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2,074,286

AIR CUSHION ARCH BUILDER

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Fig. 1.

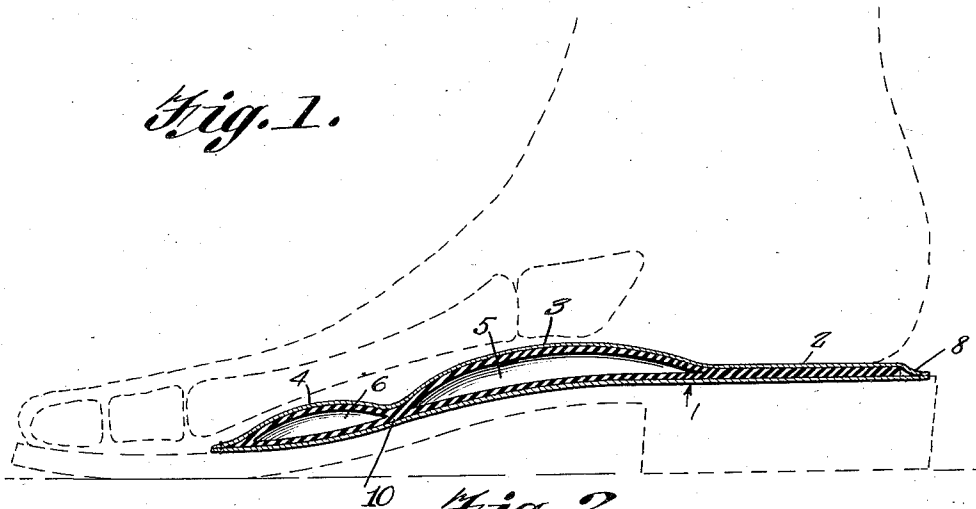


Fig. 2.

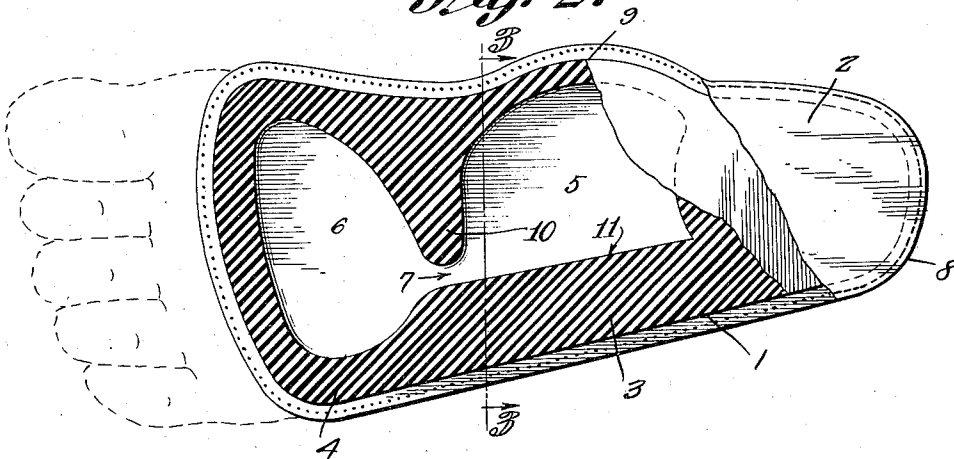
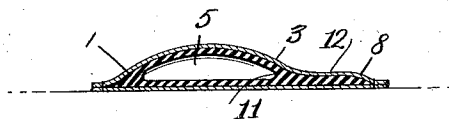


Fig. 3.



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AIR CUSHION ARCH BUILDER

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1 Claim. (Cl. 36—71)

This invention relates to a cushion arch supporter and strengthener and has for the primary object the provision of a device of this character which may be readily inserted in a shoe and with the latter placed on a foot, the arch of the foot will be pneumatically cushioned and supported so as to strengthen or build up weakened muscles of the arch.

Another object of the invention is the provision of an arch supporter of the above stated character having pneumatic chambers so located that the lifting or cushioning effect will be applied to the metatarsus joints of the arch and the chambers are in communication by a restricted passage to permit equalization of the pneumatic pressure between said chambers and to permit the air to pass from one chamber to the other as the load or weight on one chamber increases and decreases on the other chamber which produces a massaging effect to the arch and also acts to retard the tendency of a rolling motion to the foot on the supporter.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

Figure 1 is a vertical sectional view illustrating an arch supporter and strengthener constructed in accordance with my invention and illustrating the same applied to a shoe and a foot of a person.

Figure 2 is a longitudinal sectional view illustrating the arch supporter and strengthener.

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

Referring in detail to the drawing, the numeral 1 indicates a pad shaped to provide a flat heel portion 2, an instep portion 3 and a tread portion 4. The pad is constructed of layers of rubber vulcanized or otherwise secured together to form pneumatic chambers 5 and 6 communicative with one another by a restricted passage 7. The chamber 5 lies within the instep portion 3 while the chamber 6 lies within the tread portion 4. The upper or outer walls of both the chambers 5 and 6 are arched both longitudinally and transversely and the inner pad is formed with a flat extension 12, along one of its edges of the same thickness as that of heel 2. This part 12, terminates with the arched top of the tread portion 4, while the arched top of the instep portion 3 is of a less width than that of the tread portion,

so that the pad at the said instep portion is provided with a straight surface or extension. The heel portion 2 is non-chambered and engages the heel of a foot, as shown in Figure 1, lying between said heel of the foot and the heel tread of a shoe. Air is trapped in the chambers 5 and 6 causing the upper wall of the pad to assume a double arch shape, as shown in Figure 1, and provides for the arch of the foot cushions, the rear and larger arched portion being directly under the joints between the metatarsus and the front bones of the tarsus while the other front and smaller arched cushion engages the metatarsus directly rearwardly of the joints between the toes and the metatarsus. Thus it will be noted that all of the bones of the foot are cushioned and that the cuboid bone at its juncture with the middle and inner cuneiform bones and that the calcaneum and astragalus bones at their juncture with each other and with the cuboid and with the said inner and middle cuneiform bones, rest directly on the rear and larger arched cushion over the chamber 5. The cushioning and lifting effect is placed on the foot where most needed to strengthen or build up the muscles of the arch.

A suitable fabric casing 8 is provided for the pad and the inner edge of the pad intermediate the ends of the latter is offset to form a projection 9 acting to support the inside of the first or outer cuneiform bone of the arch.

During the bending of the foot while walking the chambers cushion the arch and permit the full load to come gradually on the weakened portion of the foot due to the passage 7 permitting the air in said chambers to surge from one chamber to the other as the load increases on one chamber and decreases on the other chamber. This action provides to the arch of the foot a massaging effect and also checks the tendency of a roll to the foot which is apparent in arch supporters of a single chamber type. The pad 1, between the arched portions 3 and 4 of the chambers 5 and 6 has a connecting wall or web 10 which terminates a slight distance from the straight inner side wall 11 of the chamber 5 and which provides a restricted air passage 7 between said chambers. The restricted passage 7 permits the air pressure to equalize in said chambers when not under load and to maintain the pressure in each chamber long enough to help to carry the load for an instant and then to let the full load come gradually on the weakened foot muscles. It is to be noted that the arched portion 4 of the pad is of a width approximately equalling that of the pad so that all of metatarsus

bones are supported on this pad while the arch 3 is of a less width and accommodates thereon only the bones of the foot designed to rest thereon and as heretofore set forth.

5 Having described the invention, I claim:

10 An insert comprising a rubber pad designed to be arranged in a shoe and to extend from the heel to beyond the shank of said shoe and a fabric casing for said pad, said pad including a flat heel portion, an instep portion and a tread portion, said pad, at its said instep and tread portions having inner air chambers whose outer walls are arched both longitudinally and transversely and which chambers are divided by a web

that has an air communicating port nearest one edge of the pad, and the side wall of the air chamber in a line with the port being straight and terminating a distance away from the edge of the pad adjacent thereto and the arched top 5 of the air chamber for the instep portion being of a less width than that of the tread portion and having one side of its edges disposed over the straight side wall of the chamber to render the portion of the pad outward of said arch straight 10 and flat and of the same thickness as that of the heel portion.

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