July 17, 1956 C. W. WATSON 2,754,599

ORTHOPEDIC APPLIANCE

Filed July 15, 1955

FIG. 1

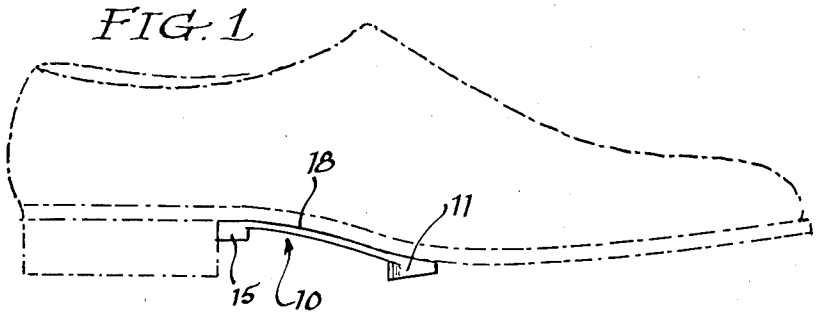


FIG. 2

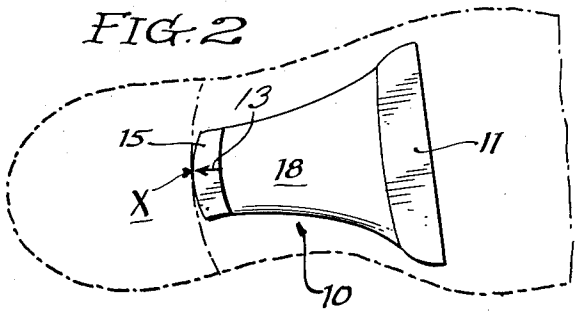


FIG. 8

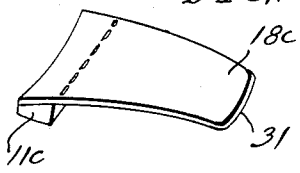


FIG. 3

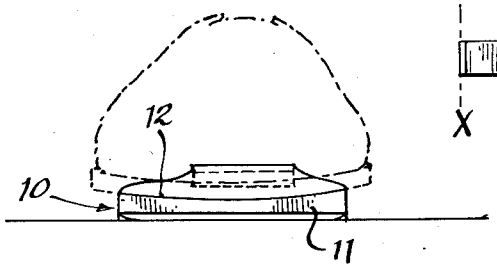


FIG. 4

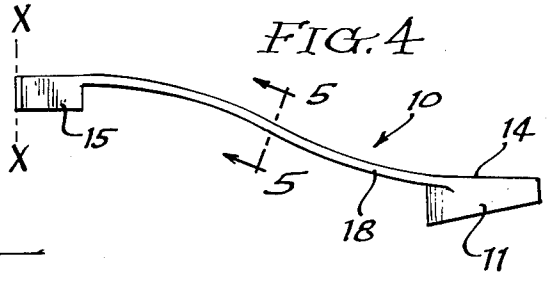
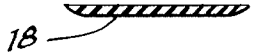


FIG. 5



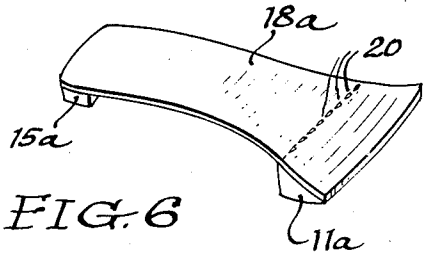
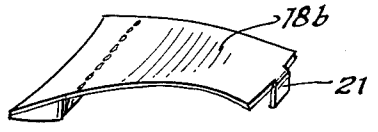


FIG. 6

FIG. 7



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ORTHOPEDIC APPLIANCE

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Application July 15, 1955, Serial No. 522,340

2 Claims. (Cl. 36—71)

This invention relates to improvements in metatarsal bars. This application is a continuation-in-part of my application Serial Number 442,997 filed July 13, 1954, now abandoned.

Persons suffering from certain ailments of the feet due to improper weight bearing, ill-fitting shoes, congenital deformities, injuries and other causes often are greatly helped by the addition of a lift to the outsole of the shoe. Metatarsalgia is one common form of difficulty of the class referred to which is relieved by a rigid bar secured transversely to the outsole of the shoe in a region corresponding to the ball of the foot, i. e. the metatarsal region, and therefore termed a "metatarsal bar."

Many persons requiring a remedial appliance as aforesaid hestitate to seek the help of a technician competent in this field for fear of exorbitant cost, not only for the advice but for the appliance which may be prescribed. Accordingly, a principal object of this invention is to provide a bar for relief of cases of metatarsalgia and other related conditions which may be quickly and inexpensively applied to the outsole of the shoe by an operator having only a little training.

Persons seeking to avoid the apparent complexities of a visit to a professional orthopedist will sometimes assume that the fitting of special shoes will remedy their condition and, in presenting the problem to a shoemaker, will frequently be given no help or, in those cases where help is proffered and a metatarsal bar is supplied, the construction and application of the bar may be far removed from acceptable standards: thus the physical condition intended to be alleviated is often aggravated.

However, it is unquestionably desirable to provide persons of impecunious means with the necessary relief at minimum cost without, in the process, doing additional harm. Accordingly, a device which may be reliably installed by an operator of only moderate skill will enable relief to be provided for such persons, and with minimum loss of time and inconvenience.

Having in view the foregoing desiderata, another object of this invention is to provide a metatarsal bar which is relatively foolproof in its application and requires no special tools, dies, gauges or apparatus for its application.

A further object is to provide a device which relies for attachment and fit only upon the outsole and the breast of the heel of the shoe and is adaptable readily to a wide range of variation in this respect as compared to prior similar devices which must be individually fitted at substantial cost, as for example, a device of the kind disclosed in United States Patent No. 2,553,451.

Further objects will become apparent from the following description which, taken together with the accompanying drawing, discloses certain preferred forms which the invention may assume in practice.

In this drawing:

Fig. 1 shows a side elevation of an Oxford shoe in phantom incorporating the invention appliance;

Fig. 2 is a bottom plan view thereof;

Fig. 3 is a frontal view thereof;

Fig. 4 is an enlarged view of the device per se as seen in Fig. 1;

Fig. 5 is a cross section on the line 5—5 of Fig. 4;

Fig. 6 is a perspective view of an alternative form of the invention;

Fig. 7 is a perspective view of another alternative form of the invention; and

Fig. 8 is a perspective view of another alternative form of the invention.

Broadly regarded the invention, in one respect, comprehends the provision of a metatarsal bar to extend substantially entirely across the outsole of the shoe and having those dimensions and configuration found best suited to feet of persons wearing a certain range of shoe sizes. I have found that it is not essential that metatarsal bars be custom-shaped and fitted except for a small proportion of abnormal cases and that perfectly acceptable relief is afforded if the bar bears predetermined dimensional relation to the shoe. Moreover, I have found that, for this purpose a range of shoe sizes may receive one size of appliance except for the distance of the bar from the breast of the heel. Thus the invention may comprise a metatarsal bar of appropriate configuration and dimensions having an elastic membrane constituting a gauging element extending posteriorly thereof and adapted to abut the breast of the heel at the center thereof, and whereby the bar may be located antero-posteriorly, the elastic membrane also adapting itself to the curvature of the shank. The entire unit may be cemented, nailed or otherwise permanently secured to the shoe. In another aspect the invention contemplates the provision of a flexible gauging member or membrane which may be readily separated from the bar following securement of the latter, and the gauging element thereafter discarded.

Turning to Figs. 1 to 4 the device, in one form, comprises a preferably one piece unit **10** of rubber or other material which may combine elasticity, i. e. flexibility with firmness, such as vulcanized rubber, including a bar **11** designed to afford the necessary lift to the sole of the shoe and interfering least with normal stride. While the form to be given to a metatarsal bar may vary in accordance with the personal opinions of various orthopedists experience has shown that a bar can be designed which is an average embodiment, and that all but extreme cases will find virtually complete relief from wearing such a bar. Accordingly, the bar shown as preferred has a cross section in any of its vertical planes which is trapezoidal in form, the narrower side being forward (Fig. 4). At its extreme ends the bar may be rounded off for esthetic considerations, as the active portion thereof falls well within the welt. In order to merge smoothly into the outsole the upper face **14** of the bar may be made complementally concave.

In order to insure accurate location of the bar on the shoe a gauging member comprising a flexible part **18** and an abutment **15** is provided, the abutment **15** being designed to abut the breast of the heel in a line contact. To this end the posterior face of the member **15** is made convex, the line of contact referred to being at X—X. The necessary relation between abutment **15** and bar **11** is achieved through the use of the resilient thin section or membrane **18** which is capable of being conformed to the shank of the shoe while the bar **11** and abutment **15** occupy their proper positions. Thus the membrane **18** serves to relate the abutment **15** and bar **11** in an antero-posterior direction and the person making the installation need take no precautions in that respect. Moreover, by the use of an index **13** the abutment **15** may be readily centered on the breast of the heel which, in turn, disposes the bar **11** at the desired angle with respect to the principal axis of the foot. It will be understood that the proper angular relation between the bar **11** and abut-

ment **15** is fixed by the manufacturer. If desired the membrane **18**, being of flexible material may also be elastic to permit antero-posterior variation in spacing between the bar **11** and abutment **15**.

Desirably the membrane **18** is given some esthetic appearance by beveling or rounding off its lateral margins as shown in Fig. 5.

An alternative form of the invention is shown in Fig. 6 in which the membrance **18***a* is of discerptible material such as thin cardboard or heavy paper to which the bar **11***a* and abutment **15***a* are cemented. Thus after installation of the bar in the manner described above the membrane **18***a* and its accompanying abutment **15***a* may be torn off and discarded. If desired, a row of perforations **20** may be provided to facilitate tearing.

The alternative illustrated in Fig. 7 is similar to that of Fig. 6 except that the abutment **15***a* is omitted and a lug **21** bent out of the membrane **18***b* serves to fix the relation between the breast of the heel and the metatarsal bar. Obviously this lug may be omitted and the posterior edge **31** of the membrane employed to abut the heel breast, and as illustrated in Fig. 8. In this case the function of the discrete abutment **15** of the form of invention shown in Fig. 1 is performed by the edge **31** of the membrane **18***c*. The material employed for the membrane **18***c*, while sufficiently flexible to conform to the sole of the shoe will possess the stiffness required for its temporary use as a gauging member.

From the foregoing it will have been made clear that I have provided an appliance for the purpose set forth which is inexpensive to supply and install and which may be applied by a person having only rudimentary training in the field concerned. Knowing the shoe size the operator need only select a size of device corresponding thereto and apply the same to the shoe in the manner indicated.

Obviously, women's sizes will be similarly handled within their respective range of fit.

While I have shown certain embodiments of my invention it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made and I therefore contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

I claim:

1. A device of the class described for application to a shoe having a heel including a breast, an outsole and a shank comprising: a metatarsal bar for application to the outsole of the shoe and a gauging element secured to the bar extendig posteriorly thereof, the posterior end of said element abutting the heel breast to locate the bar anteriorly of the breast, said gauging element being flexible to conform to the curvature of the shank and comprising discerptible material for ready severance thereof from the bar following application of the bar to the outsole.

2. A device of the class described for application to a shoe having a heel including a breast, an outsole and a shank comprising: a metatarsal bar for application to the outsole of the shoe and a paper gauging element secured to the bar extending posteriorly thereof, the posterior end of said element abutting the heel breast to locate the bar anteriorly of the breast, said gauging element being flexible to conform to the curvature of the shank and capable of ready severance from the bar following application of the bar to the outsole.

References Cited in the file of this patent

UNITED STATES PATENTS

1,792,938	Stagl	Feb. 17, 1931
1,915,627	Stagl	June 27, 1933
2,553,451	Guest	May 15, 1951