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W. M. SCHOLL

2,148,882

FOOT-RELIEF PAD

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Fig. 1.

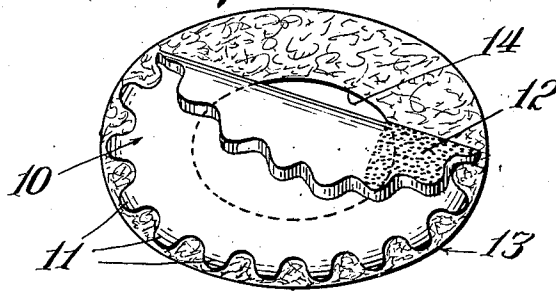


Fig. 2.

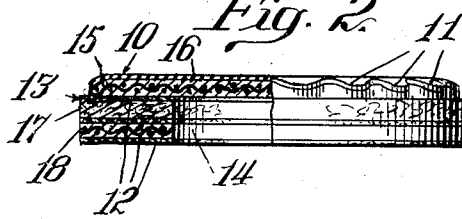


Fig. 3.

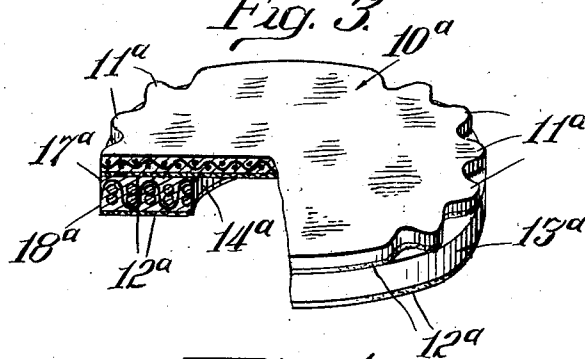
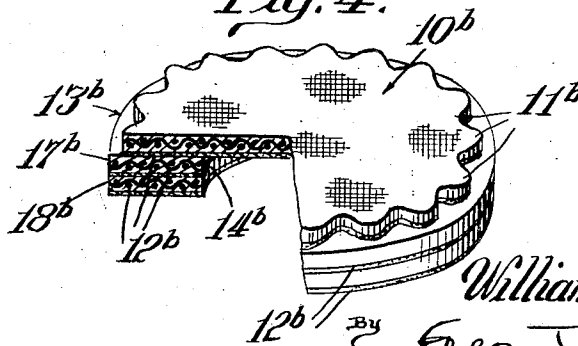


Fig. 4.



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FOOT-RELIEF PAD

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1 Claim. (Cl. 128—153)

My invention relates to pads for shielding and relieving corns, callouses and other sensitive areas of the human foot from the harmful effects of shoe pressure and rubbing, and pertains more particularly to that general type of fabric pad, adapted for direct adhesion to the foot, wherein a plurality of stuck-together layers of adhesive-coated fabric provide both a body or "ring-section" of the desired texture and thickness, apertured to form a recess, and a top-layer or cover-piece, usually made of some suitable sort of cotton fabric, which quite commonly is waterproofed.

Pads of this general type have long been in enormous demand, in appropriate sizes, peripheral shapes and thicknesses for different foot ailments, but the most widely used form thereof—namely, the "squared-edged" form; that is, one having the perimetral edge of its uniform-size layers cut at right angles to the initially-flat planes of the pad's top and bottom surfaces—is subject to drawbacks for which a remedy has long been sought but which have proved very difficult to overcome in any simple, satisfactory fashion.

One such drawback is that the rubbing of the shoe and stocking over a freshly-applied pad is apt to wear a hole through sheer hosiery by chafing it against the abrupt edge of a hard-woven top-layer. Another is that the shear-strains which the shoe imparts to the pad's top-layer in walking often force the abrupt edge thereof backward, starting a "skidding" or crumpling condition that rapidly grows worse as use continues, since the slippage or wrinkling of the top-layer generally exposes, on the surface of the subjacent body-layer, some of the layer-uniting adhesive, which then tends strongly, of course, to stick the pad and stocking together, and oftentimes the shoe as well; thus aggravating the bad condition to the wearer's discomfort and to the detriment of the pad and of the footwear.

The general object of my invention is to provide a construction that will substantially overcome or effectively minimize the drawbacks above referred to and that has other advantages hereinafter mentioned. Also, one which may be manufactured with an economy of material and with low production cost, comparable to well-known commercial pads of the square-edged type.

For the attainment of these and other objects which will appear from the following specification, my invention consists in the features of construction and combinations thereof hereinafter set forth and claimed, reference being had to the accompanying drawing showing embodiments of my invention in several specific forms.

In the drawing,

Figure 1 is an enlarged plan view, with a portion of the cover-piece rolled back, of a desirable embodiment of my invention in a corn pad;

Fig. 2 is a side elevation thereof, with parts in section; and

Figs. 3 and 4 are perspective views, broken away on longitudinal half-sections, of two other modified embodiments of my invention.

Reference numerals applied to Figs. 1 and 2 are, as far as applicable, used to designate like parts of Figs. 3 and 4 but are, for convenience, given the exponent "a" in Fig. 3 and "b" in Fig. 4.

In each construction shown I provide a cover-piece 10 having its marginal edge provided with teeth 11 and coated on its underside (as is each layer of the built-up pad) with a thin film 12 of adhesive of the sort commonly used in surgical bandages, foot-relief pads, etc.; that is to say, one having the usual unvulcanized rubber base, compounded with zinc oxide and customary oily ingredients to provide the appropriate spreadable, slow-drying paste; such cover-piece being stuck to the body 13 of the pad to overlie its shielding recess 14. The tooth-edged cover-piece or top-layer 10 is, in most desirable form, slightly smaller than the unbroken perimeter of the body or ring-section 13, so that the tips of its teeth are slightly set back from the perimetral edge of the body.

I have found, upon extensive tests of pads constructed as above stated, and made of various shapes and sizes common in built-up multi-ply pads of the aforementioned "square-edged" type for shielding corns, callouses and bunions, that the provision of this slightly set-back, toothed-edge character of cover-piece is notably efficacious in overcoming or minimizing the aforesaid drawbacks encountered in use of the square-edge construction; some of its advantageous characteristics in these regards being quite surprising, although they appear to be reasonably accountable for, as will hereinafter appear.

Each of the illustrations shows an oval corn pad, greatly enlarged and with some departures from scale, and each toothed cover-piece is shown as having a general type of tooth formation that I have found to be very satisfactory in the large sizes of callous pads and bunion pads as well; that is to say, one wherein the tooth-edges form a wave-line that approaches sinusoidal curvatures in plan; a particular proportioning of these "teeth" that I have found to be effective being one providing eight or ten teeth per perimetral inch, with the teeth of a height, from valley to crest,

of substantially the same order or somewhat shallower.

In Figs. 1 and 2, the cover-piece 10 is shown as made of hard-woven, fine-thread cotton fabric 15, such as is commonly used in corn-pad manufacture, and also as externally waterproofed as by an adhering or impregnating coating 16 of rubber, pyroxylin or the like exaggeratedly shown; while the body or ring-section 13 provides a layer of quite soft-texture felted fibrous fabric 17 next below the cover-piece, this felt ply being underlain by a base-layer 18 of fabric substantially like that of the top-layer 15 in weave; each said layer being coated on its underside with a film of adhesive-material 12 for adhesion to the subjacent surface.

It will be understood that although it is desirable to sandwich the felt layer 17 between substantially non-stretchable plies of cotton fabric, as above described, a single layer of felt of suitable thickness to give the desired body-depth may be employed if desired, for somewhat decreased production costs.

In Fig. 3 the cover-piece 10^a is of "moleskin" type cotton fabric, which is quite soft, fleecy and somewhat stretchy, while the body 13^a is of thick, quite-soft cotton fabric of known type, comprising two distinct layers 17^a and 18^a of rather loosely twisted cross strands, meshed and interwoven by thinner longitudinal strands and a binder; the top layer being of full body-size with teeth 11^a extending to the body's "square" edge and local to its ends, at one of which skidding or crumpling is most apt to start particularly when the corn is directly on top of the toe.

In Fig. 4 the fine-woven cotton top layer 10^b, with the set-back row of teeth 11^b extending all around its edge, is adherently applied to a body 13^b made of one or more laminae of like fabric having substantially no yield under compression.

It will be understood that these diversifications of embodiment of my invention are presented, not by way of limitation thereof, but to indicate its utility and its efficacy to reduce the above-stated drawbacks under different structural conditions.

In the manufacture of any of the aforementioned pads, care is taken to insure that the narrow, preferably somewhat rounded tip or "point" of each tooth 11 has firm adhesion to the subjacent ring-section 13 of the pad. Also I find it to be advantageous, in insuring this tooth-tip adhesion, to subject the toothed margin of the cover-piece to localized pressure tending to bend all of the tooth-tips downward; this operation having the beneficial tendencies to minimize the thickness of the adhesive film 12 that unites the teeth with the ring-section, to insure good interstitial penetration of their adhesive into the fabrics, and also, where the subjacent body-material is of soft enough texture, to embed the tooth-tips slightly in the top surface of the ring-section, as is illustrated in Fig. 2.

Such pre-forming of the teeth into slightly down-bent condition—although it is advantageous where the materials employed make it feasible—is not indispensable, and in Figs. 3 and 4 the teeth of the cover-piece are shown as flat, in initial construction. In my extensive range of tests with pads of the flat-toothed sort above described, it appears that normal use will result in a down-bending and slight embedding of some of the tooth-tips local to the areas that are under greatest shoe-pressure and shear-strain in walk-

ing, where the subjacent body-material is soft enough to permit of this effect.

In my said extensive tests, I have found that the advantages of pads provided with my toothed-edge top-layer, over "square edged" pads of otherwise similar construction, are very marked, in avoidance or minimization of hosiery-chafing and of top-layer skidding or crumpling, even where the perimetral edges of the cover-piece are particularly sharp-cut by reason of very fine, hard weave of the top-layer fabric and of appreciable stiffening thereof by water-proofing pre-treatment.

The attainment of these advantages appears to be clearly due to the toothed formation of the cover-piece edge and the relation thereof to the square-edge of the ring-section, and to be furthered by the slight setting back of the tooth-tips from the margin of the subjacent ring-section.

This toothing of the cover-piece edge seems manifestly to be additionally advantageous in permitting individual down-curving of respective tooth-tips as the initially-flat pad is being fitted to the curvatures of the foot; with the result of diminishing any tendency of the margin of the cover-piece to loosen or wrinkle during such application for use.

But as to the primary advantages stated it seems clear from my experience in aforesaid tests that the recurrent curvatures of the teeth, although lengthening the edge-line of the top-layer, so reduce and space apart those marginal "sectors of attack" (so to call them) upon which the generally-rearward shoe-pressure and shear-strains, engendered in walking, may have effect that advantages flow therefrom both in avoidance of top-layer skidding or crumpling and in protection of the hosiery against chafing. In the use of "square edged" pads, crumpling or skidding (and hosiery-chafing as well) usually begins at or adjacent the forward extremity of the pad, of course; and the progressive incurving of the sides of each tooth in my improved construction, together with the increased length of the margin and the fact that at least the tooth-valleys are distinctly set back from the square edge of the body, all act with good effect to so distribute the pressure and the rubbing action that the footwear glides over and along the most-affected teeth with ease, in most instances where the conventional "square-edged" margin would "skid" or start crumpling.

The readiness with which footwear glides over the teeth that are most subject to pressure appears to be due in part at least to the varying "slope" (so to call it) between points on the bottom and sides of each tooth-valley and corresponding points on the edge of the ring-section; while the better performance of the preferred construction wherein the top-layer is smaller than the ring-section, appears to be due in part at least to the general lowering or "easing" of the slope.

Further, when top-layer skidding does occur sufficiently to expose some of the adhesive compound on the upper surface of the ring-section, such exposure appears in practice to be discontinuous and minimal, due to the toothage, and some portions of the exposed adhesive appear to be shielded by the little teeth from easy access of the hosiery.

Other, more-obscure factors may enter into the improved results attained by my novel top-layer toothing, but those that I have suggested appear primarily to account for better performance of

such construction as shown in Fig. 4 against "square-edged" corn pads of otherwise identical construction and to be in keeping with the fact that still greater advantage of my novel "toothed top" structure appears when forms having softer body material are tested in use against otherwise identical structures of "square-edged" construction.

I claim:

10 A pad for corns or the like comprising an apertured under layer and a cover layer wholly superposed thereon, an adhesive between said layers whereby they are united, marginal teeth project-

ing from said cover layer having spaces between them and within the peripheral edge of the under layer exposing the upper surface of the under layer, said marginal teeth providing a perimetral edge in excess of the normal circumference of said cover layer and the extremities of said teeth adapted to be depressed by pressure thereon, whereby frictional coaction between the layers is increased and relative lateral movement retarded, a downwardly sloping edge of the cover layer produced under pressure and adhesive along the edges of the said layer isolated.

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