(No Model.) 2 Sheets—Sheet 1.

# F. A. CUSHMAN.

## BOOT OR SHOE COUNTER FORMING MACHINE.

No. 371,491. Patented Oct. 11, 1887.

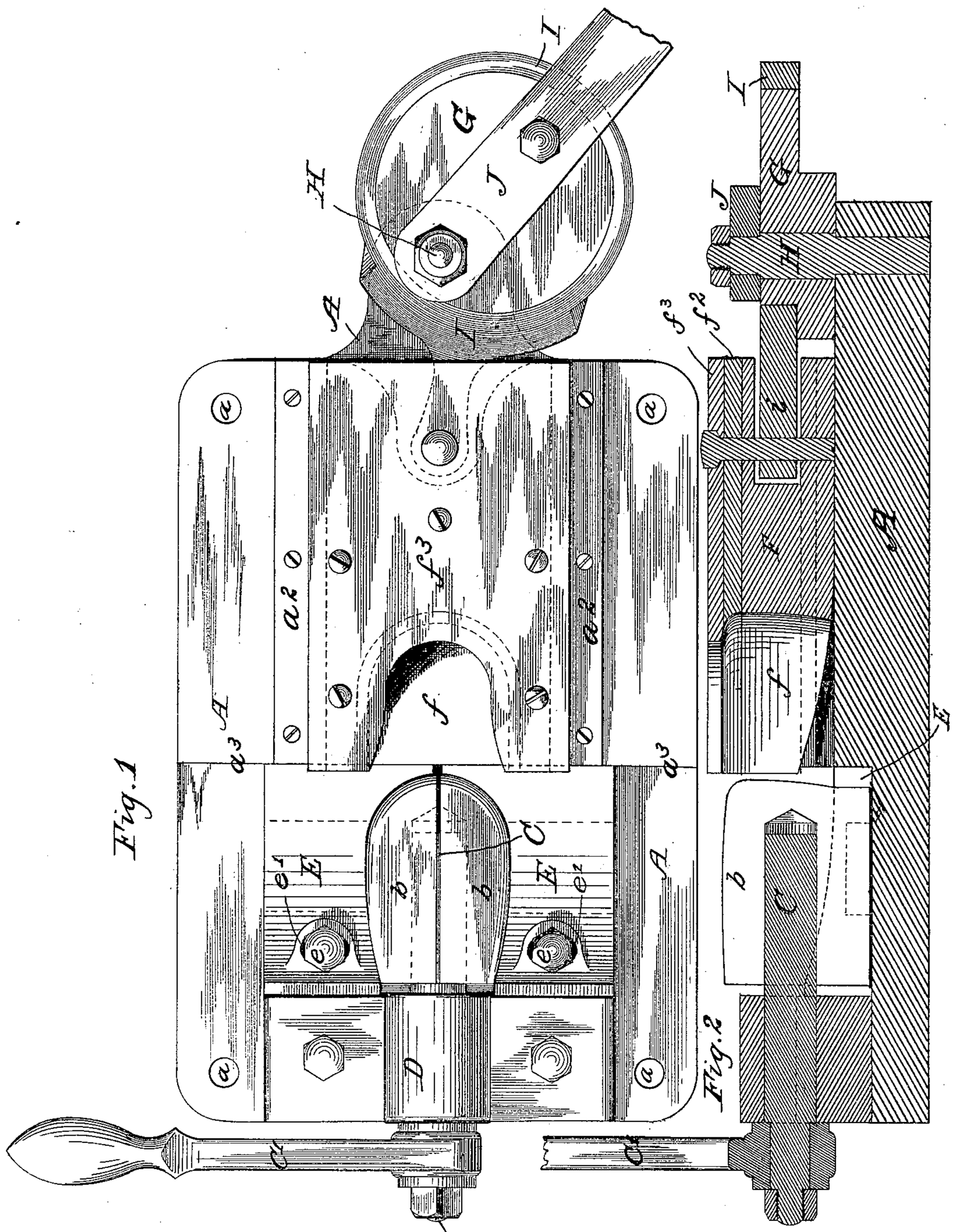


Fig. 1




Fig. 2

Witnesses.
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A. M. Johnson.

Inventor.
F. A. Cushman
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(No Model.) 2 Sheets—Sheet 2.

# F. A. CUSHMAN.

## BOOT OR SHOE COUNTER FORMING MACHINE.

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Fig. 3

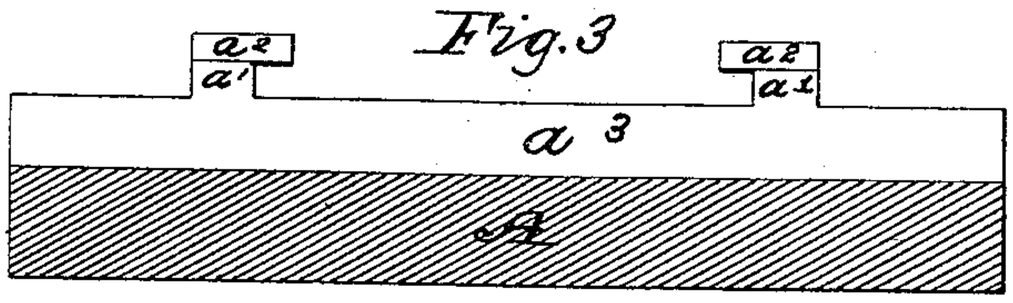



Fig. 4

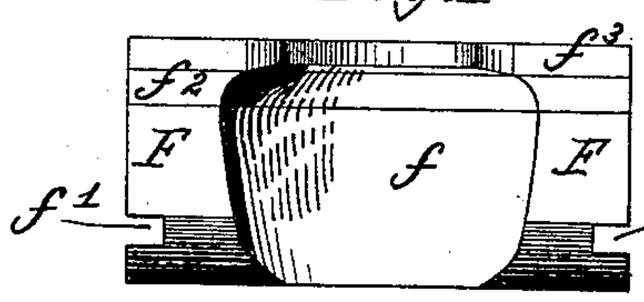



Fig. 5

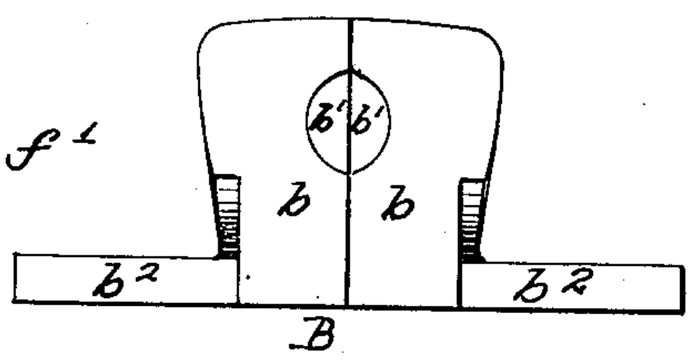



Fig. 7

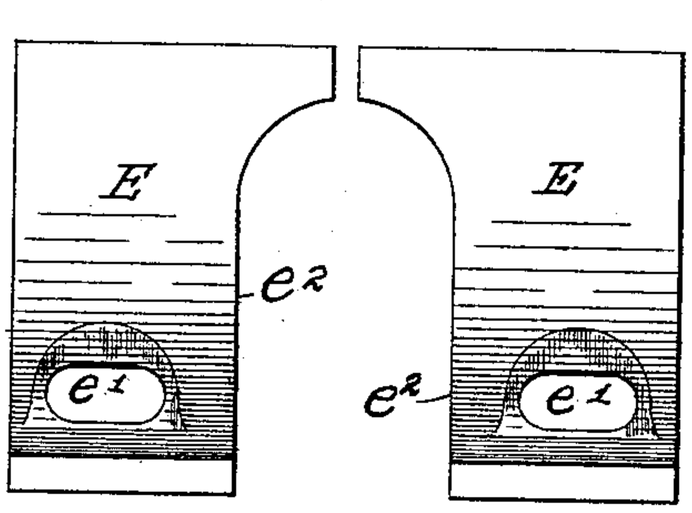



Fig. 6

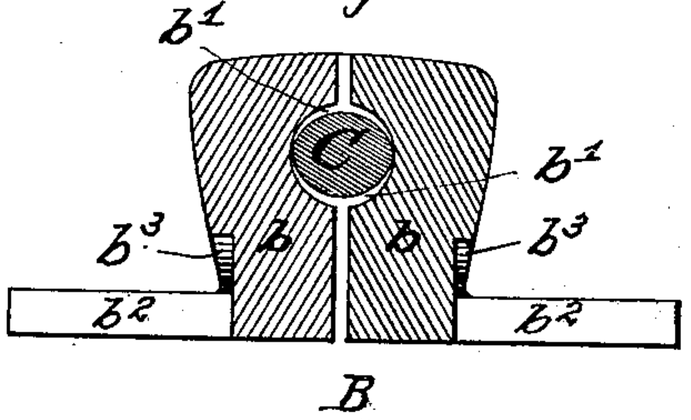
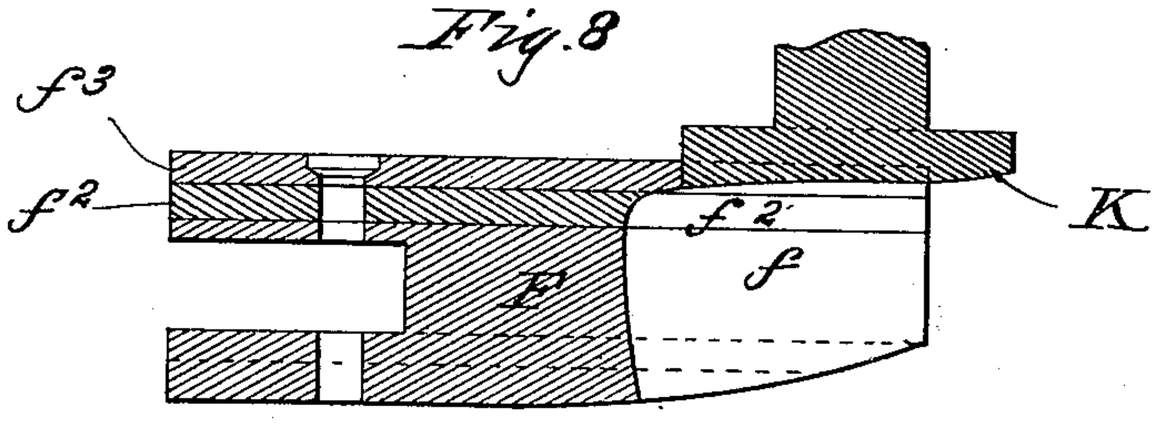



Fig. 8




Witnesses
F. A. Merrill
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Inventor.
F. A. Cushman
By J. B. Thurston
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# UNITED STATES PATENT OFFICE.

FRANCIS A. CUSHMAN, OF PLYMOUTH, NEW HAMPSHIRE.

## BOOT OR SHOE COUNTER FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 371,491, dated October 11, 1887.

Application filed January 24, 1887. Serial No. 225,337. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS A. CUSHMAN, a citizen of the United States, residing at Plymouth, in the county of Grafton and State of New Hampshire, have invented certain new and useful Improvements in Boot or Shoe Counter Forming Machines, of which the following is a specification.

The object of this invention is to provide a machine capable of forming boot or shoe counters in a rapid and efficient manner. These results are attained by the use of a male and female die, the former capable of expansion within the latter, as clearly described in the following specification, and illustrated in the accompanying drawings, forming part thereof, of which—

Figure 1 is a general plan view of a machine embodying my improved dies and showing one method for operating them. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a cross-section of the machine-bed. Fig. 4 is a front end view of the female die detached. Fig. 5 is an end view of the male die when closed. Fig. 6 is a cross-section of said die as when opened or spread apart, and shows one method for expanding the same. Fig. 7 is a plan view of the adjustable counter-guides, and Fig. 8 shows the female or socket die in longitudinal section and a pressure-plate adapted to bear upon the crimped edges of the counter and form it as desired.

Similar letters indicate corresponding parts.

The counter is formed in my improved machine bottom side up, as it would appear upon a last.

In the drawings, A represents a bed-plate, having holes *a* for the reception of screws for fastening the same to a bench or table. The center or male die, B, is made in two parts, *b b*, divided in the longitudinal center of the bed-plate, and so mounted upon the bed-plate as to be capable of expansion in a transverse direction. This may be accomplished in many ways—the simpler the better. For instance, cap-screws may be passed from the under side through slots formed transversely in the bed-plate and threaded to either of the said parts *b b*, and steady-pins be introduced between said parts near their top, fast in one and loose in the other, to insure an even movement, and a wedge driven by a cam be interposed between said parts for expanding them; or the adjacent surfaces of either of said parts *b b* may be grooved, as at *b' b'*, Figs. 5 and 6, so as to form an elongated or oval hole when the said parts are compressed, and an oval shaft, C, made to closely fit said hole, and having a cylindrical portion by which it may be mounted in the bearing D, bolted to the bed-plate, may be introduced therein, when, by a movement of the lever C', mounted on the opposite end of said shaft C, the latter is rotated, and the said parts *b b* of the die B are then expanded, as shown in Fig. 6.

Tongues $b^2$ $b^2$ may project in a transverse direction from the outside of either of the parts *b b* at their bottom, and be planed a movable fit for grooves formed in the bottom of the counter guide-plates E E, located one upon either side of the die B. These are shaped on their upper side in a manner to give the proper slope to the top of the counters, to be hereinafter explained, and are fastened to the bed-plate by aid of screws *e e*, which pass through slots *e'* and are threaded in the bed-plate. By this construction the said guide-plates are allowed the necessary adjustment to enable them to conform to different sizes of dies B. To adjust the plates E to position, the die B should be opened or expanded, and said plates pushed as close as possible to said die and so retained by said screws *e e*.

The female or socket die F may be made in various sizes to conform to the dies B, and the socket *f* should be made a snug fit for its companion die B when the latter is expanded, which will insure sufficient pressure to form the counter.

The socket-die F may be conveniently supported between tongues *a' a'* by means of gibs $a^2$ $a^2$, secured by screws to the said tongues *a' a'*, and fitting grooves *f' f'*, formed one in either side of the said die, that portion of the bed-plate upon which the said die F is supported being made flush with the upper side of the guides E E, and that supporting said guides being planed down, thus forming the shoulder $a^3$, between which and the bearing D said guide-plates rest.

In the drawings one method for operating the socket-die F is shown. This consists of the eccentric G, mounted upon the stud H, secured to the bed A, having a strap, I, from which the arm *i* extends to and is pivoted upon the end of said socket-die F, and by aid of a lever, J, screwed to said eccentric, the latter may be rotated and said die F moved to and fro on and off of the die B, the material to be operated upon being placed between the two dies B F while they are in the position shown in Figs. 1 and 2. It is obvious that the said die F may be made whole, in one piece, if expense is not considered; but for the purposes of economy it will be found preferable to form the part F of perhaps two pieces, divided longitudinally, and to add another layer, $f^2$, in which to form the rounded corner, as appears on the bottom of the heel of a last. Then a cap-piece, $f^3$, is secured over all, as in the drawings, to form the crimped bent edge of the counter to the sole of a last. In some cases it may be desirable to provide more effective means for accomplishing this; hence I show in Fig. 8 a section of a pressure-plate, K, which may be brought into service by means of a suitable press, operated by foot or otherwise, after the dies B F have come together. The counters to be formed are introduced top edge down between the two dies, and they are brought around onto the sides of the die B by the forward movement of the die F, the said top edges being kept uniform in height and form by contact with the guide-plates E E, whose inner edges, $e^2$ $e^2$, when the die B is expanded, pass into the recesses $b^3$ $b^3$, formed for this purpose in said die.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the bed and a movable socket-die, of an internal expansion-die consisting of two disconnected parts separable longitudinally and parallel one with the other, and operating mechanism, substantially as set forth.

2. The combination, with the bed and a movable socket-die, of an internal expansion-die formed in two disconnected parts and separable longitudinally upon said bed, each provided in its adjacent face with a longitudinal groove, a shaft mounted upon said bed, having an oval portion resting within the said grooves, and a crank whereby said shaft may be rotated for expanding the same, substantially for the purpose set forth.

3. The horizontally-movable socket-die having a portion of its bottom curvilinear, as shown, an expansion-die formed in two disconnected parts, and separable longitudinally-adjustable guide-plates located one at either side of said expansion-die, having curvilinear tops for giving the desired curve to the tops of counters, and mechanism for operating said dies, all combined and conveniently arranged upon a suitable bed, substantially as set forth.

4. The movable socket-die having a portion of its bottom curvilinear, as shown, an expansion die formed in two disconnected parts, and separable longitudinally-adjustable guide-plates located one at either side and extending partly underneath said expansion-die, provided with curvilinear tops for giving the desired curve to the tops of counters, and suitable operating mechanism for said dies, all combined and conveniently arranged upon a bed-plate, substantially for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS A. CUSHMAN.

Witnesses:
A. E. DRAPER,
ALVIN BURLEIGH.