A. L. ELLIOT.

Apparatus for Molding Heel-Stiffeners.

No. 210,307. Patented Nov. 26, 1878.

Fig. 1

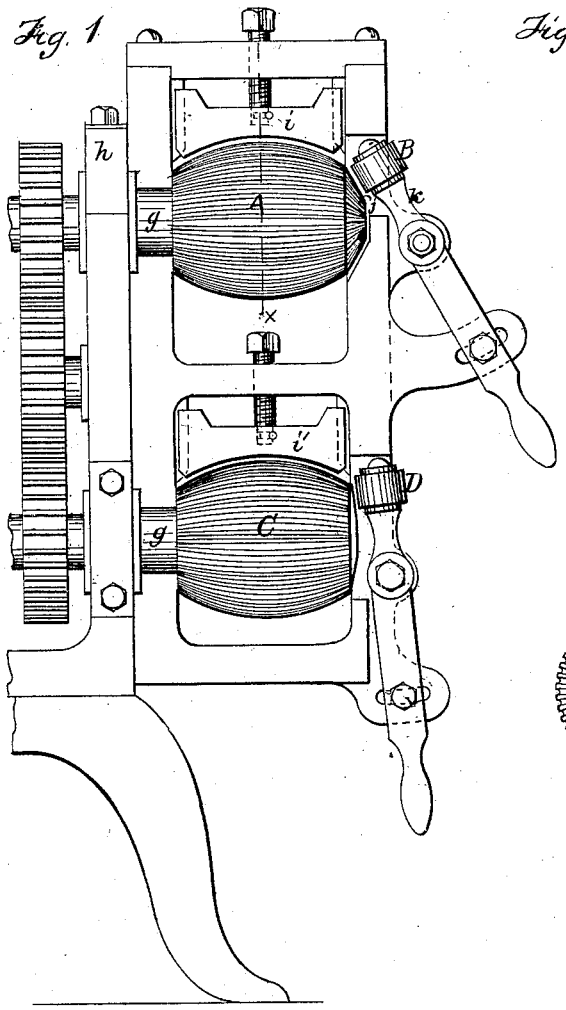


Fig. 3.

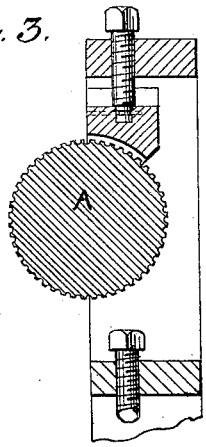


Fig. 4.

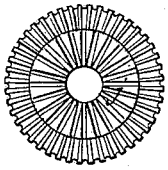


Fig. 2.

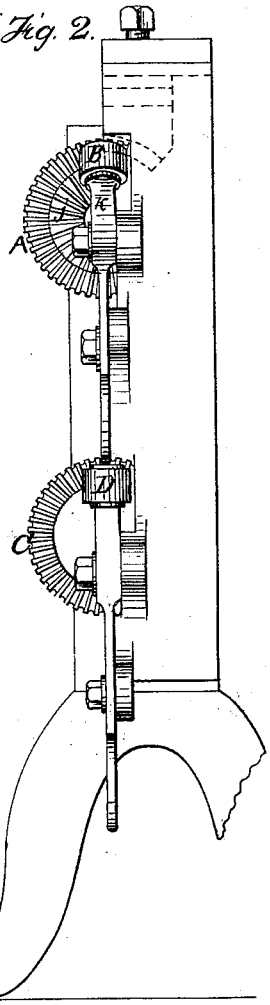


Fig. 6.

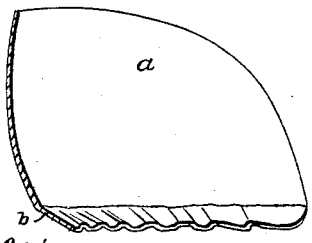


Fig. 5.

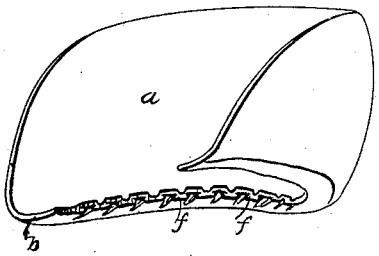
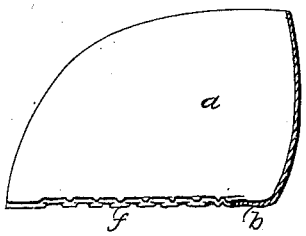


Fig. 7.



Witnesses.
Geo. W. Pierce
E. B. Fairchild

Inventor.
A. L. Elliot
by Wright Brown
Attys

UNITED STATES PATENT OFFICE.

ALFRED L. ELLIOT, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO HORACE P. HEMENWAY AND ALPHONSO H. CARVILL, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR MOLDING HEEL-STIFFENERS.

Specification forming part of Letters Patent No. **210,307**, dated November 26, 1878; application filed May 22, 1878.

To all whom it may concern:

Be it known that I, ALFRED L. ELLIOT, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Apparatus for Molding Heel-Stiffeners, of which the following is a specification:

The invention has for its object to provide a machine for molding heel-stiffeners for boots and shoes in such manner as to render the inwardly-projecting flange of the stiffener flexible or extensible.

To this end my invention consists in the improved mechanism for making heel-stiffeners, which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a machine embodying my invention. Fig. 2 represents an end elevation of the same. Fig. 3 represents a section on line *x x*, Fig 1. Fig. 4 represents an end view of the roll A. Fig. 5 represents a perspective view of a completed heel-stiffener constructed by the apparatus. Fig. 6 represents a section of the stiffener as it is left by the first stage of the operation; and Fig. 7 represents a similar section of the completed stiffener.

Similar letters of reference indicate corresponding parts.

The heel-stiffener which the hereinafter-described apparatus produces is composed of a wall or body, *a*, and an inwardly-projecting flange, *b*, at its lower end, for attachment to the bottom of the boot or shoe. The wall *a* has a concavo-convex form in vertical section. The flange *b* is the edge of the body *a*, bent at substantially a right angle with said body, and having the surplus stock produced by the bending operation disposed in regular flattened folds or plaits *f f*, as shown in Figs. 5 and 7.

For forming the heel-stiffener described, I employ an apparatus consisting, mainly, of two pairs of rolls, A B and C D, which apparatus constitutes my invention, and is adapted to form the flange *b* by successive operations. The rolls A C are located on the ends of arbors *g g*, which are supported in a suitable frame, *h*, and are positively rotated by any suitable motor. The roll A is convex longitudinally, and is provided with longitudinal corrugations or teeth. *i* represents a fixed plate or guide, which is arranged to hold a blank of leather-board or other material against the periphery of the roll A, and thus enable the latter to move or carry along such blank. The outer end of the roll A is beveled or formed in the shape of the frustum of a cone, and this beveled portion is provided with radial corrugations or grooves *j*, which are of such form as to impart the folds or plaits *f* to the flange *b* of the stiffener, as described hereinafter. The roll B is located on an inclined arbor, *k*, and is arranged to bear against the beveled corrugated end of the roll A at one side of the axis of the latter, as shown in Figs. 1 and 2, and is in rolling contact with said roll A. The roll B is preferably surfaced with rubber, although, if desired, it may be of rigid material, and provided with corrugations arranged to mesh with or enter the corrugations *j* of the roll A.

The operation of the mechanism thus far described is as follows: A blank of leather-board or other material of the proper shape is placed in contact with the convex periphery of the roll A, and carried by the rotation of the latter between the periphery of the roll A and the plate or guide *i*, and between the corrugated end of the roll A and the inclined roll B. The guide *i* holds the blank in contact with the roll A, so that the rotation of the latter carries or propels the blank along. The part of the blank passing between the end of the roll A and roll B is bent or turned at an obtuse angle with the main portion of the blank, this turned portion constituting an incipient flange, *b*, which is at the same time corrugated or plaited by the pressure of the roll B against the corrugated end of roll A, the plaits or folds *f* being thus produced, which are regularly disposed along the flange *b*. After the blank leaves the rolls A B its flange presents the appearance shown in Fig. 6, and is ready for the operation of the rolls C D.

The roll C is similar in construction to the roll A, excepting that its outer end is nearly or quite flat, as shown in Fig. 1, and is practically smooth, said end being slightly milled or roughened to prevent it from slipping on the blank.

The roll D is of rigid material, and has a

smooth periphery, and is located on an arbor, *m*, so as to bear against the end of roll C at one side of the axis of the latter.

i' represents a guide, which has a similar function to that of the guide *i* above described.

The body of the partially-completed blank is passed between roll C and guide *i'*, and the flange *b* is passed between the end of roll C and the roll D. The flange is thus bent about into a right angle with the body of the stiffener, and its corrugations are flattened down, the stiffener leaving the rolls C D in a completed form, and presenting the appearance shown in Figs. 5 and 7.

I claim as my invention—

An apparatus for molding heel-stiffeners, consisting of the rolls A B and C D, constructed and arranged substantially as described, and adapted to form the flange of a heel-stiffener by successive operations.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 20th day of May, 1878.

ALFRED L. ELLIOT.

Witnesses:

GEO. W. PIERCE,

C. F. BROWN.