

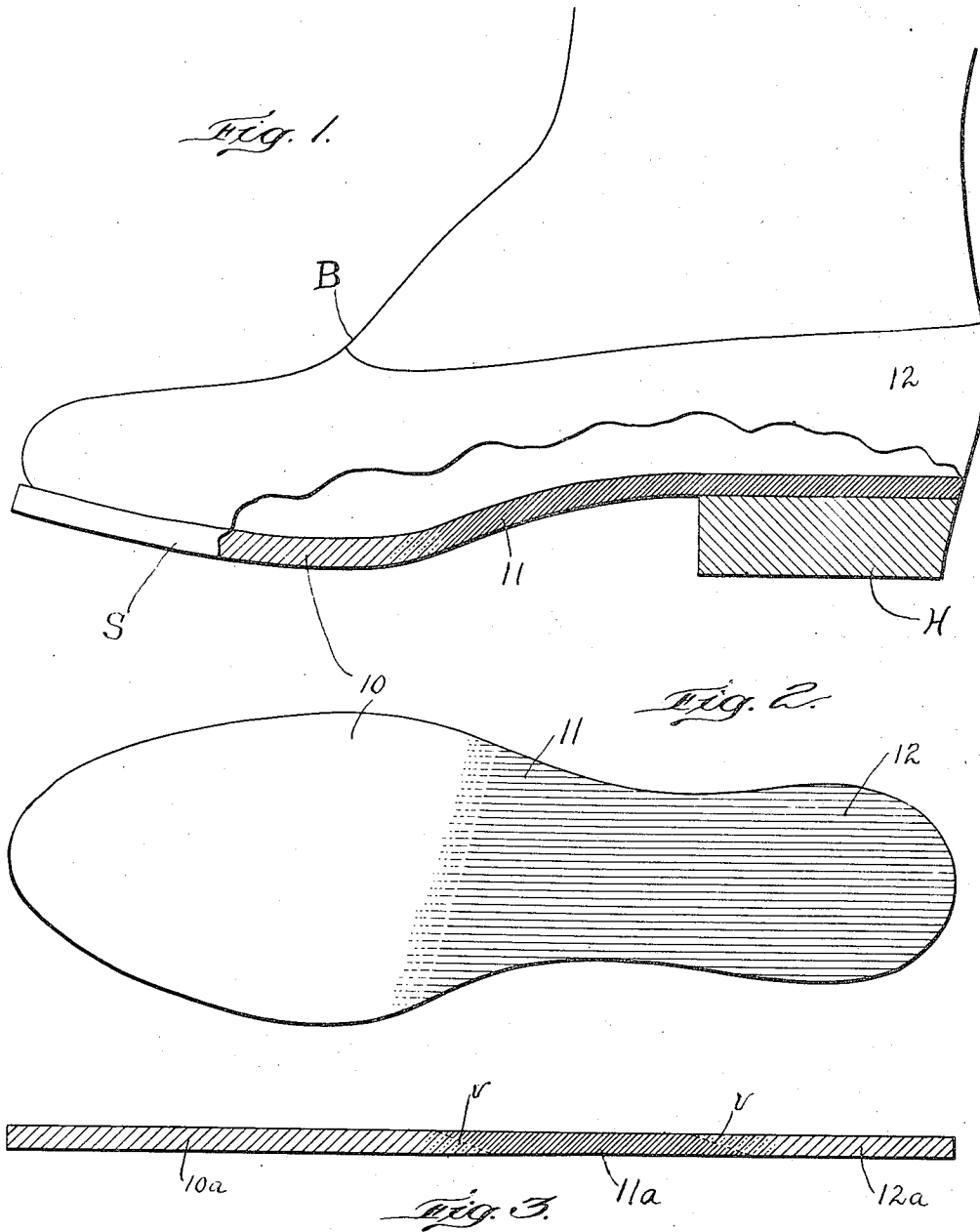
M. BROWN.
VULCANIZED SOLE.

APPLICATION FILED NOV. 18, 1916. RENEWED FEB. 7, 1922.

1,428,356.

Patented Sept. 5, 1922.

2 SHEETS—SHEET 1.



Inventor:
Max Brown,
by Clyde L. Rogers
his atty.

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Fig. 4.

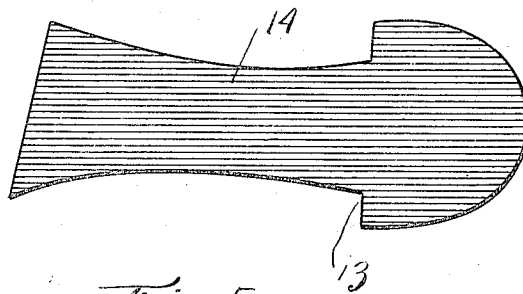
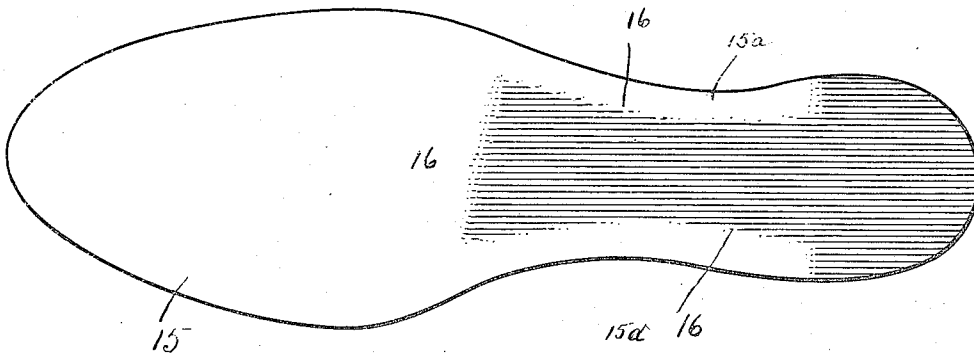


Fig. 5.

Inventor:
Max Brown,
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UNITED STATES PATENT OFFICE.

MAX BROWN, OF BROOKLINE, MASSACHUSETTS.

VULCANIZED SOLE.

Application filed November 18, 1916, Serial No. 132,048. Renewed February 7, 1922. Serial No. 534,813.

To all whom it may concern:

Be it known that I, MAX BROWN, a citizen of the United States, and resident of Brookline, county of Norfolk, Commonwealth of Massachusetts, have invented an Improvement in Vulcanized Soles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to soles for boots and shoes of rubber or rubber like composition capable of being vulcanized or treated in like manner to harden or stiffen the material variably according to the degree to which the vulcanizing process is carried out.

A prime object of the invention is to provide a sole of this character having its forward or ball portion relatively soft, e. g., of rubber treated so as to leave it relatively compressible and resilient, while the shank portion of the sole may be vulcanized to a relatively hard and stiffened condition whereby it has the attributes of a reenforced shank and instep support. The heel portion of the sole may also be vulcanized to render it relatively hard in the same or different degree from the shank so as to constitute a firm, reliable backing for the heel, and to which it may be securely fastened. While I preferably produce the present rubber sole with both its shank and heel portions hardened or stiffened by vulcanizing to a condition approaching ebonite or vulcanite, it is to be understood that my invention also contemplates thus hardening or stiffening either the shank or the heel portion selectively, while leaving the other relatively soft, if desired. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description, and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevation of a shoe showing most of the sole broken away in lengthwise vertical section to illustrate the invention;

Fig. 2 is a plan view of a sole constructed in accordance with my invention;

Fig. 3 is a lengthwise vertical section showing a sole produced in accordance with a modification of the form shown in Figs. 1 and 2;

Fig. 4 is a plan view of a sole exhibiting a modified form of the invention; and

Fig. 5 is a plan view showing the shank and heel portion of the sole in accordance with the form shown in Fig. 4.

A boot or shoe B of usual or any desired type and form is equipped with a usual or any desired heel H, or the heel may of course be omitted if desired. In accordance with my invention the sole S is formed of rubber or rubber like material capable of being treated by vulcanization or like process to harden or stiffen the same to a required degree. It will be understood that where I use herein the terms "rubber" and "vulcanizing" these are intended in an illustrative and not in a restrictive sense and meant to typify in a broader aspect, any suitable material having characteristics more or less like rubber and capable of being treated by a process more or less like the vulcanization of rubber to harden or stiffen the same to a required degree. The sole S which is of one piece as shown in Figs. 1 and 2 has its forward or ball portion 10 relatively soft and compressible as is usual in rubber shoe soles so as to provide a resilient elastic tread and be at the same time impervious to moisture. The shank portion 11 and the heel portion 12 of the sole are treated by the vulcanizing process to render them relatively hard and stiff, i. e., approaching the rubber products known as ebonite and vulcanite, thus providing a reenforced and stiffened shank and a heel backing to which the heel H may be securely and reliably fastened. Instead of starting with a sole in one piece I may produce my improved sole by a modification as illustrated in Fig. 3 wherein the forward or ball portion 10^a, the shank portion 11^a, and the heel portion 12^a may be produced in separate pieces and then after being treated to bring them to the required degrees of hardness in each case, they may be vulcanized together as indicated at v. Thus as shown in Fig. 3 the forward or ball portion 10^a is of relatively soft rubber, the shank portion 11^a is hardened to provide a reenforced shank, and the heel portion 12^a is left relatively soft as might be desirable in cases where no heel, or a relatively low heel is used, to contribute to the resiliency of the heel; these three pieces constituting substantially a single integral sole member when vulcanized together. It will also be understood that the

heel portion alone might be vulcanized hard if desired leaving the shank and sole portions relatively soft and compressible, i. e., any desired combination in this respect may be attained within the broader conception of my invention. In Figs. 4 and 5 I show a form of the invention where a heel portion 13 and a shank portion 14 are produced of relatively hard vulcanized rubber or the like made in one piece. In this form the relatively hard heel and shank portion thus constituted are vulcanized and molecularly united with the relatively soft and resilient front portion 15 of the sole, the relatively soft portion of the sole extending as shown backward at each side of the hard shank portion 14 as seen at 15^a, and being vulcanized thereto along the extended contact line thus created both at the sides and end of the shank portion 14,—thus insuring an adequate and reliable union between these portions. In practice the relatively hard heel and shank portion may be first produced and set in the mold, and then the soft forward portion of the sole applied thereto and vulcanized therearound. I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims, rather than to the foregoing description, to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

35 1. A sole for boots and shoes, composed of a single piece of material relatively compressible and soft at its forward portion and having a central shank portion relatively hard and stiff to constitute a shank re-
40 inforce.

2. A sole for boots and shoes, composed of a single piece of material relatively flexible and soft at its forward portion, and with a central shank piece of restricted width relatively hard and stiff to constitute a shank re-
45 inforce, and having also a relatively hard and stiff heel seat.

3. A sole for boots and shoes having the forward portion thereof relatively flexible, and a shank portion constituting a reinforce
50 relatively hard and molecularly united to the forward portion, the shank having a softer edge portion at each side of said hardened reinforce.

4. A sole for boots and shoes, composed of rubber, having its forward or ball portion relatively compressible and soft, and with its shank portion vulcanized to render it relatively hard and resistant to constitute a
60 shank reenforce.

5. A sole for boots and shoes, composed of a relatively soft forward portion substantially uniform throughout the thickness of the sole, and a shank portion relatively hard and stiffened throughout the thickness of
65 the sole, both said portions being of material impervious to moisture.

6. A sole for a boot or shoe having a tread and a shank portion, both of vulcanized rubber, the rubber of the shank being stiffer
70 than that of the tread.

7. A sole for a boot or shoe having a tread comprising a rubber compound and a shank comprising rubber compound continuous with said tread, said shank rubber com-
75 pound being of stiffer character than said tread.

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

MAX BROWN.