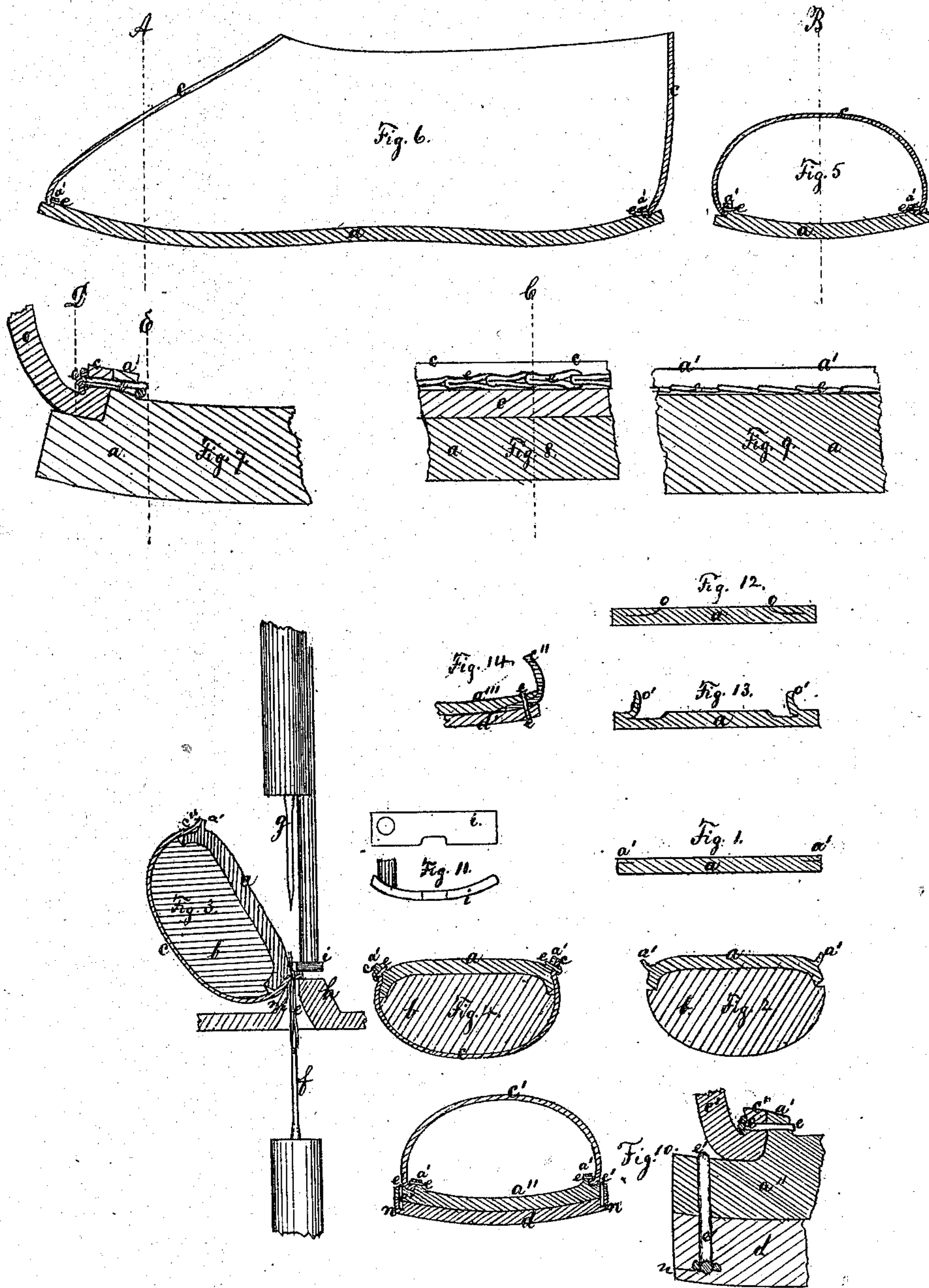


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W. WICKERSHAM.
MANUFACTURE OF BOOTS AND SHOES.



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IMPROVEMENT IN MANUFACTURE OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. 106,012, dated August 2, 1870.

To all whom it may concern:

Be it known that I, WILLIAM WICKERSHAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in the Manufacture of Shoes and Boots, of which the following is a specification:

The first feature of my invention relates to the manner of splitting the sole preparatory to its attachment to the upper in shoes and boots; and consists in splitting the sole from the outer edge toward the middle in a plane parallel, or nearly so, to its upper surface, and far enough in from the edge as to render the upper portion wide enough to hold the stitches by which the upper is attached to the sole, and far enough from the upper surface of the sole to allow sufficient thickness in the upper portion for the necessary strength. It also relates to the form given to the edge of the sole and the separation of the two parts previously split; and consists in bending the outer edge of the sole downward and the portion above the split upward, thereby opening the split sufficiently to receive the upper-leather preparatory to sewing it to the upper portion of the sole. The next feature of my invention relates to a shoe or boot as a new article of manufacture; and consists in a shoe or boot in which the upper is attached to the sole by means of chain-stitches (or stitches in which each one is interlocked by the succeeding stitch) passing through the upper and the upper portion of the sole, which has been separated from the lower portion of the same by a split or cut from the outer edge of the sole toward its middle, parallel, or nearly so, to its upper surface.

Referring to my drawings, Figure 1 is a cross-section of the sole of a turn-shoe or boot with a split made in the edge preparatory to attaching the upper to the upper portion of the split part. Fig. 2 shows the sole with the split part opened out and the sole bent into a suitable form for the attachment of the upper. It also shows the form of the last made suitable for the reception of the sole thus bent. Fig. 3 shows the same with the upper placed on the last suitably for its attachment to the sole and on the machine in the proper position for the seam to be sewed which unites the sole to the upper. It also shows the peculiar presser-foot and the projection on the upper side of the table, making it suitable for sewing on the

soles of my turn-shoes. Fig. 4 shows the turn-shoe after the sole and upper have been attached, but while on the last and before turning. Fig. 5 shows the same after it has been turned, as a cross-section of my shoe or boot, taken in the dotted line A. Fig. 6 is a longitudinal and perpendicular section of my turn-shoe, taken in the dotted line B. Fig. 7 is an enlarged view of one edge of the sole and upper, showing more clearly the manner of attaching the one to the other, taken in the dotted line C. Fig. 8 is an enlarged perpendicular section through one edge of the sole and upper just outside of the seam in the dotted line D, showing more clearly the seam on the outside. Fig. 9 is an enlarged perpendicular section of the sole in the dotted line E, showing more clearly the seam on the inside. Fig. 10 is a perpendicular and cross section of a shoe with two soles, the inner sole being attached to the upper, as shown at Fig. 5, and then the outer sole attached by sewing chain-stitches through the edges of the lower and projecting portion of the first and inner sole and through the outer soles outside of the upper-leather; and this seam, by which the outer sole is attached, may pass entirely through it or into a channel cut into the lower side of it.

a is the sole of my turn-shoe. *b* is the last. *c* is the upper of my turn-shoe or boot, of whatever material. *d* is the outer sole of my double-soled shoe or boot. *a''* is the inner sole of the same, and *c'* is the upper of the same. *e* is the stitch. *f* is the needle of the machine by which the sole is attached to the upper. *g* is the awl of the same. *h* is the projection on the upper side of the table of the sewing-machine, which answers the double purpose of supporting the work while the seam is sewing and as a guide for the seam. *i* is the presser-foot.

Having described the parts of my invention, I will now explain more fully its nature and purpose.

I cut out the sole the proper shape for the bottom of the shoe, and then make a split in the edge of it, as is shown in the extremities of *a*, Fig. 1, at *a' a'*. The upper portion of this split part is bent upward, as shown at *a' a'*, Fig. 2. The other part of the split is turned downward, and the edge of the sole is curved downward a little way inside of

the split, as shown in Fig. 2. I then make a last, as other lasts, except the bottom has the corners dressed off to fit the curved form of the sole, and the sole is fitted onto it and secured by tacks or otherwise, as shown at Fig. 2. When this is done, I then apply the upper to the last, so that the lower edge will fit closely in the split of the sole, as shown at *c''*, Fig. 3, having the extreme edge extend out as far as the extremities of the upper parts *a' a'* of the sole; and then I apply the shoe thus prepared to the sewing-machine, as shown at Fig. 3, and sew a seam all the way around the edge of the sole, through the upper and the upper portion of the sole, of chain-stitches, or a series of stitches in which each stitch is interlocked by the succeeding one, as shown at *e e*, Fig. 8. I use for this purpose an ordinary wax-thread sewing-machine, such as are made by Elmer Townsend, Boston, Massachusetts, with the improvements, first, of the projection *h* above the table, a cross-section of which is shown at Fig. 3, which answers the double purpose of supporting the parts to be sewed at an elevated position, and as a guide for the seam, by having an inclined or perpendicular surface next to the work at *m* for the part of the shoe just above the seam to rest and move against, so that by a very simple manipulation in holding the shoe against the side *m* of the projection *h* the machine will feed the shoe along, sewing the upper to the projecting or upper part *a'* of the sole, the presser-foot, meanwhile, holding the two parts being sewed together on the top surface of the said projection.

When the seam is completed the upper and sole are completely secured together, as shown in Fig. 4. I then take it off of the last, turn it, and place it on an ordinary last, where it receives its proper form, as shown in Figs. 5 and 6, where the seam may be flattened down more nearly level with the upper surface of the sole than appears in Figs. 5 and 6, preparatory to the lining being pasted in the bottom. By inspecting the upper *c c*, the sole *a a'*, and the stitch or seam *e e*, Fig. 7, it will be seen clearly the form the upper and sole take at the parts where they are joined together, and the manner in which the seam *e e* secures them, Fig. 8 illustrating the outside of the seam, and Fig. 9 the inside of the same on a larger scale.

When it is desirable to make double-soled shoes or boots, I make them as already described, and shown at Figs. 5 and 6, except the soles are a little larger, to give more room at the edge for the seam which attaches the second sole, as shown at Fig. 10, where the second or outer sole *d* is attached to the inner sole *a''* by the seam *e' e'* outside of the upper. I usually conceal the seam by cutting a small channel, *n n*, into the edge of the outer sole near to its lower surface, turning down the surface part, and sewing through the remaining part of the sole, and after the seam is complete I turn up the surface part and cement it in its

first position, thereby concealing the seam on the bottom of the shoe.

The outer sole may be sewed on by the same machine by which the upper is attached to the sole of my turn-shoe, and in this case the presser-foot *i* becomes the guide for the seam, provided the upper part of the shoe has an upper position while the seam is sewing; but the shoe may be reversed in the machine, and then the projecting surface at *m* may be the guide for the seam; but in either case, in sewing up the turn-shoe, the peculiar form of the presser-foot *i* is essential, for the purpose of allowing the seam to be made close to the part of the upper, which rests against the last just above the seam.

My method of constructing a shoe or boot dispenses with the use of a welt, either in a single-soled turn-shoe or boot or one with a double sole, as described, and shown at Fig. 10. Splitting the sole in from the edge, and turning the upper portion upward, as a substitute for a welt, and attaching the upper thereto, not only answers the purpose of a welt, at much less cost—that is, cost of sewing one seam instead of two, and that one being sewed by machinery instead of two being sewed by hand, which reduces it at least to one-twentieth of the cost in this respect—but it also enables it to be sewed on ordinary machinery with but very slight improvement, as already described.

There are other methods of attaching the sole by machinery already patented, and which are brought more or less into public use, both turn-shoes and those made right side out, but none, in my opinion, so simple in their construction, and made at so small cost, and none by machines of so simple construction. One method was patented by Lyman R. Blake, August 14, 1860, in which the seam was sewed through the two soles and the upper, as shown in Fig. 14, where *a'''* is the inner sole, *d'* the outsole, and *c''* the upper; and *e e* represent the seam by which the three parts are sewed together, this being a cross-section of one side of the shoe. Another method of applying the sole to the upper has been devised for turn-shoes, which I have illustrated in Figs. 12 and 13, showing cross-sections of the sole. At *o o*, Fig. 12, are cuts in the upper surface of the sole, curving downward, and extending outward toward the edge of the sole, and all the way around it. The upper portion of the leather thus separated from the lower by the cut is raised up to nearly a perpendicular position, as shown at *o' o'*, Fig. 13, and while in this position the upper is sewed to it, after which the shoe is turned and finished. This is very awkward compared with my method, and requires a complication of machinery to sew it, which mine does not.

Thus describing my invention, I claim—

1. A sole of a turn-shoe or boot, as a new article of manufacture, in which is a split from the edge toward the middle, and then the two parts thus split separated by turning the upper por-

tion upward and the lower portion downward sufficiently to render it suitable for the reception of the upper in the split thus made and opened, as described and shown, substantially as and for the purpose set forth.

2. A shoe or boot, as a new article of manufacture, in which the upper is attached to the sole by a seam or chain of stitches passing through the vamp or upper, and through a portion of the sole which has been previously

separated from the other portion by a split passing from the outer edge of the sole toward its middle, into which split the upper is doubled, substantially as specified, and for the purpose set forth.

WILLIAM WICKERSHAM.

Witnesses:

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