A. D. WARNER.

RUBBER BOOT OR SHOE.

APPLICATION FILED MAY 3, 1910.

989,089. Patented Apr. 11, 1911.

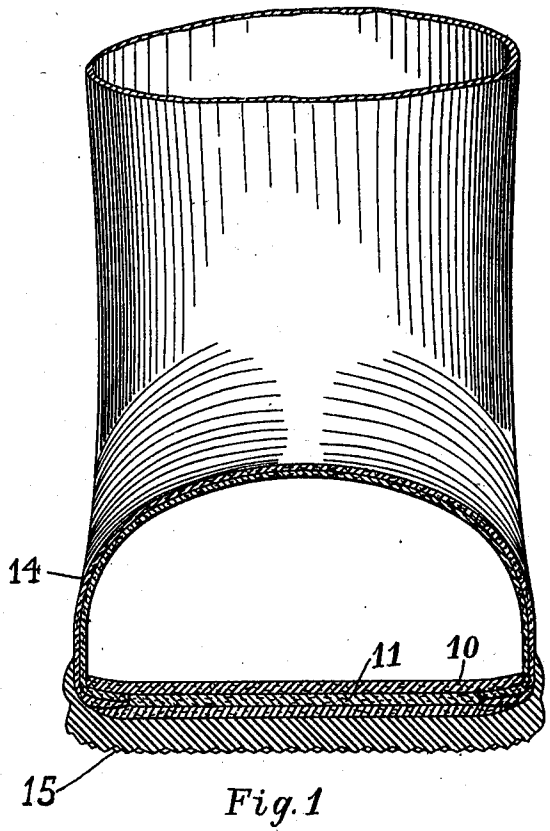

Fig. 1

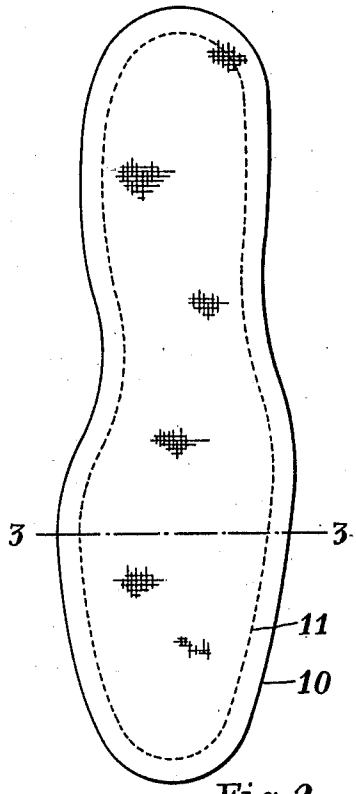

Fig. 2

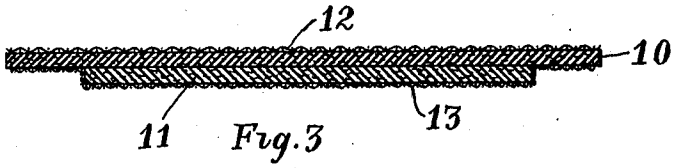

Fig. 3

Witnesses:

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ADNA D. WARNER, OF MISHAWAKA, INDIANA.

RUBBER BOOT OR SHOE.

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To all whom it may concern:

Be it known that I, ADNA D. WARNER, a citizen of the United States, residing in Mishawaka, county of St. Joseph, and State of Indiana, have invented a certain new and useful Improvement in Boots and Shoes, of which the following is a specification.

This invention relates to an improved rubber boot or shoe wherein a peculiar form of combined insole and filling sole is employed, with the result of increasing the life of the boot or shoe and of decreasing the labor incident to its manufacture.

The improved combined insole and filling sole is made by an improved method in one solid integral piece without cement or hand rolling as hereinafter described, and as particularly claimed in my copending applications, which are divisions of this application.

The combined insole and filling sole in question lends itself to easy and rapid manufacture and to simple and ready adjustment in proper relation to the other portions of a boot or shoe, and it possesses furthermore a high degree of strength and durability, whereby the life of the boot or shoe of which it forms a part is increased.

In the accompanying drawings, Figure 1 is a vertical section through the lower part of a rubber boot, showing the relation of the improved form of combined insole and filling sole to the other parts of the boot, Fig. 2 is a plan view of the combined insole and filling sole, looking downward, and Fig. 3 is a section on the plane 3—3 of Fig. 2.

The combined insole and filling sole is manufactured as follows:—Calendered sheets of the rubber compound, or equivalent material, are prepared; the sheets intended for making the wider portion 10 of the combined insole and filling sole being faced with fabric 12 in any well known manner. These faced sheets are then cut or stamped to the proper shapes and sizes to make the portion 10. The narrower portions 11 are cut or stamped out of similar calendered sheets, which, however, are not faced. The shaped pieces 10 and 11 having been cut as described, the unfaced piece 11 is placed upon the unfaced side of the piece 10 in the position shown in dotted lines in Fig. 2. A piece of fabric 13 of proper shape and size to entirely cover the combined insole and filling sole is then laid over the two sheets of uncured rubber compound, and the whole mass is subjected to pressure, preferably in a hydraulic press. In making the boot or shoe the combined insole and filling sole thus produced is assembled with the material for the uppers, 14, upon a tree or last, and the outer sole 15 is applied as shown in the drawings; the inturned edges of the uppers folding under the wide layer 10 and abutting against the part 11. The insole and filling sole combined may be vulcanized separately from the remainder of the boot (either when first compressed or later) and may be cemented to the other portions before final vulcanization, or the bottom portions of the boot, including the combined insole and filling sole and the outer sole may all be vulcanized together under pressure.

By the use of the above process, I avoid all cementing between the layers of the insole and filling sole, and secure a homogeneous and integral mass faced on both sides with fabric incorporated by pressure with the rubber or equivalent compound.

In my preferred modification of this invention the two portions 10 and 11 of the combined insole and filling sole differ further in the relation of their longitudinal dimension to the direction of rolling of the respective sheets. In the wider sheet 10 the longitudinal dimension is the direction of rolling, while the narrower sheet 11 is cut with its longest dimension at right angles to the direction of rolling. I find that this arrangement of the calendered material adds greatly to the combined flexibility and strength of the inner parts of the bottom of the shoe or boot, because the calendered material is more flexible across its direction of rolling, while the use of the upper layer cut longitudinally of the sheet, firmly united to the transversely cut layer, prevents all tendency to split due to the natural bending of the combined insole and filling sole during use.

What I claim is—

1. The process of manufacturing rubber boots and shoes which consists in forming of green compound and assembling separately from the remainder of the boot or shoe an insole and a narrower filling sole, uniting the two by extremely high pressure so as to form an integral mass shaped with a recess all around and under it, applying the integral mass so formed as a unitary article to a last, applying the green upper to said last, applying a green outer sole to the

parts so built up, and vulcanizing the whole, substantially as described.

2. The process of manufacturing rubber boots and shoes which consists in forming of green compound from calendered sheets a relatively wide insole and a relatively narrow filling sole so cut that the line of rolling is longitudinal in the insole and transverse with respect to the filling sole, assembling the two shaped pieces separately from the remainder of the boot or shoe, subjecting said pieces to extremely high pressure whereby an integral unitary article is formed, assembling this article with the remainder of the boot or shoe, and vulcanizing the same in place, substantially as described.

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