J. KIMBALL.

MACHINE FOR MAKING BOOT AND SHOE COUNTERS.

No. 192,582. Patented July 3, 1877.

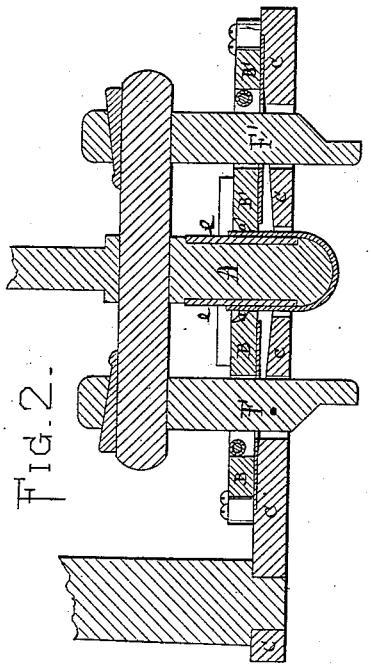

FIG. 2.

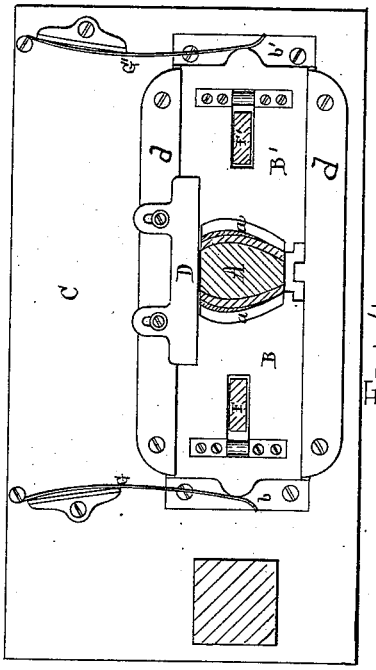

FIG. 4.

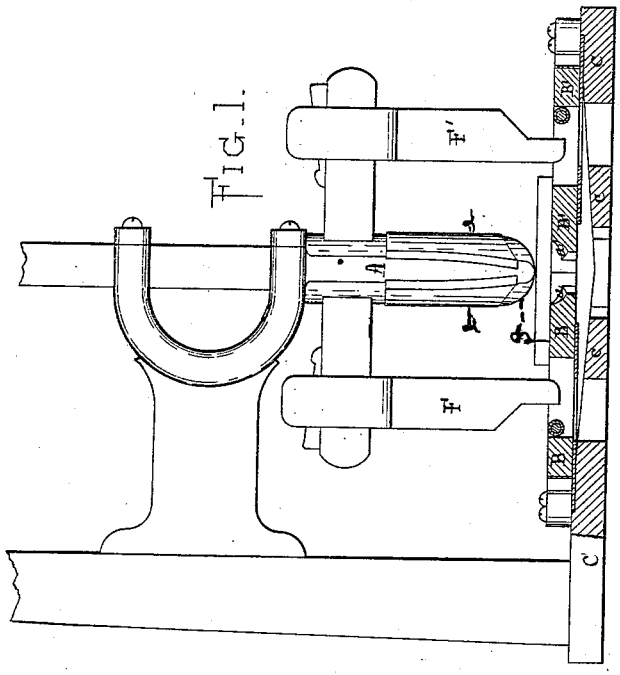

FIG. 1.

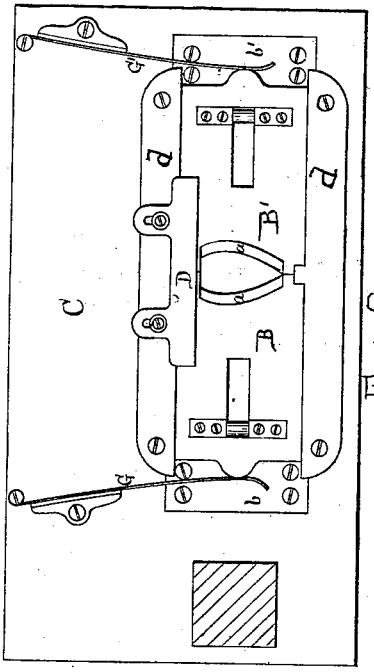

FIG. 3.

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UNITED STATES PATENT OFFICE.

JOHN KIMBALL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING BOOT AND SHOE COUNTERS.

Specification forming part of Letters Patent No. **192,582**, dated July 3, 1877; application filed October 15, 1875.

To all whom it may concern:

Be it known that I, JOHN KIMBALL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine adapted especially for Making Stiffeners or Counters for Boots and Shoes, of which the following is a specification:

In the drawings, Figure 1 is an elevation, partly in section, showing the plunger raised. Fig. 2 is a section with the plunger depressed. Fig. 3 is a plan with the plunger and its connections removed. Fig. 4 is also a plan, showing the plunger and its connections in section and depressed.

The principle of my invention consists in forming the stiffener by forcing it through a sectional female mold, thereby elongating the stock, and giving it not only the required shape, but so setting it that it will retain this shape. The machine shown in the drawings is adapted for the manufacture of that style of stiffener described in my Letters Patent No. 131,957.

In the drawings, A is a plunger, the exterior lower surface of which is the same as the inner surface of the article to be shaped. The female mold is not a full mold, but a section of a mold; it is formed of the two slides B B′, which are fitted over an orifice in the table or bench C. The blank for the stiffener is laid upon these slides and adjusted by the gage D. This gage is adjusted so far from the opening in the mold that the portion of the lower edge of the blank thus overlying the opening in the mold shall be of sufficient width to constitute the base-flange of the stiffener when molded, said flange being crimped, formed, and set, as the blank is forced through the mold, by the descent of the plunger, and falls into a box below the female mold.

When the male and female mold are first brought together, the blank is nipped between the beveled surfaces *a a* of the female mold and the plunger, and that part of the blank which covers the opening through the female mold is caused to assume the shape of the bottom of the plunger or male mold. To better accomplish this object the slide B B′ should be mounted upon stiff springs, which will allow their inner ends to yield a little to the motion of the plunger just before they begin to recede. These springs are marked *b b′*, and they are shown in section in Figs. 1 and 2.

To insure the passage of the plunger into the sectional mold, cams F F′ are attached to it, which enter slots in the slides B B′, and engage with friction-rollers in order to move the slides outward. The plunger enters the female mold, carrying the blank before it, while the cams F F′ are separating the slides B B′; but the throw of the cams is such that the slides are moved just sufficiently to allow the plunger to enter, and not enough to take the pressure of the female mold entirely off of the blank; and as soon as the plunger has entered the female mold the cams cease to operate, and the springs G G′ press the sections of the female mold tightly against the blank. This has the effect to draw the blank very closely over the plunger, and insures the forming of the stiffener.

To accommodate the inequalities in the thickness of the stock, a sheet of vulcanized rubber, *e*, should be attached to each side of the plunger.

The parts B B′ of the sectional female mold are shown as mounted in ways *d d*; but it is obvious that they may be mounted in any other convenient manner which will admit of their moving back and forth.

I do not claim, broadly, either the use of elastic bearings beneath the female mold, or to regulate the lateral pressure; nor do I so claim elastic cushions or bearings to regulate or adjust the action or effect of the male mold or plunger, as I am aware that such devices have been often employed for these several purposes. Nor do I claim devices constructed to form or mold the vertical wall only of the stiffener by forcing the blank through a divided female mold by means of a male plunger.

What I claim as my invention is—

1. In a shoe-stiffener-crimping machine, the combination of plunger A, the divided mold *a a′* B B′, the supporting-springs *b b′*, and the concave bed C, whereby the die-pieces B B′ are provided with a free, limited, and positive vertical adjustment at their meeting ends by a pivotal movement upon the fixed fulcrum of their outer ends, all substantially as described and shown.

2. In a shoe-stiffener-molding machine, the combination, with a divided female mold or die, of the male plunger A, formed with the solid unyielding face or head *f* and the parallel elastic cushions *e e*, arranged in rear of such head, substantially as described and shown.

3. In a shoe-counter-molding machine, the divided female mold B B′, provided with a wall or boundary for forming both the sides and the base-flange of the stiffener, and the plunger A, also formed with sides corresponding to the curves of the mold and side walls of a stiffener, and with a flattened back corresponding to such base-flange, and adapted to mold both the sides and bottom of the stiffener simultaneously as the plunger descends into the mold.

4. In a shoe-stiffener-molding machine, the combination, with the divided female mold B B′ and the male plunger A, of devices which automatically open such mold for the entrance of the plunger, substantially in manner as and for the purposes specified.

5. The combination of male mold A, sectional female mold *a a* B B′, cams F F′, springs *b b′*, and springs G G′, substantially as described.

JOHN KIMBALL.

Witnesses:

CHAS. F. SLEEPER,

J. E. KNOX.