

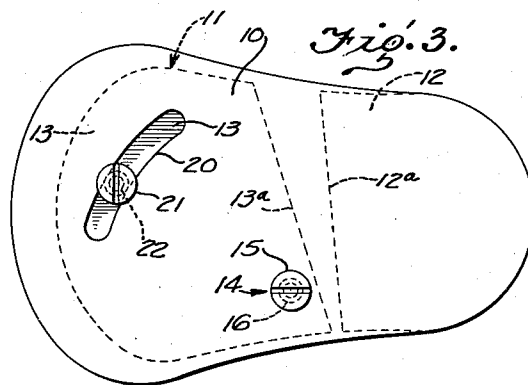
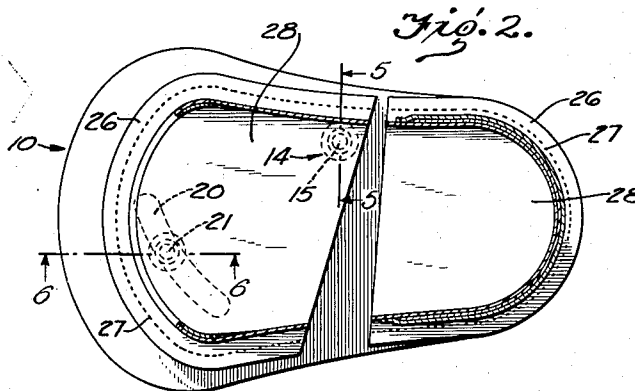
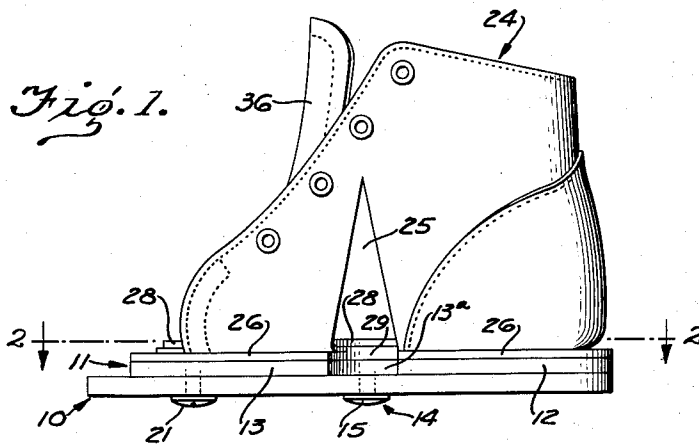
Jan. 10, 1961

P. E. RICE
ORTHOPEDIC SHOE

2,967,360

Filed Feb. 23, 1960

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 4.

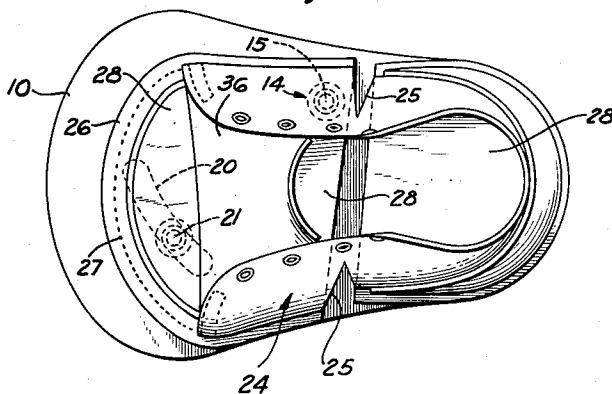


Fig. 5.

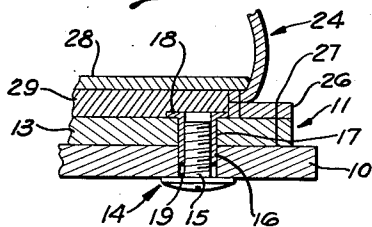


Fig. 6.

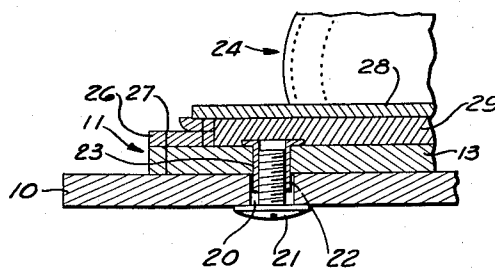


Fig. 7.

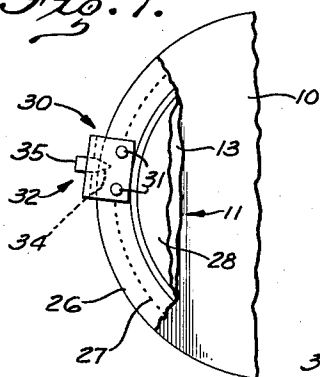


Fig. 8.

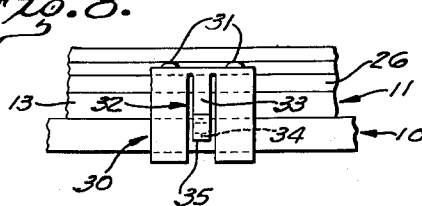
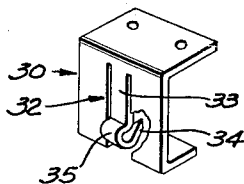


Fig. 9.



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9 Claims. (Cl. 36—8.5)

This invention relates broadly to correctional equipment and more especially to special adjustable shoes for use in the correction of deformities in the feet of babies, particularly club feet and feet which are twisted one way or the other from normal position.

Conventional correctional procedures in such cases frequently involve the use of special shoes built to a single corrective position and more commonly involve the use of casts and/or more or less cumbersome and expensive frames and the like which interfere with bathing and apparel changing, are uncomfortable, deprive the baby of freedom of movement, and are a serious damper on the contentment of the patient and the spirits of the parents.

Where special orthopedic shoes are employed in treating foot malformations, they are usually specially constructed according to the prescription of a specialist, and are, therefore, rather expensive. Furthermore, as such shoes are employed during successive phases of correction, when the first phase has been completed, a new and expensive replacement prescription shoe is required for each foot being treated, or prescribed changes must be made in the used shoe, and so on, until the deformation is corrected as far as possible. It was a recognition of these problems and difficulties and the complete lack of any commercially acceptable adjustable shoes on the market for use in the correction of babies twisted and/or club feet which led to the conception and development of the present invention.

Accordingly among the objects of the present invention is a solution of such problems by providing a new and improved orthopedic shoe having a novel construction which allows it to be readily adjusted for use during various foot straightening phases and permits ready shoe removal for bathing and apparel changing.

Another object of the present invention is the provision of an orthopedic shoe having a portion of its sole cut away crosswise just ahead of the heel portion, and the lower portion of the shoe upper correspondingly cut away to permit the toe portion of the shoe to be shifted sidewise in varying amounts from time to time to meet foot straightening requirements.

A further object of the present invention is to provide the orthopedic shoe with a stiff secondary sole to which the heel portion of the shoe proper is fixedly anchored while the sole of the toe portion of said shoe is pivotally mounted on the forward portion of said secondary sole, and means are provided for anchoring the toe portion of said shoe in various positions on said secondary sole.

Still further objects and advantages of the present invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain means for carrying out the invention, such disclosed means illustrating, how-

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ever, but several of various ways in which the principle of the invention may be used.

In the annexed drawings:

Figure 1 is a side elevation showing a preferred construction of an orthopedic shoe constructed in accordance with the present invention.

Figure 2 is a horizontal sectional view as taken on line 2—2 of Figure 1, looking in the direction of the arrows, and showing the shoe prior to adjustment thereof.

Figure 3 is a bottom view of the shoe shown in Figure 1.

Figure 4 is a top view showing the shoe in an illustrative state of adjustment.

Figures 5 and 6 are detail sectional views as taken on lines 5—5 and 6—6, respectively, of Figure 2, looking in the direction of the arrows.

Figure 7 is a fragmentary top view showing a different construction for holding the shoe adjusted.

Figure 8 is a fragmentary front view of the construction shown in Figure 7.

Figure 9 is a perspective view of the clip and detent member shown in Figures 7 and 8.

The constructions shown in the drawings will be rather specifically described, but attention is invited to the possibility of making variations within the spirit and scope of the invention as shown and described.

A stiff, one-piece, bottom sole 10 is provided and is preferably formed from a flat piece of leather. This bottom sole 10 is of relatively uniform thickness throughout its length and is widened toward its front end to a width considerably greater than the width of a conventional sole for the same size shoe.

A stiff two-piece top sole 11, also preferably formed from leather, is disposed upon the upper side of the bottom sole 10 and comprises a rear section 12 and a front section 13, both of which are of substantially the same thickness.

The sole sections 12 and 13 are spaced apart and the adjacent edges 12a and 13a thereof preferably converge toward the pivot 14, as shown.

The rear sole section 12 is rigidly secured to the bottom sole 10 by cement or other suitable means. The front sole section 13, however, contacts slidably with the bottom sole 10. The rear end of this front sole section 13 is pivotally connected, by suitable pivot means 14, preferably adjacent a side edge of sole section 13, to the bottom sole 10 to allow lateral pivotal adjustment of said front sole section 13 to different positions, one of which is shown in Figure 4.

The pivot means 14, Figures 2 and 5, is preferably located near the closely spaced but relatively adjustable ends of the adjacent edges 12a and 13a of the sole sections 12 and 13, and said pivot means is shown as comprising a screw 15 and tubular nut 16. The nut 16 is conventionally secured against rotation in an opening 17 in the sole section 13 and has a flange 18 disposed upon the upper side of said sole section 13. The lower end of the tubular nut 16 preferably projects, for stability of the assembly, into the opening 19 in the bottom sole 10, through which the screw 15 extends.

Means is provided for releasably securing the top sole section 13 to the bottom sole 10 in fixed position after said section 13 has been pivotally adjusted to a selected position. In the preferred construction, as shown in Figures 1 to 6, an arcuate slot 20 is formed in the bottom sole 10, a clamping screw 21 extends through this slot, and said screw is threaded into a tubular nut 22, which is conventionally held against rotation. This nut is of the same flanged form as the above described nut 16 and is secured in an opening 23 in the sole section 13, Figure 6. Loosening of the screw 21 allows pivotal adjustment of the sole section 13 on bottom sole 10 as

required, and tightening of said screw secures said sole section 13 in the selected position to which it has been adjusted.

A flexible upper 24 is secured to the top sole sections 12 and 13 and is preferably of lace-up, open-toe form to facilitate an adjustable firm grip on a foot to be held in fixed position. The opposite sides of the upper 24 are vertically notched in the lower portion thereof at 25 to facilitate required movements thereof when pivotally adjusting the position of front sole section 13. In preferred construction this notch 25 does not pass all the way through upper 24, but only sufficiently high to facilitate pivotal movement of sole section 13 on its pivot 14.

The connections of the upper 24 with the sole sections 12 and 13, respectively, are shown as including welts 26 on the upper, to which said sole sections are stitched at 27.

An inner sole is provided, composed of sections 28; and fillers 29, Figures 5 and 6, are interposed between these sections 28 and the top sole sections 12, 13.

In the construction shown in Figures 7 to 9, inclusive, a C-shaped metal clip 30 embraces the aligned and concentrically curved front edges of the bottom sole 10 and top sole section 13, both of which are substantially concentric with pivot 14, and is conventionally secured at 31 to the latter. The clip 30 includes a detent 32 for engagement with the bottom sole 10 to hold the top sole section 13 in any selected position to which it may be pivotally adjusted. The detent 32 comprises a vertical, stamped-out arm 33, a prong 34 to penetrate the edge of the sole 10, and a loop 35 connecting said prong with said arm and serving as an aid in adjusting detent 32. After the top sole section 13 has been adjusted to selected position, the prong 34 is forced into the edge of the sole 10 to maintain the adjustment. When further adjustment or release of the sole section 13 is required, the prong 34 may be withdrawn by engaging a suitable instrument with the loop 35. The arm 33 may be a spring arm to bias it toward the sole 10 or said arm may be bendable for manual movement to and from the position in which the prong 34 engages the sole 10.

With the front sole section 13 released, the orthopedic shoe is applied to the foot to be straightened and the top of upper 24 snugly laced up over the tongue 36 to grip the child's ankle. Then, with the child's heel and ankle fixedly held in the rear portion of said shoe, the front portion of the foot is twisted toward corrected position, the front sole section 13 is then secured in adjusted position to the bottom sole 10, and the rest of the lacing of upper 24 is completed to hold the foot in adjusted position. The shoe is left in this adjusted condition until the first stage of foot straightening is completed, which commonly will take a week or two, the sole section 13 is then further adjusted and anchored for effecting a further step in the foot straightening operation, and so on until the foot malformation has been corrected. Some over-correction may be effected, anticipating that the foot will have a tendency to return somewhat toward initial position when use of the present orthopedic shoe is discontinued. Whenever bathing is necessary, or changing of socks is required, the shoe may be unlaced and removed, and then reapplied without disturbing the adjusted position of the sole section 13. An alternate procedure when the shoe is to be removed for foot bathing or sock changing, is to release the adjusted upper sole section 13 for ease of reinserting the foot, and then after the bathing and/or sock changing has been completed, the foot is reinserted in the shoe and the adjusting handled as previously described.

The shoes may be supplied in pairs, such as rights and lefts (pivoted oppositely), or singly, as required. When two are required, should the deformities so dictate due to being partially in the child's legs, suitable cross braces (not shown) may be used to adjustably connect the two

shoes, and this adjustment plus that of the individual shoes themselves gives the present adjustable orthopedic shoes a wide range of use.

From the foregoing, it will be seen that novel provision has been disclosed for attaining the desired ends. However, attention is again invited to the possibility of making variations within the spirit and scope of the invention as shown and described. While directional terms such as "top," "bottom," et cetera, have been used to describe the invention in the position shown, such are not to be considered as limiting upon the invention, since the orthopedic shoe shown in the drawings can be used in various positions without departing from the spirit of the present invention.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the orthopedic shoe herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. An orthopedic shoe comprising a top sole and a flexible upper secured thereto, said top sole comprising a rear section and a front section relatively movable into different angular relations with each other, a relatively stiff bottom sole underlying said top sole and rigidly secured to said rear section of said top sole, said front section of said top sole being disposed slidably upon said relatively stiff bottom sole, means pivotally connecting the rear end of said front section of said top sole to said relatively stiff bottom sole to allow lateral pivotal adjustment of said front section of said top sole to different positions, and means for releasably securing in fixed position said front section of said top sole to said relatively stiff bottom sole after adjustment of the former to selected position.

2. A structure as specified in claim 1, in which said stiff bottom sole is of greater width than said front section of said top sole to adequately support the latter in any position to which it may be adjusted.

3. A structure as specified in claim 1, in which the sides of said upper are notched upward from the bottom thereof at the juncture of said front and rear portions of said top sole to expedite movements thereof when pivotally adjusting said front section of said top sole to different positions.

4. A structure as specified in claim 1, in which the front portion of said stiff bottom sole has an arcuate slot concentric with said pivot means, a clamping screw extending through said arcuate slot, and a nut into which said screw is threaded, said nut being secured to said front section of said top sole, said clamping screw and nut constituting said means for releasably securing said front section of said top sole to said bottom sole after adjustment of the former to selected position.

5. A structure as specified in claim 1, in which a C-shaped clip embraces concentric curved front edge portions of said soles and is secured to one of said edge portions, said clip having a detent engaging the other of said edge portions and constituting said means for releasably securing said front section of said top sole to said relatively stiff bottom sole after adjustment of the former to selected position.

6. An orthopedic shoe comprising a stiff bottom sole extending throughout the length of the shoe, a top sole mounted upon the upper side of said stiff bottom sole, said top sole having a stiff rear section rigidly secured upon said stiff bottom sole, said top sole also having a stiff front section spaced forwardly from said rear section and disposed slidably upon said stiff bottom sole, means pivotally connecting the rear end of said stiff front section of said top sole to said stiff bottom sole to allow lateral pivotal adjustment of the former to different positions, means for releasably securing said stiff front section of said top sole to said stiff bottom sole after

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adjustment to selected position, and an upper connected with said stiff front and rear sections of said top sole in manner facilitating adjustment of said front and rear sections relative to each other.

7. An orthopedic shoe for foot correction, said shoe having a stiff bottom sole extending throughout the length of the shoe and being somewhat wider at its forward end than usual, a top sole mounted on said bottom sole, said top sole having a rear portion rigidly anchored to the rear portion of said bottom sole, said top sole also having a front portion pivotally mounted at its rear end on said bottom sole substantially at the instep portion of said shoe and spaced forward a short distance from said top sole rear portion to facilitate sidewise pivotal adjustment of said front sole portion on said bottom sole as required for orthopedic foot treatment, an upper conventionally joined to said front and rear portions of said top sole, said upper also being connected to said front and rear portions of said top sole for relative movement with same, means for gripping said upper to the foot to be orthopedically treated and holding said

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foot firmly therein, and means for releasably holding the front portion of said top sole in predetermined but variable sidewise pivotally adjusted positions.

8. A structure as specified in claim 7, in which said means for releasably holding the front portion of the top sole in predetermined but variable sidewise pivotally adjusted positions consists of a clamping screw mounted on said top sole front portion and extending through an arcuate slot in said bottom sole concentric with said pivot of said top sole front portion.

9. A structure as specified in claim 7, in which said means for releasably holding the front portion of said top sole in predetermined but variable sidewise pivotally adjusted positions consists of a C-shaped clamp embracing curved front edge portions of said bottom sole and forward top sole, with said front edges concentric with the pivot of said forward top sole, said clip having means secured to one of said soles and having a detent engaging the edge of the other of said soles for releasably fastening said soles together in selected position.

No references cited.