(No Model.)

2 Sheets—Sheet 1.

I. E. BOOTH.

MACHINE FOR STRETCHING AND FINISHING SHOES.

No. 355,966. Patented Jan. 11, 1887.

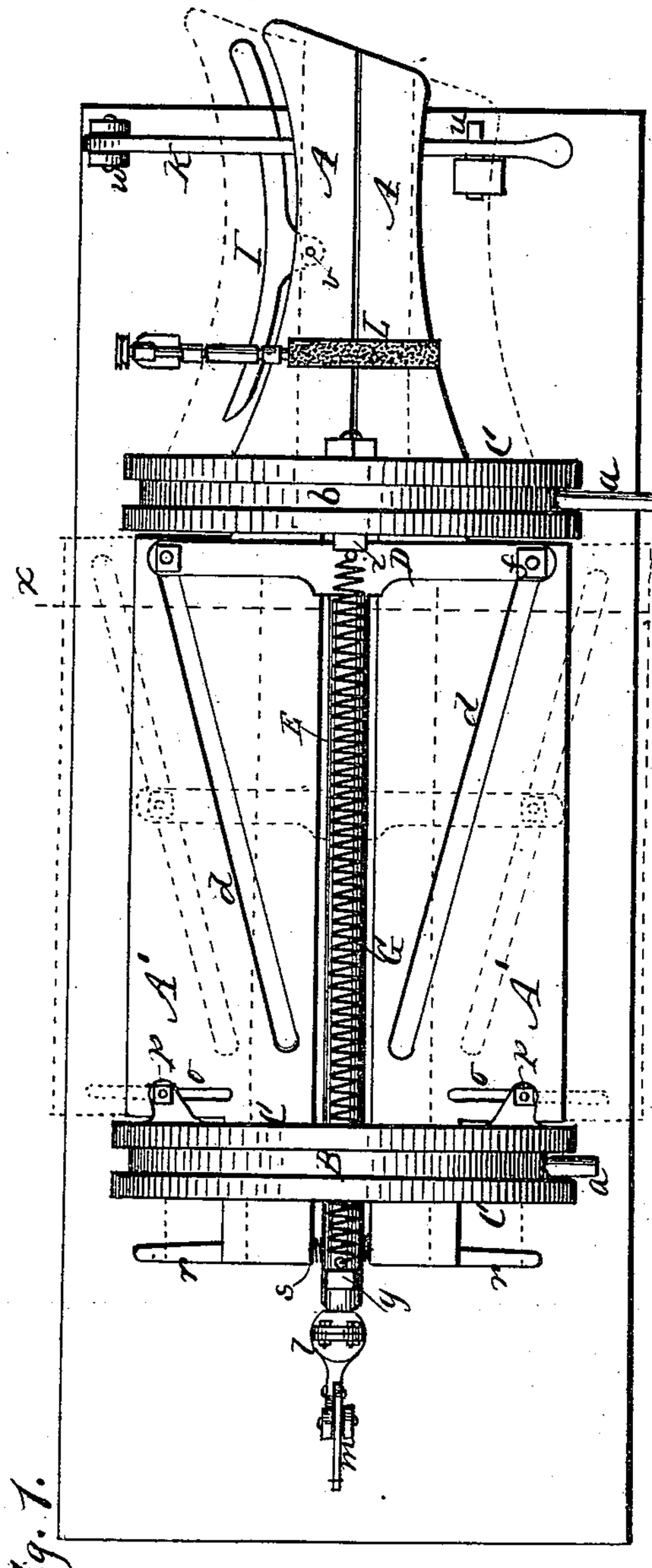

Fig. 1.

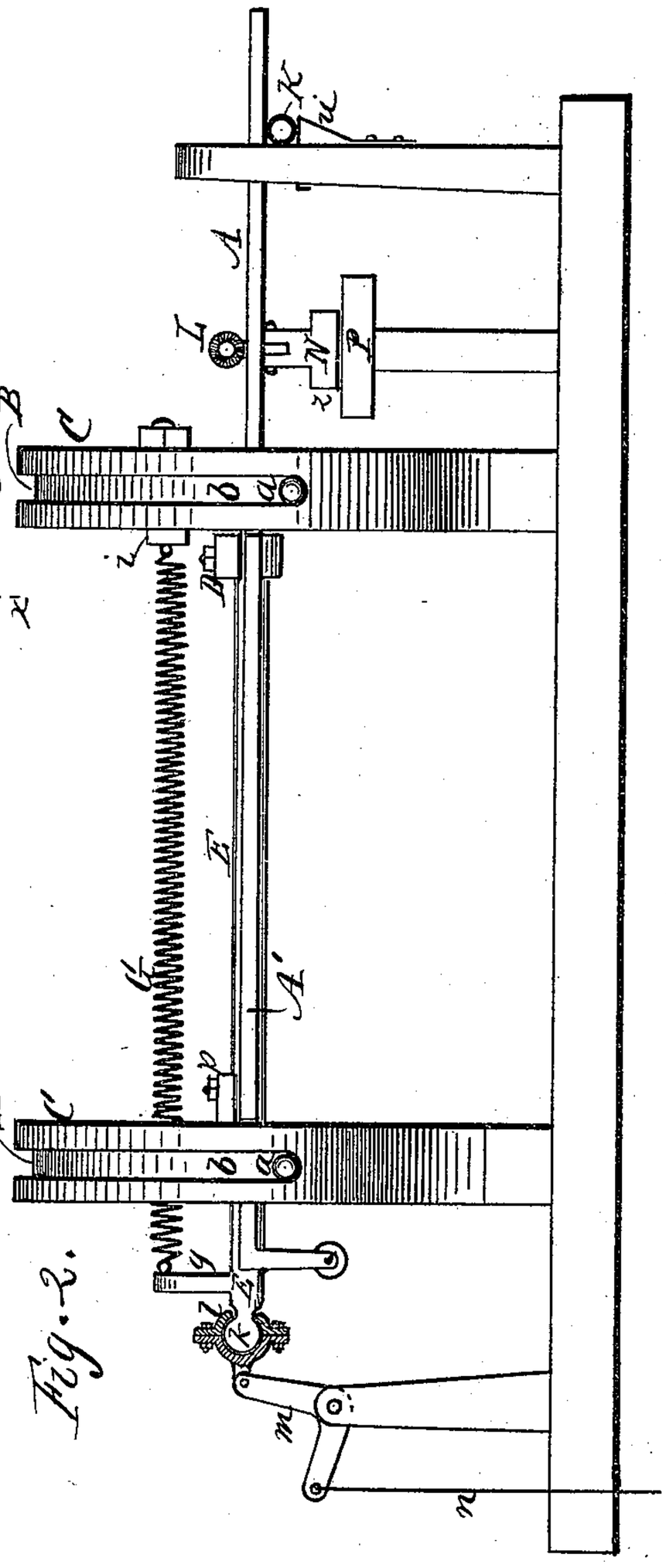

Fig. 2.

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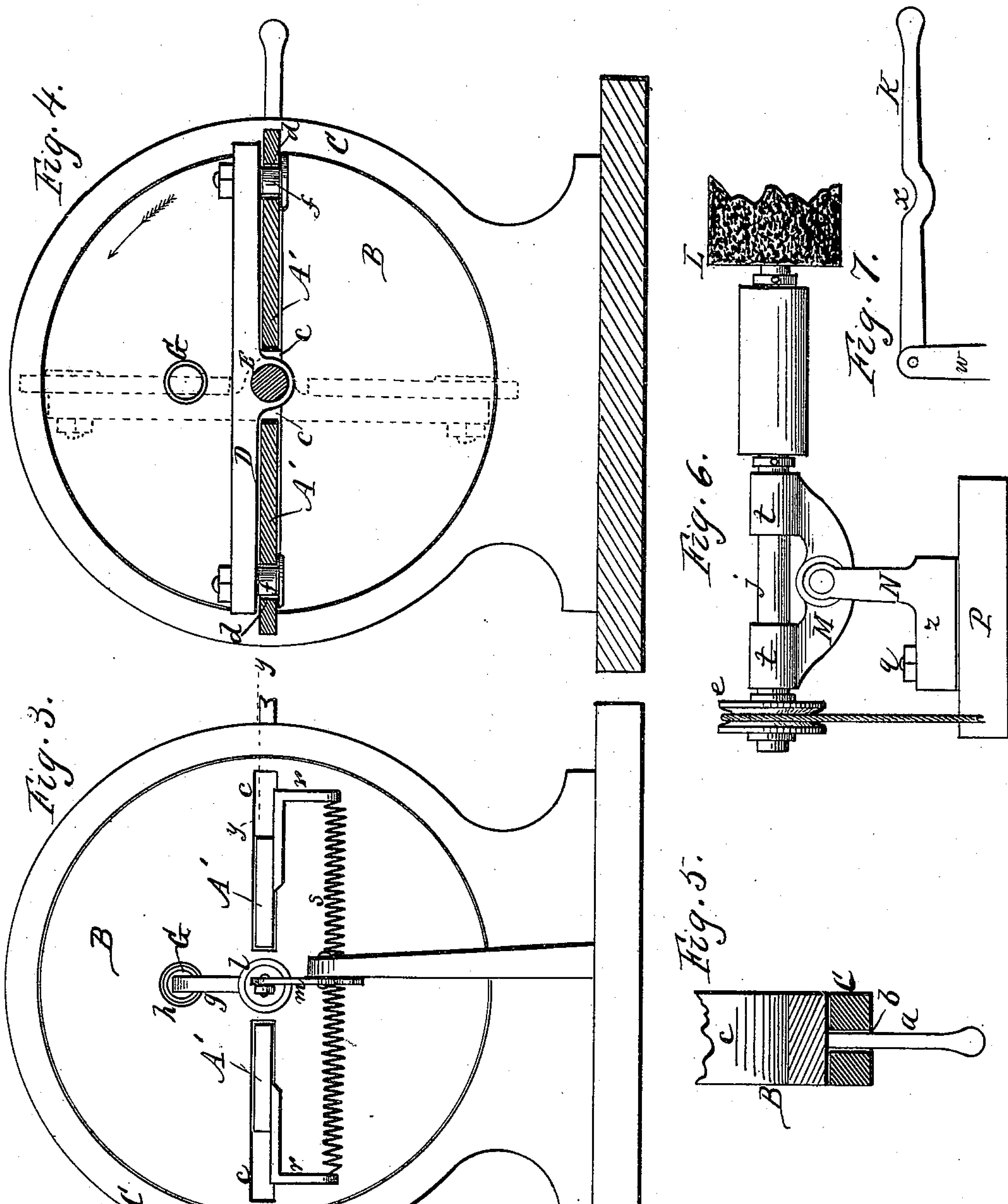

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UNITED STATES PATENT OFFICE.

IRVING E. BOOTH, OF ROCHESTER, NEW YORK.

MACHINE FOR STRETCHING AND FINISHING SHOES.

SPECIFICATION forming part of Letters Patent No. 355,966, dated January 11, 1887.

Application filed October 27, 1886. Serial No. 217,304. (No model.)

To all whom it may concern:

Be it known that I, IRVING E. BOOTH, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Machines for Stretching and Finishing Shoes; and I do declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to machines for treeing and shaping the legs of shoes, and is of that kind where stretching-jaws are used, over which the ankle portion of the shoe is fitted, said jaws being then expanded until all the wrinkles in the shoe-upper are drawn out smooth, so that it can be malleted, boned, or ironed out.

The invention consists in the following construction and arrangement:

In the drawings, Figure 1 is a plan view of the machine in the closed position. Fig. 2 is a side elevation of the same. Fig. 3 is a rear end view enlarged. Fig. 4 is an enlarged cross-section in line *x x* of Fig. 1. Fig. 5 is an enlarged cross-section of one edge of the rim and turning-head in line *y y* of Fig. 3. Fig. 6 is an enlarged side elevation of the brush. Fig. 7 is an elevation of the lever that supports the outer ends of the expanding-jaws.

A A indicate the jaws, which consist of flat steel plates, which are of the usual or required form and of such shape as to easily enter the boot or shoe leg and, when expanded therein, fill out the leg at the edges. The jaws are connected with suitable supporting devices or bearings whereby they can be turned over or inverted.

The devices shown in the drawings consist of circular heads B B, which rest and turn freely in circular rims C C, forming the stationary standards of the machine. The heads are held in place by any suitable means, that shown being studs or levers *a a*, that rest in slots *b b* of the rim, said slots being of such extent that the studs have a motion of half a circle therein, the front stud being extended past the frame or standard of the machine to serve as a handle by which the jaws may be inverted.

The jaws proper, A A, are provided with rear extensions or plates, A′ A′, which rest in cross-slots *c c* of the heads, the slots being of such extent that the jaws can be moved out laterally to the proper degree to stretch the upper after the shoe has been placed over the jaws. By this means, after one side of the upper has been malleted or ironed, a half-turn of the heads will reverse or invert the jaws, so as to bring the other side of the shoe up, when it can be malleted or ironed without releasing the jaws or removing the shoe, which has to be done in ordinary machines of the kind.

The jaws are operated by the following means:

D is a cross-bar resting loosely over the extension-plates A′ A′ of the jaws, just back of the front head, and sliding freely forward and back. *d d* are longitudinal slots in the plates, extending angularly inward as they extend back, as shown in Fig. 1. The cross-bar has studs, on which are friction-rollers *f f*, that rest in the slots. When the cross-bar is drawn back, the studs running in the inclined slots will force the plates out laterally, as indicated by dotted lines, Fig. 1. When pushed forward, it will close the plates together. E is a shaft attached rigidly to the cross-bar, extending longitudinally back between the plates, and having at its rear end an arm, *g*, to which is attached a long spiral spring, G, that passes freely through a hole, *h*, of the rear head B, and is attached at its front end to a lug, *i*, of the front head B. When the shaft is drawn back to expand the jaws, the spring G will be stretched, and when the shaft is released the spring will draw it back to place again and close the jaws.

k is a ball on the end of shaft E, and *l* is a socket attached thereto, forming a ball-and-socket joint. *m* is a bell-crank jointed to the coupling, and *n* is a cord or other connection attached to the bell-crank, extending down and attached to a foot-treadle, (not shown in the drawings,) this treadle being so arranged as to be held in any desired position, and thus hold the shoe stretched while it is being operated on and inverted. By drawing on the bell-crank the shaft and cross-bar will be drawn

back, as before described. *o o* are cross-slots in the rear ends of the extension-plates of the jaws, and *p p* are studs resting therein, said studs being attached to the inner side of the rear head B. These studs, resting in the slots, prevent any longitudinal movement of the jaws.

r r are elbows attached to the rear end of the jaws or of their extension-plates A′ A′, outside of the head B, and *s* is a spiral cross-spring attached to said elbows. The tendency of the spring is to draw the jaws toward each other, but to be stretched when the jaws are expanded. At the commencement of the expanding action the front ends of the jaws expand first and fill the lower part of the leg, owing to the greater leverage at the front and the tension of the cross-spring *s* at the rear, which resists expansion at that point. Then as the pressure is applied the jaws expand at the rear and stretch the whole leg of the shoe.

For dressing some kinds of shoes a curved form or pattern, I, is pivoted at *v* to one jaw, as shown in Fig. 1, which by having a free turning motion on its pivot fits more accurately to the interior of the front portion of the leg and produces a better stretching action. This is of especial service in shoes that have a good deal of curve in the ankle.

In use the ankle portion of the shoe is placed over the ends of the jaws, and the jaws are expanded, as before described. The upper is then malleted, or otherwise operated on, the jaws themselves serving as an anvil and resisting the force of the blows. In most work the jaws are sufficiently stiff for the purpose; but in some cases, where heavy blows are to be struck, a lever, K, is used under the outer end of the jaws, pivoted to a standard, *w*, and turning up under and in contact with the shoe when it is on the jaws, and held by a catch, *u*, of any suitable kind. The lever K is provided with a depression, *x*, at or near its center, whereby it will pass under and not bear upon buttons of the shoe. When one side of the shoe has been dressed, the jaws are inverted or turned bottom upward, as before described, and the other side dressed in the same manner.

One great advantage in this invention is the jaws mounted in reversible bearings, whereby they can be inverted, so that both sides of the shoe can be operated on without releasing the pressure or removing the shoe from the stretching-jaws.

L is a brush used for rubbing and polishing the shoe after it has been malleted. It is mounted on a shaft, *j*, which receives rotary motion by means of a band running on a pulley, *e*. The shaft rests in bearings *t t* of a yoke, M, and the latter is pivoted to a standard, N. By this means vertical motion is allowed the brush to bring it to or from its work.

The brush can be made of sufficient length to sweep the entire width of the shoe at one stroke, or it may be given a longitudinal motion through its bearings *t t*.

The standard M has an offset, *z*, pivoted at *q* to the base-plate P, by which the brush can swing horizontally to operate over the whole surface of the ankle portion of the shoe.

When not in use, the brush can be swung up out of the way, in which position the band is slackened and the brush ceases to revolve.

It is not material, except for compactness, that the details of construction shown in the drawings be followed in order that the jaws may be inverted or turned over. This part of my invention consists in the combination of a pair of stretching-jaws and suitable supports by which the jaws may be inverted or turned over, and is not limited to the specific arrangement shown.

Having described my invention, I claim—

1. In a machine for stretching and dressing shoes, the combination of a pair of flat stretching-jaws, one or more supports therefor, and means, substantially as described, for separating the jaws, the said jaws projecting beyond and clear of their supports, and separating mechanism, whereby the entire surfaces of the jaws remain unobstructed and constructed to serve without additional means the double purpose of stretching-jaws and an anvil on which the malleting and finishing operations may be performed, as set forth.

2. In a machine for stretching and dressing shoes, the combination of a pair of stretching-jaws, one or more supports or bearings, and means, substantially as described, for separating the jaws, the said jaws projecting beyond and clear of the supports and separating mechanism, and adapted to be turned or reversed in position by means substantially as set forth, whereby both sides of the shoe may be operated on while remaining stretched, and without removing it from the jaws, as set forth.

3. In a machine for stretching and dressing shoes, the combination of a pair of stretching-jaws, one or more supports or bearings, substantially as set forth, adapted to be turned over or reversed in position with the jaws therein, and means, substantially as described, for separating the jaws in the said supports or bearings, for the purpose set forth.

4. In a machine for stretching and dressing shoes, a pair of stretching-jaws, in combination with the circular turning heads in which the jaws rest, and the circular rims supporting said heads, as set forth.

5. The combination of the stretching-jaws provided with inclined longitudinal slots, the turning heads in which the jaws rest, the cross-bar provided with studs that rest in the inclined slots of the jaws, the shaft attached to the cross-bar for operating the same, and the spring for producing reaction of the shaft and cross-bar, as described.

6. The combination of the stretching-jaws, the turning heads in which they rest, the cross-bar provided with studs resting in the slots of the jaws, the shaft attached to the cross-bar, the spring for producing reaction of the shaft and cross-bar, and the cross-spring connecting the rear ends of the jaws, as set forth.

7. The combination of the stretching-jaws, the turning heads in which they rest, the cross-bar provided with studs resting in the slots, the spring for producing reaction of the shaft and cross-bar, the coupling at the outer end of the shaft, and the bell-crank for operating the shaft, as set forth.

8. The combination of the stretching-jaws provided with cross-slots, the turning heads in which the jaws rest, and the pins fastened to one of the heads and resting in cross-slots of the jaws, as set forth.

9. The combination of the stretching-jaws provided with cross-slots, the turning heads in which the jaws rest, the pins fastened to one of the heads and resting in the cross-slots of the jaws, and the cross spring connecting the jaws, as set forth.

10. The combination, with the stretching-jaws, of the supporting-lever at the outer end of the jaws, pivoted to be elevated and lowered, and provided with a depression near its center, whereby it will pass under and not rest against the buttons of the shoe, as set forth.

11. The combination, with the stretching-jaws, of a revolving brush adapted to clean or brush the shoe while it is still stretched on the jaws, and means for rotating the said brush, as set forth.

12. The combination, with the stretching-jaws, of the revolving brush pivoted to turn both vertically and horizontally, as and for the purpose specified.

13. The combination, with the stretching-jaws, of the curved pattern or form, pivoted to the front jaw and operating in the manner and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

IRVING E. BOOTH.

Witnesses:
P. A. COSTICH,
R. F. OSGOOD.