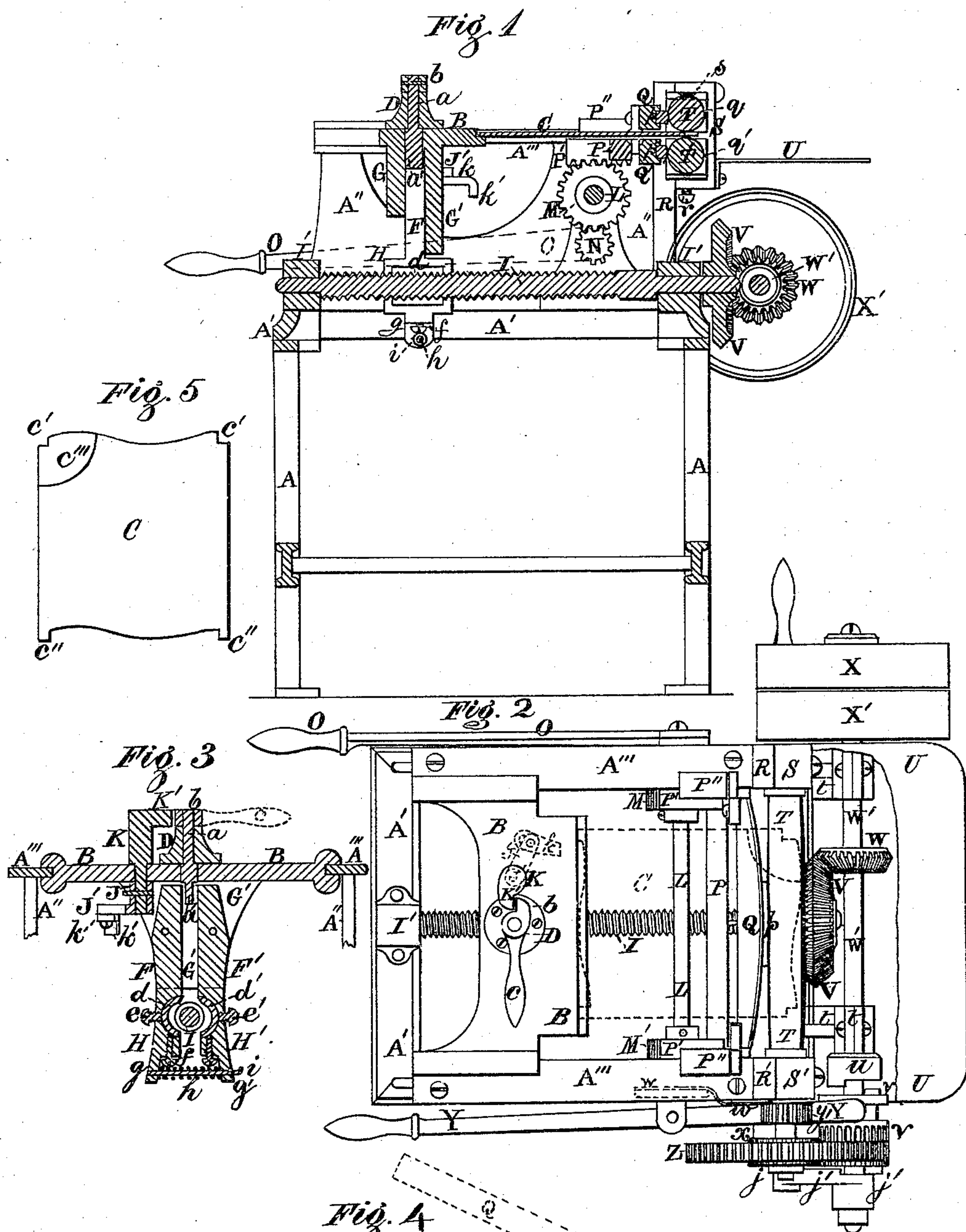


T. BARRETT.  
Leather-Crimping Machines.

No. 157,780.

Patented Dec. 15, 1874.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN LEATHER-CRIMPING MACHINES.

Specification forming part of Letters Patent No. 157,780, dated December 15, 1874; application filed November 25, 1874.

*To all whom it may concern:*

Be it known that I, THOMAS BARRETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Crimping Leather, of which the following is a specification:

Figure 1 of the accompanying drawings is a central vertical longitudinal section, and Fig. 2 is a top view, of my improved boot and shoe crimping machine. Fig. 3 is a vertical transverse section of a portion of the machine. Fig. 4 is a front view, and Fig. 5 is a top view, of parts in detail of the machine.

The object of the present invention is to provide a machine for crimping the leather or other material of boots and shoes, in the desired finished curve of the back or front, in an expeditious and effective manner, without injury to the stock; and, to effect these ends, my invention consists, mainly, in a crimping-machine arranged and operating as will be hereinafter more fully explained, to carry a driving-carriage arranged to receive one end of a form, and to be adjusted to connect with, so as to be carried by, or to automatically disconnect from, a screw-shaft provided with suitable gearing, operated by a driving-shaft having a clutch-gear arranged to be connected with a clutch on the driving-shaft, to actuate gearing operating suitable rollers, or to be disconnected from said clutch to allow the independent rotation of the driving-shaft to actuate the driving-carriage, and permit a stationary position to the said rollers, as desired, to perform the separate required portions of the work as the stock is carried between them on a properly-shaped form, advanced by the driving-carriage to a certain distance, when the carriage is automatically released by the action of a series of mechanical devices connected therewith, which will be fully described in due course; and the rotation of the rollers in one direction bears against and presses the stock, and the reversed rotation of the rollers feeds out the stock in its finished crimped form, the stock being held by convex binders, formed with a slot to receive the form, and arranged on, to tilt and be carried toward or from the rollers by, a traveling carriage, one binder being hinged to be raised to allow the introduction and removal of the form, and for other

purposes, and both binders provided on the front with rubber or other pliable cushions, to better bind and protect from injury the stock during the crimping operation. My invention also consists in the construction, arrangement, and combination of several mechanical devices and parts, for the adjustment, operation, and the general perfecting of the machine, that will be more fully described in due course.

I will now proceed to more particularly describe the construction and operation of my improved boot and shoe crimping machine, and explicitly define my invention in the claims.

In the drawings, A represents the legs or open ends, supporting an open bed or frame, A', having vertical sides A'', curved out, as shown, or otherwise shaped, as preferred, and having screwed or otherwise attached or formed on the top longitudinal ways A''', formed to receive the grooved ends, and allow the back-and-forth longitudinal travel, of a driving-carriage, B, curved in at the rear, or otherwise shaped, as desired, and rabbeted or otherwise formed on the front to support the rear end of a form, C. Screwed or otherwise attached to the top of the carriage B is the flanged bottom of a circular or other-shaped socket-standard, D, which receives (to allow the turning of) a stem, a, of a cam, b, provided with a handle, c, and turning on the top of the standard D. The bottom portion of the stem a is, in one direction, of less width than the upper portion, and is curved at the ends, forming a cam-like termination, a', to turn readily between, and operate to extend, or allow the contraction of, lever-arms F F', pivoted to turn between abutments G G', depending from the bottom of the carriage B. The lever-arms F F', at the bottom, are attached to, or formed on, sectional nut-boxes H H', recessed on the interior segmentally, to receive and hold, or allow the ready removal of, adjustable semicircular or segmental clutch-nuts d d', which are adjusted, to take up any wear on them, by screws e e', operating, through the sides of the boxes, against the outer periphery of the nuts d d', against whose bottoms operate, through the bottoms of the boxes H H', screws f. The boxes H H' are formed with bottom ears g, which receive a rod, h, provided with a spiral spring, i, that abuts at either end against the inside



of the ears  $g$ , to throw out the boxes  $H H'$ , and release the nuts  $d d'$  from a central longitudinal screw-shaft,  $I$ , supported to turn in suitable boxes  $I'$  on the ends of the bed or frame  $A'$ . The said nuts  $d d'$  are brought to clasp the shaft  $I$ , to hold and operate the carriage  $B$ , by the turning of the cam-handle  $c$ , which causes the bottom portion  $a'$  of the stem  $a$  to turn and bear against, so as to extend, the upper ends of the arms  $F F'$ , and contract the boxes  $H H'$ , and engage the nuts with the shaft  $I$ , in which position they are held by the abutment of the cam  $b$  against the projecting or cam portion  $K'$  of a standard,  $K$ , extending upward from the top of the carriage  $B$  at the side of, and on a central line with, the standard  $D$ , and formed with a stem extending through and turning in the carriage, and extending below it, to receive the socket and vertical portion  $J$  of a horizontal arm,  $J'$ , to whose end is screwed or otherwise connected the slotted end of an adjustable arm,  $k$ , bent downward or otherwise formed at the front end to serve as a stop-piece or trip,  $k'$ , to automatically turn the cam  $K'$  and disengage the cam  $b$ , to release the carriage  $B$ , when sufficiently advanced to allow of its movement independently of the shaft  $I$ , by the abutment of the stop-piece  $k'$  against a transverse shaft,  $L$ , turning in the sides  $A''$ , which are provided with proper abutments or boxes to receive it. Located within the sides  $A''$ , on either end of the shaft  $L$ , are cog-wheels  $M M'$ . Below, so as to engage with and operate, the cog-wheel  $M$  is located a pinion,  $N$ , on one end of a shaft,  $L$ , extending through and operating in the abutment and side  $A''$ , and to whose other end is connected one end of a longitudinal hand-lever,  $O$ . Or, if preferred, the pinion-shaft may be arranged to be operated by a foot-treadle. The cog-wheels  $M M'$  engage with, to operate back and forth longitudinally, racks  $P'$ , depending, one on either side, from the ends of a cross-bar or binder-carriage,  $P$ , arranged to support the front of a form, and formed with grooved side pieces  $P''$ , or otherwise arranged as desired, to travel longitudinally back and forth on the ways  $A'''$ . The front ends of the side pieces  $P''$  or carriage  $P$  are formed with sockets, or otherwise arranged to receive and allow the turning of trunnions or axle ends  $n$  of, to allow a tilting movement to, binders  $Q Q'$ , located one above the other at the front of the carriage  $P$ , a slot,  $o$ , being formed between the bottom of one and the top of the other, to allow the passage of a form. The upper binder  $Q$  is hinged at one end to a lug or plate at the back, extending upward from the end of the lower binder  $Q'$ , at whose other end is an upward-extending plate at the back, to receive the other end of the upper binder, which is rabbeted at the back to fit against it snugly. The upper binder is hinged to admit of its being raised for the introduction and removal of a form, and to allow the crimping of button boots or shoes where the upper is lapped. The binders  $Q Q'$  are con-

structed of metal or other suitable material, convexly curved longitudinally on their faces, and recessed or otherwise formed to hold in the center rubber or other pliable cushions  $p p'$ , convexly curved in the direction of their length, or otherwise shaped as required for the desired work to be performed. Extending upward at the front end of the machine, on either side, are standards  $R R'$ , that support slotted standards  $S S'$ , which receive adjustable axle-boxes  $q q'$ , supporting the axles of transverse rollers  $T T'$ , located one above the other. The standards  $S S'$  are each provided with a spiral spring,  $s s'$ , or other yielding bearing between the upper box,  $q$ , and the top of the standard. Or any other arrangement that may be preferred for providing a yielding bearing to the rollers  $T T'$  may be adopted. Arranged to turn in the bottom of the standards  $S S'$  are screws  $r$ , that bear against the lower boxes for the purpose of adjusting the rollers  $T T'$  to the proper height and level. Attached to the front of the frame at the proper height is a shelf,  $U$ , to receive the completed work. On the outside of the frame, on the forward end of the shaft  $I$ , is a bevel-gear,  $V$ , which meshes with and is operated by a smaller bevel-gear,  $W$ , located on a forward transverse driving-shaft,  $W'$ , supported to turn in suitable boxes or clamp-brackets  $t$ , projecting from the front of the frame  $A'$ . Located on one end of the shaft  $W'$  is a fast belt-pulley or driving-wheel,  $X$ , and a loose belt-pulley,  $X'$ . Or the shaft may be arranged with a crank or otherwise, to be operated by hand or other motive power, as preferred. Located on, so as to rotate with, the shaft  $W'$ , near its other end, is a clutch,  $u$ , formed on one side to receive and hold, when brought in contact with it, a clutch-pin,  $v$ , located beyond it, to operate to and fro on the shaft  $W'$ , and be thrown in connection with or released from the clutch  $u$  by the lateral movement of a longitudinal hand-lever,  $Y$ , pivoted to lugs extending from the side of the frame, or otherwise arranged, and curved at the front to extend partly over the top of the clutch-pin  $v$ , which is grooved to receive a stem depending from the curved end of the lever  $Y$ , which lever, when pressure is removed from it, is thrown one side, to disconnect the clutch-pin  $v$  from the shaft-clutch  $u$ , by the pressure against it of a bent spring,  $w$ , connected with the side of the frame.

By throwing the clutch-pin  $v$  into connection with the shaft-clutch  $u$  the former is rotated, and engages with so as to operate a pinion,  $x$ , turning in the bottom of an arm,  $j$ , depending from the outer end of the axle of the lower roller  $T'$ , which, outside of the frame, is provided with a pinion that meshes with and operates a pinion,  $y'$ , on the axle of the upper roller  $T$ , through the medium of a cog-wheel,  $Z$ , located on the under roller-axle, and meshing with, so as to be operated by, the pinion  $x$ . Extending forward from the bottom of the arm  $j$  is a horizontal arm,  $j'$ , notched



in on the inside of its forward portion, to form a clutch to receive the projection or key formed on the outside of the clutch-pinion *v*, and hold the latter in position when freed from the clutch *u* and at rest, a key or projection being formed on the opposite side of the clutch-pinion *v*, to connect with the clutch *u*. The forward portion of the arm *j'* is projected laterally on the outside, and formed to support and allow the turning of the end of the shaft *W'*. The form *C* is made of a plate of metal or other suitable material, of the desired thickness, length, and width to receive the leather or other material to be supported by the carriages *B* and *P*, and to pass between the binders *Q Q'* and rollers *T T'*, and is curved on the front in the required shape to form the desired curve of the back or other portion of the boot or shoe to be crimped, and the back of the form is reversely curved—that is, to receive the front of another similar form. The front of the form *C* is notched in on the sides, as at *c'*, Fig. 5, and at the rear is formed with projecting ends *c''*, that fit into the notches *c'*, to guide the following form when the latter is used. The form *C* is countersunk on the top and bottom, at the front bottom corner or lower portion of the heel, in a curved shape, as at *c'''*, Fig. 5, to insure an even finish and prevent the projection of leather or other material that would otherwise occur by crimping the double thickness caused by the stiffening used at this portion of the heel.

The rollers *T T'*, in the present instance, are of metal, slightly convexly curved in a longitudinal direction; but it is evident that hard-rubber rollers, or rollers covered with rubber, or other yielding material or construction, may be used in their stead, according to the nature of the material to be crimped, and of the work required to be performed.

The operation of my improved machine is as follows: The carriage *B* being brought in connection with the shaft *I*, so as to be propelled thereby, by turning the cam *b* to abut against the cam *K'*, and clutch the nuts *d' d* on the shaft, as hereinbefore described; the form *C* is placed with its rear end on the rabbet on the front of the carriage *B*, and its front end on the carriage *P*. The leather or other material to be operated upon, suitably cut, is inserted vertically at the rear of the rollers *T T'*, and by bearing down the lever *O* the carriage *P*, through the medium of the pinion *N*, wheels *M M'*, and racks *P*, is advanced to bring the binders *Q Q'* against the leather or other material or stock, and hold it against the rollers *T T'*, the rubber or other pliable cushions *p p'* serving to bind the leather or other material against the rollers without injury to it, and stretching it vertically, in a like manner to the pressure and stretching of a piece of leather by a person's thumbs, while the convexity of the binders allows the smoothing out of any wrinkles in the stock, and admits of its lateral or horizontal stretching by the forward ends of the form *C*, which, as the

form *C* is advanced by the propulsion of the driving-carriage *B* by the screw-shaft *I*, operated through the medium of gears *V W* and driving-shaft *W'*, rotated by steam or other power, first takes the ends of the stock, while the center is held by the cushions *p p'* until the form carries it between the rollers *T T'*, which are now (the clutch-pinion *v* being disconnected from the clutch *u*) stationary and unaffected by the rotation of the shaft *W'*, operating the form-carriage *B*. When the stock on the form has been sufficiently advanced between the rollers *T T'*, the stop-piece *k'* strikes the shaft *L* and releases the carriage, as hereinbefore described. By operating the lever *Y* to one side the clutch *v* is locked with the clutch *u*, and the rollers *T T'*, whose gearing is thus put in communication with the shaft *W'*, are now rotated against the stock, thus pressing and evenly and smoothly finishing it in a completely and permanently crimped form of the desired shape. The rollers *T T'* are then reversely rotated to carry the stock and form out therefrom, and deposit them on the shelf *U*; or the form and stock may be received by hand from the rollers.

When the binders *Q Q'* have performed their required function, which is to hold and properly stretch the stock during the crimping process, they are carried back by raising the lever *O*.

When the form *C* has been sufficiently advanced and the carriage *B* retrograded, by raising the binder *Q* another form may be inserted to immediately follow up the former one, the rear projections of the first form fitting into the front-side notches of the latter form, and the carriage *B* advanced to drive on the forms as the first is carried out between the rollers, and the previously-described operation repeated, thus furnishing a constant supply of work to the machine.

The carriage *B*, when released, may be carried back by hand, or by a backward movement of the form, imparted by the rollers when operated in the direction induced by the backward rotation of the shaft *W'*; or the carriage *B* may be carried back, when in connection with the shaft *I* and the rollers are at rest, by the forward rotation of the shaft *W'*.

The segmental nuts *d d'* are readily inserted and adjusted by the screws in their boxes, to take up any wear on them, and have a firm clutch at all times when engaged on the shaft *I*, and when worn or injured may be readily removed and replaced at a trifling expense.

It will be evident that it is not necessary that the rollers remain at rest during certain portions of the work, for, on examination, it will be seen that they may be kept in constant rotation, if so desired, and effectively perform the work of feeding and crimping the stock.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. In a boot or shoe crimping machine, the



cam *b*, having cam-like stem *a'*, supported upon and turning in the carriage B, in combination with arms F F' and boxes H H', provided with adjustable segmental screw-nuts *d d'*, rod *h*, and spring *i*, all substantially as and for the purpose described.

2. In combination with a cam, *b*, arranged and operating as hereinabove described, a cam, K', formed on standard K, turning in carriage B, socket J, formed with an arm, J', and adjustable stop-arm *k*, all arranged and operating substantially as and for the purposes herein set forth.

3. The longitudinally-traveling carriage B, provided with cams *b* K' and arms F F', in combination with screw-shaft I, engaging with, and rotated by, a driving-shaft, W', all substantially as and for the purpose described.

4. The binders Q Q', convexly curved on their outer faces, arranged one above the other, in combination with longitudinally-traveling carriage P and lever O, all substantially as and for the purpose shown.

5. In combination with binders Q Q' and rollers of a boot and shoe crimping machine, rubber or other pliable cushions *pp'*, arranged and operating substantially as and for the purpose specified.

6. The longitudinally-traveling carriage P, arranged to receive and support the binders Q Q', in combination with cog-wheels M M', shaft L, pinion N, and lever O, all substantially as and for the purpose stated.

7. In combination, the shaft W', adjustable clutch-pinion *v*, lever Y, stationary clutch *u*, clutch-arm *j'*, arm *j*, pinion *x*, cog-wheel Z, pinions *y y'*, and rolls T T', all substantially as and for the purpose described.

8. The carriage B, provided with holding and automatic releasing mechanism, as described, in combination with screw-shaft I, gears V W, shaft W', rollers T T', together with their intermediate mechanism, all substantially as and for the purpose described.

9. A boot and shoe crimping form, C, formed with front side notches *c'* and rear projections *c''*, and curved on the front and rear in the shape of the desired crimp, the rear curve formed to receive the front of a following form, substantially as described.

10. A boot and shoe crimping form, countersunk on both faces in a curved form at the corner of the lower portion of the heel, substantially as and for the purpose described.

11. In combination, the traveling carriage B, form C, carriage P, binders Q Q', rollers T T', together with their operative intermediate mechanism, all arranged substantially as and for the purpose shown.

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

THOMAS BARRETT.

Witnesses:

CARROLL D. WRIGHT,  
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