

No. 665,289.

Patented Jan. 1, 1901.

T. WATTERS.

BOOT OR SHOE AND METHOD OF FORMING SAME.

(Application filed Oct. 31, 1899.)

(No Model.)

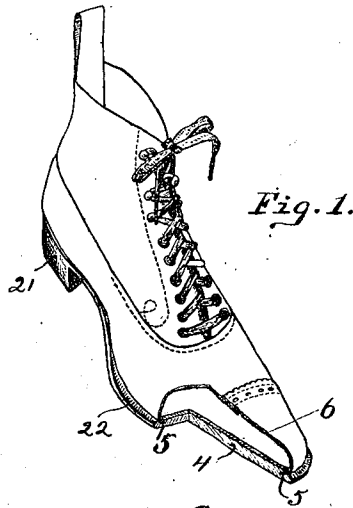


Fig. 1.

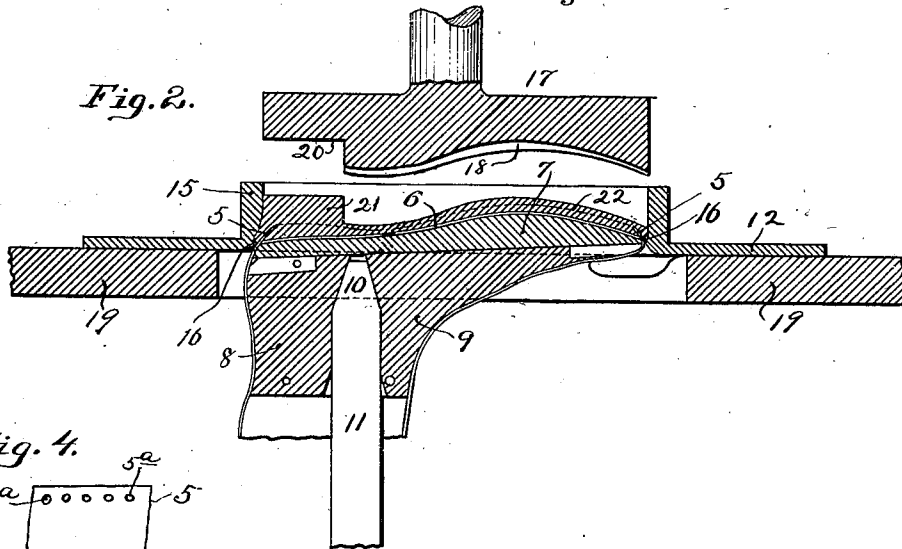


Fig. 2.

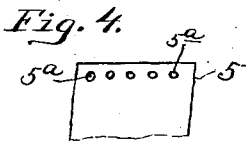


Fig. 4.

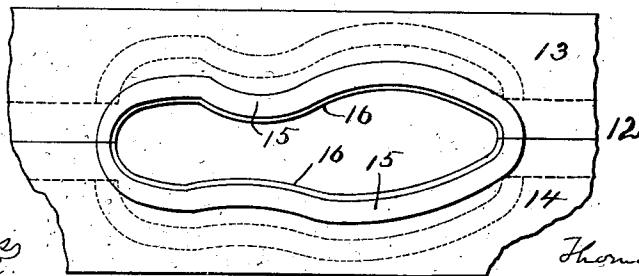


Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS WATTERS, OF PITTSBURG, PENNSYLVANIA.

BOOT OR SHOE AND METHOD OF FORMING SAME.

SPECIFICATION forming part of Letters Patent No. 665,289, dated January 1, 1901.

Application filed October 31, 1899. Serial No. 735,349. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WATTERS, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Forming Shoes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the formation and attachment of soles to boots and shoes, its object being to form the sole and attach it to the upper at one and the same time.

My invention consists, generally stated, in forming boots or shoes by securing the upper over a suitable last, placing the last and the upper in a suitable mold, with the lower edges of the upper extending beyond the edges of the last and away from its bottom, and molding the plastic material upon the same, said molded sole enveloping the projecting or free edges of the upper in such manner as to securely unite the sole to said upper, and in the shoe constructed by such method.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of a shoe formed in accordance with my invention, a portion of the sole and upper being shown in section. Fig. 2 is a sectional view of the shoe and mold, &c., showing the manner in which the sole is formed and attached to the upper. Fig. 3 is a plan view of the mold, showing the two parts thereof closed in full lines and separated or open in dotted lines; and Fig. 4 is a detail of a portion of the upper.

Like numerals indicate like parts in each figure of the drawings.

As shown in Fig. 1, the sole 4 is attached to the upper by embedding a portion of the lower edges thereof in the sole, as indicated at 5, the sole being molded from plastic material, which readily allows of such attachment, and being molded directly to the upper. An insole 6 is attached to the inside of sole 4, said insole adhering thereto when the sole is in its plastic state. The insole also serves the purpose of preventing the plastic material from coming in contact with and adhering to the last, as will appear hereinafter.

In practicing my invention I first form the

upper in the usual manner and place the same over a suitable last. I prefer to form the last in sections, so that said sections may be forced apart to stretch or last the upper at the time of inserting the upper in the mold, the last and mold serving to firmly hold the upper in proper position during the process of molding the sole thereto. For this reason I have shown the last as composed of the bottom plate 7 and the body portion or sections 8 and 9. Any number of sections may be used as may be found most practical. The sections 8 and 9 of the last may be separated by the wedge 10, so as to stretch the upper over the same, the body 11 of said wedge being used as a support for said last during the subsequent molding and pressing operation, to be hereinafter described. A further description of the last is deemed unnecessary, as said last forms no part of my invention. Any suitable last, however, may be used.

The upper is so formed as to leave a portion of the lower or ragged edges extending beyond the last when stretched over the same, said projecting edges corresponding to the portions 5, before referred to.

The projecting edges 5 of the upper are preferably perforated, as shown at 5^a, Fig. 4. During the molding of the sole these perforations will be filled with the plastic material and the sole and upper more firmly united.

For the purpose of molding the sole I provide the mold 12, comprising two parts 13 and 14, which may be separated, as shown in dotted lines, Fig. 3, for the purpose of inserting the last and upper. Extending up from the plates 13 and 14 of the mold are the flanges 15, which form the mold proper, and extending around inside of said mold, at practically the lower edge thereof, is the annular inwardly-projecting wedge-shaped ledge or flange 16. A plunger 17, the lower surface 18 of which conforms to the shape to be given to the sole, is supported above the mold in such manner that it may be lowered into the mold. The two parts 13 and 14 of the mold rest upon a suitable table, as indicated at 19, Fig. 2. After the upper has been formed and placed over the last the whole is inserted in the mold, the two parts of the mold being separated for the insertion of said last and upper. The mold is then closed and the wedge 10 forced up be-

tween the movable parts of the last, separating said parts and stretching the upper. The lower end of the upper is firmly held between the sole-plate 7 of the last and the flange 16 of the mold, causing the projecting edges 5 of the upper to incline inwardly in position to be wholly enveloped by the plastic material during the subsequent molding thereof. An insole 6, formed of any suitable material properly shaped, is then placed upon the exposed surface of the last, the edges being secured, if desired, to the inside of the projecting edges 5 of the upper by means of any suitable adhesive material. A sufficient quantity of the plastic material from which the sole is to be formed is then placed within the mold and the plunger 17 forced down upon the same, compressing said plastic material and causing it to conform to the shape of the mold, the outer surface of the sole taking the shape of the lower surface of the plunger. By this means the required shape is given to the sole, the plastic material entering the offset 20, provided in the bottom of plunger 17, thus forming the heel 21, and the thinner portion 22 of said sole being formed beneath the portion 18 of the plunger. After the plastic material has been sufficiently compressed the plunger 17 is withdrawn from the mold and the plastic material allowed to set. The mold is then opened, the shoe and last removed therefrom, and the last removed from the shoe. It may be found convenient, however, to leave the last in the shoe for the further finishing or polishing thereof.

By reason of the plastic condition of the material from which the sole is formed the insole adheres to said sole at the time of forming the same and the subsequent drying thereof firmly unites the upper to the sole, the portion 5 of the upper being firmly embedded in the sole, the plastic material entering the perforations 5^a in said projecting edges. Any suitable plastic material may be used for forming the sole, such as xelton, velverill, &c.

I am thus enabled to produce a shoe much more cheaply and quickly than has heretofore been possible and at the same time by forming the sole and heel in one piece I overcome

the possibility of the heel pulling loose, as often occurs in the case of shoes manufactured by the methods heretofore in use.

The molding of the sole directly to the upper, and the consequent embedding of a portion of the lower end of said upper in the sole, allows of a much stronger union of the two than can result from stitching or pegging, as in the present form of construction.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. The method of forming boots and shoes which consists in placing an upper on a last with its edges projecting beyond the edges of the last and away from the bottom thereof, forming and stretching the upper, molding a body of plastic material about the projecting edges of the upper to form a heel and sole in which the projecting edges of the upper are embedded and finally allowing said plastic material to harden.

2. The method of forming boots and shoes which consists in placing an upper on a last with its edges projecting beyond the edges of the last and away from the bottom thereof, forming and stretching the upper, placing an insole on the last within the projecting edges of the upper, molding a body of plastic material about the projecting edges of the upper to form a heel and sole in which the projecting edges of the upper are embedded, and finally allowing said plastic material to harden.

3. As a new article of manufacture, a boot or shoe provided with a composition heel and sole molded in one piece and having the edges of the upper embedded therein at an angle to the face of the sole.

4. As a new article of manufacture, a boot or shoe comprising a composition heel and sole molded in one piece and an upper having perforated edges that are embedded in the heel and sole piece and constitute the only means of fastening said parts together.

In testimony whereof I, the said THOMAS WATERS, have hereunto set my hand.

THOMAS WATERS.

Witnesses:

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