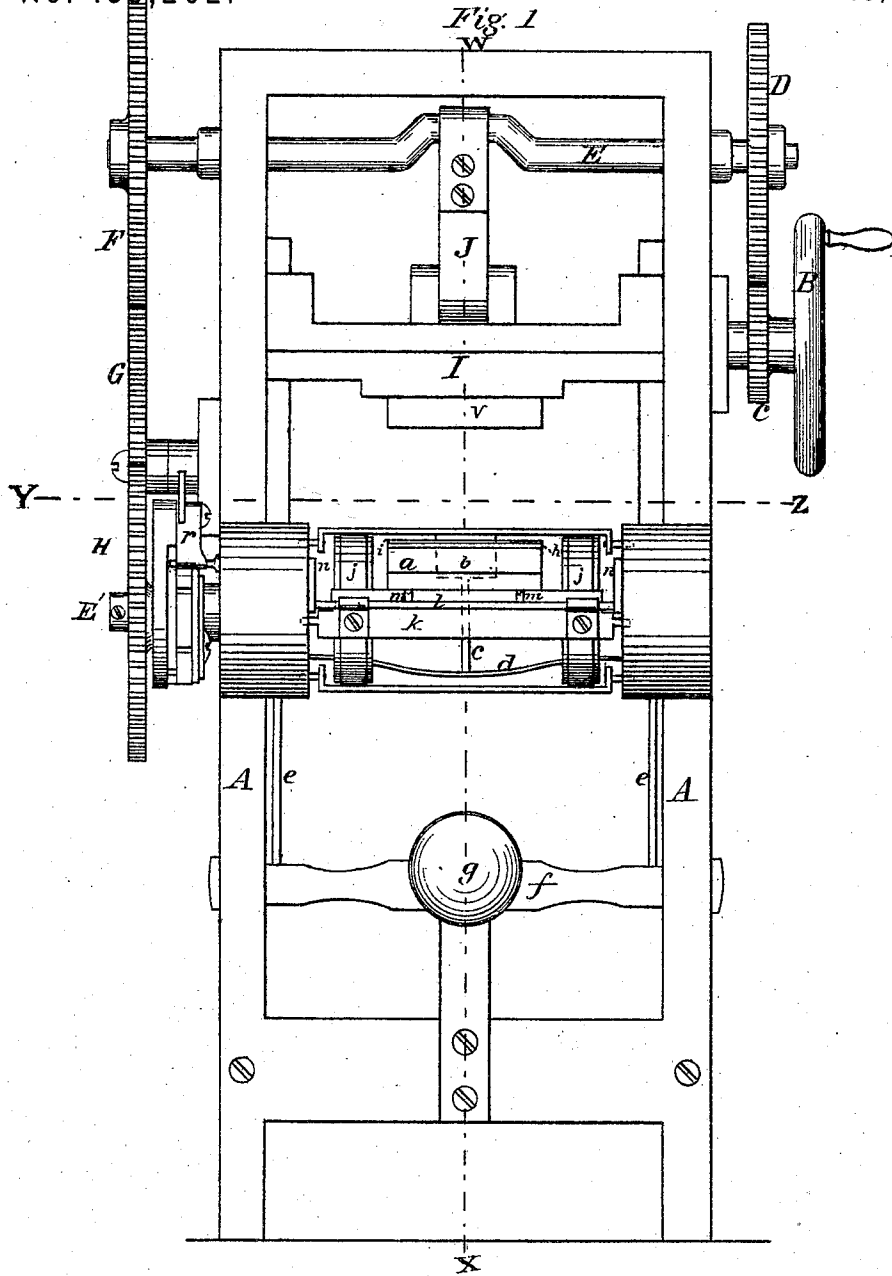


N. J. SIMONDS.

Improvement in Machines for Crimping Boots and Shoe Stiffenings.

No. 133,262.

Patented Nov. 19, 1872.



Witnesses.
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Fig. 3

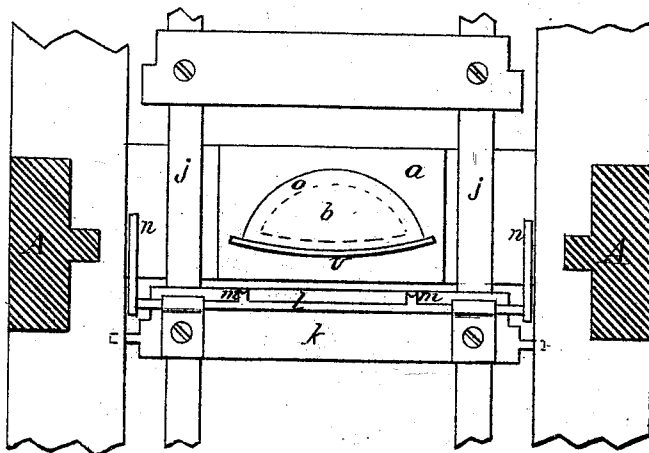


Fig. 4

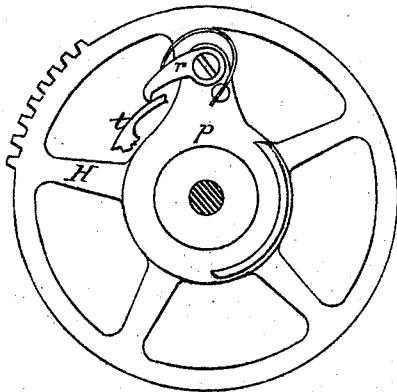
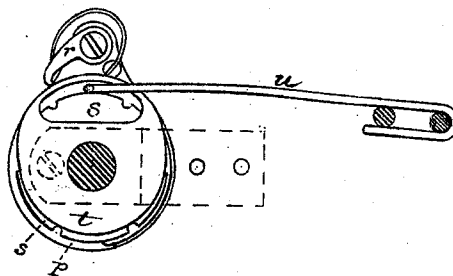


Fig. 5



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Fig 6

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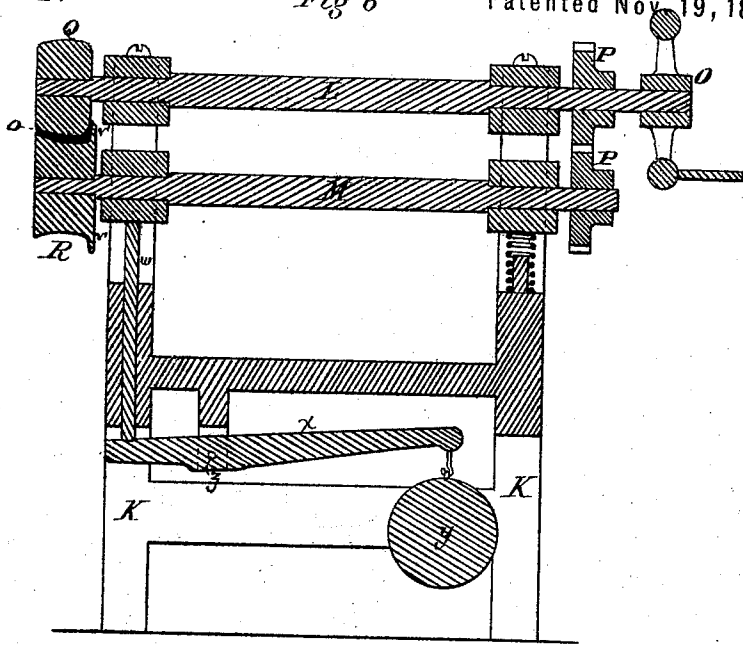
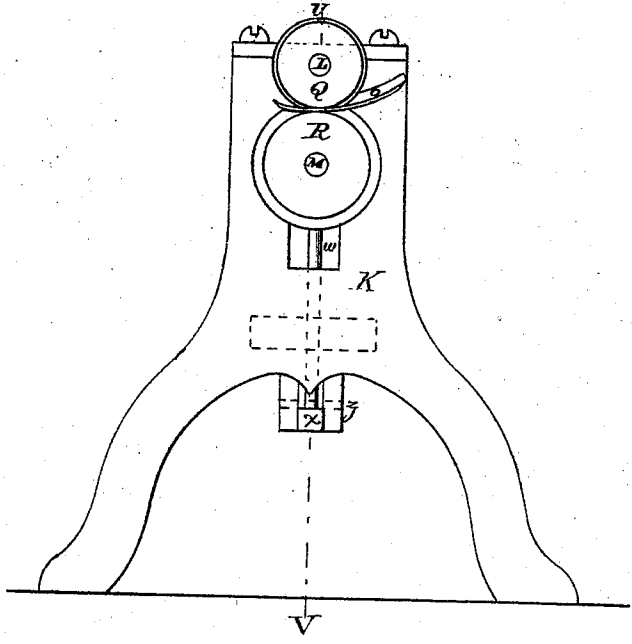


Fig. 7



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UNITED STATES PATENT OFFICE.

NATHAN J. SIMONDS, OF WOBURN, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR CRIMPING BOOT AND SHOE STIFFENINGS.

Specification forming part of Letters Patent No. 133,262, dated November 19, 1872.

To all whom it may concern:

Be it known that I, NATHAN J. SIMONDS, of Woburn, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Machinery for Crimping and Molding Boot and Shoe Stiffenings, of which the following is a specification:

This invention relates to machinery used for the purpose of crimping and molding the heel-stiffenings of boots and shoes, by which means the stiffenings are changed from a plane to the angles and vertical curve which they will retain when incorporated in the boot or shoe. This I accomplish by means of a press provided with peculiarly constructed and arranged dies and corresponding movements of the same, and also by means of a pair of rolls of peculiar contour of longitudinal section. The object of the first part of my invention is to crimp or turn the lower edge of the stiffening at or about a right angle with the vertical part, and also to produce both a longitudinal and transverse or vertical concavity of the inner side of the stiffening; and the object of the second part of my invention is to compress and consolidate the stiffening after being crimped and molded, as above stated.

In the accompanying drawing, Figure 1 is an end elevation taken at the left end of Fig. 2. Fig. 2 is a vertical section taken on line *x*, Fig. 1. Fig. 3 is a detached horizontal section taken on line *y z*, Fig. 1. Fig. 4 is a detached side elevation of the reciprocating devices taken from the right of Fig. 1. Fig. 5 is a similar view of a part of the same devices taken from the same point. Fig. 6 is a vertical section taken on line *u v*, Fig. 1; and Fig. 7 is an end elevation taken at the left of Fig. 6.

In the drawing, A represents the frame of the press, which should be substantially constructed to resist shocks and the strain and vibrations of the working parts. B is a hand-wheel, revolving upon a wrist secured to the side of frame A. C is a pinion, rigidly secured to the hub of wheel B and revolving with it. This pinion meshes into gear-wheel D, secured upon crank-shaft E, and thereby rotating the same. Upon the opposite end of shaft E is secured the gear-wheel F, which engages in an intermediate gear, G, revolving on a stud, secured in the side of frame A. This intermediate meshes into gear H, which revolves

loosely upon shaft E, thereby, through the clutch devices to be described, producing an alternating rotary movement of the shaft and an endless belt or apron connected therewith, as hereinafter described. The foregoing devices employed to produce a rotary movement of crank-shaft E may be varied, as desired, and a belt-pulley may be substituted for hand-wheel B. I is a cross-head, sliding in grooves in the side of frame A. J is a pitman connecting this cross-head with the crank of shaft E, whereby the rotation of this shaft imparts a reciprocating motion to the cross-head. *jj* are two endless belts, passing around pulleys secured upon shaft E' and corresponding pulleys upon a shaft at the other extremity of the machine, as shown in Fig. 2. These belts are connected by a series of bars, as shown at *k*, Figs. 1, 2, and 3, these bars being kept in line by their ends entering grooves in frame A, as shown in Fig. 3. Upon each of these bars is pivoted, in suitable bearings, a rod, *l*, upon the ends of which are secured the weight-levers *n n*, Figs. 1 and 2, while nearer the centers of the rods are two spurs, *m m*, formed upon or rigidly secured thereto, the ends of these spurs reaching to the edge of bar *k* for the purpose of holding and carrying the stiffening forward to the dies, as will be explained. Beneath cross-head J is a bed, *a*, extending across the frame, and arranged to move vertically to a limited extent. This bed is supported upon two vertical rods, as shown at *e*, Fig. 2, the lower ends of which are stepped in the rock-shaft *f*, as shown, so that the downward pressure thereon shall tend to raise the weighted lever *g*, thereby allowing a slight downward yielding movement to the rods. Upon the top of bed *a* is placed a platen or sheet of rubber or other elastic material, shown at *h*, and over this a thin sheet of steel or other metal, *i*. Centrally in bed *a* is inserted loosely the die *b*, which has a contour similar to the stiffening *o*, but smaller. This die is secured upon rod *c*, which rests upon a rigid bar, *d*. Thus the bed *a* has not only a yielding face, by reason of the elastic platen, but it has also a vertical movement independent of die *h*; and, if desired, their conditions may be reversed, the bed being stationary and the die movable. Beneath cross-head I is a mold of the same outline as the stiffening, shown at *o*,

Fig. 3. This mold is formed with a concavity in its cross-section or width, as shown, and a similar concavity in its length, while the edge corresponding to the outline of stiffening *o* is in the same plane as platen *i*. *v* is a thin strip of metal, set vertical, and secured to the edge of the upper die, and is curved to correspond to the curvature of the lower edge of the stiffening, as shown in Fig. 3. *o*, Fig. 2, represents a stiffening in process of molding.

The practical operation of this press is as follows: The operator standing at the right of the press, as seen in Fig. 2, places the stiffenings successively upon the bars *k*. As the endless belt *j* is moved forward, the lower line or edge of the stiffening being placed next the rods *l* and beneath spurs *m*—the weighted arms *n* being raised for this purpose as they pass around the sheaves on which the belt travels at the extremities, and falling and holding the stiffening in place—until it is carried between the dies, which then arrest its progress, and the belt, after moving a slight distance further, stops also. When, by the means already described, the upper die descends, the knife *v* crimps or turns down the lower edge or base-line of the stiffening; the edge or outline is firmly pressed between the upper die and the platen or bed; and as the latter is forced downward the die *b* forces the central part upward, producing the vertical concavity which it should possess to neatly fit the counter of the shoe. When the stiffening has been thus molded and the plunger rises it is removed, and the operation is repeated.

For the purpose of producing an intermittent movement of belt *j*, timed in accordance with the reciprocating motion of the upper die, I employ the following devices: *p*, *s*, and *t* are three cams. The first is rigidly attached to gear *H*, *s* is rigidly attached to shaft *E'*, and *t* is secured to frame *A*. In the periphery of *s* is formed a series of notches, in which pawl *r*, secured to *p*, may engage. *u* is a spring-catch, which also engages the notches in *s*. Cam *t*, being eccentric to the shaft, serves to release pawl *r* from *s* during a part of the revolution, during which time *u* engages in *s* and holds it in place, a set of projections upon *p* serving to release *u* just before *r* engages *s*. When the stiffenings have been thus molded and removed they are transferred to the rolls shown in Figs. 6 and 7, for the purpose of consolidation and permanent retention of the form imparted while in the press.

In these figures *K* is the frame, in suitable bearings in which are journaled the arbors *L*

M. *O* is a hand-wheel or pulley, secured upon the upper arbor, by which to impart rotary motion thereto, which is also imparted to the lower roll by the pinions *P P*. Upon the opposite ends of the arbors are fixed the convex and concave rolls *Q R*. Roll *R* is forced against roll *Q* by the weight *y* acting upon lever *x*, pivoted at *z* and acting against rod *w*, the opposite end of this roll being acted upon by a coiled spring beneath to insure a constant contact or mesh of pinions *P*. Upon roll *R* is formed a flange, *v'*, which extends past the face of roll *Q*, for the purpose of receiving the angle of the stiffening *o*; and by passing the stiffenings between these rolls, provided with an adjusting pressure, they are smoothed, compressed, and permanently molded, in readiness to be bent to the curvature of the counter of the shoe. For the purpose of molding certain kinds of stiffenings they may be passed through these rolls without being first subjected to the action of the dies.

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

1. In combination with the reciprocating molding-dies, the endless belt, with an intermittent cadenced movement, and holding devices for the stiffening, substantially as and for the purposes specified.

2. The combination of the reciprocating die, the platen, and the interior die working through the platen, substantially as described and shown.

3. In combination with the dies and platen, the edge-crimper *v*, substantially as and for the purposes specified.

4. In combination with the dies and platen, the cushion *h* and metallic plate *i*, substantially as described and shown.

5. A rolling-machine provided with the rolls *Q R*, formed with a convex and concave contour corresponding to the vertical curvature of the stiffening, and the crimping-flange *v'*, substantially as and for the purposes specified.

6. The process of crimping and molding shoe-stiffenings by means of rolls so as to impart thereto a concave line and folded edge, substantially as described and shown.

7. The process of molding a shoe-stiffening by confining its edges and applying pressure to the central portion, substantially as described and shown.

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Witnesses:

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