

A. H. CARVILL.  
Machine for Manufacturing Heel-Stiffeners.  
No. 222,661.                      Patented Dec. 16, 1879.

Fig. 1.

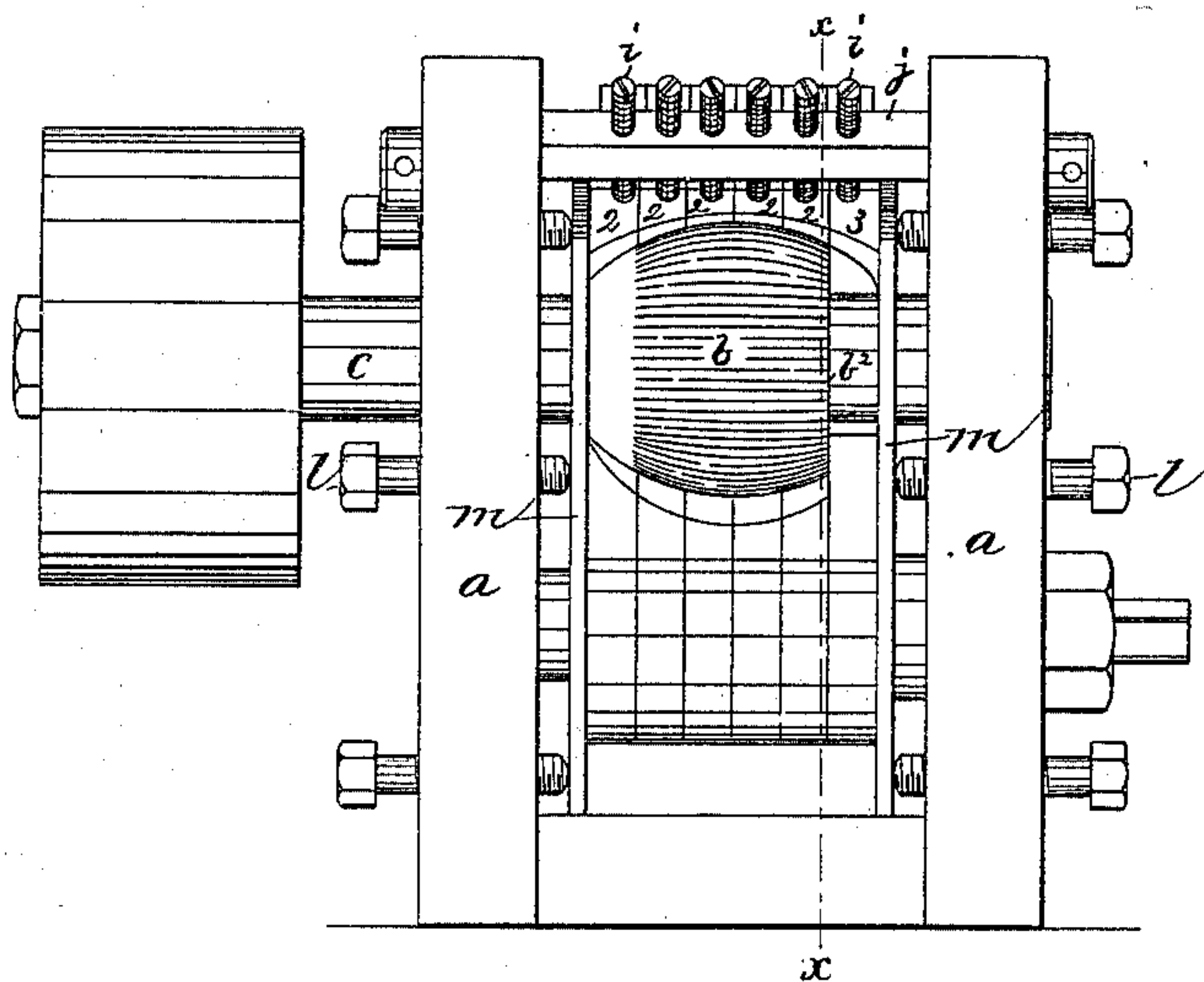


Fig. 2.

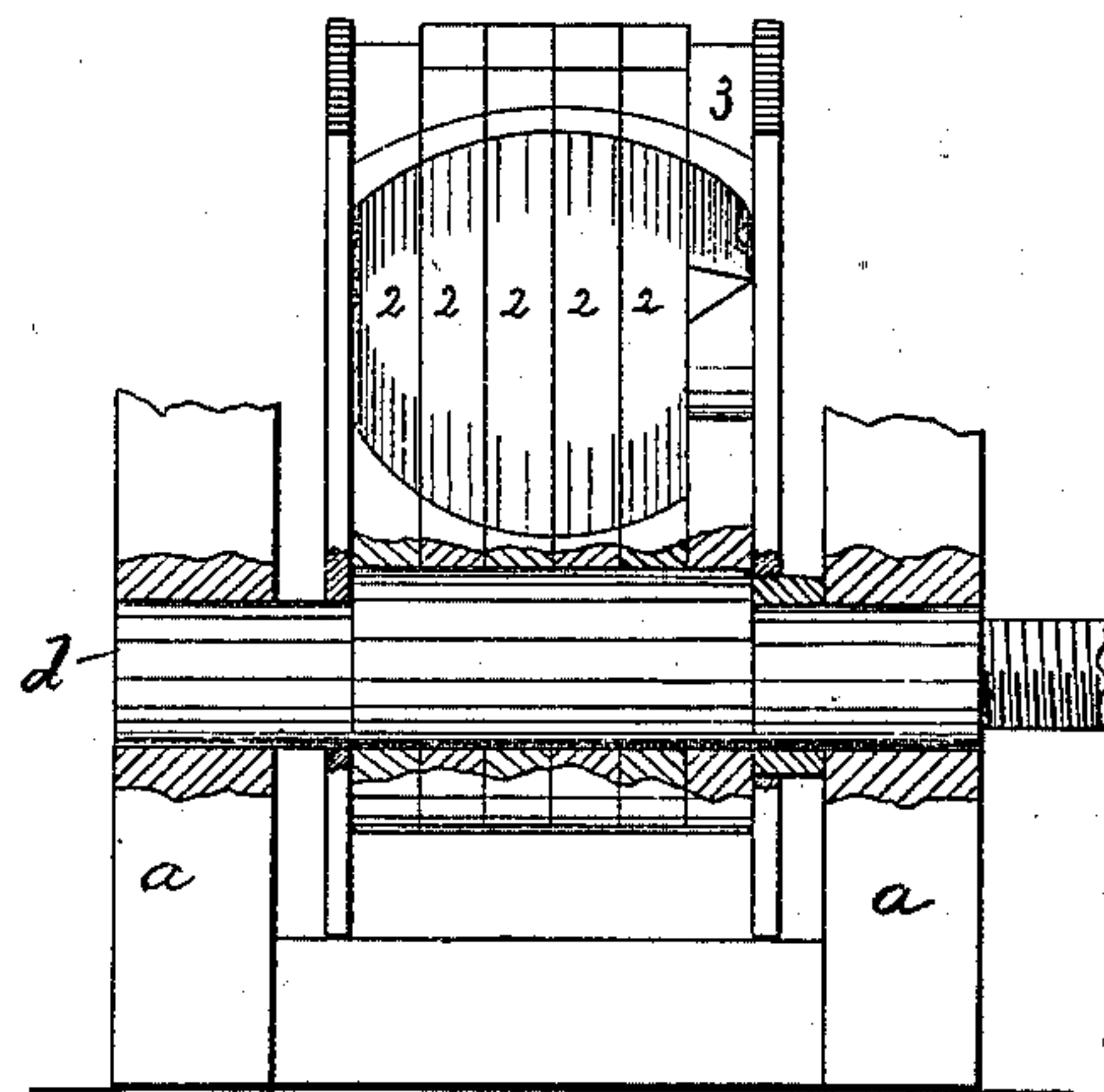


Fig. 3.

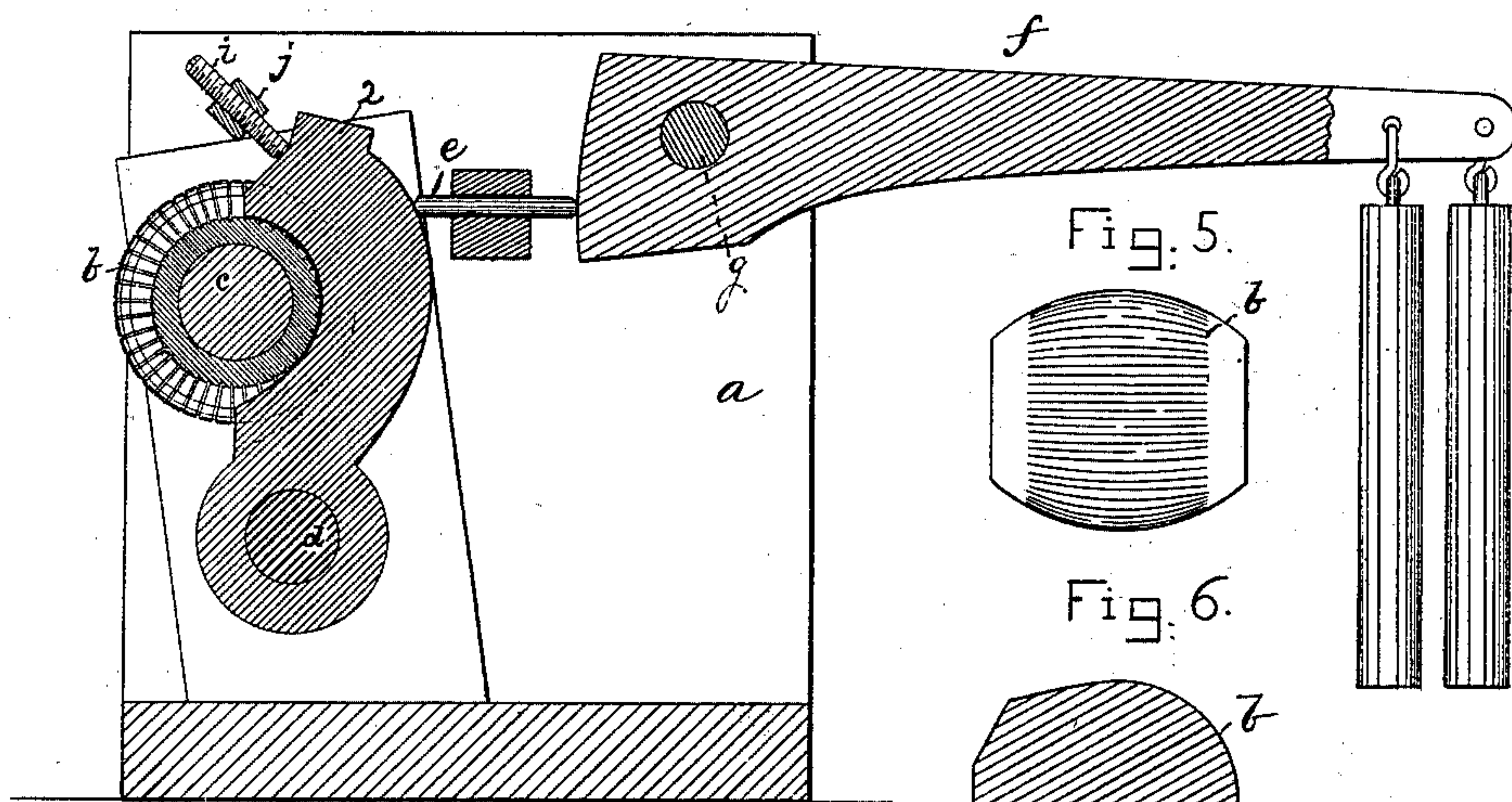


Fig. 5.

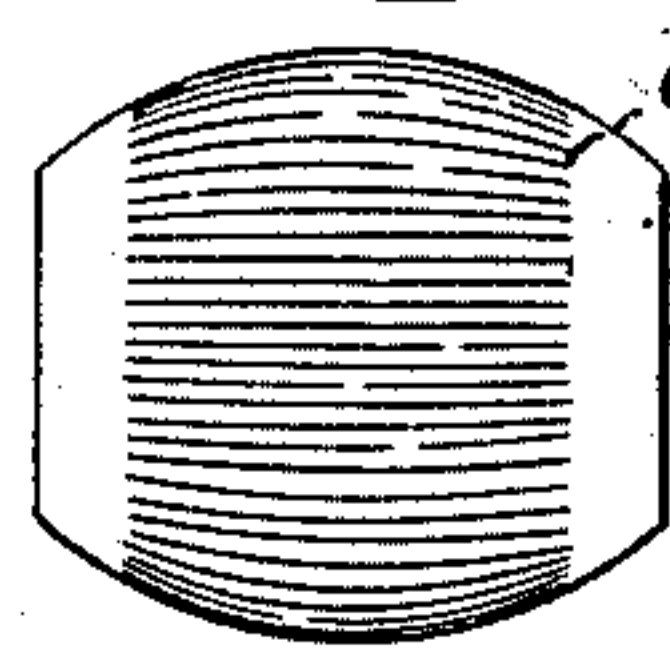


Fig. 6.

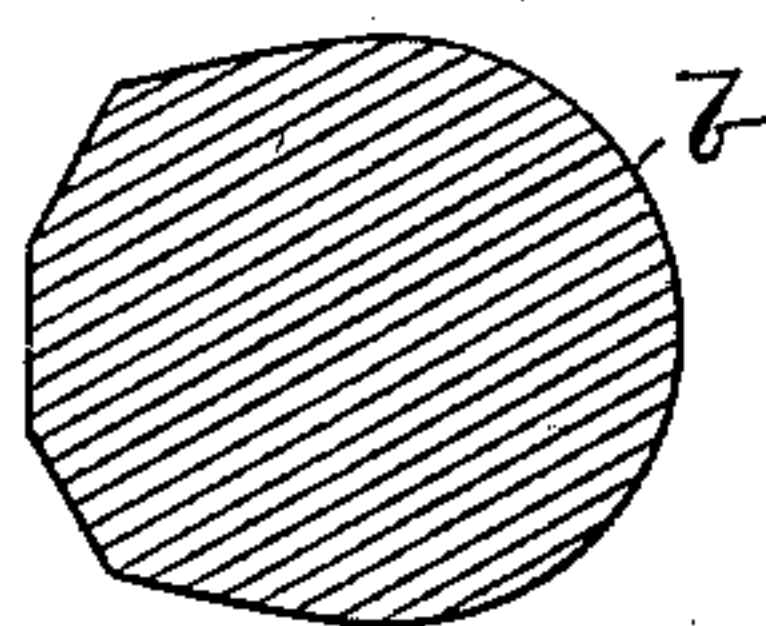
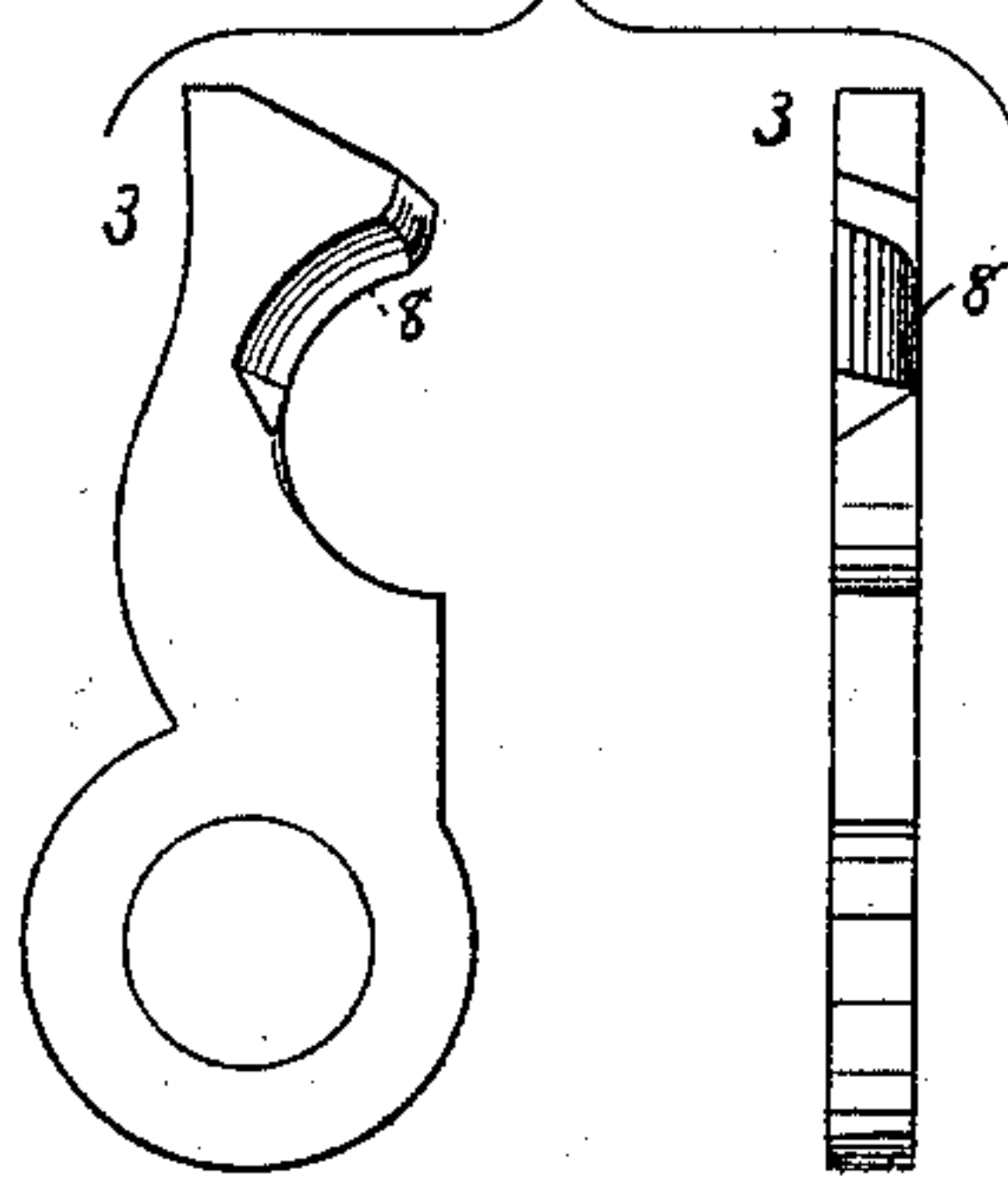


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ALPHONSO H. CARVILL, OF SOMERVILLE, MASSACHUSETTS.

## IMPROVEMENT IN MACHINES FOR MANUFACTURING HEEL-STIFFENERS.

Specification forming part of Letters Patent No. **222,661**, dated December 16, 1879; application filed November 6, 1879.

*To all whom it may concern:*

Be it known that I, ALPHONSO H. CARVILL, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Machines for the Manufacture of Heel-Stiffeners, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for the manufacture of heel-stiffeners of leather-board or other usual material; and the invention consists, essentially, in the combination, with a ball to operate at the inner side of the stiffening-blank, of a shaping-hand to hold the said blank in contact with and lap it about the ball to be shaped as the ball rotates.

The shaping-hand is composed of a series of independent fingers pivoted at one end, and having substantially the same center of motion, each of the said fingers being controlled as to the amount of its pressure against the blank on the ball by one of a system of levers controlled by weights, or equivalents, made variable as to their force, according to the class of material of which the stiffener is to be made, and the particular shape of the same, as to fullness or otherwise, that it is desired to give to the completed article, some blanks being stretched more than others at the center.

Figure 1 represents, in front elevation, a machine containing my invention; Fig. 2, a view of the interior of the shaping-hand, showing the separate fingers; Fig. 3, a longitudinal section on the line *xx*, Fig. 1; Fig. 4, a detail, showing the flanging-finger separately, both in front and side elevation; and Figs. 5 and 6 are modified forms of balls, whose transverse and longitudinal sections are formed by curved lines or by a combination of curved and straight lines.

The frame-work *a* may be of any suitable shape to properly sustain the working parts.

The ball *b*, or that device which acts at the inner face of the stiffening-blank, is shown in Fig. 1 as partially cylindrical and of varying diameter, one end, *b*<sup>2</sup>, of the ball being flattened or cut off square, so as to present a wider portion than at its other end, the wider end being that used to aid in the formation of the flanged part of the stiffener. This ball is

attached to a shaft, *c*, capable of being rotated by a suitable belt and pulley or other usual driving-power.

The surface of the ball will preferably be roughened more or less, to enable it to properly hold the material to be formed into a stiffener.

The shaping-hand is composed of a series of independent narrow fingers, 2 3, six fingers being herein shown; but it is obvious that more or less than that number may be employed.

The fingers are supported at their lower ends upon a shaft, *d*, which, as shown in Fig. 2, is so turned or cut away at its bearings as to leave the same eccentric to that part of the shaft embraced by the said fingers, so that a partial rotation of the said shaft will adjust the fingers longitudinally, and also laterally, to such an extent as is necessary to enable the ball and hand to receive the material to be operated upon, according to its thickness, and according to the degree of permanent curvature it is desired to give to the blank.

The fingers at or near their upper ends, at their rear sides, are borne upon by a series of rods, *e*, or equivalents, held pressed against the fingers by a series of angular or other suitably-shaped levers, *f*, or equivalent pressure-regulating devices, pivoted at *g*, and acted upon by weights *h*, or equivalents, such as springs of more or less power, according to the requirements of the work being done, the said weights being adjustable, so as to cause each finger to exert the proper pressure required for it, the amount of pressure being either the same or more or less than that of adjacent fingers.

The forward position assumed by the upper ends of the fingers is controlled by a system of adjustable stops (shown as screws *i*) held in a cross-bar, *j*, the said screws determining the area of the entering-space between the ball and the free end of the hand or fingers, said space being represented by the heavy black line between *b* and 2, Fig. 3. These fingers between their ends are hollowed out, bent, or shaped so as to keep the blank pressed closely against the periphery of the ball, the shape of the fingers between their ends depending, it is



obvious, upon the extent of the surface of the ball against which it is desired to press the said blank during its formation.

The finger 3, or that one of the series which co-operates with the squared end of the ball at the right of Figs. 1 and 2 to form the flange of the stiffener, is provided with a flange or projection, 8, (see Fig. 4,) to fit the end  $b^2$  of the ball and wipe over against it one edge of the blank.

If it is desired to make a stiffener without a square-turned flange, the ball may be shaped as represented in Fig. 5, and in some instances I may shape the ball much as the heel end of a last, as in Fig. 6, the fingers being of proper shape to keep the blank against the ball for the proper length of time and with the proper pressure. With a ball shaped as in Fig. 6 the axis of motion of the fingers would be more remote from the axis of the ball, and the fingers would be longer than with balls of the other form.

The fingers need not be in close contact at their sides, the one with the other, but may be separated by means of washers; and in such case the fingers may be so supported at their lower ends or be so shaped that their faces will incline with relation to the axis of rotation of the ball-shaft.

The end fingers of the series are made adjustable, so as to press the blank more or less against the reduced or smaller or squared ends of the ball by means of the adjusting-screw  $l$  acting on the plates  $m$ .

I claim—

1. In a machine to form heel-stiffeners, a rotatable ball combined with a shaping-hand composed of a series of independent fingers, to operate substantially as and for the purpose described.

2. The combination, with the ball and series of fingers, of the series of weighted levers or equivalents, to keep the fingers pressed

forward in contact with the material passing between them and the ball, substantially as described.

3. In a machine to form heel-stiffeners, a shaping-hand composed of a series of independent fingers to press the stiffener-blank upon the ball at any point thereof with the desired pressure, to stretch the blank more or less at any desired part, according to the fullness required for the stiffener, substantially as described.

4. In a machine to form heel-stiffeners, a ball and a series of fingers to press the stiffener-blank against the ball, combined with a finger having a projection, as described, to co-operate with the squared or broad end of the ball to form a flange for the stiffener, substantially as set forth.

5. The combination, with the ball and shaping-hand pivoted at one end, of mechanism, substantially as described, to bear against the hand at or near its free end, to vary the pressure of the hand against the material of the stiffener-blank passing between it and the ball, substantially as set forth.

6. The combination, with the ball and series of fingers and their pressure-controlling devices, of stops to limit the space between the acting surfaces of the fingers and ball, substantially as described.

7. In a machine to form heel-stiffeners, the combination of a forming-hand pivoted at one end with mechanism to adjust the pivoted end of the hand vertically and laterally, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALPHONSO H. CARVILL.

Witnesses:

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N. E. WHITNEY.