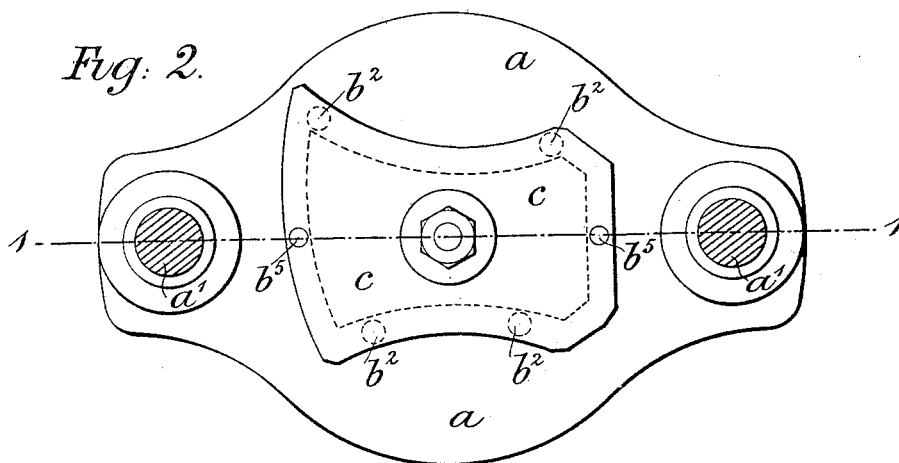
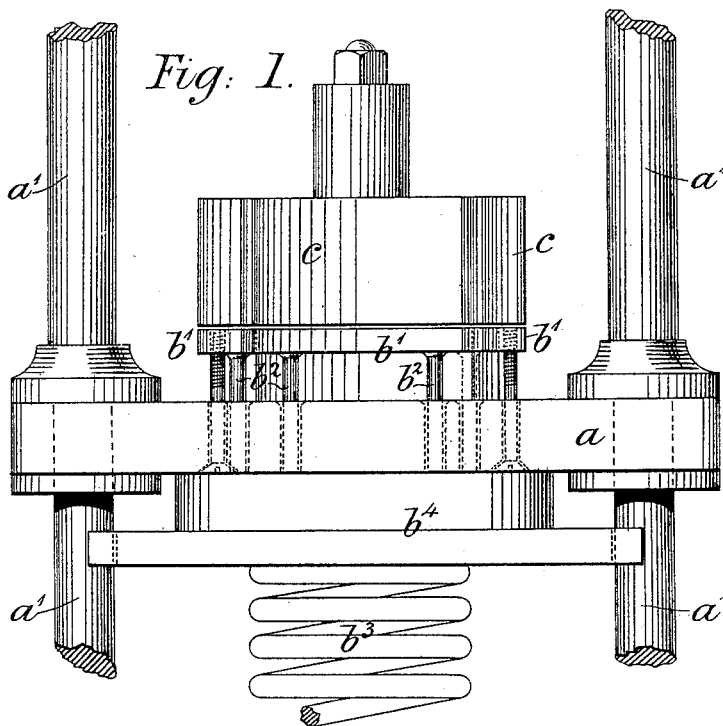


J. W. JONES & E. K. BRIDGER.

MACHINE FOR FORMING METAL WAISTS FOR BOOTS OR SHOES.

No. 453,813.

Patented June 9, 1891.



Witnesses:

Henry Huber  
Meimlen

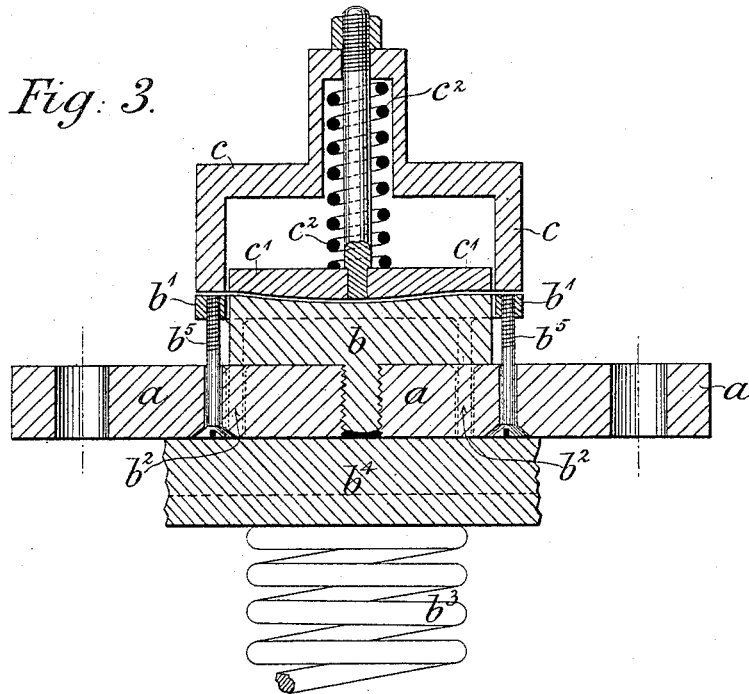
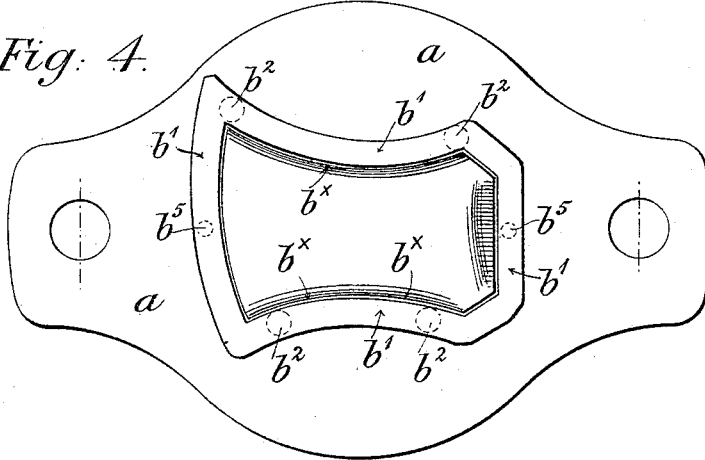
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MACHINE FOR FORMING METAL WAISTS FOR BOOTS OR SHOES.

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*Fig. 4.*

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Fig. 6.

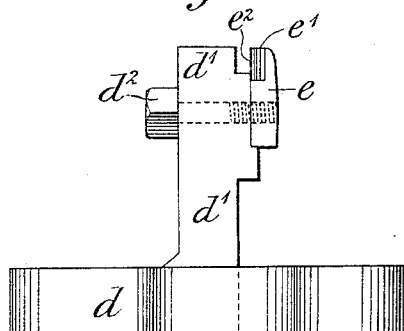


Fig. 7.

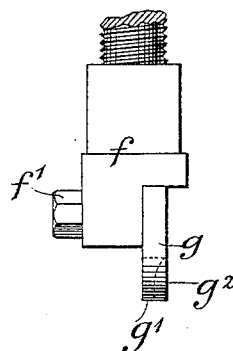


Fig. 5.

Fig. 8.

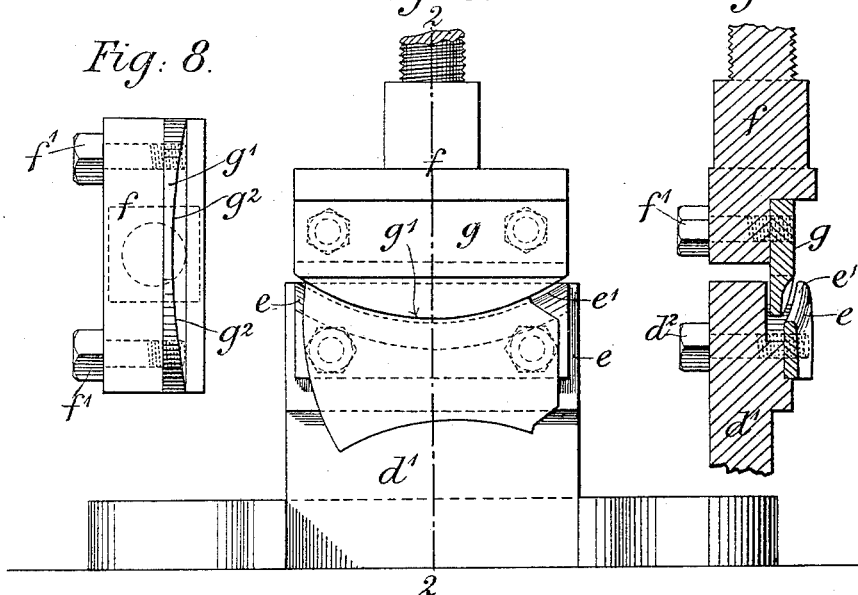
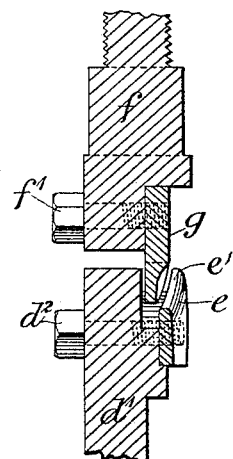


Fig. 9.



Witnesses:

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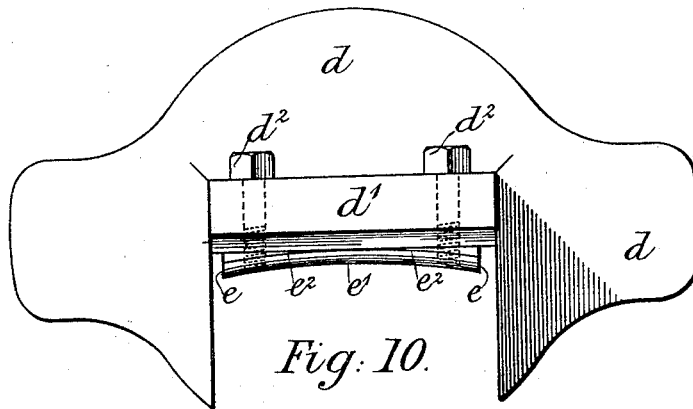
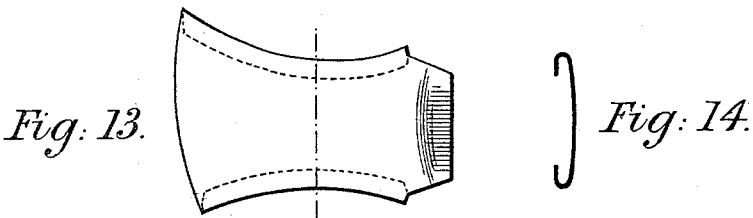
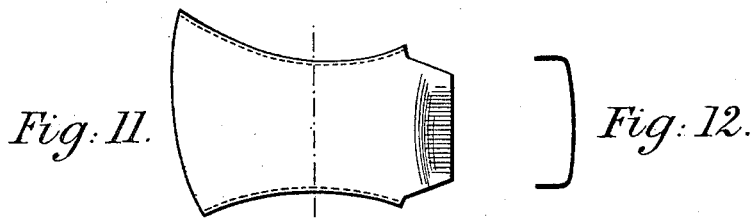


Fig. 10.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN WARD JONES AND EDWARD KYNASTON BRIDGER, OF LONDON, ENGLAND, ASSIGNORS TO THE JONES SYNDICATE, LIMITED, OF SAME PLACE.

## MACHINE FOR FORMING METAL WAISTS FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 453,813, dated June 9, 1891.

Application filed June 24, 1890. Serial No. 356,528. (No model.) Patented in England May 28, 1890, No. 8,283.

*To all whom it may concern:*

Be it known that we, JOHN WARD JONES, engineer, of 1 Canonbury Terrace, London, England, and EDWARD KYNASTON BRIDGER, gentleman, of Temple Chambers, Falcon Court, Fleet Street, London, England, subjects of the Queen of Great Britain, have invented certain new or Improved Machinery or Apparatus for Stamping or Forming Metal Waists for Boots and Shoes, (for which we have made application for Letters Patent in Great Britain, No. 8,283, dated May 28, 1890,) of which the following is a specification.

This invention relates to machinery or apparatus for stamping up or forming into the desired shape the metal waists of boots and shoes. Now, owing to their peculiar curves and forms, there are many difficulties in forming metal waists for boots and shoes by machinery; and our present invention consists in the arrangement and construction of dies and apparatus for making these metal waists in the shape and form desired; and in order that our present invention may be easily understood and readily carried into practice we will proceed to fully describe the same with reference to the accompanying drawings.

The metal waists which our machinery is designed to produce are formed with each side thereof turned downward and under, so that such turned-under edge on each side will embrace the outer edges of a metal plate on the boot or shoe. We form this curved turned-under edge in two operations, viz: first, by turning over ("drawing" down) the two edges of a flat piece of steel or tin-plate (or other suitable sheet metal) to about a right angle with the body of the plate, and then, secondly, each edge is separately turned under and inward, so as to leave a space between such turned-in edge and the body of the waist itself.

Figures 1 to 4 show the figures for the first-named operation, and Figs. 5 to 10 the apparatus for the second-named operation. Figs. 11 to 14 show a metal waist of the particular form and shape produced by the dies of the form and shapes shown in the other figures of the drawings.

Fig. 1 is a side view in side elevation of the apparatus for performing the first-named op-

eration. Fig. 2 is a plan of Fig. 1. Fig. 3 is a vertical section on line 1 1 of Fig. 2. Fig. 4 is a plan of the male die, the female die being removed. Fig. 5 is a front elevation of the apparatus for performing the second-named operation. Fig. 6 is a separate side or edge view in elevation of the bottom die or lower part of Fig. 5. Fig. 7 is a separate side or edge view of the top die or upper part of Fig. 5. Fig. 8 is an underside plan of Fig. 7—that is, a plan of Fig. 7 inverted. Fig. 9 is a vertical cross-section of Fig. 5 on line 2 2. Fig. 10 is a plan of Fig. 6—that is, a plan of the lower part or bottom die. Fig. 11 is a plan of the metal sheet after the first operation, and Fig. 12 a cross-section thereof. Fig. 13 is a plan, and Fig. 14 is a cross-section, of the metal sheet after undergoing the second operations—that is, Figs. 13 and 14 are respectively a plan and section of a finished metal waist for a gentleman's boot or shoe.

*a* is the platform or support mounted in the standards *a' a'*, (or in any other suitable manner,) and on this platform *a* is secured the male die *b*, of the shape on its two sides *b<sup>x</sup>* and on its top which it is desired to impart to the metal waist. (See Figs. 3 and 4.) This peculiar-shaped male die *b* has a sliding rim or ring of metal *b'* surrounding it and normally kept pressed up to the top edge of the male die by the guide-pins *b<sup>2</sup>*, which travel freely through holes provided for them in the platform *a*, and the lower ends of these pins *b<sup>2</sup>* are normally kept pressed up by the spring *b<sup>3</sup>* (or by any other suitable means) and intermediate plate or buffer *b<sup>4</sup>*, thus leaving the said slide *b'* free to be forced down the sides of the male die when required, the spring *b<sup>3</sup>* forcing back the rim *b'* when the pressure from above is removed.

*b<sup>5</sup> b<sup>5</sup>* are two headed screw-pins, which serve to prevent the metal rim *b'* from coming off the die *b*.

The female die *c* corresponds in shape and fits over the male die *b*, upon which it is forced down by any suitable press or pressure, the separate central part *c'* being normally held in the position shown in Fig. 3 by a strong spring *c<sup>2</sup>*; but when the female die *c* is pressed down over the male die *b* the part *c'* is forced back up the hollow part of the die *c* until

such pressure is released, whereupon the central part  $c'$  is forced down by the spring  $c^2$  back to its normal position, as in Fig. 3.

The operation is as follows: The piece of flat steel or tin-plate (or other suitable sheet-metal plate) of the desired size is placed in between the dies  $b$  and  $c$ , Fig. 3, and then the dies are forced together, thus drawing or forcing the two side edges of the piece of plate down the sides of the male die  $b$ , against which they lie closely. Then as the die  $c$  is withdrawn from  $b$  the metal rim  $b'$  follows up close after it, and catching the turned-down ("drawn" down) edge of the piece of metal plate forces same off the male die ready to be removed, such metal plate then having the shape or appearance presented by Figs. 11 and 12.

The top surface of the male die  $b$  is made to any curve, form, or arch desired to be given to the body of the metal waist, and the under side of  $c'$  is made to correspond; also the die  $b$  is made in different sizes as to width and length and of various forms as to the curves of its side  $b^x$ , according to the size and shape desired to be given to the various characters of metal waists, the female die  $c$  being formed to correspond with and fit over the male die  $b$ , whatever the latter's size and shape may be. We will now refer to Figs. 5 to 14 and to the second operation.  $d$  is the stand or platform, having the upright support  $d'$  thereon. To the upper part of  $d'$  is secured by the bolts  $d^2$  (or in any other suitable manner) the block or die  $e$ , which is curved or formed along its top edge  $e'$ , (see Fig. 5,) according to the curve or form required to be given to the side of the waist, and also curved or formed on its inner face  $e^2$  (see Fig. 10) or not, according to the curve, form, or arch to be given to the body of the metal waist. The upper part  $f$ , Fig. 7, is forced down or actuated by any suitable press or pressure, and has secured to it the block or die  $g$  by bolts  $f'$  or other suitable fastenings. This block or die  $g$  is curved or formed on its bottom edge  $g'$  to correspond with the curve or form  $e'$  of the lower die  $e$ , and also the die  $g$  is curved or formed on its face  $g^2$  to correspond with the curve or form  $e^2$  on the lower die  $e$ . Thus the curve or form of  $e'$  is approxi-

mately concave, that of  $g'$  being convex, while the curve or form  $e^2$  is approximately convex, and that of  $g^2$  concave.

The second operation is as follows: One edge of the partly-formed metal waist, as in Figs. 11 and 12, is placed over the lower die or block  $e$ , said edge pointing toward the support  $d'$ , as indicated in Fig. 5, and the top die  $g$  is then pressed down and so turned over (drawn down) the projecting edge of the metal waist until it lies close against the inside face  $e^2$  of the lower die  $e$ . The upper die is then withdrawn and the metal waist removed from the machine, and the edge on the opposite side of the waist is then turned under in the same manner on a similar machine, the only difference being in the curves or forms of the dies  $e$  and  $g$ , and which would be of the shape or form which it is desired to impart to the said opposite side.

It will be obvious that the forms or curves of the dies or blocks  $e$  and  $g$  may be varied to any extent, according to the sizes and shapes desired to be imparted to the finished metal waist.

We would remark that we make no claim herein to the metal waist *per se*; nor do we wish to limit ourselves to or to claim any method of actuating the aforesaid dies or presses for forming such metal waists.

Having thus described the nature of our said invention, what we claim as our invention, and desire to secure by Letters Patent of the United States, is—

In an apparatus for making metal shanks for boots and shoes, the combination of a die  $e$ , concaved longitudinally and convexed transversely on its top edge  $e'$  and side face  $e^2$ , according to the shape to be given to the finished metal shank, and a die  $g$ , convex longitudinally on its lower edge and curved on its side face to correspond with the shape of the die  $e$ , substantially as described.

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