Feb. 27, 1951 D. W. BEMAN, JR 2,543,272

DISPOSABLE MEDICATED FOOT CAP FOR TREATMENT OF ATHLETE'S FOOT

Filed June 6, 1950

FIG. 1

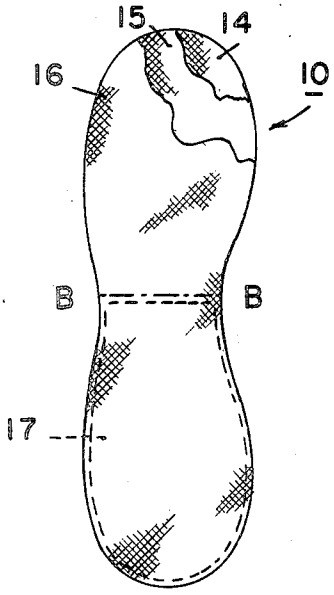


FIG. 3

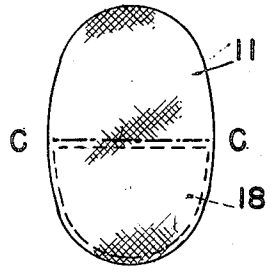


FIG. 6

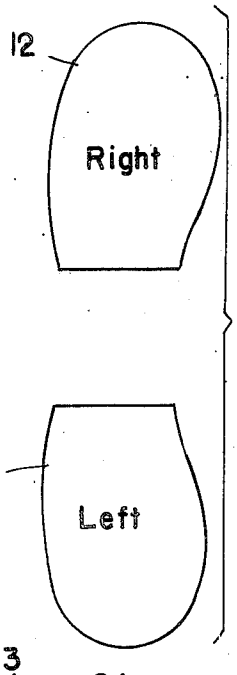
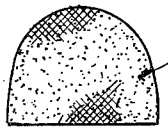
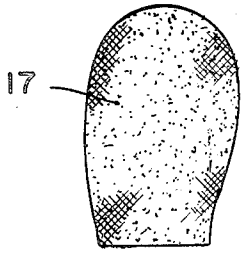


FIG. 4



Top Insert. (Impregnated)

FIG. 2



Bottom Insert. (Impregnated)

FIG. 5

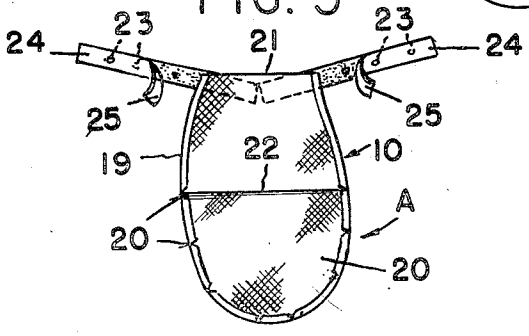


FIG. 8

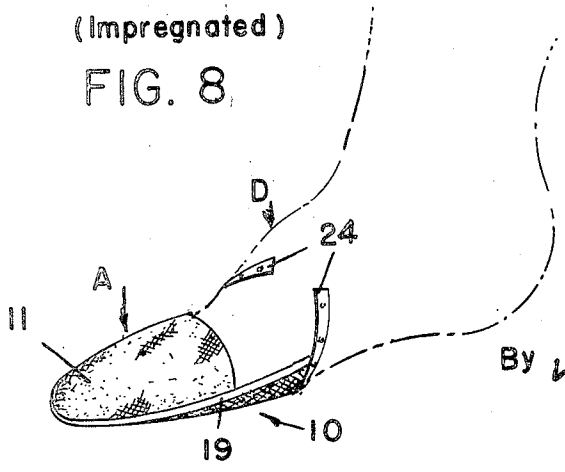
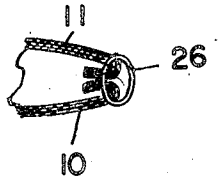


FIG. 7



Inventor:

Delmar W. Beman Jr.

By Wendroth, Lind & Ponack

Attorneys

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DISPOSABLE MEDICATED FOOT CAP FOR TREATMENT OF ATHLETE'S FOOT

Delmar W. Beman, Jr., Bethesda, Md.

Application June 6, 1950, Serial No. 166,384

6 Claims. (Cl. 128—260)

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The present invention relates to a disposable medicated foot cap primarily for use as a treatment for and preventative of athlete's foot.

In previous devices and means for treating of the disease of the foot commonly known as athlete's foot various creams, salves and powdered preparations have been utilized with varying degrees of success. These prior known devices, however, have not proven entirely satisfactory for various reasons. For example when salves and creams have been used, these preparations have a tendency to rub off on the socks of the user or on bed linen with consequent lessening of the curative powers as also the soiling or infecting with the fungi of these articles. When medicated powder has been used, the powder due to its nature did not adhere sufficiently to the user's foot in the proper place with a consequent loss of the curative powers. Additionally, it has been found that while some of the medicament previously used had very good curative properties, nevertheless in those persons susceptible to the disease reinfection from shoes, socks and bed linen was very prevalent and one of the main problems was caused by this reinfection which perpetuated the disease with consequent ill effects. Another drawback of previous medicaments and devices was that perspiration or running or oozing of the sores tended to carry the medicament from the zone being treated and into the socks and shoes carrying with it fungi which increased the possibility of reinfection due to the fungi becoming lodged therein and an insufficient amount of fungicide to insure the killing or inhibiting thereof. Also the loss of medicament from the infected area decreases the curvative effects and tends to allow growth and spreading of the fungi.

The device of the present invention has been carefully devised in order to overcome the previous drawbacks and to insure as far as possible maintaining of the area to be treated sufficiently coated with a medicament to insure curing of the disease and at the same time to guard against reinfection of the infected area or other portion of the foot. The present device is intended to bathe or dust the infected area and the surrounding area of the foot with a fungicide powder which kills or inhibits the fungi present in the disease and also to avoid reinfection by bathing or dusting the sock of the user as well as the shoe or bed linen and the like.

Recognized authorities in fungous disease therapy and primarily fungous infections of the feet have long recognized not only the need for effective medicaments and treatments for curing

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of athlete's foot but have also emphasized the fact that after the infection is cured strenuous prophylactic measures must be taken in order to insure against reinfection especially that of known or susceptible individuals. In addition, a need was felt for a treatment which would not only cure existing cases but which would effectively prevent the occurrence of new cases. The present device fulfills this need in a convenient, inexpensive and practical way as will be pointed out more clearly hereinafter.

A further object of the present invention is to provide a disposable, inexpensively manufactured foot cap containing a medicament impregnated therein, which will dust the foot with a fungicide powder contained in the cap upon action of the foot in a shoe and the like such as when walking and which is thereafter disposed of to aid in preventing reinfection.

A further object of the invention is to render immune that area of the user's foot surrounding the infected area, thus avoiding the spreading of the infection.

Other objects will be more readily apparent from the following detailed discussion of preferred embodiments of the invention taken together with the accompanying drawings in which—

Figure 1 is a plan view of the bottom section of the foot cap in unassembled condition, particularly broken away, and having an impregnated insert shown in dotted lines thereon,

Figure 2 is a plan view of an insert for the bottim portion of the cap and which is impregnated with a fungicide powder,

Figure 3 is a plan view of the top portion of the cap in unassembled condition and showing an impregnated insert superimposed thereon,

Figure 4 is a plan view of an impregnated insert for the top of the cap,

Figure 5 is a plan view of the completed and assembled foot cap of the present invention,

Figure 6 is a plan view of patterns for forming the components of the cap,

Figure 7 is a partial sectional view of a modified assembly of the components of the cap, and

Figure 8 is a perspective view of the foot cap as applied to the foot of a user.

The foot cap generally designated A as shown completed in Figure 5 and as applied to the foot of a user in Figure 8 comprises a bottom portion 10 and a top portion 11 composed of a plurality of layers of surgical gauze or similar material which have been so shaped that upon assembly of the cap, the device will comfortably

and relatively snugly fit the foot of the user. The caps can be made in a plurality of different shapes and sizes so as to fit various types and sizes of women's, men's and children's feet. The actual shaping of the material can be effected by means of patterns 12 and 13 as shown in Figure 6.

In Figure 1 which shows the bottom 10 of the cap, it can be seen that this portion of the cap is comprised of a plurality of layers of gauze such as 14, 15, and 16 superimposed one on the other. A bottom insert 17 as shown in Figure 2 is impregnated with a fungicide powder which will be hereinafter more fully described and which insert 17 is preferably of slightly smaller dimensions than the bottom 10 and is superimposed on approximately one-half of the bottom 10 when the bottom is in a flattened or extended condition as shown in Figure 1 in dotted lines. Subsequently the two ends of the bottom 10 are folded over approximately along the center line designated by line B—B in Figure 1 so that on either side of the impregnated insert 17 a plurality of layers of the gauze will be provided. When folded over, the completed bottom portion of the cap results.

In Figure 3 there is shown in flattened or extended condition the top portion 11 of the cap which has been shown as being approximately oval. This top portion also is composed of a plurality of layers of gauze and in like manner with the bottom portion 10 there is provided a top insert 18 as shown in Figure 4 which is impregnated with a fungicide powder and which is superimposed on the top portion 11 which is subsequently folded over the insert on line C—C in Figure 3 to form the completed top portion of the cap. If desired the bottom insert 17 and/or the top insert 18 can be formed to extend substantially over the entire bottom portion and top portion in flattened or extended condition or as shown in the drawings can comprise substantially one-half of these members.

After the completed bottom and top portions have been formed, the top 11 is superimposed on the bottom 10 as shown in Figure 5 and subsequently an adhesive tape which can be either of cotton or paper or the like is placed around the free edges of the gauze and as designated by 19. In order to prevent a bunching of the gauze and to insure comfort to the foot of the user the tape 19 can be either formed of separate individual pieces or notched around the inside thereof as shown at 20 in the drawing. This tape extends around the periphery of the cap with the exception of the straight portion 21 at the rear of the cap which has been formed by the fold along the line B—B of Figure 1. The rear 22 of the top portion 11 is also formed as a fold along the line C—C of Figure 3. These folded portions consequently provide an edge which will not ravel and which also will be comfortable to the foot of the user and in conjunction with the bound edge as at 19 will form pockets for holding the insertions 17 and 18 in place. Due to the porous nature of the gauze forming the layers of the cap the adhesive tape 19 will tend to bind the edges through more than one layer and maintain them in their relative position.

Preferably attached to the rear 21 of the cap A and on the bottom surface thereof is a strip of adhesive tape 23 which may be perforated as shown at 24 and which when manufactured will have superimposed on the portion having the adhesive material a protecting gauze 25 which is to be removed before applying the cap to the foot.

In use, the cap A is placed on the foot of the user generally designated D as shown in Figure 8 and the gauze portions 25 can then be removed from the tape 23 which tape is then pressed against the foot so as to hold the cap in place on the foot.

As can be readily seen from Figure 8 of the drawings, the bottom portion of the cap extends backwardly of the ball of the foot and preferably about one-half the length of the foot so as to end in the arch of the foot whereas the top portion extends approximately one-half to two-thirds the length of the bottom portion and sufficiently long to extend beyond the joints of the toes so as to cover the probable infected area. The top portion 11 can, of course, be modified in shape and length to adapt the same to the use with women's shoes which normally are cut lower than men's and children's shoes.

In Figure 7 there is shown an alternative method of assembling the top and bottom portions of the cap by means of an overstitch 26. The overstitch will allow the inwardly turned ends of the gauze layers to lie substantially flat against the inside of the cap due to the nature of the gauze and thereby will provide comfort for the foot of the user.

Preferably in forming the cap, an additional layer of gauze is provided between the insert 17 and that portion of the bottom 10 which will be in contact with the sock of the user externally of the cap and also an additional layer of gauze will be provided between the insert 18 and that portion of the top 11 in contact with the sock externally of the cap. Alternatively this additional layer of gauze can be made of a finer weave than the remaining layers of gauze so as to be less pervious to the passage therethrough of fungicide powder which will be hereinafter further set forth and for purposes later developed.

The inserts which are formed preferably by a single layer of gauze are heavily impregnated with medicated fungicide powder before they are inserted in the cap in forming the same. The fungicide powder may be impregnated in the inserts in different ways such for example where a comparatively water soluble substance is used, it can be placed on the insert in dry form and the insert is subsequently pressed so that the powder will adhere to the gauze insert in the interstices thereof and be present on both sides of the insert. In this instance the powder must be susceptible of adequate cohesion so that in manufacturing the cap and shaping of the same the powder will adhere to the insert and will not tend to dust away but will be of sufficient frangibility so that it will readily disintegrate and dust off when the user walks or moves a foot so that the powder will sift through the gauze and insufflate the area which it surrounds. In the event that a medicament which is comparatively insoluble in water is utilized it is preferable to form a paste of the powder with water which can be placed on the insert by any well known means such as drawing the insert through a bath or container of the same after which the insert is allowed to dry and the powdered medicament will cover the insert and have sufficient coherence to adhere thereto to prevent dusting during manufacture or shipping but be sufficiently frangible to provide insufflation or dusting of the covered areas upon the movements of the user's foot.

As an example of medicaments which can be utilized for impregnating of the inserts there have been recently devised highly satisfactory preparations and which will be set forth in the following examples showing the preparations and ingredients used.

Example I

	Per cent
Zinc undecylenate	20
Undecylenic acid	2
Talc U. S. P.	78

Example II

	Per cent
Salicylic acid	5
Menthol	2
Camphor	8
Boric acid	50
Starch	35

Example III

	Per cent
Salicylanilide	5
Trimethyl octadecyl ammonium pentachloro phenate	1
Talc U. S. P.	94

Each of the foregoing compounds have proven highly satisfactory in the treatment of athlete's foot and relatively insoluble in water so that they are well adapted to the wet method of impregnating the insert which is the more desirable method and which compounds have also been found to be readily frangible upon movement of a user's foot so that the action of the layers of gauze in movement relative to one another tend to break down the coating over a period of time and the particles of powder then work through the surrounding layers of gauze and insufflate or dust the affected areas of the foot as also the surrounding sock of the user and the shoe of the user.

As set forth hereinbefore either an additional layer of gauze or an additional layer of gauze or closer weave and less pervious is inserted in the cap on that side thereof opposite from the foot of the user with respect to the insert. The reason for this construction is to provide a differential insufflation or dusting action whereby the greater portion of the powdered medicament is directed to the infected area and the foot of the user with a lesser amount being provided or furnished to the sock or shoe of the user. Due to this differential the infected area receiving the greater amount of the powder is more actively treated with a consequent high curative effect whereas the sock or shoe receives a lesser amount of the powdered medicament but of sufficient quantity to insure against reinfection due to the fungi getting into the sock or the shoe since the powdered medicament or fungicide as set forth in the preceding examples is adapted to kill or inhibit the fungi in contact therewith. This is a very important feature of the invention so as to prevent recurrence of the disease. The fine powder which comes in contact with the sock will readily filter therethrough so as to contact the interior area of the shoe due to the bellows action that takes place inside the shoe due to the motion of the foot in the interior of the cap in walking. In addition to insufflating and dusting the infected area with the powder, the area surrounding the infected area in contact with the cap is rendered immune to the infection since this area is likewise dusted with the powder and any fungus which has been transferred to the socks or interior of the shoe through perspiration or otherwise is also killed or inhibited due to contact thereof by the powder thus avoiding reinfection. If a person has been exposed to athlete's foot and within a reasonable time thereafter wears a pair of the foot caps of the present invention, infection will be prevented since the dusting action of the fungicide powder will kill or inhibit the fungi on contact with the foot and at the same time tend to sterilize the socks and the shoe.

The foot cap maintains the infected area of the foot from coming in contact with the socks of the user and consequently removes any danger of secondary infection due to dye, lint or dirt in the sock. It can readily be seen, therefore, from the foregoing description that the device of the present invention brings about an ideal condition for treatment of athlete's foot as regards treatment of the infected area, prevention of reinfection due to fungi in the socks or shoes of a user and also acts as a preventative measure for persons who have been exposed to athlete's foot. Previous known methods and devices did not in any way provide such a complete and comprehensive action as does the present device.

The action which takes place when the fungicide powder is dusted on the foot not only tends to kill or inhibit the fungi, on contact, but due to being in powdered form and containing for example talc, boric acid or starch will in conjunction with the porous gauze tend to absorb foot perspiration and thus tend to create a condition on the foot which is not conducive to growth of the fungi.

It may readily be seen from the foregoing description of a preferred embodiment of the invention that a foot cap for use in connection with athlete's foot has been advised which fulfills a long felt need not only for curing existing cases of athlete's foot, but also in preventing reinfection or infection of persons never previously infected and the caps are simple to use, convenient, inexpensive and of the highest order of efficiency.

It is obvious that changes may be made in portions of medicaments used and in the shape and construction of the foot caps without departing from the spirit of this invention as defined in the appended claims.

I claim:

1. A disposable device for treatment and prevention of athlete's foot comprising a foot cap having an upper and lower portion and adapted to fit over the front portion of a user's foot, said portions comprising said foot cap consisting in a plurality of layers of cloth having interstices therein and superimposed one on the other, an insert of cloth impregnated with a frangible powdered medicament being inserted between said layers of cloth forming the upper and lower portions, said powdered medicament being adapted to sift through the surrounding layers of cloth for insufflating the foot of the user and surrounding articles of clothing upon movement of the foot in said cap.

2. In a device as claimed in claim 1, said layers of cloth comprising said cap and said impregnated insert consisting of surgical gauze.

3. In a device as claimed in claim 2, and wherein an additional layer of material is inserted between said impregnated inserts and the external sides of said foot cap whereby due to the additional layer of material the exterior sides of said foot caps are less pervious than the interior

side and a differential insufflation of the foot of the user and surrounding clothing is effected.

4. In a device as claimed in claim 3, and wherein said additional layer of gauze is of closer weave and less pervious than the surrounding layers of gauze.

5. In a device as claimed in claim 4, said upper portion being of sufficient length to extend backwardly of the juncture of the toes of the foot of a user, said lower portion being of sufficient length to extend beyond the ball of the foot and under the arch of the foot, means connecting said upper and lower portions along the matching peripheries thereof in a non-bunching manner, and fastening means on the rearward end of the lower portion extending backwardly therefrom at an angle for securing said cap to the foot of the user.

6. A disposable device for treatment and prevention of athlete's foot comprising a foot cap having an upper and lower portion and adapted to fit over the front portion of a user's foot, said portions being composed of a plurality of layers of material having numerous interstices therein, and superimposed one on the other, an insert of material having numerous interstices therein impregnated with a frangible powdered medicament being inserted between said layers of material forming the upper and lower portions, said powdered medicament being adapted to sift through said interstices in the surrounding layers of material for insufflating the foot of the user and surrounding articles of clothing upon movement of the foot in the cap.

DELMAR W. BEMAN, JR.

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