Aug. 25, 1925. 1,551,010

J. CLARK

ARCH SUPPORTER

Filed Jan. 28, 1925

Fig. 1.

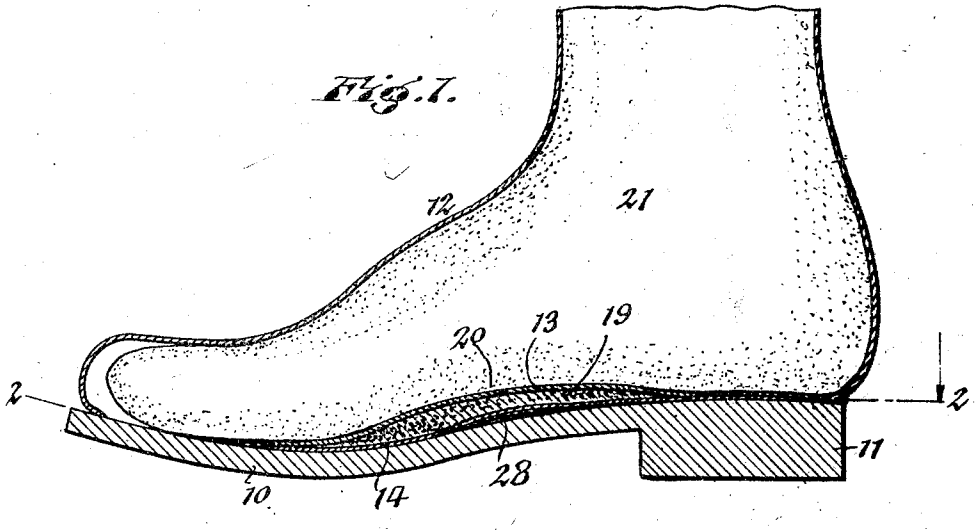



Fig. 2.

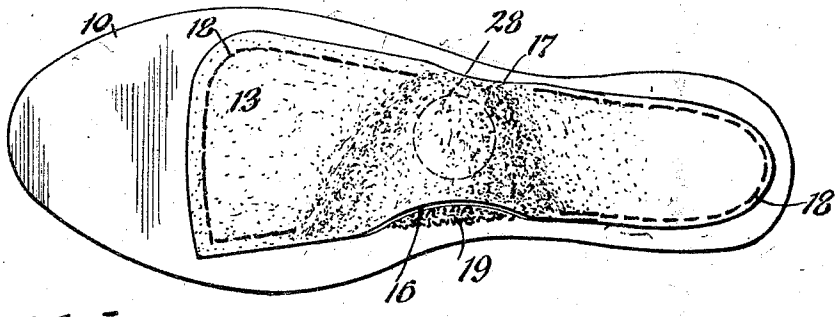



Fig. 5.

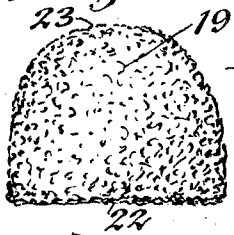



Fig. 3.




Fig. 6.

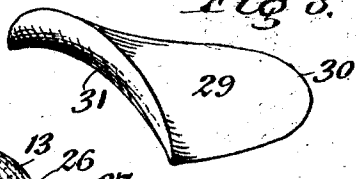



Fig. 7.

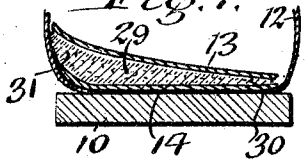
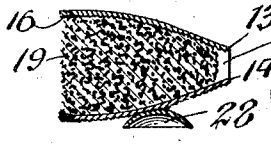



Fig. 4.




Inventor
John Clark
By Popp & Powers
Attys

12 BOOTS, SHOES AND LEGGINS,
128-606

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# UNITED STATES PATENT OFFICE.

JOHN CLARK, OF BUFFALO, NEW YORK.

## ARCH SUPPORTER.

Application filed January 28, 1925. Serial No. 5,332.

*To all whom it may concern:*

Be it known that I, JOHN CLARK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Arch Supporters, of which the following is a specification.

This invention relates to an arch supporter for use in shoes to support dropping or fallen arches of the foot.

It is the object of this invention to provide an arch supporter for this purpose which is simple and inexpensive in construction, which can be easily applied to shoes of standard construction and held reliably against displacement, which will readily adapt itself to the shape of the foot as the latter bears upon the supporter, and which can be conveniently restored to its most efficient condition when it becomes set or impaired as to its resilience after having been worn a considerable time.

In the accompanying drawings:

Figure 1 is a vertical longitudinal section of a shoe equipped with my improved arch supporter and showing the manner in which the supporter operates when a foot bears down upon it.

Figure 2 is a plan view of the sole of the shoe taken substantially on line 2—2 and showing the manner in which the arch supporter rests upon the same.

Figure 3 is a vertical longitudinal section of a shoe sole and the arch supporter resting thereon showing the form of the latter when not subjected to the pressure of the foot.

Figure 4 is a cross section of the arch supporter about midway of its length showing its form when not subject to foot pressure.

Figure 5 is a top plan view of the form of pad showing in Figures 1–4.

Figure 6 is a perspective view showing a modified form of resilient pad for the arch supporter as compared with that shown in Figures 1–5.

Figure 7 is a cross section of the lower part of a shoe showing the manner in which this modified form of arch supporter engages the shoe and foot when in use.

Similar characters of reference indicate like parts throughout the several views.

The shoe shown in the drawings as an example of foot wear adapted for use in connection with my invention comprises a sole 10 provided on the rear part of its underside with a heel, and an upper or vamp 12 connected with the marginal part of the sole in a well known manner.

My improved arch supporter is adapted to be arranged within the shoe and rest upon the rear part of its bottom. The form of arch supporter shown in Figures 1–5 is constructed as follows:

The numerals 13 and 14 represent lower and upper sheets of pliable material such as soft leather. These sheets are superposed and of like outline so as to conform generally to the shape of the space over the rear part of the bottom of the shoe.

These sheets are connected along some parts of their edges while other parts thereof are unconnected and thereby form a pocket 15 between these sheets and openings 16, 17 at the opposite longitudinal sides of the pocket which are transverse in line about midway of the length of the sheets. This connection between the sheets may be effected in any suitable manner, for instance by means of stitches 18, as shown in Figures 2 and 3.

In this pocket is placed a pad 19 of resilient material which is preferably introduced through the opening 16 on the inner longitudinal side of the arch supporter so that a larger part of the pad is arranged underneath the high part 20 of the instep of the foot 21 which rests on the supporter. For this purpose the inlet opening 16 is made comparatively long while the opposite opening 17 is made comparatively short, as defined by the termination of the stitches 18 in Figure 2, which is sufficient to permit the opening 17 to serve as a vent to the interior of the shoe whereby air can escape from the outer longitudinal side of the pocket when introducing the pad into the pocket or when the foot presses on the supporter, and air can also readily enter this side of the pocket when withdrawing the pad through the opposite side of the same or when the foot pressure on the supporter is relieved. By this means air is at no time trapped in the supporter and only the resilience of the pad is relied on to furnish the cushioning effect for the foot. This pad may consists of soft sponge rubber, as shown in Figures 1, 3, 4 and 5, and the same is somewhat greater in extent along its inner longitudinal side 22 which is adapted to support the high part of the instep than the opposite or

outer side 23 which is adapted to support the low part of the instep, as shown in Figure 5, thereby providing a cushion in accordance with the requirement of different parts of the foot. As the pressure of the foot is brought to bear on the supporter the pad therein is flattened, spread and shaped to conform to the particular contour of the foot resting thereon. It is possible for the pad to thus adapt itself to the shape of the foot inasmuch as the pad is of smaller area than that demarcated by the boundaries of the edges of the pocket, thereby leaving the pad free on all sides to spread out in any direction under the pressure of the foot and thus enable the pad to adapt itself to the shape of the foot and provide a uniform cushion support for all parts of its arch which will permit easy and comfortable walking.

If the pad should become set or less elastic by long usage the same may be removed from the pocket through the large opening 16 and returned after being kneaded to loosen its cells or fibers and restore its resilience or cushioning capacity.

To permit slipping the foot easily into the shoe without displacing the arch supporter the upper sheet of leather is arranged with its smooth or dressed side 24 facing upwardly and its undressed or rough side 25 facing downwardly while the dressed side 26 of the lower sheet of leather faces upwardly and the undressed or rough side 27 of the same faces downwardly. By this means the foot can slip easily into and out of the shoe on the smooth top 24 of the arch supporter and the rough underside 27 of the supporter will cling to the bottom of the shoe to avoid displacement.

In order to positively guard against displacement of the arch supporter in the shoe while drawing the same on or removing it from the foot a pneumatic gripper is provided for attaching the supporter to the bottom of the shoe. This gripper preferably consists of a flexible pneumatic suction cup 28 of rubber secured by cement with its convex upper side to the central part of the underside of the lower sheet 14 so that its concave side faces downwardly. After placing the supporter in the desired position within the shoe and pressing downwardly thereon the edge of the suction cup on its underside will be engaged with the bottom of the shoe and flattened out thereby expelling the air therefrom whereby upon removing the pressure of the foot the vacuum created within the cup will cause the external air pressure against the same to hold it firmly in place together with the arch supporter of which it forms a part.

Instead of making the pad of soft sponge rubber the same may be made of comparatively stiff or hard sponge rubber, as shown at 29 in Figures 6 and 7. When making the pad of the last mentioned material the same does not spread so freely for adapting the same to the shape of the foot and it is therefore desirable to make the same comparatively thin on the outer longitudinal side of the supporter, as shown at 30 and comparatively thick and rounded on the opposite longitudinal edge of the supporter, as shown at 31, in order to fit the adjacent rounded part of the shoe.

In marketing this arch supporter it will be necessary to make the same in a suitable number of sizes each of which will take in a certain range of shoe sizes.

This arch supporter is not only very simple in construction and low in cost but it will also automatically conform to the shape of the foot it is intended to support and thereby cushion the same in a raised position without producing any discomfort and instead enable the wearer to walk with ease and without becoming sore or tired.

I claim as my invention:—

1. An arch supporter comprising upper and lower sheets of pliable material which are connected at their marginal parts forming a pocket therebetween, a pad of resilient material arranged within said pocket, and means for preventing said lower sheet from slipping on the bottom of the shoe in which it is placed comprising a pneumatic gripper arranged on the lower sheet.

2. An arch supporter comprising upper and lower sheets of pliable material which are connected at their marginal parts forming a pocket therebetween, a pad of resilient material arranged within said pocket, and means for preventing said lower sheet from slipping on the bottom of the shoe in which it is placed comprising a flexible pneumatic suction cup secured to the central part of the underside of said lower sheet with its concave side downward and adapted to engage its edge with the bottom of the shoe.

JOHN CLARK.