June 16, 1942. R. D. MATTESON 2,286,495

ARCH SUPPORT

Filed Jan. 15, 1940

Fig. 1.

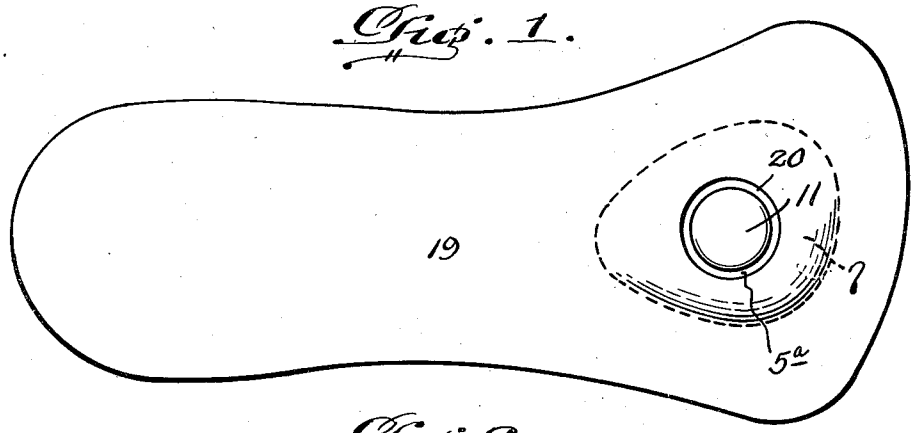



Fig. 2.

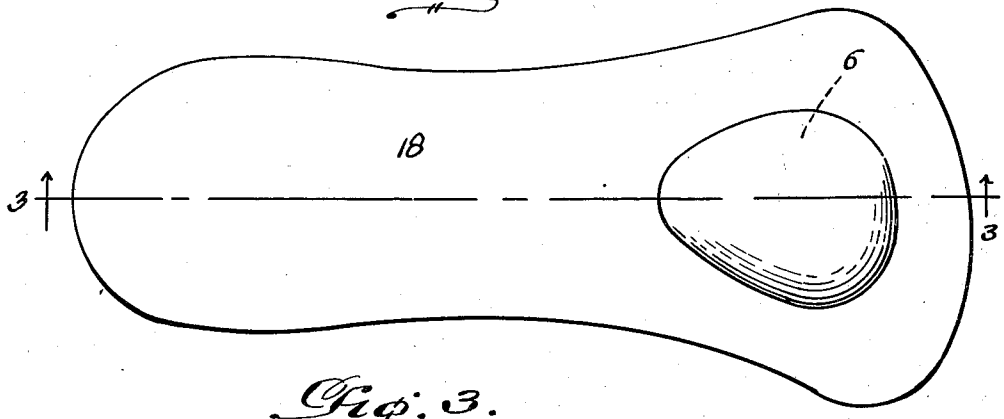



Fig. 3.

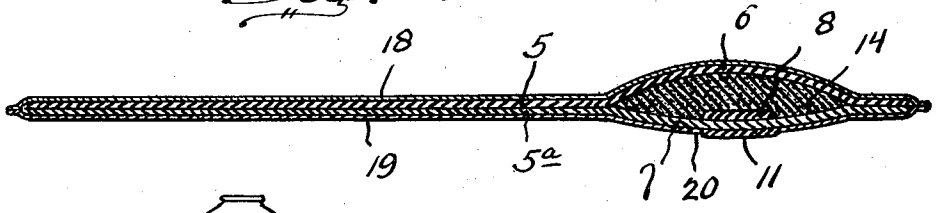
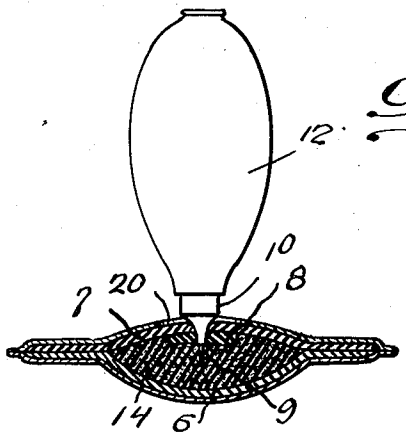



Fig. 4.




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# UNITED STATES PATENT OFFICE

2,286,495

## ARCH SUPPORT

Ralph D. Matteson, Boise, Idaho

Application January 15, 1940, Serial No. 313,997

3 Claims. (Cl. 36—71)

This invention relates to an improved arch support of the type shown in my co-pending application Serial Number 240,397, filed November 14, 1938, wherein an air pocket is provided to support the desired arch of the foot.

Objects of the present invention are to provide means to facilitate inflation or a partial deflation of the air pocket so that the latter may be readily properly adjusted to the individual need, and so that any air eventually lost from the pocket may be replenished; and to provide a highly resilient and porous pad in the air pocket, made of sponge rubber or the like, so as to provide for uniform distribution of the air in the air pocket.

With the above general objects in view, the present invention consists in the novel form, combination and arrangement of parts hereinafter more fully described and shown in the accompanying drawing and claimed.

In the drawing:

Figure 1 is a bottom plan view of an arch support pictured in accordance with the present invention.

Figure 2 is a top plan view thereof.

Figure 3 is a longitudinal section on line 3—3 of Figure 2; and

Figure 4 is a transverse section taken through the arch support at the air pocket, and showing the manner of using a special air pump of the bulb type in inflating the air pocket.

Referring in detail to the drawing, the present arch support is adapted to be arranged interiorly of a shoe, and includes a pair of similar insole members 5 and 5a cut from pure sheet rubber. These insole members are superimposed and adhered together throughout their adjacent surfaces except at opposed areas 6 and 7 where the air pocket is formed to provide the desired arch support. While an air pocket or arch support may be provided for either or both the transverse and/or longitudinal arch of the foot, the device shown is illustrated by way of example as including a single air pocket or arch support for the transverse arch of the foot. The insole members 5 and 5a may be adhered together by cementing, vulcanizing or the like, the device being preferably placed in a heated mold after inflation of the air pocket so as to cause the latter to protrude upwardly and downwardly, but with the upward protrusion greater as illustrated clearly in Figure 3.

Before the insole members 5 and 5a are secured together, a disk of soft rubber 8 is secured upon one of the insole members, such as the lower insole member 5a centrally of the area 7 which forms the lower wall of the air pocket. Thus, when a projecting needle 9, carried by the nozzle 10 of an air pump, is inserted through the lower wall 7 of the air pocket and through the disk 8, the pocket may be inflated to the desired degree or partially deflated to the desired degree, the opening made in the disk 8 automatically sealing itself due to the soft nature of the rubber from which the disk 8 is made, upon withdrawal of the nozzle 10 and needle 9 of the pump. However, in order to more positively secure against leakage of air from the air pocket after this is done, another soft rubber disk 11 may be adhered on the outer face of the lower wall 7 of the air pocket over the opening made by the needle 9 and nozzle 10 of the air pump. As the disk 11 is readily removable, it may be replaced by a new one from time to time or each time the pump is used for adjustment of the air pocket. The pump shown is of the conventional bulb type including the bulb 12 provided with the inflation nozzle 10 and projecting needle 9.

A pad 14 of highly resilient and highly porous material, such as sponge rubber, is also placed between the walls 6 and 7 of the air pocket prior to securing or adhering the insole members 5 and 5a together. The purpose of this pad is not to furnish the actual or main arch supporting element, as the air placed in the pocket is mainly relied upon to perform this function. The pad 14, therefore, is primarily designed to uniformly distribute the air provided in the air pocket. In this way, a most efficient cushion is had, the air being maintained so distributed that the shock of air force against the walls of the air pocket is relieved, thereby, insuring longer life of the device and giving a more gentle massage to the foot.

The arch support is completed by covering the exposed surfaces of the insole members 5 and 5a with sheets of suitable finishing material 18 and 19, preferably formed or cut from leather and cemented in place. The lower covering or finishing sheet 19 may have an opening as at 20 to facilitate application of the sealing disk 11 directly to the lower wall 7 of the air pocket.

From the foregoing description, it will be seen that the present arch support is extremely simple and durable in construction, highly efficient in use, and well adapted for carrying out the stated objects of the invention.

What I claim as new is:

1. An arch supporting device adapted to be arranged interiorly of a shoe, comprising a pair

of similar sheet rubber insole members conforming to the shape of the shoe bottom, said insole members being superimposed and adhered together throughout the major portion of their adjacent surfaces and except at predetermined opposed restricted areas to form an air pocket therebetween arranged to provide an arch support when inflated, and a disk of soft rubber adhered to one of said insole members within said areas, whereby the pocket may be inflated or partially deflated to the desired degree at will by means of a pump having a nozzle provided with a needle to puncture said disk and the insole member to which it is secured, said disk being capable of automatically sealing its puncture upon withdrawal of the needle of the pump from the latter.

2. An arch supporting device adapted to be arranged interiorly of a shoe, comprising a pair of similar sheet rubber insole members conforming to the shape of the shoe bottom, said insole members being superimposed and adhered together throughout the major portion of their adjacent surfaces and except at predetermined opposed restricted areas to form an air pocket therebetween arranged to provide an arch support when inflated, and a disk of soft rubber adhered to one of said insole members within said area, whereby the pocket may be inflated or partially deflated to the desired degree at will by means of a pump having a nozzle provided with a needle to puncture said disk and the insole member to which it is secured, said disk being capable of automatically sealing its puncture upon withdrawal of the needle of the pump from the latter, said device being molded so that the air pocket protrudes upwardly and downwardly with the upward protrusion greater.

3. An arch supporting device adapted to be arranged interiorly of a shoe, comprising a pair of similar sheet rubber insole members conforming to the shape of the shoe bottom, said insole members being superimposed and adhered together throughout the major portion of their adjacent surfaces and except at predetermined opposed restricted areas to form an air pocket therebetween arranged to provide an arch support when inflated, and disks of soft rubber adhered to the inner and outer surfaces of one of said insole members within said areas, whereby the pocket may be inflated or partially deflated to the desired degree at will by means of a pump having a nozzle provided with a needle to puncture said disks and the insole members to which they are secured, said disks being capable of automatically sealing their punctures upon withdrawal of the needle of the pump from the latter.

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