 is formed. The heat sealing of the foam layer 3 to the base layer 5 greatly reduces the cost of manufacture of the innersole.

In filling the innersole with foot powder, for example foot powder for treating athlete's foot, the dispensing neck of a can of foot powder is placed within the opening 7 at the heel end of the innersole and powder is poured

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into the inner sole while holding the same in a position with the heel end up. The quantity of powder poured into the pocket 6 is viewed through the transparent layer 5 of the innersole. When the pocket has been filled to the desired level, which can be indicated by suitable markings placed on the transparent layer 5, the innersole may be placed within the user's sock or in the bottom of a slipper. The powder is dispensed by the pumping or sucking action created by the compression and expansion of the open-cellular foam material 3 of the innersole. This forces the foot powder within the pocket 6 through the interconnecting cells of the foam material 3 to dispense appreciable quantities of the powder over the contiguous areas of the foot.

The soft, resilient character of the open-cellular or foam material 3 of the innersole serves the additional function of a foot cushion.

It should be understood that numerous modifications may be made of the preferred form of the invention above described without deviating from the broader aspects of the invention. For example, to dissipate moisture, breathing holes 13 (see Fig. 6) may be provided extending through the upper and lower layers 3' and 5' of the innersole. These holes are desirable where the bottom innersole layer 5' is a material like polyvinyl chloride which is moisture impervious. The sealed breathing holes can be formed by heat sealing the upper the lower innersole layers together around pins projecting from one of the sealing dies used in performing the heat-sealing operation. The breathing holes are thereby defined by cylindrical walls 14 extending the thickness of the innersole. These holes may be formed at a number of spaced points in the central region of the innersole. The cylindrical walls 14 isolate the holes from the powder-containing pocket 6 and thereby prevent clogging of the breathing holes with foot powder.

I claim:

1. A foot pad of such thickness and size to be used inside of a shoe beneath the user's foot, said pad comprising a powder-impervious base overlaid with a highly resilient and compressible open-cellular material impregnated with powder for treating a foot condition, the pad being thus adapted to dust powder onto the wearer's foot by the alternate compression and expansion of the resilient material upon walking.

2. A foot pad comprising a powder-impervious, thermo-plastic base overlaid with a highly resilient and compressible thermo-plastic, open-cellular material which is heat sealed to said base, said open-cellular material being impregnated with a powder for treating a foot condition, the pad being thus adapted to dust powder onto the wearer's foot by the alternate compression and expansion of the open-cellular material upon walking.

3. A foot pad for treating foot conditions comprising a powder-impervious, thermo-plastic base overlaid with a polyurethane foam material which is heat sealed to said base, said base having sufficient rigidity to maintain the desired shape of the pad.

4. An insert for a shoe, sock, or the like for dispensing foot powder, said insert comprising a powder-impervious backing overlaid with a highly resilient and compressible, open-cellular material through which foot powder may readily pass, said open-cellular material being permanently fastened to said backing about substantially its entire periphery except for a relatively small portion thereof where an opening into the space between the backing and open-cellular material is formed, whereby a pouch is provided between the backing and the open-cellular material for receiving a supply of said foot powder which is dispersed upward through the open-cellular material by the alternate compression and expansion of the latter material during walking, to dust the powder about the adjacent areas of the wearer's foot.

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5. An insert for a shoe, sock, or the like for dispensing foot powder, said insert comprising a powder-impervious, thermo-plastic backing overlaid with a highly resilient and compressible open-cellular thermo-plastic material through which the foot powder may readily pass, said latter material being heat sealed to said backing about substantially its entire periphery except for a relatively small portion thereof where an opening into the space between the backing and material is formed, whereby a pouch is provided for receiving a supply of said foot powder which is dispersed upward through the open-cellular material by the alternate compression and expansion of the latter material during walking, to dust the powder about the adjacent areas of the wearer's foot.

6. An innersole comprising a relatively flat pouch shaped in the form of a foot bottom and having an opening at the heel and through which foot powder may be poured into the pouch, the upper portion of the pouch being made of a highly resilient and compressible open-cellular material through which the foot powder in the pouch may pass as the open-cellular material is expanded and contracted during walking.

7. An innersole comprising a relatively flat pouch shaped in the form of a foot bottom and having an opening through which a foot powder may be poured into the pouch, the upper portion of the pouch being made of a highly resilient and compressible open-cellular material through which the foot powder in the pouch may pass as the latter material is expanded and contracted during walking, and the bottom portion of the pouch being made of a rigid, powder-impervious material.

8. An insert for a shoe, sock, or the like comprising a relatively flat pouch shaped in the form of a foot bottom and having an opening through which foot powder may be poured into the pouch, the upper portion of the pouch being made of a highly resilient and compressible open-cellular material through which portions of the foot powder in the pouch may pass as the latter material is expanded and contracted during walking, and the bottom portion of the pouch being made of a transparent, powder-impervious material through which the powder in the pouch may be seen.

9. An article for treating athlete's foot comprising a foot pad for insertion beneath the sole of the afflicted person's foot, said foot pad having a pocket therein containing foot powder for treating athlete's foot, the upper portion of the pad including a highly resilient and compressible foam-like material having small, interconnecting cells and being of a size to cover the afflicted portion of the foot, the open, interconnecting cells of the latter material communicating with said powder-containing pocket and the upper surface of the pad, whereby the powder is forced through the open-cellular material and is dusted over the wearer's foot by the compression and expansion of the open-cellular material during walking.

10. A foot pad for dispensing foot powder comprising superimposed layers fastened together at their extremities to form a pocket therebetween, said pad having a filling opening communicating with said pocket, the upper layer of said pad being made of a highly resilient and compressible powder-impervious material, the bottom layer being made of a powder-impervious and moisture impervious material, and a number of open-ended breathing holes extending through the pocket-forming portion of the pad and formed by continuous powder-impervious walls which isolate the breathing holes from the pocket of the pad to prevent clogging of the holes by the powder in the pocket.

11. A foot pad of such thickness and size to be used inside of a shoe beneath the user's foot, said pad comprising a substantially powder-impervious base overlaid with a highly resilient and compressible open-cellular material impregnated with powder for treating a foot

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condition, said base and porous material both being shaped to underly the entire foot bottom, said highly resilient and compressible material forming a cushion for the whole foot bottom and creating a pumping action due to substantial alternate compression and expansion thereof which forces powder thereabove onto the user's foot.

12. A foot pad for dispensing foot powder comprising superimposed layers of material both shaped in the form of a foot bottom and fastened together at their extremities to define a foot-powder receiving pocket therebetween, said pad having a filling opening communicating with said pocket, foot powder loosely disposed in said pocket and in direct contact with the uppermost of said layers, the latter layer being made of a highly resilient and compressible, porous, powder-pervious material and the bottommost of said layers being substantially impervious to powder relative to said uppermost layer, said highly resilient layer forming a cushion for the whole foot bottom and creating a pumping action due to the substantial alternate compression and expansion thereof which feeds said powder thereto and forces powder from said uppermost layer to the foot bottom of the user.

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13. A relatively thin foot pad, for insertion beneath a user's foot inside of a shoe, said pad comprising an upper, highly resilient compressible, open-cellular material through which foot powder may readily pass, and a bottom layer secured beneath said upper layer and being impervious to foot powder but pervious to air.

14. A foot pad for dispensing foot powder comprising superimposed layers of material fastened together at their extremities to define a foot powder-receiving pocket therebetween, said pad having a filling opening communicating with said pocket, the upper layer of said pad being made of highly resilient and compressible powder-pervious material, and the bottom layer being impervious to the powder in said pocket and pervious to air, so that air can circulate through the pad.

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