

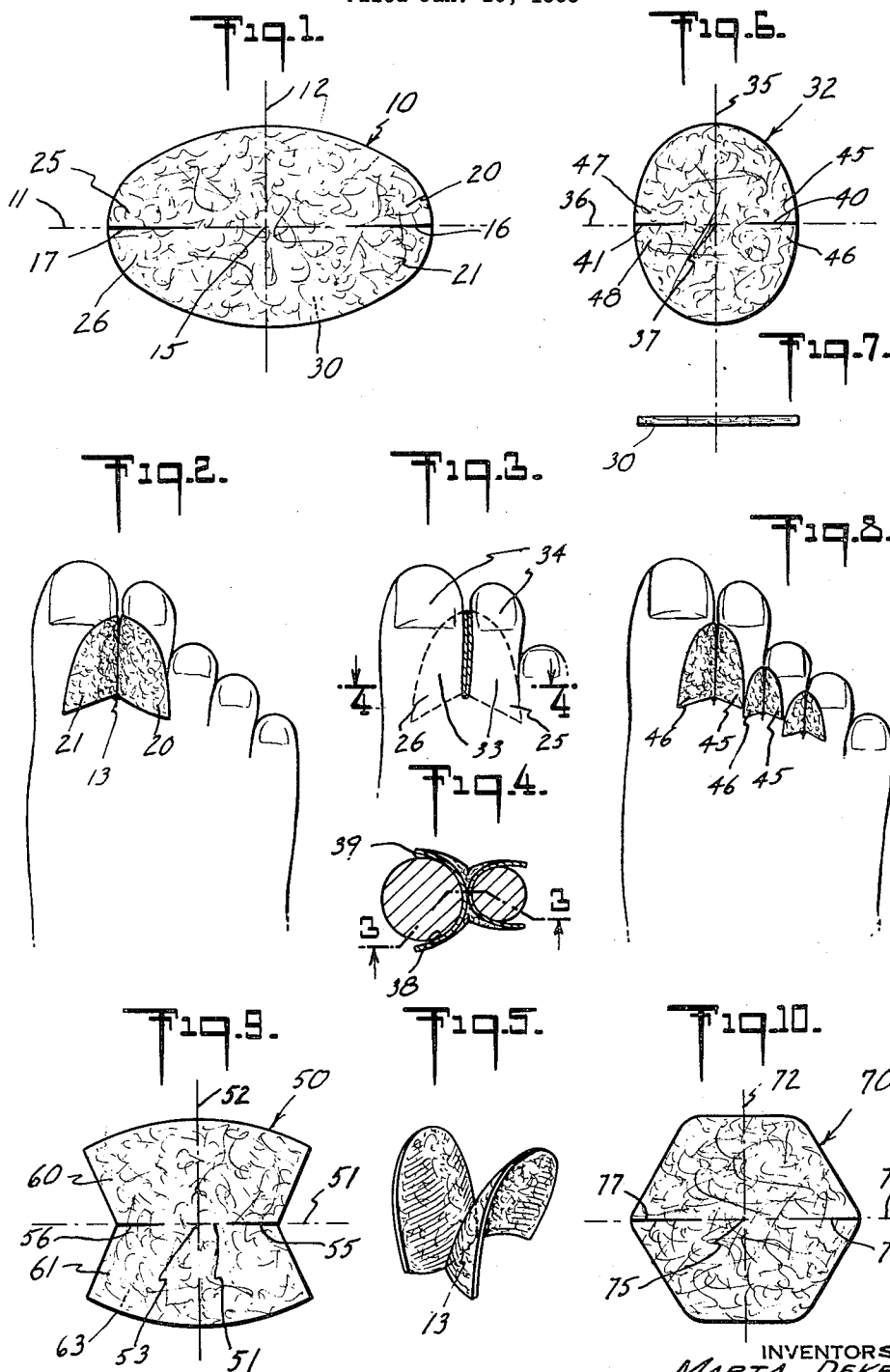
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PAD

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1

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PAD

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This invention relates to a pad designed for use in interdigital spaces for relief from the malady commonly known as "athlete's foot."

Intertriginous athlete's foot (scaling, oozing, cracking, maceration and itching between the toes) has heretofore been considered to be a disease solely due to fungi. Accordingly, it has been treated with powders, salves and liquid medications which have antifungal properties. The results of such treatment have been unreliable; not infrequently the skin is made worse and even though a cure may occur, it has not been proved that this is due to the incorporation of fungus killing agents.

Use of various types of padding between the toes also has been proposed. However, such pads have been in specially molded shapes or have required adhesive tape to secure them in place. The adhesive tape itself may, and frequently does, cause irritation and, therefore, largely vitiates the sought-for result.

Objects and advantages of the present invention include a solution to the problem of cure of athlete's foot from a new approach designed to produce outstanding and improved results. A particular object and advantage lies in the provision of an interdigital pad which will remain in place between the toes when the sock is drawn on over the foot and will not become disarranged due to natural movements of the toes and foot during walking and will remain in place for a matter of hours or even days if desired.

A further particular object and advantage of the invention is provision of an interdigital pad having minimum bulk and which can be easily and economically manufactured.

It has been found according to the invention that in most cases ringworm fungi do not cause intertriginous athlete's foot; rather, mechanical factors such as heat, sweating, friction, accumulation of moisture combine to cause breakdown of the skin, greatly promoting bacterial growth or predisposing to the growth of fungi. Microorganisms, whether bacteria or fungi, are secondary agents in causation; they are enabled to develop in a site made favorable by the wearing of shoes, which in susceptible persons, leads to moisture retention, occlusion of the lateral interspaces with constant friction of the contacting skin surfaces, and finally overgrowth of the damaged area by microorganisms. The lesions containing fungi are indistinguishable from those which do not, from which it may be concluded that intertriginous athlete's foot is a syndrome, not a disease, which may be classified as one of the types of intertrigo. Elimination of bacteria and fungi by killing them with chemical agents is not the prime aim of treatment but rather the correction of physical factors which make the skin hospitable for their growth. The paramount aim is to promote dryness and eliminate the rubbing of apposing skin surfaces by "opening up" the affected interspaces. When these goals are achieved, the lesions, whether or not fungi are present, resolve promptly. According to the invention an interdigital dressing has been made having therapeuti-

2

cally beneficial, absorbing and desiccating properties which affords a substantially complete cure for athlete's foot.

The way in which the invention achieves the foregoing objects may be conveniently understood by reference to the attached drawings in which like reference numbers represent the same part in the various figures.

Figure 1 is a plan view of an interdigital pad according to the present invention, the pad being in the flat condition.

Fig. 2 shows the pad of Fig. 1 in place between the toes.

Fig. 3 is a sectional view of the pad in position taken on plane 3—3 of Fig. 4.

Fig. 4 is a sectional view taken on plane 4—4 of Fig. 3.

Fig. 5 illustrates the form the interdigital pad of the invention may assume while it is being inserted between the toes.

Fig. 6 illustrates a particular form of pad according to the invention in the flat condition.

Fig. 7 is an edge view of the pad shown in Fig. 6.

Fig. 8 illustrates the interdigital pad of Figs. 6 and 7 in position between the toes.

Figs. 9 and 10 illustrate other embodiments of the invention, that is, pads of modified shapes.

The pads shown in the various figures are made of relatively thin, soft, absorbent sheet material described in detail hereinafter. The pad of Fig. 1 is of generally round shape and has a long axis 11 and a perpendicular short axis 12, each passing through the center 15 of the pad 10. Two slits 16 and 17, which pass entirely through the thickness of the pad, are disposed substantially on axis 11. Each slit extends from an opposite edge of the pad, as shown, toward the center 15. However, each of slits 16 and 17 terminates short of said center, thereby forming tabs 20 and 21 on the opposite sides of slit 16, and tabs 25 and 26 on the opposite sides of slit 17. It will be noted that the pad is symmetrical about axis 11, whereby tabs 20 and 21 are of substantially the same size and shape, and the same is true of tabs 25 and 26.

To place the pad 10 between the toes, it is bent back on itself substantially along long axis 11 producing a fold 13, and inserted in the interdigital space as illustrated in Fig. 2. Proximal portions of the toes are shown at 33 and distal portions at 34. It will be noted that tabs 20 and 21, on the one hand, and 25 and 26, on the other hand, conform to the top and bottom surfaces of the foot, respectively, while extending in lateral directions from the intertriginous surfaces of the toes being protected, thereby covering a substantial part of the proximal portions 33 of contiguous digits including both the dorsal and plantar surfaces 38 and 39, respectively, of the digits. At the same time, the surface 30 of pad 10 is in contact with and separates adjacent interdigital surfaces between adjacent toes. The manner in which surface 30 contacts and separates the adjacent interdigital surfaces is clearly shown in Figs. 3 and 4.

In an alternative modification, the pad may be bent back on itself substantially along short axis 12, producing a fold as shown in Fig. 5.

The pad 32 illustrated in Figs. 6 and 7 has a long axis 35 and a short axis 36, both passing through a central point 37 of the generally round pad. The pad 32 is symmetrical about axis 36, thereby providing adjacent tabs of substantially the same size and shape. Slits 40 and 41 are similar to slits 16 and 17 of pad 10 but differ therefrom in that they are disposed on the short axis 36 rather than on the long axis 35. This makes tabs 45 and 46 and 47 and 48 substantially shorter than tabs 20, 21, 25 and 26 of pad 10. Pad 32 is shown in place between the interdigital area in Fig. 8. It will be noted

that tabs 45 and 46 have less material and bulk on the top and bottom surfaces of the foot, overlap each other to a minimum degree and therefore have advantages in certain applications, for example, on a lady's foot where minimum bulk is desired.

Fig. 9 illustrates another type pad, also having a generally rotund shape. Perpendicular axes 51 and 52 pass through the center 53 of the pad. Slits 55 and 56 are disposed on axis 51 (an axis of symmetry), thereby forming tabs 57 and 58 on opposite sides of slit 55; and tabs 60 and 61 on opposite sides of slit 56. The surface 60 of pad 50 contacts adjacent interproximal areas in use just as does the surface of pad 10, although tabs 57 and 58, 60 and 61 are substantially shorter than corresponding tabs illustrated in Figs. 2 and 3. Nevertheless, they conform to the top and bottom surfaces of the foot while extending away from each other and from the integral surfaces thereby to provide the advantages of the invention described above.

In Fig. 10 the pad 70 again is of substantially rotund shape, has axes 71 and 72 passing through center 75, and slits 76 and 77 placed on axis 71 thereby providing tabs on opposite sides of the slits.

The advantages of the invention arise from the fact that the dressing has surfaces in contact with substantially the entire intertriginous surfaces of the toes and has tab portions extending in lateral directions thereby covering a substantial part of the proximal portions of contiguous digits, including both the dorsal and plantar surfaces thereof. The tabs assist in securing the portion of the pad actually in the interdigital space in position. Further, these tabs are so formed and so placed that there is minimum interference of the sock of stocking therewith even when the stocking is being put on or removed from the foot.

Although medicated powder, such as antifungal powder, may be added to the pad, this is not essential since, according to the teaching of the present invention, marked improvement and usually a complete cure of the athlete's foot is obtained in a matter of days by using the pad even without medication.

The pad of the invention may be nonwoven fabric intermittently bonded, for example, produced according to the method of United States Patent Number 2,039,312. Soft felt or woven materials may be utilized. The material in all cases should be water-absorbent on at least one side; that is, the side adjacent the interproximal areas. The pad may be composed of cotton, wool, rayon or other absorbent material.

If desired, the inward corners of tabs 21, 22, 25 and 26 may be rounded. The sharp corners of the tabs of the other pads may be similarly rounded.

A suitable type pad may be produced by blending approximately 30% by weight of cotton and 70% by weight of a mixture consisting of 25% rayon and 75% domestic cotton. The material is carded and several card layers superposed to produce a composite sheet having a weight of approximately 1000 to 1500 grains per square yard. The composite sheet may be treated with a 0.31% solution of polyvinyl alcohol or similar non-irritating binder to a solution pick-up of about 250% based on the weight of the dry sheet. The material then may be dried in a tunnel drier by directing hot air upon the surface of the material. The polyvinyl alcohol serves to impart a bond and cohesion to the web. However, equivalent methods may be utilized to bond the fibers, such as incorporating vinyl resin fibers uniformly into the web and activating with heat or solvent.

The sheet, after bonding, is cut into the desired shape described above, suitably by dieing out in a press.

Although specific embodiments of the invention have been described above and in the drawings, it will be apparent to those skilled in the art that there are many modifications within the spirit of the invention. Accordingly, it is intended that such modifications and equivalents be included and covered within the scope of the appended claims.

We claim:

1. An absorbent pad adapted to fit between the toes, said pad being flat, having a generally rotund shape, and having an axis in the plane of the pad passing through the center of the pad, two slits passing entirely through the thickness of said pad disposed substantially on said axis, each slit extending from an opposite edge of said pad toward but terminating short of said center, thereby forming a tab on each side of each slit, said pad in position having said axis passing between the toes and one of its surfaces contacting and separating adjacent interdigital surfaces, while said tabs on opposite sides of the same slit conform to the surface of the foot and extend away from each other and from said interdigital surfaces.

2. An absorbent pad according to claim 1 which is substantially symmetrical about said axis.

3. A pad according to claim 2 made of soft bonded non-woven fibrous material.

4. An absorbent pad adapted to fit between the toes, said pad being flat, having a generally rotund shape, and having two perpendicular axes of appreciably different length in the plane of the pad passing through the center of the pad, the pad being substantially symmetrical about at least one of said axes, two slits passing entirely through the thickness of said pad disposed substantially on said one axis, each slit extending from an opposite edge of said pad toward but terminating short of said center, thereby forming a tab on each side of each slit, said pad in position having said one axis passing between the toes and one of its surfaces contacting and separating adjacent interdigital surfaces, while said tabs on opposite sides of the same slit conform to the surface of the foot and extend away from each other and from said interdigital surfaces.

5. A pad according to claim 4 which is symmetrical about both of said axes but has slits on only one of said axes.

6. A pad according to claim 5 having said slits in the longer of said axes.

7. A pad according to claim 5 having said slits in the shorter of said axes.

8. An interdigital dressing comprising absorbent sheet material having surfaces adapted to contact substantially the intertriginous surfaces of the toes, and having tab portions extending in lateral directions, said dressing having therapeutically beneficial absorbing and desiccating properties.

9. A dressing according to claim 8 in which said sheet material is folded on itself, said fold is placed in the interdigital crease extending between the digits, and sides of said sheet opposite said fold of one surface of said sheet contact respective opposite intertriginous surfaces of said toes.

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