Oct. 14, 1930. M. C. MESSLER 1,778,683

CUSHIONING AND ARCH SUPPORTING DEVICE

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Fig. 1.

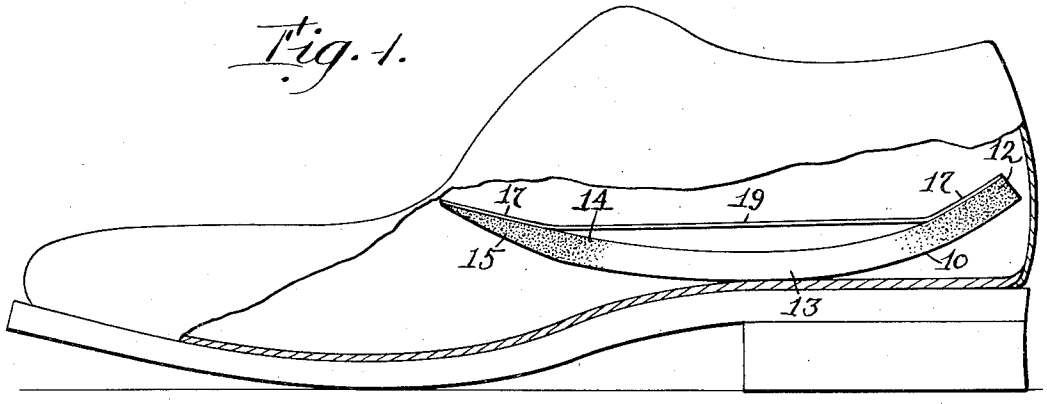


Fig. 2.

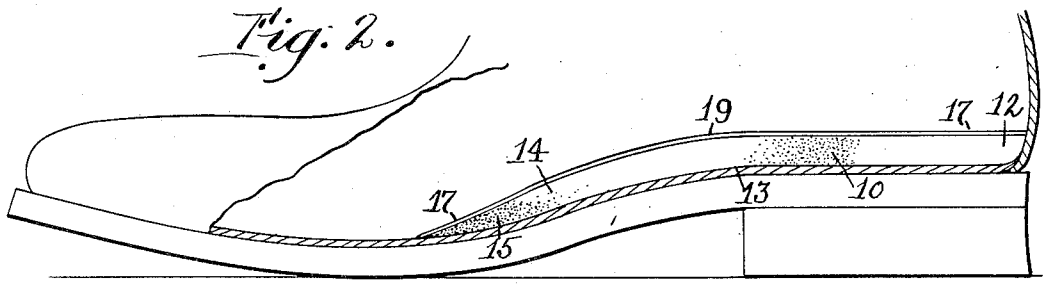


Fig. 3.

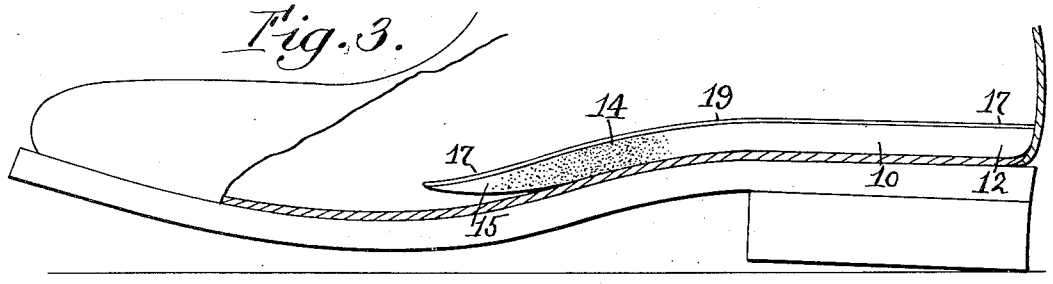
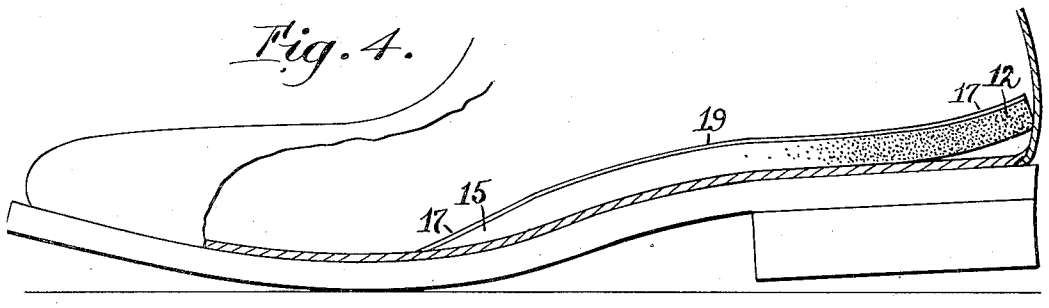


Fig. 4.



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Fig. 5.

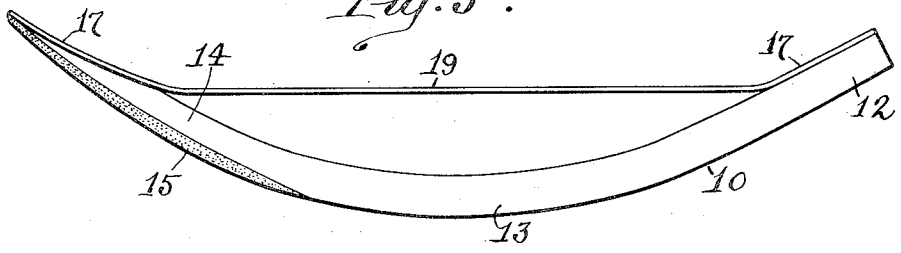


Fig. 6.

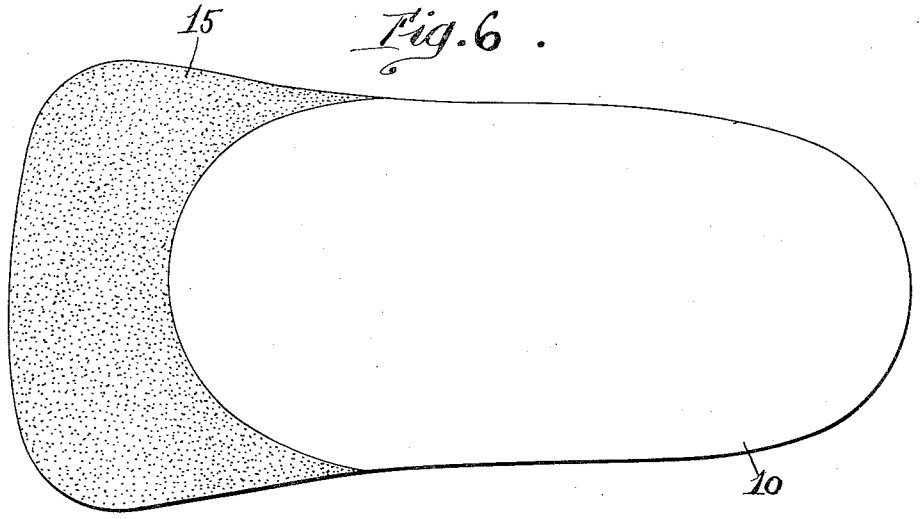
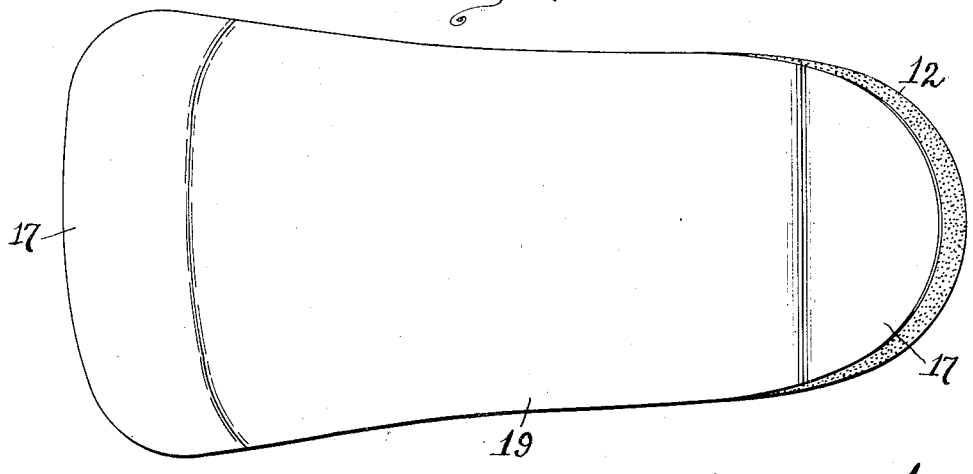


Fig. 7.



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UNITED STATES PATENT OFFICE

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CUSHIONING AND ARCH-SUPPORTING DEVICE

Application filed October 19, 1929. Serial No. 400,917.

This invention relates to a cushioning and arch-supporting device for use in boots and shoes.

The invention has for its object to provide a superior device of the character described, which is capable of being inserted into the shoe.

To this end, the device is provided with a cushioning member, preferably of sponge rubber, which member is preferably provided with a tapering front end portion and with shank and heel portions of substantially uniform thickness.

The cushioning member is made of a length substantially equal to the distance from the rear of the heel of the shoe to the ball thereof, and has co-operating with it a flexible arching member of thin leather or like fibrous material which is preferably of a length less than that of the cushioning member and has its opposite ends secured to the heel and tapered front portions of the cushioning member and its intermediate portion free from the shank portion of the cushioning member so that the cushioning member is curved or rendered arc-shaped, for a purpose as will be described.

The particular features of the invention will be pointed out in the claims at the end of this specification.

Fig. 1 represents a shoe having a cushioning and arch-supporting device embodying this invention, the shoe being broken away and the device being shown in what may be considered its normal position, with the shoe removed from the foot of the wearer.

Figs. 2, 3 and 4 views of the shoe with the cushioning device in different positions, to illustrate the action of the same when the wearer of the shoe is standing still and when walking;

Fig. 5 is a side elevation on a larger scale of the cushioning device shown in Fig. 1 removed from the shoe.

Fig. 6, an inverted plan view of the cushioning device shown in Fig. 1, and

Fig. 7, a plan view of the cushioning device shown in Fig. 5.

Referring to the drawings 10 represents the cushioning member, which is made of flexible and compressible material, preferably sponge rubber, and is provided with a heel portion 12, a shank portion 13, and a ball portion 14, which latter is made tapering, being provided as herein shown with a tapered under surface 15 (see Fig. 6).

The cushioning member 10 is normally flat and its heel and shank portions 12, 13 are of substantial and uniform thickness while its front end portion 14 is tapered. The cushioning member 10 has imparted to it a curved or arc shape by means of a strip or member 17 of thin leather or other fibrous material, which strip or member is cemented or otherwise attached to the upper surface of the cushioning member 10 at the front and rear ends of the latter and so as to leave an intermediate portion 19 of the arching strip or member 17 shorter than the length of the cushioning member, which shorter portion is separated from the upper surface of the intermediate portion of the cushioning member 10 so as to form a chord for the arc-shaped cushioning member 10.

The strip or member 17 serves to normally arch the cushioning member when the latter is removed from the shoe as represented in Fig. 5, and also when inserted into the shoe and the latter is off the foot of the wearer, as represented in Fig. 1.

When the shoe is on the foot of the wearer and the latter is standing still, the foot depresses the front and heel portions of the cushioning member after the manner shown in Fig.2 and causes the shank portion of the rubber member to be longitudinally compressed and arched upwardly into engagement with the chord portion 19 of the arching member and thereby reversely arch the chord portion and cause the intermediate portion of the cushioning device to conform to the instep portion of the foot and support and cushion the said instep portion and thus support and cushion the longitudinal arch of the foot. When the arch supporter is in place and subjected to pressure, forward movement of the cushioning member is resisted by the fibrous member and the position of the arch supporter is determined by the fibrous member.

The chord member 19 of the arching member 17 tends to restore the cushioning member 10 to its normal position represented in Figs. 1 and 5 in the act of walking, for when the heel of the shoe is brought into contact with the ground as represented in Fig. 3, the weight of the foot is practically removed from the tapered front of the cushioning device and the latter is lifted by the action of the chord member 19 and is moved more or less toward the heel portion of the foot by the expansion lengthwise of the compressed intermediate portion of the cushioning member and is thus moved rearwardly into contact with the bottom of the instep portion of the foot, and is moved in the reverse direction when the ball portion of the shoe is brought into engagement with the ground after the manner represented in Fig. 4.

In this manner, the supporting and cushioning device has more or less of a massaging action upon the instep portion of the foot and therefore more or less action to promote circulation of the blood in the foot with benefit to the wearer of the shoe.

The cushioning member 10 may be insertable into and removable from the shoe, or, if desired, it may be definitely located in the shoe by cementing the cushioning member 10 at its rear portion to the sole of the shoe and so as to leave the tapered front end free to be moved by the chord member as above described.

It may be preferred to cement the shank portion 13 to the sole of the shoe and leave both the tapered front portion and also the heel portion free to be moved by the chord 19 after the manner represented in Figs. 3 and 4.

It is preferred to use the supporting and cushioning device after the manner herein represented and described, namely, with the chord member 19 uppermost and with the cushioning member curved or arched downward, but in some cases the said device may be used reversely, to wit: with the cushioning member arched upwardly, in which the latter case the chord member serves to maintain the arched cushioning member in contact with the bottom of the instep portion of the foot, and thereby support the longitudinal arch of the foot for the length of the same under all conditions of use while providing for a massaging action of the bottom of the instep portion of the foot in the act of walking.

From the above description it will be observed that when the cushioning device is free from pressure, as represented in Fig. 1, the arching member is provided with oppositely inclined end portions which are affixed to the ends of the cushioning member and said end portions are connected by an intermediate portion which is not affixed to the cushioning member but is shorter than the length of the cushioning member and the construction is such that when pressure is applied by the foot of the wearer, the ends of the arching member are capable of being brought into substantially the same plane as the intermediate portion thereof and of effecting longitudinal compression of the intermediate portion of the cushioning member especially when the latter is made of relatively soft rubber, such as sponge rubber, as the arching member resists stretching action and thereby effects longitudinal compression of the more compressible cushioning member. When the pressure is removed, the longitudinally compressed intermediate portion of the cushioning member expands, and assisted by the shorter unattached portion of the arching member causes the end of the cushioning member to be restored to its arched or curved form.

What is claimed is:

1. An arch supporting and cushioning device for boots and shoes comprising a cushioning member of relatively soft rubber, and a member of substantially non-extensible fibrous material shorter in length than said cushioning member and fixedly attached at its ends to said cushioning member for normaly arching the cushioning member.

2. An arch supporting and cushioning device for boots and shoes, comprising a cushioning member of relatively soft rubber, and an arching member of fibrous material fixedly secured at its ends to the cushioning member and having a portion intermediate said ends shorter than said cushioning member and unattached thereto for normally arching said cushioning member and for effecting longitudinal compression of portions of the cushioning member intermediate the end portions thereof when the center portion of the cushioning member is subjected to pressure.

In testimony whereof, I have signed my name to this specification.

MATIE C. MESSLER.