

J. STEINBRECHER.
SHANK PIECE AND METATARSAL ARCH SUPPORT.
APPLICATION FILED OCT. 13, 1920.

1,387,952.

Patented Aug. 16, 1921.

Fig. 1.

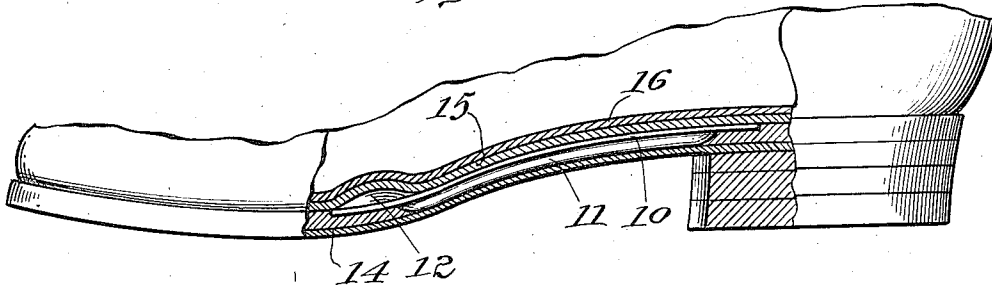


Fig. 2.

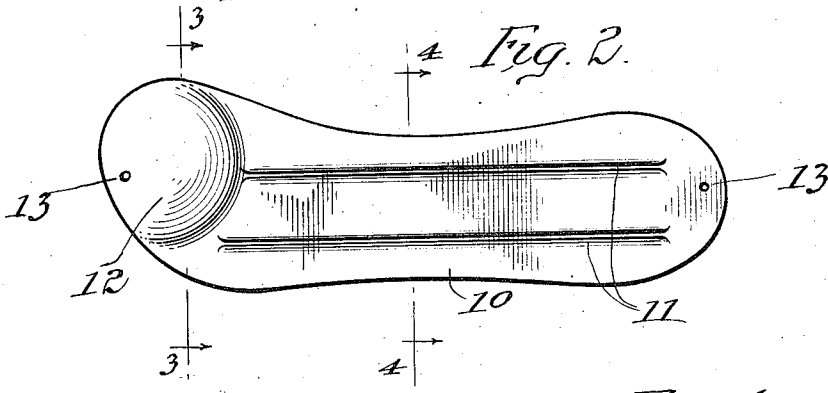


Fig. 3.

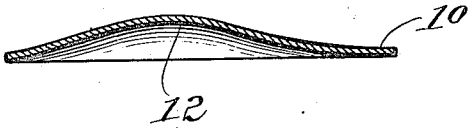


Fig. 4.

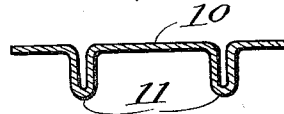
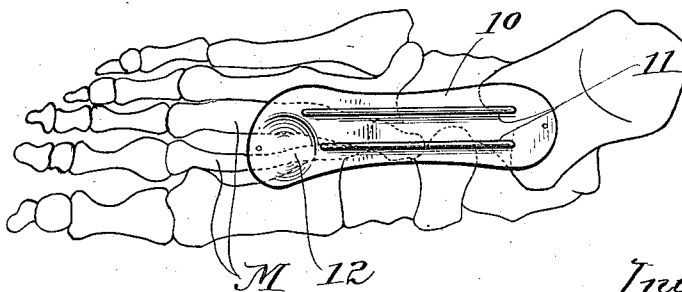


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SHANK-PIECE AND METATARSAL-ARCH SUPPORT.

1,387,952.

Specification of Letters Patent.

Patented Aug. 16, 1921.

Application filed October 13, 1920. Serial No. 416,689.

To all whom it may concern:

Be it known that I, JOHN STEINBRECHER, a citizen of the Dominion of Canada, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shank-Piece and Metatarsal-Arch Supports, of which the following is a specification.

My present invention has relation to the provision of a device for shaping and reinforcing the soles of footwear for abnormal feet, and has special reference to providing a sole for footwear adapted for use with a foot in which the transverse metatarsal arch has sagged or flattened, or in which such a condition is apprehended. The sagging or flattening of the transverse metatarsal arch creates a chronic callous place or corn upon the bottom or ball of the foot, which, unless it is given constant attention, becomes extremely painful and irritating, and often such sagging or flattening is of such an extent as to be beyond relief afforded by careful attention and to constitute a serious physical disability. I am aware that transverse metatarsal arch supports are already known, but, so far as I am at present advised, these structures have always consisted of a plate adapted to be inserted into the shoe and secured to the upper surface of the sole at the ball of the foot. Such a structure probably accomplishes some good in certain cases, but in the provision of such structures the fact is ignored that the correction to be applied should have reference to the heel as well as the ball of the foot, for, if the shoe is permitted to twist so as to disturb the normal relation between the heel and ball of the foot the weight will not be distributed between these parts as it should be and the wearer will not obtain the full, or, in fact, any value from the correction, for the improper distribution of the weight to the various parts of the foot will easily induce habits or manners of walking in the wearer which may be far worse than the original abnormality which it is sought to correct. The presence of a protuberance or raised portion in the center of the ball of the shoe when the weight is not distributed properly on the respective portions of the foot causes the wearer to refrain from using, as far as is possible, that portion of his foot, while, if the entire foot is held properly the protuberance at the ball of the sole holds the

metatarsal bones in their proper relation and secures a proper distribution of weights to the various portions of the foot.

The objects therefore of my present invention are the provision of a structure light in weight but, nevertheless, sufficiently strong to dependably hold the heel and ball of the foot in desired relation under all conditions of service and at the same time afford instrumentalities for raising and holding the central metatarsal bones in their normal arched relation. I prefer to secure the above stated and other objects substantially in the manner and with the instrumentalities illustrated in the accompanying drawing, in which—

Figure 1 is a longitudinal side elevation of a fragmental portion of a shoe, the central portion whereof being shown in section so as to illustrate the application of my invention thereto.

Fig. 2 is a bottom plan of my combined shank piece and transverse metatarsal arch support.

Fig. 3 is a section on line 3—3, Fig. 2, drawn to a somewhat exaggerated scale for greater clearness.

Fig. 4 is a similarly exaggerated view on line 4—4 of Fig. 2, and

Fig. 5 is a schematic plan of the bottom of a skeleton of a foot showing the relation of my invention to the bones thereof.

In the drawings, similar reference characters are employed to designate the same parts throughout the several views.

My invention is carried out by means of a plate 10, which is of the general nature and provided with similar longitudinal corrugations as are shown in United States Letters Patent No. 1,347,061, issued to me July 20, 1920, for a combined shank and arch support for footwear. Plate 10 is longitudinally curved much in the same manner as is shown in the above referred to Letters Patent, but the peripheral outline is more rounded and the anterior end is enlarged and formed with the upwardly extending protuberance 12. This plate 10 is preferably provided at both its anterior and posterior ends with the hole or holes 13 for securing it to the sole of a shoe with rivets or nails, or in any other desired manner.

The plate is positioned upon the upper surface of the outer sole 14 of a shoe or other footwear so that the posterior end extends over and may be anchored to the solid

heel portion of the footwear and the anterior end will extend and be secured to the footwear at the ball of the foot. Above plate 10 is disposed the inner sole 15, and above this inner sole may be placed the lining 16, all as disclosed in Fig. 1 of the accompanying drawings. This disposition of plate 10 provides the necessary reinforcement in the footwear to prevent the twisting of the shank thereof so as to destroy the desired relation between the heel and the ball of the shoe. The presence of the longitudinal corrugations 11 gives the plate 10 the necessary strength to stand all conditions of service without distortion even when the plate is fabricated from a very thin and light gage of sheet steel or other suitable material. The protuberance 12 acts in itself as a reinforcement of the enlarged anterior end of the plate, and together with the longitudinal corrugations which extend closely to the protuberance form an extremely rigid construction.

By reference to Fig. 5 of the drawings, it will be seen that protuberance 12 is located just forward of the posterior ends of the intermediate metatarsal bones designated by the character M, and serves to return these bones to and hold them in their normally slightly arched relation.

What I claim new is:

1. In combination with a shoe having a

heel, an outer sole and an inner sole and a suitable upper, of means for securing the longitudinal and transverse rigidity between the heel and the forward portion of the sole consisting of a plate inserted between the outer and inner soles and secured thereto and to the heel, said plate being provided with longitudinal reinforcement and having the anterior end thereof formed with an integral upwardly dished portion whereby the central metatarsal area of the wearer's foot is maintained in an arched relation with respect to itself and with respect to the heel.

2. In combination with a shoe having a heel, an outer sole and an inner sole, and a suitable upper, of means for securing rigidity between the heel and forward portion of the soles consisting of a plate inserted between the outer and inner soles at the shank and heel and constructed to prevent twisting of the structure, said plate being further provided adjacent its anterior end with an integral upwardly dished portion whereby the central metatarsal area of the wearer's foot is maintained in an arched relation with respect to itself and with respect to the heel.

Signed at Chicago, county of Cook, and State of Illinois, this 2nd day of October, 1920.

JOHN STEINBRECHER.