G. F. BUTTERFIELD.

BOOT OR SHOE.

APPLICATION FILED OCT. 23, 1913.

1,174,054. Patented Mar. 7, 1916.

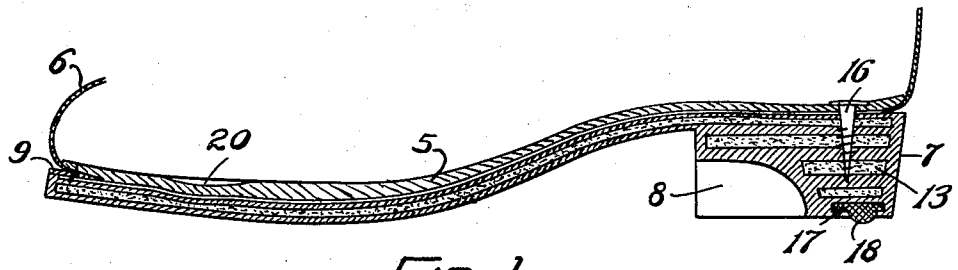


FIG. 1

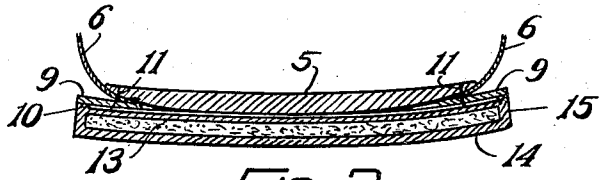


FIG. 2

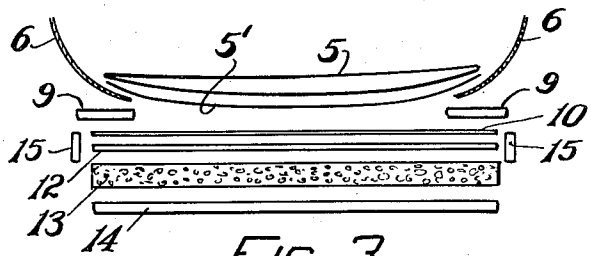
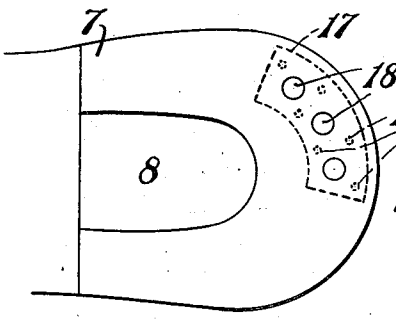


FIG. 3

FIG. 4



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BOOT OR SHOE.

1,174,054. Specification of Letters Patent. Patented Mar. 7, 1916.

Application filed October 23, 1913. Serial No. 796,830.

To all whom it may concern:

Be it known that I, GEORGE F. BUTTERFIELD, of West Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Boots or Shoes, of which the following is a specification.

The object of this invention is to provide a composite boot or shoe having a leather or other suitable upper, insole and welt and a lower portion,—that is a sole and heel,—of a waterproof character and of the peculiar construction hereinafter described, whereby a very soft, resilient sole and heel are produced, built up in one with, and vulcanized permanently to, the under surface of the lasted boot or shoe.

The drawing represents the general construction in two sectional views, Figures 1 and 2. Fig. 3 shows the several parts as about to be assembled and Fig. 4 illustrates the peculiar heel construction.

In the construction of my improved shoe, I first coat the inner-sole, 5, on its bottom 5′, with a vulcanizable rubber compound cement. Then I stitch firmly together, by a seam 11 the insole, 5, the upper 6, and the welt 9 (or welt-sole), and a continuous layer of silk fabric 10, that has been thoroughly coated on both sides with vulcanizable rubber cement. I then apply a thin, impermeable layer 12, of the soft rubber compound to the whole bottom of the shoe in process; then a substantial layer of sponge rubber compound 13 is applied over the entire bottom, followed by another sheet or layer 14 of said vulcanizable rubber compound. The heel portion will be built up of successive layers of the same material as the sole. To receive this sole and heel made integral, the boot or shoe has had the heel portion punched through to receive broad and flat headed screws, or nails, 16, which are embedded in the soft resilient and sponge rubber compound, while in the vulcanizing mold, and the pressure of the metal last within the shoe forces the screw or nail heads to embed themselves in the inner sole and into the compound in the heel portion of the shoe mold, so smoothly that they do not hurt the foot, and all parts are held firmly together as the result of vulcanization, so that they cannot be torn off. I make no special claim to this construction. I also finish the edges of the sole and heel with a thin tape 15 of impermeable rubber compound which makes a smooth edge when vulcanized therewith.

In forming my improved shoe, the shoe-upper 6 and insole 5 are lasted or made ready to go on the metal last to receive the soft compound rubber bottom and heel to be all in one body when completed. The metal screws or nails in the heel portion are embedded in the soft rubber compound, which, while in the mold, is vulcanized firmly to them. The compound is also vulcanized firmly to the entire shoe bottom.

A small, curved plate of soft metal 17, with protuberances 18, on it, is also placed in the heel portion of the mold, at its rear edges, and when the rubber is vulcanized said plate is embedded therein upon the heel at its rear wearing edge conforming to the curvature of the heel to withstand the wear and to prevent slipping. Perforations 19, Fig. 4, permit the rubber to form through the plate to secure it. The bottom of the heel 7 is concaved in the central and forward portion, as at 8, Figs. 1 and 4, this bringing the resistance to the weight of the wearer upon the thick edges. This makes a more resilient tread and takes less material; it is lighter in weight and the crushing and working of the material, when in use, throws out snow, mud or stones. It wears more evenly than a solid heel and gives a firmer tread. Such a heel has the advantage that it does not slip.

A peculiarity of my improved shoe sole is the formation in its upper surface of a depression 20, at the location corresponding to that of the great toe of the wearer and adapted to receive some portion of the enlarged joint of the toe, which frequently requires more space than the ordinary shoe affords. This depression gives an arch-like support and may be formed during vulcanization by a corresponding projection on the metal last within the shoe.

A division of this case has been filed Feb. 5, 1916, Serial No. 76,478.

I claim as my invention:

1. A boot or shoe having in combination an upper, an insole and a composite sole comprising a rubber saturated sheet of silk fabric stitched marginally to said upper and insole and a sole body of rubber compound vulcanized to said sheet, substantially as set forth.

2. A shoe having a sole comprising two impermeable layers and an intermediate layer of sponge-rubber compound, said layers being vulcanizable when first assembled and being permanently united into one integral body by vulcanization, substantially as set forth.

3. A boot or shoe having an upper, and a composite integral bottom comprising an inner sole coated with rubber cement, a welt, a rubber saturated silk layer stitched to said inner sole and to said welt, a layer of soft rubber compound under said silk layer, a layer of sponge-rubber compound extending the entire length of said bottom, and a thin sheet of impermeable rubber compound covering the lower surface of said sponge-rubber layer and the edges of all said layers.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE F. BUTTERFIELD.

Witnesses:

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MORA A. CORLISS.