Sept. 9, 1924. 1,508,110

A. MAYER

ARCH SUPPORTER

Filed March 23. 1923

Fig. 1

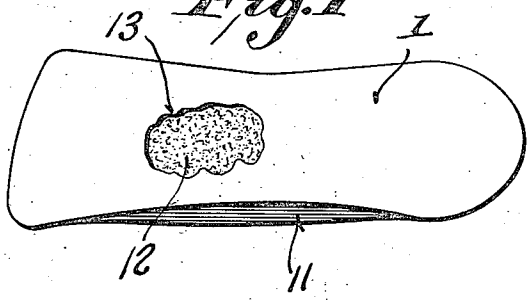


Fig. 2

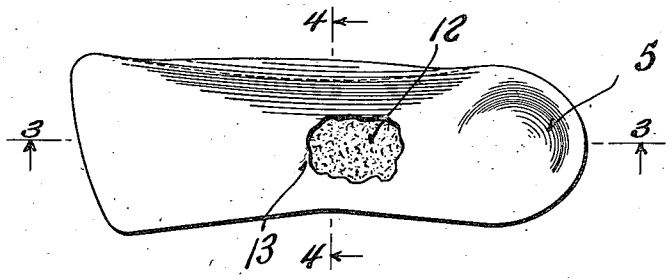


Fig. 3

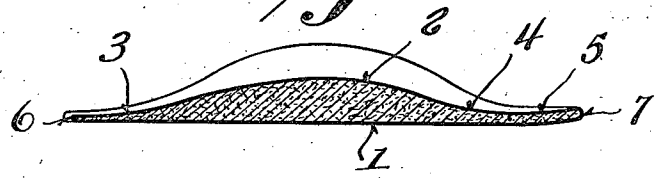
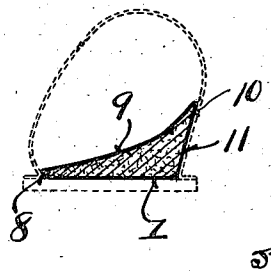


Fig. 4



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UNITED STATES PATENT OFFICE.

ABRAHAM MAYER, OF MILWAUKEE, WISCONSIN.

ARCH SUPPORTER.

Application filed March 23, 1923. Serial No. 627,031.

To all whom it may concern:

Be it known that I, ABRAHAM MAYER, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Arch Supporters; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to an arch support and to the process of making such support.

Arch supports, as heretofore made, have not proven wholly satisfactory, as they were frequently the cause of added discomfort to the user and only partially relieved the discomfort sought to be cured. Several causes produced these undesirable results. Frequently the arch supports were heavy and cumbersome and required an unnecessary exertion on the part of the user. They were never of sufficient resiliency and flexibility to conform to the individual or separate portions of the foot, and consequently, although resilient as a whole, such for instance as a spring, did not provide the necessary resiliency at the individual portions of the structure and consequently produced excessive pressure at separate portions of the foot. This obviously, greatly lessened their efficacy and detracted from the benefit sought. On the other hand, if they were made of a soft pad or cushion, this pad soon lost its shape and became lifeless and inert and was thus gradually deformed and flattened into a shape unsuited for the purposes intended.

It is to overcome these defects that this invention is designed, and objects of this invention are to provide an arch support which is not only resilient as a unit, but which is resilient and soft at its individual or separate parts, and which will not, therefore, produce excessive pressure at any one point, which will not crack, which is of light weight, which will not absorb moisture, and which is exactly contoured to the foot.

Further objects are to provide a process which may be easily carried out, which attains the exact shape of the article designed, which produces with certainty the same product at each operation, which is rapid and inexpensive and which may be performed by an unskilled workman.

An embodiment of the invention is shown in the accompanying drawing of which Figure 1 is a bottom view of the arch support, a portion being broken away.

Figure 2 is a plan view of the arch support, a portion being broken away.

Figure 3 is a sectional view on the line 3—3 of Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 2.

In practising the process contemplated by this invention, vegetable tissue, such for instance as cork, is divided, as for example, by means of grinding or granulating until the material is separated into relatively small portions. For the purpose of this description this material will hereafter be referred to as ground cork. This ground cork is then mixed with an elastic cement, or analogous substance, such as rubber cement, and a thorough mixing is assured. The mass is then placed in a mould roughly approximating the contour desired and allowed to set until it has sufficient consistency to retain a definite shape when subjected to the pressing operation. It has been found that this stage has been reached when the mass has almost completely set. Thereafter when the mass has almost completely set, it is moulded under pressure to the exact contour desired and allowed to take its permanent set while it is in this shape.

The arch support, therefore, is exactly contoured to the desired shape throughout its entire extent without, however, requiring the services of skilled workmen to secure this highly desirable result. It is to be noted that this process may be rapidly carried out in an inexpensive and effective manner.

The arch support produced by this process comprises a body portion having a bottom 1 shaped to fit the inner surface of the bottom of the shoe. It is thickened adjacent its central portion as indicated in the drawings to provide an upwardly bulged portion which longitudinally has throughout its entire portion a convex survace 2 which merges into the thin front portion by means of a reverse curve 3 and which similarly merges into the heel portion by a reverse curve 4. This heel portion is concaved so that its upper surface is slightly dished as indicated at 5 to accommodate the roughly spherical heel of the user's foot. The forward end 6 of the arch support may dwindle

to a feather edge while the rear end 7 is substantially thicker to provide the necessary cushioning for the heel.

Transversely the arch support gradually slopes downwardly towards the outer side to provide a relatively thin end or edge 8—such edge gradually thickening as the heel portion is approached, and gradually thinning as the thinner forward end 6 is approached. The upper surface 9 is concaved as may be clearly seen from Figures 2, 3 and 4 and rises as the inner side of the foot is approached. It terminates in a relatively thin upwardly projecting portion 10. The inner marginal edge 11 is slightly concaved to fit the curvature of the shoe at this point and slopes inwardly towards the bottom 1 as may be seen from Figures 1 and 4. It is to be noted particularly that the upper surface adjacent the arch follows approximately the contour of a cissordal curve and provides a gradually increasing curvature along this concaved surface as the inner side is approached.

The body portion 12 is composed of divided vegetable fiber such as ground cork bound together by an elastic cement such as rubber cement, as previously described. It is incased in a sheath 13 of any desirable material preferably of a soft high grade of leather which completely encases the body portion.

It will thus be seen that an arch support has been provided which is resilient in its individual portions, that is to say, which will yieldingly conform to the exact contour to the particular foot with which it is used, at all points throughout its extent without producing any unusual pressure at any portion of the foot. It will be seen further that the device is flexible and resilient as a whole as well as in its individual portions and that it will permanently retain this resiliency and will not become distorted under continued use.

It will further be seen that the arch support is exactly contoured in the desired manner, that it is of extremely light weight, that it has a long useful life and that it is a relatively cheap construction.

It is further to be noted that the process may be repeatedly and expeditiously carried out in a simple manner by unskilled workmen and that the resulting product will be exactly the same for each operation for each set of dies or other shaping instrumentalities employed, and, therefore, the skill of the individual workman is not required in order to produce a product of perfect quality. Although the invention has been described with considerable detail, it is to be understood that it may be embodied in different forms and that the process may be slightly altered without departing from the spirit of the invention. It is, therefore, to be understood that the invention is to be limited only as set forth in the appended claim.

I claim:—

The method of making waterproof, resilient arch supports comprising thoroughly mixing ground cork with rubber cement into a free plastic mass, roughly moulding this freely plastic mass to the approximate contour of an arch support, allowing the roughly moulded mass to nearly set, moulding the nearly set mass under pressure to the exact contour of the arch support, and allowing complete setting to occur while the material is in the exact contour.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

ABRAHAM MAYER.