

Feb. 14, 1956

J. LEVITT

2,734,285

FOOT CORRECTING AND SUPPORTING ATTACHMENT

Filed Nov. 22, 1952

2 Sheets-Sheet 1

Fig. 1.

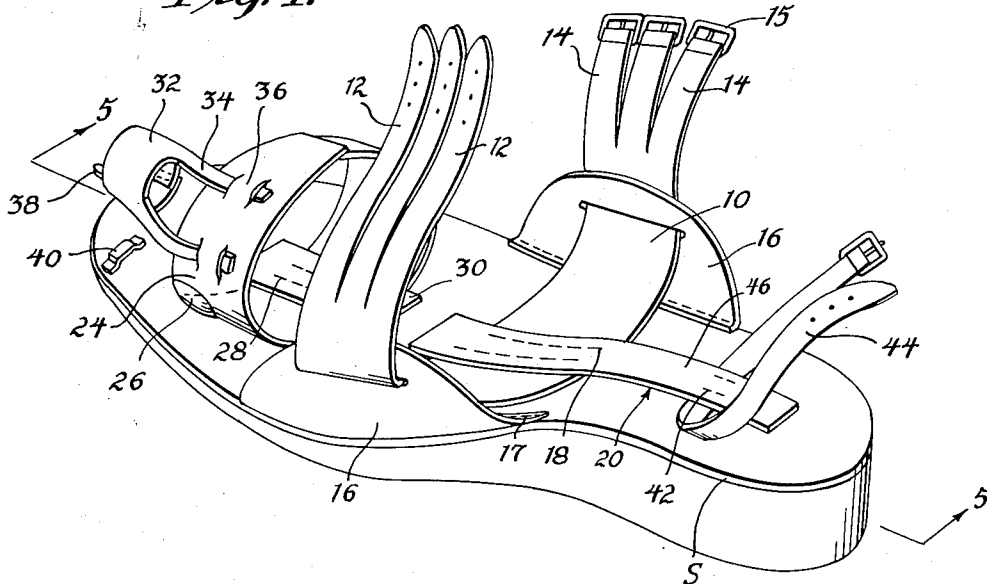


Fig. 5.

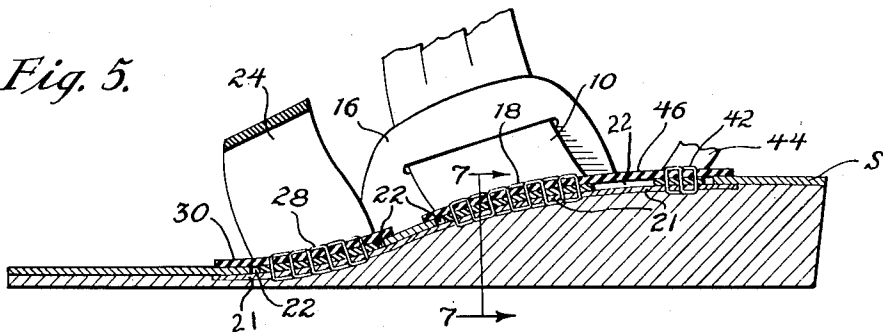


Fig. 6.

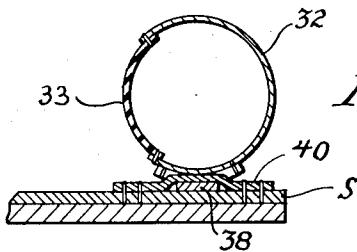
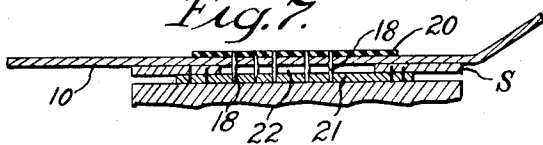


Fig. 7.



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2 Sheets-Sheet 2

Fig. 2.

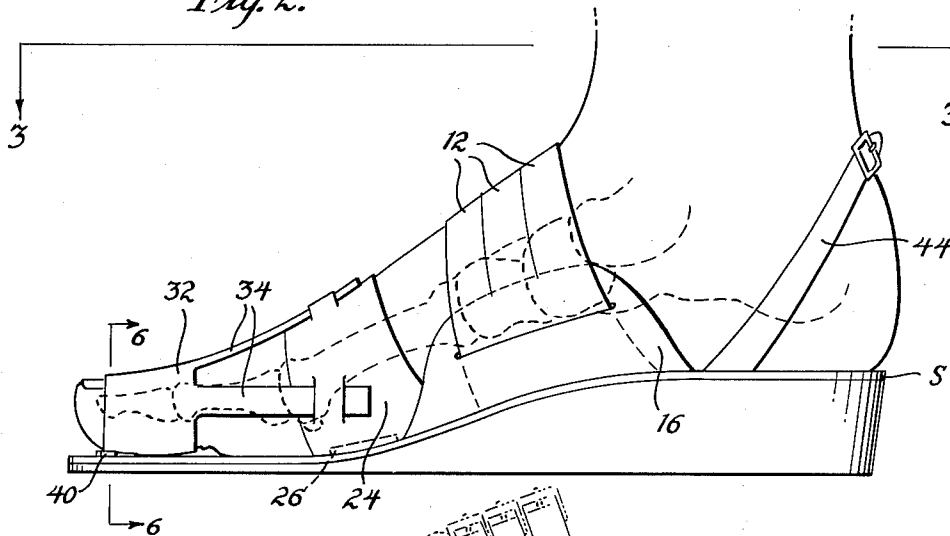


Fig. 3.

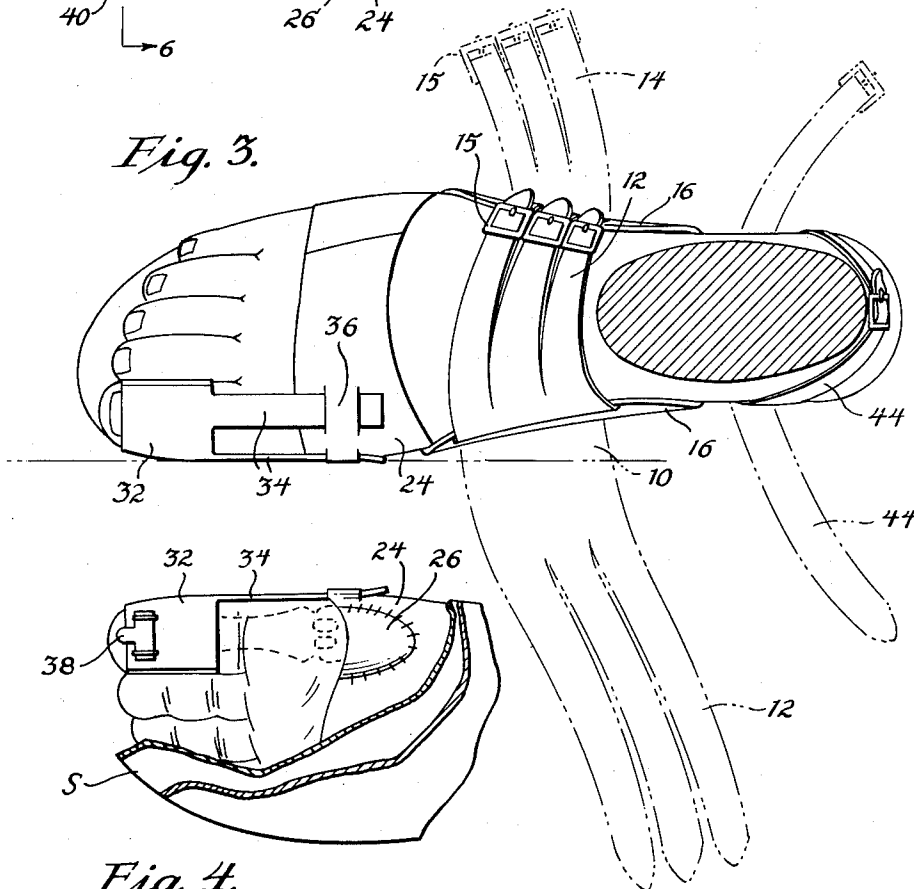
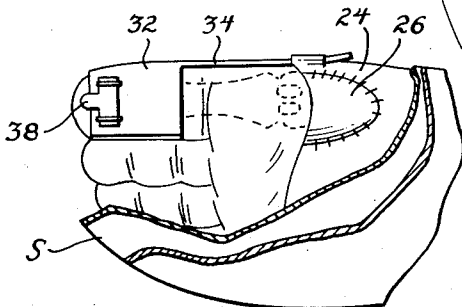


Fig. 4.



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1

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FOOT CORRECTING AND SUPPORTING
ATTACHMENT

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4 Claims. (Cl. 36—8.5)

My invention relates to an orthopedic device adapted for use in correcting, treating, preventing or alleviating congenital or acquired defects in the foot.

My invention further relates to a device of the character stated which can be attached to a separate insole so as to be entirely independent of the shoe proper, or which can be attached to an insole which forms part of, or is secured to, the shoe.

My invention still further relates to an orthopedic device of the character stated which can be brought to bear, selectively and progressively, on one or more parts of the foot thus supplying the alleviating or correcting effect at the point, or points, at which such effect is needed.

The full nature of my invention will be understood from the following specification and the accompanying drawings in which:

Fig. 1 is a perspective view of an orthopedic device embodying my invention, the same being shown as applied to the sole of sandal type shoe and in unfastened condition.

Fig. 2 is a side elevational view showing the orthopedic device of Fig. 1 strapped to the foot.

Fig. 3 is a view looking in the direction of line 3—3 on Fig. 2.

Fig. 3 is fragmentary, bottom perspective view showing details of construction.

Fig. 5 is a partial vertical sectional view showing details of construction.

Fig. 6 is a section on line 6—6 on Fig. 2.

Fig. 7 is a sectional view on line 7—7 on Fig. 5.

My experience as a foot doctor for many years shows that the arch of the foot is subjected to greatest strain in the tarsal region or across the instep where the cuboid, scaphoid and cuneiform bones are located. To support this part of the arch of the foot, I have provided a relatively wide strap 10 the opposite ends of which are split to form a number of relatively narrow strips 12 and 14. The ends 12 of the strap are adapted to be engaged by buckles or other fastening means 15 carried by ends 14. It will be understood that the strap 10 acts directly on the underside of the arch and that splitting the ends of the strap 10, as shown, affords greater adjustment of the supporting pressure applied to corresponding portions of the arch. The strap 10 passes through wings 16 which may be elastic and which are stitched as at 17, or are otherwise secured, to the insoles. In the preferred embodiment, the central portion of strap 10 is secured, by stitches 18, to an upper, longitudinally extending strip 20, and to a lower strip 21, which is preferably of canvas. The portion of the insole between strips 20 and 21 is preferably cut out as at 22 so as to permit strip 21 to flex upwardly in response to the pull exerted thereon by tightening of strap 10.

The upward flexing of strip 21 is controlled by the flexibility and stretching capacity of the fabric from which it is made and by the width and length of opening 22. This permits strip 21 to flex enough to allow strap 10

2

to exert limited following pressure against the arch of the foot and it prevents strap 10 from exerting excessive pressure. This following pressure and adjustment is necessary because a muscle contracts considerably when it is at rest and it stretches considerably when it is subjected to pull or tension. To function properly, the muscle must have free play between the extreme limits of contraction and stretching. This is especially applicable to the muscles in the arch of the foot which connect and motivate the tarsals, navicular, cuneiform, cuboid, talus and metatarsal bones. In other words, if the strap is attached to the insole instead of to canvas strip 21 which is adapted to flex upwardly through opening 22, the insole itself, or the entire shoe as a unit will be pressed against the sole of the foot and will act as a splint which will immobilize these muscles. This will leave the distorted bones where they were before. By provision of opening 22 and by making strap 21 flexible, the muscles, when the foot is raised off the ground can move away from the insole and can contract to their normal, non-weight-bearing dimensions. Likewise, my experience has shown that, because the metatarsal bones are rather long and because their forward ends serve as fulcrums during walking, they tend to be dislocated or at least strained with consequent pain and discomfort. To take care of this condition, I have provided a strap 24 which is adapted to embrace the foot at the forward portions of the metatarsal bones as shown in Figs. 2 and 3. This strap may be made partly, or wholly, of elastic material and it may be in the nature of a closed loop of a size tightly to hug the foot, or it may be made adjustable after the manner of strap 10. The strap 24 is also provided with a bottom pad 26 which serves to cushion the junction of the first metatarsal and sesamoid bones where the fulcrum stresses are applied. The pad 26 also serves to correct any imbalance of the foot which may have resulted from dislocation of the metatarsal bone. The strap 24 is secured in position by stitches 28 to strip 30 and canvas strip 21. The portion of insole S between strap 24 and canvas strip 21 is also cut out as at 22.

The formation of a bunion results in deflecting the big toe outwardly, or toward the little toe of the foot and, by way of alleviation or correction, it is necessary, as much as possible, to bring the big toe back to, and to retain it in, its normal position. To this end, I provide a pocket or annular member 32 which is at least partly formed of elastic material 33, and which is adapted to receive the big toe. The pocket 32 is provided with one or more straps 34 adapted to engage, or to be fastened to, strap 24 as at 36, or in any other suitable manner. The straps 34 serve to pull the pocket 32 and the toe encased therein in the desired direction. The pocket 32 is also provided with a bottom hook or lug 38 which is adapted to engage a loop 40 carried by the insole, as best shown in Figs. 1 and 2. In addition to correcting, or alleviating the condition of the toe, pocket 32, straps 34, the strap 24 and the pad 26 all coact to provide adequate traction for the toe.

A strap 44 is passed under the adjacent portion 46 of strip 20 and is adapted to be fastened around the heel of the foot as shown in Fig. 2 to secure the orthopedic device to the foot so as to apply pressure on the heel in a forward direction and thus protect the plantar muscles against undue stretching.

If the insole S shown in the drawings is part of a sandal or platform type shoe, the various straps mentioned and the hook 38 serve not only to support and correct the foot, but they also serve to secure the shoe to the foot. By this arrangement the corrective device is disguised as an open type shoe. This is very desirable as it enables ladies to wear corrective supports which to others appear as a sandal, platform or other open type

shoe. If it is desired to wear pumps or closed shoes, the various parts can be applied to a separable insole so that the corrective device is strapped on to the foot and the foot is then inserted into the shoe. Alternately the various straps and the loop 40 can be attached to a fixed insole which forms part of the shoe and the foot of the wearer is then slipped into engagement with the strap 24 and pocket 32; the straps 10 and 44 are tightened as desired, and the outer shoe is then laced in the usual manner. Again, the therapeutic device of my invention is wholly enclosed and disguised.

Another feature of my therapeutic device is that it is flexible in the sense that it does not present any rigid surface to the strained or dislodged parts, and in the sense that it is readily adjustable and adaptable to different sizes of feet and to different conditions. For example, in one case more pressure should be exerted by strap 10 and in another case, more pressure or support should be afforded by strap 24. In another case, the pad 26 should be made larger, or smaller, or it should be omitted. Likewise, the effect of pocket 32 can be varied as may be indicated. All this is different from, and far superior to, the action of rigid arch supports which are built in, or are loosely placed in the shoe. It is also altogether different from a shoe the insole of which is provided with a fixed topograph that is, an insole which has raised and lowered portions purporting to correspond to irregularities in the bottom of the foot. Such devices, regardless of other shortcomings also have the added defect in being non-adaptable to changing conditions. For example, the pressure or support afforded by strap 10 or the position of pocket 32 can be varied as the corrective effect progresses all of which is impossible without frequent discarding of rigidly constructed shoes or supports as the correction of the foot progresses. For example, if a shoe is built to correct the position of one bone or other, such shoe will be built to take care of the maximum defect then prevailing. If the bone in question responds to treatment and begins to move back toward its normal position, the effectiveness of a rigidly built shoe decreases or vanishes altogether. This is due to the fact that a rigidly built support cannot maintain following pressure against the bone or other part to be corrected. The same is true of a rigid arch support. Corrective shoes and arch supports are expensive and cannot be discarded without undue, if not, prohibitive cost. On the contrary, my orthopedic device is not only inexpensive to begin with but it can be adjusted as the correction progresses and need not be replaced until it is no longer needed or until it wears out.

The strips 20 and 30 serve to connect straps 10 and 24, respectively, to the insole, through the medium of canvas strip 21. By this arrangement, the corrective straps will flexibly embrace the foot. Where the insole is not separable from the shoe, the various corrective devices are first secured to the insole in the manner set forth above and the insole is then fastened in position in the shoe.

What I claim is:

1. A foot correcting and supporting attachment comprising an insole having a relatively large opening formed substantially in the central portion thereof, a flexible strip abutting the underside of said insole below said opening, a strap adapted to embrace the instep portion of the foot, and means passing through said opening and securing the central portion of said strap to said flexible strip.
2. The structure recited in claim 1 and a heel engaging strap, there being a second similar opening in said insole in the heel end thereof, said flexible strip extending rearwardly below said latter opening, and means passing through said second opening and fastening said heel engaging strap to said flexible strip.
3. The structure recited in claim 2 and a loop for engaging the ball of the foot, there being a third similar opening in said insole, said flexible strip extending also forwardly below said latter opening, and means passing through said third opening and fastening said loop to said flexible strip.
4. The structure recited in claim 3 and a flexible, big toe receiving pocket, means adjustably securing said pocket to said loop, means carried by the underside of said pocket for detachable engagement of said pocket with said insole.

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