Dec. 16, 1958 C. W. WATSON 2,864,179

METATARSAL BAR

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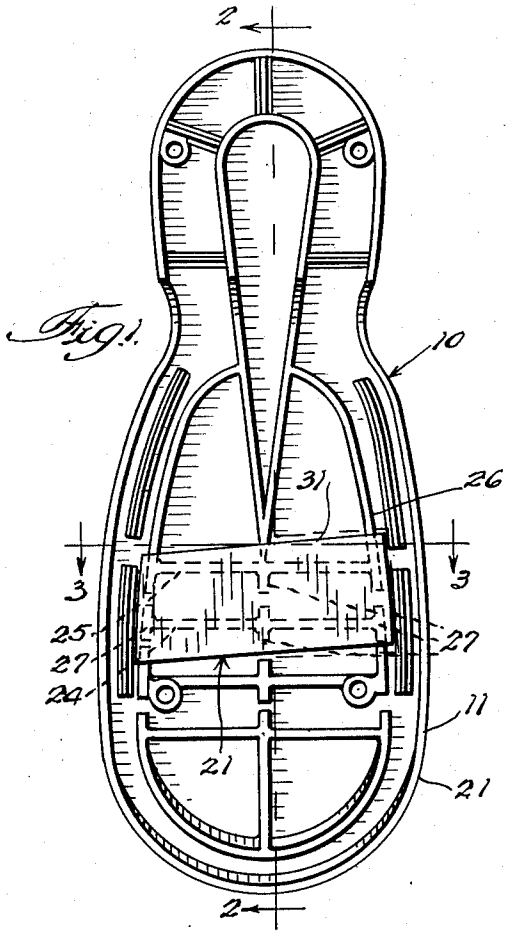


Fig. 1.

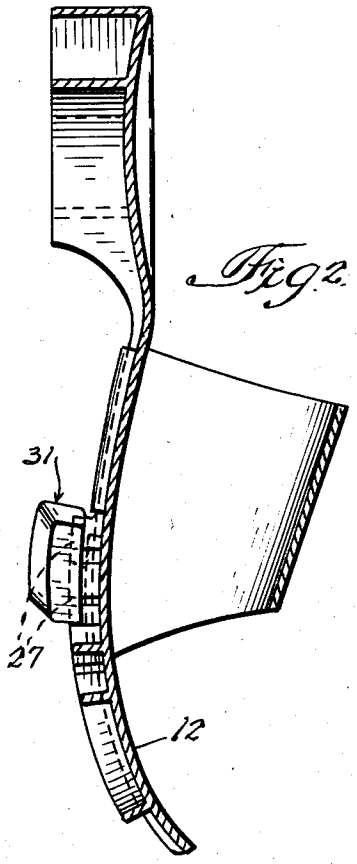


Fig. 2.

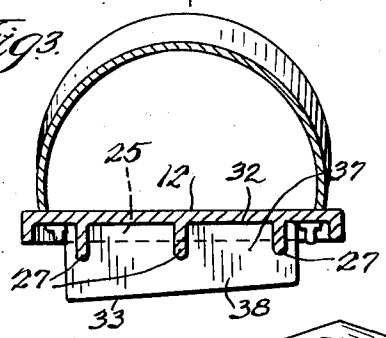


Fig. 3.

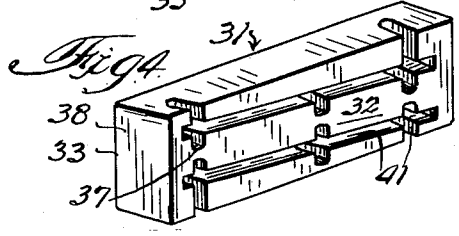


Fig. 4.

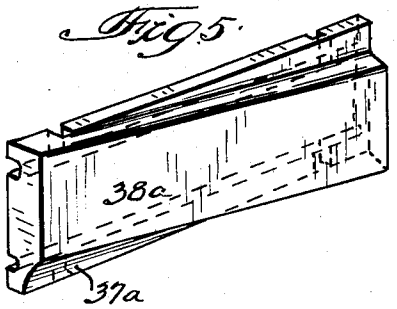


Fig. 5.

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METATARSAL BAR

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4 Claims. (Cl. 36—71)

This invention relates to a metatarsal bar for incorporation with a clog including reinforcing ribs on the underside of the sole as contrasted with bars designed for securement to the underside of the sole of a conventional boot or shoe.

Presently there is on the market a clog of plastic composition wherein the sole and heel are of relatively thin cross section and wherein rigidity is obtained by ribs on the underside of the same. Such construction results in the thin sections required for a practical molding operation and lightness in weight.

Inasmuch as an article of this character is often preferred for household use, gardening, sports, during the summer for general wear and in resort areas where warm weather prevails and, since persons who are obliged to wear a metatarsal bar on conventional footwear need the benefits thereof continuously, the principal object of my invention is to provide a metatarsal bar adapted to a clog of the foregoing character.

It will be understood that, as generally employed, a metatarsal bar is elongated and is placed against the sole of the shoe substantially slightly posteriorly of the ball of the foot with the longer axis of the bar substantially transversely of the anterior-posterior axis of the foot. The bar has a ground-contacting surface which is generally plane and may be inclined to the adjacent surface of the shoe in one or both directions to shift the weight of the body thereby to relieve infirmities of the metatarsal region as well as other conditions involving the metatarsal bones.

In accordance with the present invention I provide a metatarsal bar having a lower portion which has a ground-contacting surface of the proper inclination and area together with an upper portion for securing the device to the ribbed underside of a clog of the character hereinabove referred to. The upper or securing portion is provided with grooves to receive the ribs in a tight intergaging relation to locate the bar in a medically approved position relative to the clog and in order that, if desired, a thick, and therefore effective, layer of cement may be interposed. Since the device as a whole is desirably of resilient character the cement may be omitted and the frictional engagement of the ribs and grooves alone relied upon. In this way the user may readily detach the bar. Inasmuch as the ribs on the sole of the clog are usually perpendicular to the anterior-posterior axis thereof and because a metatarsal bar is frequently applied with its longer axis at some angle other than 90° to the said anterior-posterior axis the invention also contemplates an attaching section which is at one angle to said anterior-posterior axis and an integral working section which is at a different angle thereto.

Certain preferred modes of carrying the invention into practice are disclosed in the following description which, taken with the accompanying drawing, will provide a better understanding of the invention.

In this drawing:

Fig. 1 is a bottom plan view of a clog to which the invention is adapted showing the bar in place;

Fig. 2 is a side elevational view thereof;

Fig. 3 is a cross section taken on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of an alternative form of the bar; and

Fig. 5 is a perspective view similar to the showing of Fig. 4 of an alternative form of the bar.

Adverting to this drawing I have shown a commercial, presently available clog **10** of plastic composition including a sole **11** which is uninterrupted on its upper face **12** and is provided with a marginal reinforcing rib **21** thereabout. Additional ribs are provided and, insofar as concerns the present invention, are referred to herein as transverse ribs **24** and **25**, arcuate inner rib **26**, and longitudinal ribs **27**. It will be understood that the ribs **27** represent interruptions in what would otherwise be a rib **26** extending continuously about the sole and spaced inwardly from the margin thereof and that such interruption allows the necessary flexing of the sole of the clog during walking.

Inasmuch as the commercial form of clog referred to herein by way of example is provided with the ribs **24**, **25** and **27** in that area of the sole where a metatarsal bar would normally be located the same may be utilized for the securement of the bar of the invention. It will be understood however that ribs which are located otherwise than shown but still in the vicinity of the ball of the foot, may be utilized by the provision of appropriate mounting means forming the upper part of the bar while still being encompassed within the purview of the invention.

The device proper disassociated from the clog is illustrated in Fig. 4 and comprises a member **31** of rubber, plastic or other material having the necessary resiliency and wear resistance required for metatarsal bars. The shape is generally parallelepipedic including an upper face **32** and a lower, wearing face **33**. This latter may be inclined in a lateral direction and/or an anterior-posterior direction as dictated by the correction to be applied. Sometimes the bar is intended to transfer the weight of the body from the ball of the foot to the bar and the position of the bar with respect to the sole and the net effect thereof on the position of the foot are all factors dictating the configuration of the bar and its relation to the clog. In any case, the upper or attaching portion of the bar may be located relative to the therapeutic portion thereof as required. The preceding is not to be construed as requiring a different mold for every variant but the provision of a limited number of molds for a limited range of different bars for the average of a specific group of corrective shapes. It has been found that in nearly all cases, the corrective to be applied by the bar is not too critical.

In view of the foregoing the invention device comprises a lower or active portion **38** surmounted by an upper or attaching portion **37**. This latter is provided with channels or grooves **41** adapted respectively to engage tightly the ribs **24**, **25** and **27** or any one thereof. Preferably the grooves are arranged to engage one or more of the ribs which are directed laterally as well as one or more which are directed anterior-posteriorly, whereby shifting of the bar in either direction in a horizontal plane during locomotion is precluded. The fit is selected in a manner to provide a frictional grip of the member **31** which may, if desired, be supplemented by an adhesive. When not intended to be permanently secured in place the frictional grip will be so selected that accidental dislodgment is precluded but manual attachment and detachment permitted. The upper surface **30** is preferably arranged to bear against the underside of the sole **10** to transmit the

load to the clog in the required manner although the load may be taken by the ribs bearing on the bottom of the grooves **41**. In some cases the lower surface **33** may be inclined to provide a thickness to the bar at the inside of the foot which is greater than that at the outside thereof, as clearly shown in Fig. 3. In other cases the surface **33** may be inclined in the anterior-posterior direction. Sometimes both inclinations are combined.

It will be understood that where the active portion of the bar is inclined in either or both directions the device will be furnished in a pair consisting of a "left" and a "right."

As shown in Figs. 1 and 4 the longer of the grooves **41** are inclined with reference to the longer axis of the member **31** in order that the active portion **38** thereof may be inclined with respect to the anterior-posterior axis of the foot. Alternatively the active portion may be similarly inclined as seen in Figs. 5 at **38***a* and the attaching portion **37***a* arranged to be parallel to the ribs **24** and **25**. Otherwise the function and mode of attaching the device remains the same.

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 metatarsal bar for detachable securement to a clog having ribs on the underside of the sole thereof, some of the ribs having a lateral direction and the others having an anterior-posterior direction comprising: a lower portion having a ground-contacting face and an upper portion for securement to the ribs, said upper portion having grooves extending both laterally and anteriorly-posteriorly for snap-type frictional engagement over respective like-directed ribs to restrain shifting of the bar in a horizontal plane during locomotion, the degree of friction being so selected as to prevent accidental dislodgment of the bar but to allow manual attachment and detachment.

2. A metatarsal bar to be attached to a clog having ribs on the underside of the sole which are transverse to the anterior-posterior axis of the sole comprising a lower portion of substantially parallelepipedic configuration having a ground-contacting surface and an upper portion surmounting said lower portion, said lower portion constituting the bar proper and having a longitudinal axis positioned transversely to the anterior-posterior axis of the clog at an angle dictated by the corrective action applied by the bar to the foot, said upper portion having its own longitudinal axis parallel to the ribs and a plurality of grooves parallel to said longitudinal axis for frictional engagement with the ribs to retain the bar in proper relationship with the clog.

3. A metatarsal bar to be attached to a clog having a sole and ribs on the lower surface of the sole comprising a lower portion formed as a metatarsal bar having a ground-contacting face inclined downwardly from the outer edge of the sole to the inner edge thereof to apply a prescribed corrective action to the foot of the wearer and an upper attaching portion having an upper surface conforming substantially to the lower surface of the sole and in abutment thereto and a plurality of grooves in said upper surface for frictional engagement with the ribs.

4. A metatarsal bar to be attached to a clog having ribs on the lower surface thereof, the ribs having a direction normal to the anterior-posterior axis of the clog comprising: a lower portion formed as a metatarsal bar having a ground-contacting face which is substantially rectangular, the longer dimension whereof is inclined with respect to the direction of the ribs and an upper attaching portion having a plurality of grooves for engagement with the ribs.

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