

R. C. LAMBART.
Lasting-Machines.

No. 216,685.

Patented June 17, 1879.

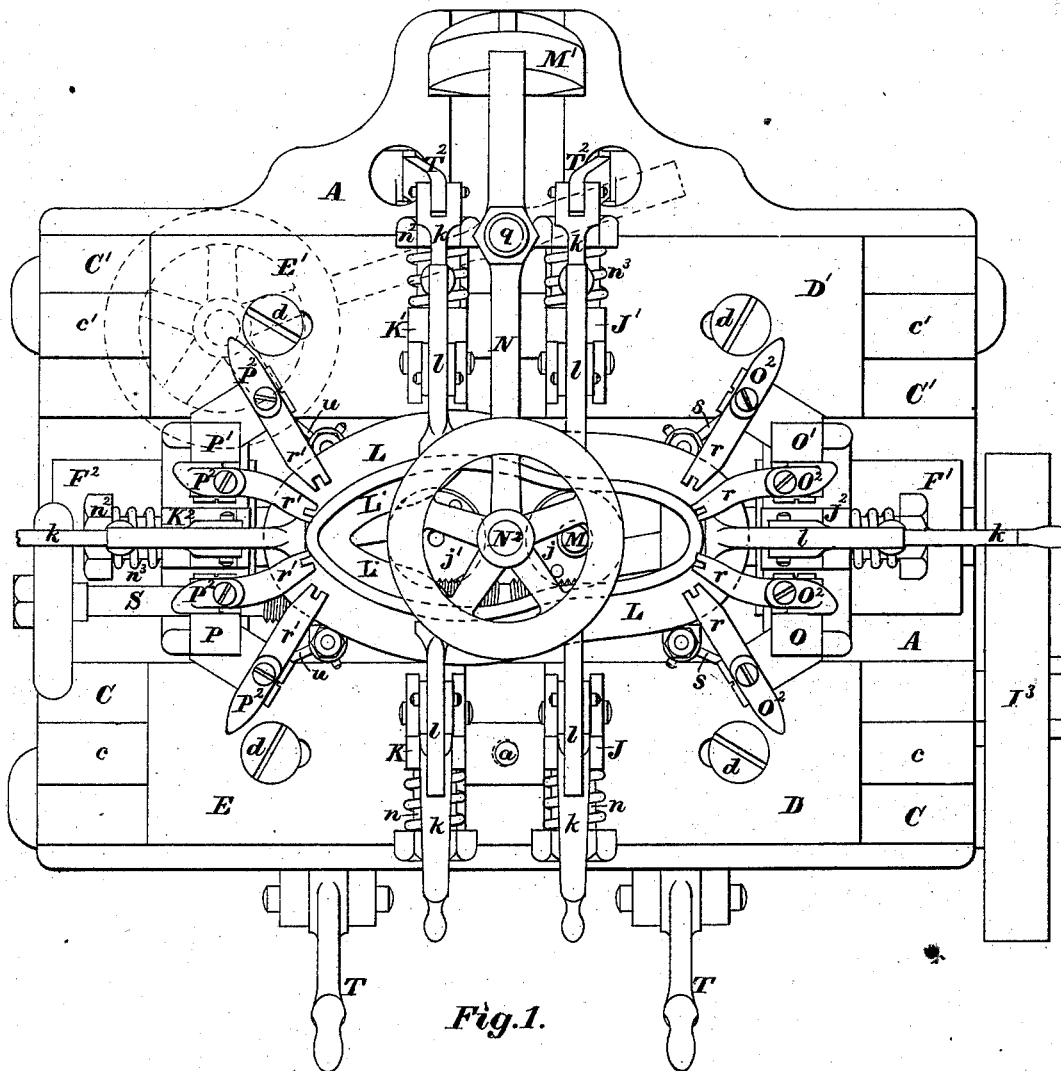


Fig. 1.

Witnesses:

E. H. Kemmerway.
C. H. Dodd.

Inventor:

Richard C. Lambart
by N. C. Lombard
Attorney.

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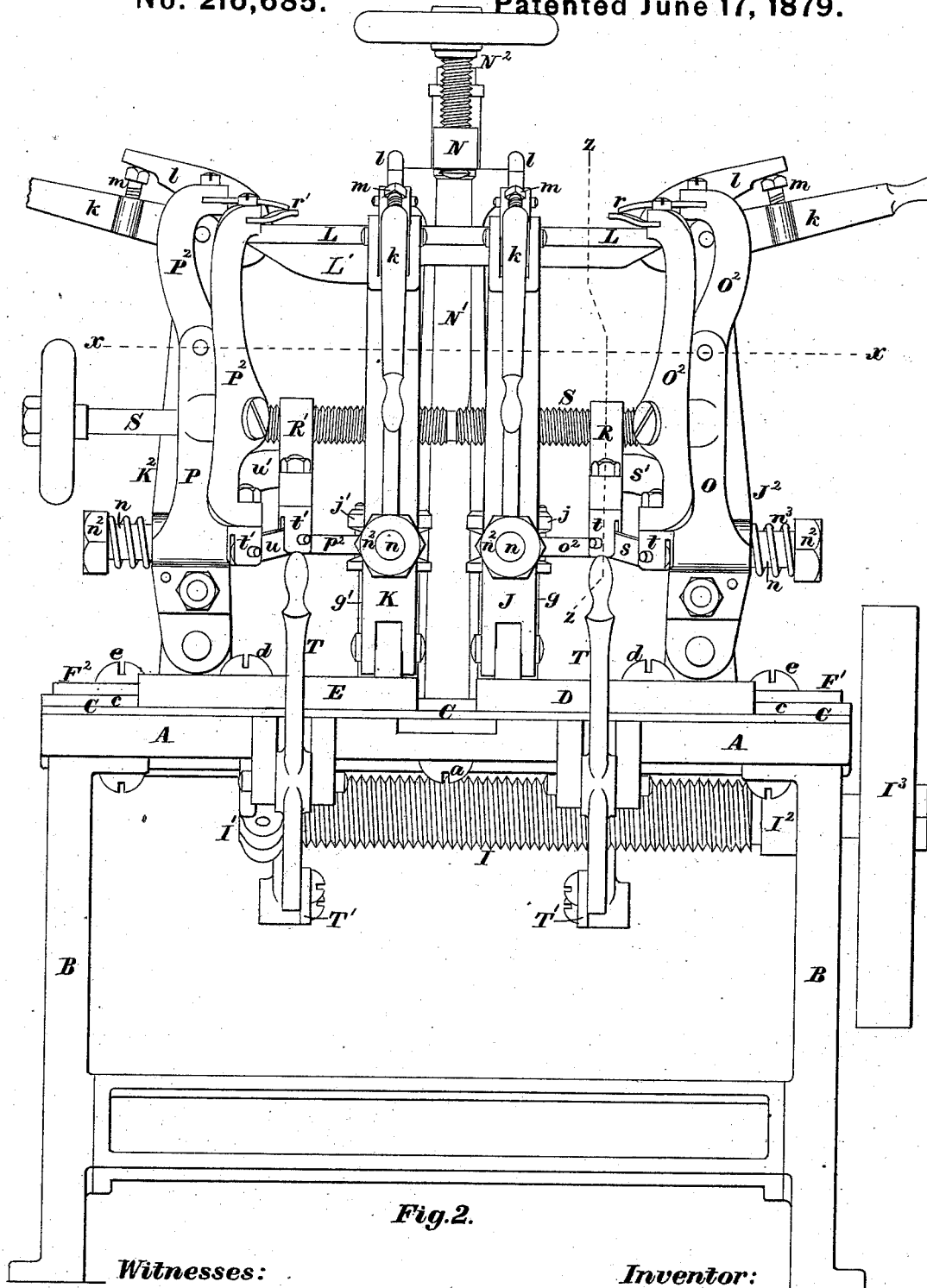


Fig. 2.

Witnesses:

C. A. Hemmenway
C. H. Dodd.

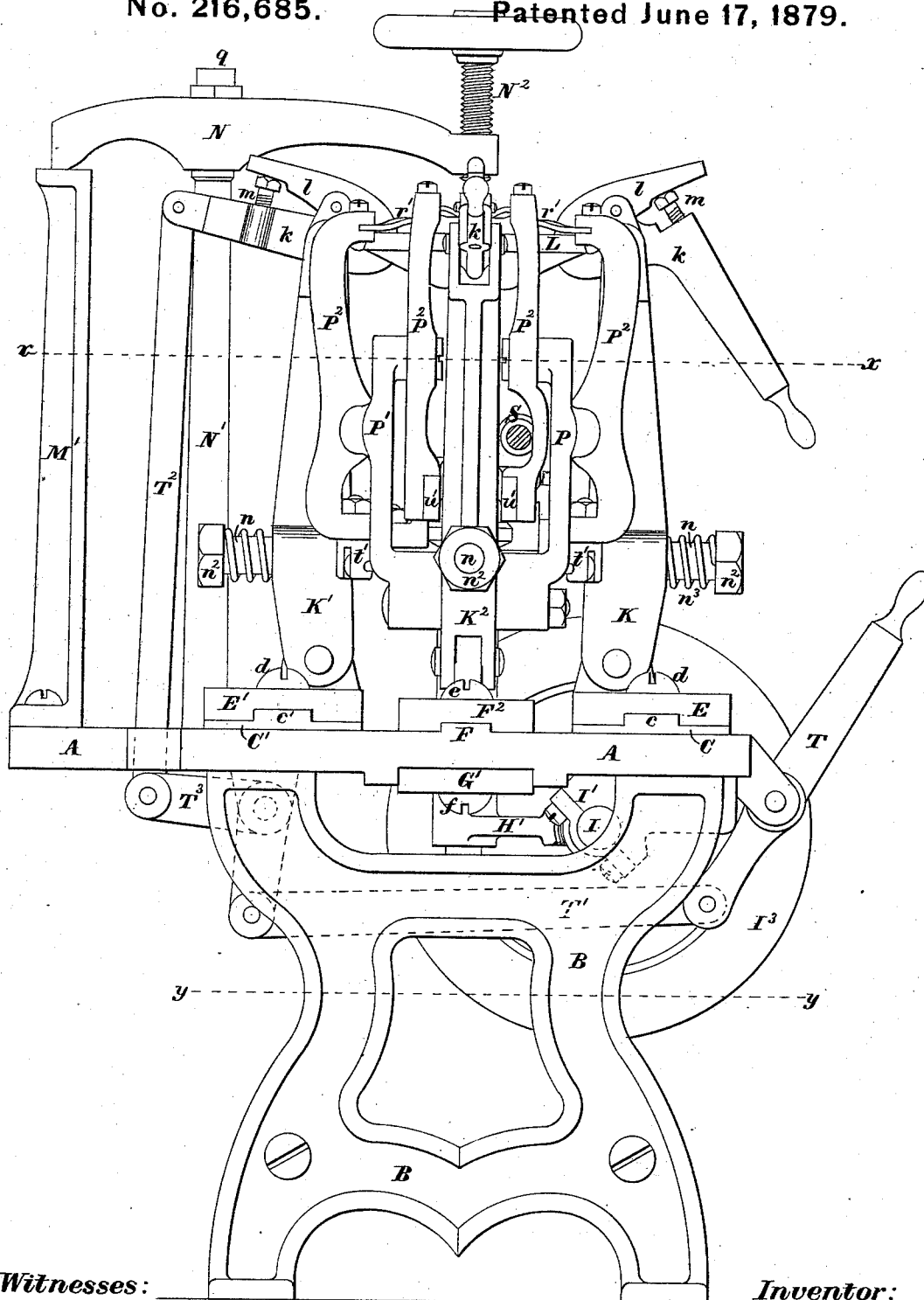
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Fig. 3.

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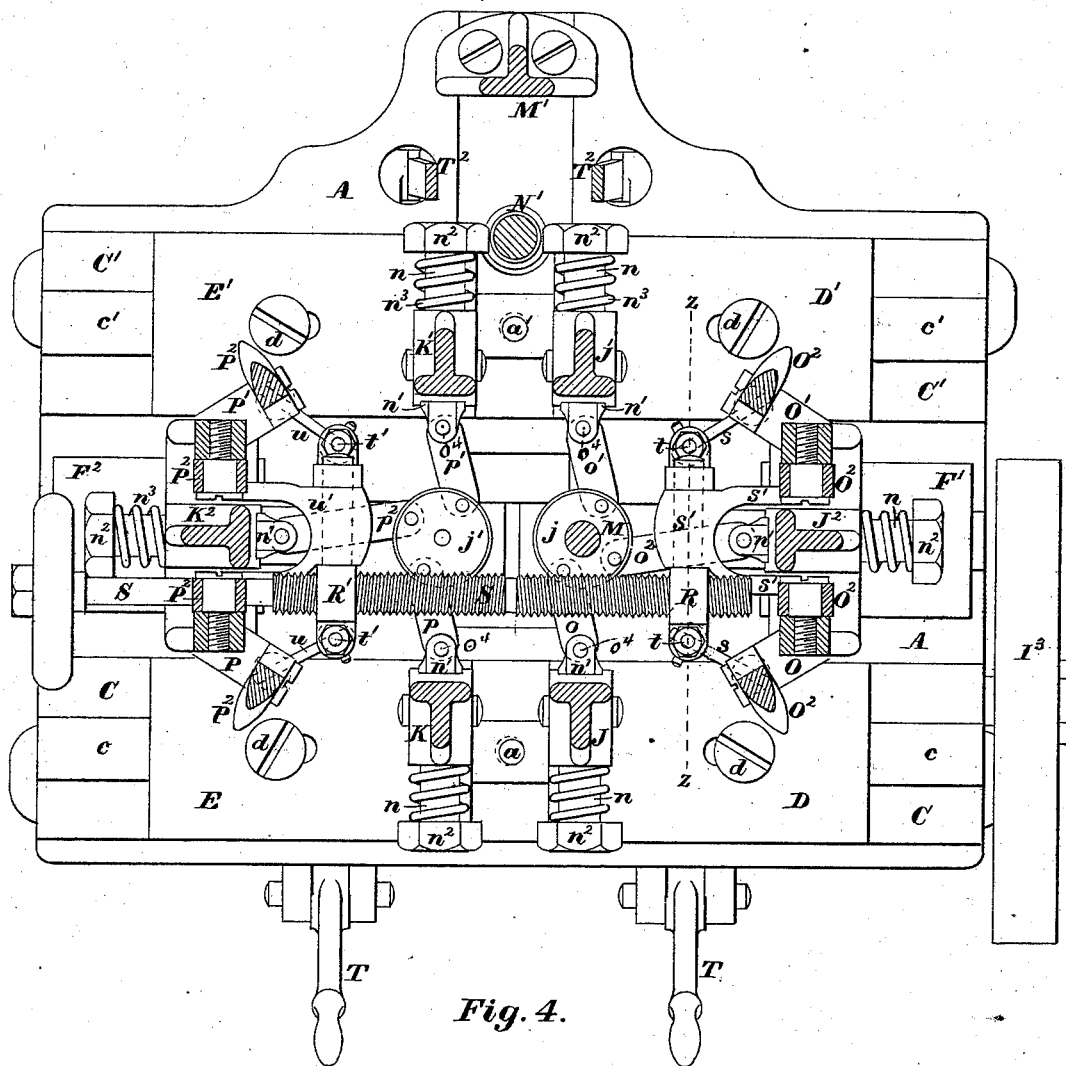


Fig. 4.

Witnesses:

E. A. Hemmenway.
C. H. Dodd.

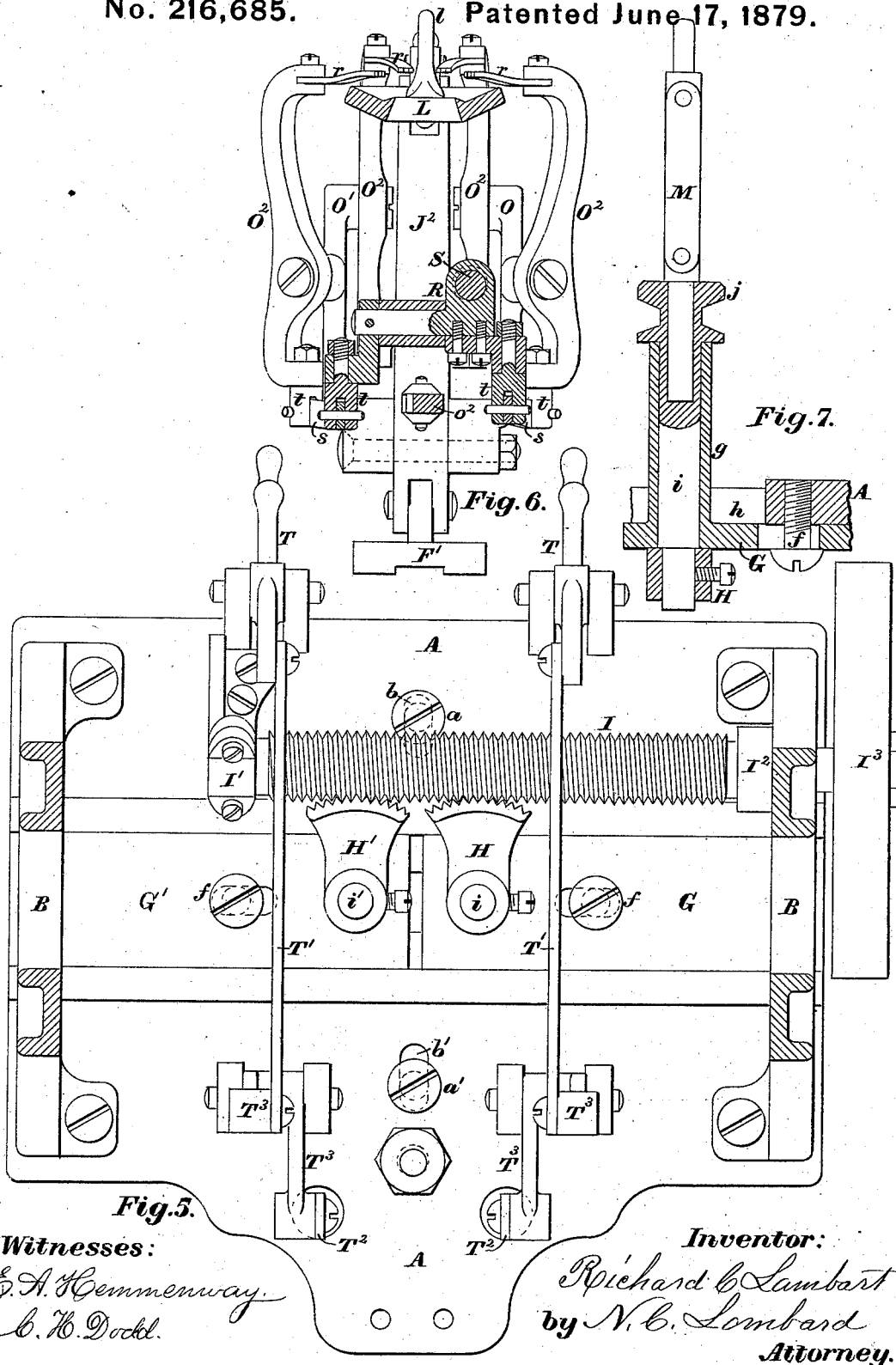
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UNITED STATES PATENT OFFICE.

RICHARD C. LAMBART, OF BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN LASTING-MACHINES.

Specification forming part of Letters Patent No. **216,685**, dated June 17, 1879; application filed May 12, 1879.

To all whom it may concern:

Be it known that I, RICHARD C. LAMBART, of Bridgewater, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Boot and Shoe Lasting Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a machine for stretching the upper of a boot or shoe onto the last and turning its edge over upon the tread-surface thereof in position to be secured to the inner sole, and is an improvement upon the invention described in Letters Patent No. 167,676, granted to me September 14, 1875; and it consists in the construction, arrangement, and combination of devices for assisting in the turning over and crimping of the leather around the heel and toe of the last, and for expanding the elastic band, which will be best understood by reference to the description of the drawings, in which—

Figure 1 is a plan of my improved machine. Fig. 2 is a front elevation. Fig. 3 is an end elevation, with the hand-wheel for operating the heel and toe crimping fingers removed. Fig. 4 is a horizontal section on line *x x* on Figs. 2 and 3. Fig. 5 is a horizontal section on line *y y* on Fig. 3, looking upward. Fig. 6 is a partial vertical transverse section on line *z z* on Figs. 2 and 4; and Fig. 7 is a vertical section of one of the standards which support and carry the toggle-operating shafts, showing the last-supporting post in elevation.

A is the table or bed of the machine, supported upon the legs B B, and having adjustably secured thereto, so as to be moved transversely of said table in suitable guides formed for the purpose, two plates, C and C', which plates extend from end to end of the table A, and are secured in the desired position by the screw-bolts *a* and *a'*, which pass through slots *b* and *b'*, respectively, in the table A, as shown in Fig. 5.

The plates C and C' have formed upon their upper sides the raised guides *c* and *c'*, to which are fitted the stands or plates D and E, and D' and E', respectively, which are secured to the plates C and C' by screw-bolts *d* passing through slots in said stands, in such a manner

that said stands may be adjusted in the direction of the length of the machine, for the purpose of adapting the machine to a larger or smaller shoe.

The table A also has formed upon its upper side, between the plates C and C', a raised rib or guide, F, to which are fitted the two plates or stands F¹ and F², which are adjustably secured to the table A by means of the screw-bolts *e e* passing through slots in said stands.

In the under side of the table A is formed a longitudinal groove or guideway, to receive the two plates G and G', adjustably secured to the table by means of the screw-bolts *f f*, which pass through slots in said plates and are screwed into the table A.

Each of the plates G and G' has formed upon its upper side a cylindrical hub, *g* or *g'*, which projects upward through a slot, *h*, extending lengthwise of the table, and forms a bearing for the vertical shaft *i* or *i'*, upon the upper end of which is formed or secured the disk *j* or *j'*, and upon the lower end of which is secured the segment of a worm-wheel, H or H', the teeth in which engage with the thread of the worm-shaft I, by the revolution of which the disks *j* and *j'* may be partially rotated about their axes.

The worm-shaft I is mounted in bearings I¹ and I², and has secured upon its outer end the wheel or pulley I³, by means of which or a crank-pin or handle set therein said shaft may be revolved.

J, K, J¹, K¹, J², and K² are standards, pivoted at their lower ends to the stands or plates D, E, D', E', F¹, and F², respectively, and each having pivoted to its upper end a lever, *k*, the inner end of which is made broad or pad-shaped, while its opposite end is provided with a handle or a link-connection for imparting motion thereto.

Each of the levers *k* has pivoted to it a secondary lever, *l*, also having a pad-shaped inner end, which serves, in conjunction with the lever *k*, to form a clamp, between the two jaws of which is firmly held the endless band of rubber L, the jaws of said clamp being adjusted by the screw *m* set in the lever *k*, and acting upon the outer end of the lever *l* to force the outer ends of said levers apart and

cause the inner pad-like ends to gripe the rubber band L with sufficient pressure to hold it securely therein.

The uprights or standards J, K, J¹, K¹, J², and K² are each provided with a horizontal rod or bolt, *n*, fitted to and adapted to be moved endwise in a bearing formed for the purpose in said standard, and having formed upon its inner end a shoulder, *n*¹, to bear against the inner face of the standard, and provided upon its outer end with a nut, *n*², between which and the outer face or side of the standard is placed the spiral spring *n*³, which serves to press the standard inward toward the shoulder *n*¹ on the rod *n*, as said rod is moved inward, and to permit said rod to be moved through the standard when the elastic band L comes in contact with the upper on the last.

The disk *j* has pivoted thereto by pins three toggle-links, *o*, *o*¹, and *o*², the opposite ends of which are pivoted by pins *o*⁴ to the inner ends of the rods *n* in the uprights J, J¹, and J², respectively; and the disk *j*¹ is similarly connected by the toggle-links *p*, *p*¹, and *p*² to the uprights K, K¹, and K².

M is a heel-post for supporting the last, made in three parts, jointed together to permit endwise movement of the last, and set in a suitable socket formed in the upper end of the shaft *i*, the toe of the last being supported by the flanges L' of the band L.

N is an arm, pivoted at *q* to the top of the standard N¹, so that it may be partially rotated in a horizontal plane about said pivot, and bearing at its rear end upon the top of the standard M', its opposite end being provided with the set-screw N², to bear upon the tread-surface of the last to hold it firmly in position during the operation of stretching the upper over the last.

The standard J² has firmly secured thereto, so as to move therewith, two arms, O and O¹, to each of which are pivoted two levers, O², the upper ends of which are provided with spring-fingers *r*, notched at their inner ends, and designed to assist in crimping the upper and pressing it down upon the last around the heel portion thereof.

In like manner the standard K² has rigidly secured thereto the two arms P and P¹, to each of which are pivoted two levers, P², to the upper end of which are secured the spring-fingers *r*¹, notched at their inner ends, and designed to assist in crimping and pressing the upper down around the toe of the last.

The lower ends of the levers O² are connected by the links *s s* and *s'* and the swivels *t t* to the nut-block R, fitted to and adapted to be moved upon the threaded shaft S; and the lower ends of the levers P² are similarly connected by the links *u u* and *u'* and swivels *t' t'* to the nut-block R', fitted to and adapted to be moved upon the opposite end of the shaft S, the screw-threads upon said shaft being cut one half right-handed, and the other half left-handed, so that a revolution of the

screw-shaft will cause the nuts R and R' to be moved toward or from each other, according to which way the shaft is revolved, and thus control the movements of the spring-fingers *r* and *r*¹.

The operation of my improved machine is as follows: The arm N being swung into the position indicated in dotted lines in Fig. 1, and the elastic band L being expanded, as shown, the last, with the upper surrounding it, is placed in position on the heel-post M, and the band L is allowed to contract till it presses hard upon the upper, which is done by revolving the worm-shaft I, so as to break the toggles and move the upper ends of the standards J, J¹, J², K, K¹, and K² inward. The arm N is then swung into position shown in full lines in Fig. 1, and the screw N² is set down upon the tread-surface of the last, or the inner sole secured thereto, to hold the last firmly in position, while the elastic band is raised up to the tread-surface of the last. The levers *k k* are then manipulated to raise said elastic band along the sides of the last, pressing at the same time the upper hard against the last, till a portion of the band is above the corner of the last, and by its contractile properties presses the upper over upon the inner sole secured upon the tread-surface of the last, the two rear levers, *k k*, being operated through the medium of the hand-levers T T, pivoted to the front of the table, the links T¹ and T², and the elbow-levers T³.

The spring-fingers *r* and *r*¹, which were previously thrown back to permit the introduction of the last and shoe, are now brought forward upon the partially-folded upper by revolving the screw-shaft S, so as to force the nuts R and R' apart, the fingers *r* and *r*¹ serving to complete the folding and crimping of the upper around the toe and heel of the last, and hold it in position till it is secured by tacking or otherwise.

The screw-shaft S is supported entirely by the nuts R and R' or without other bearing, and therefore the two sets of fingers *r* and *r*¹ are free to accommodate themselves to the surface of the last or variations in the thickness of the leather—as, for instance, if the fingers *r* come to a bearing upon the upper around the heel of the last before the fingers *r*¹ come to a similar bearing upon the leather around the toe of the last, the motion of the nut R and the levers connected therewith will cease, the shaft S being moved endwise and moving the nut R' with double speed till the fingers *r*¹ are brought to a bearing upon the leather around the toe of the last and the pressure becomes equal at both ends of the last.

When the fingers *r* and *r*¹ have forced the leather around the heel and toe of the last down firmly upon the inner sole the screw N¹ is raised, and the arm N is swung into the position shown in dotted lines in Fig. 1. The upper is tacked to the inner sole, the screw-shaft S is revolved in the opposite direction to raise and throw back said fingers, the outer

ends of the levers *k k* are raised to depress the elastic band *L*, and the lasted shoe is removed from the machine.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine for lasting boots and shoes, the combination of an endless band or ring of rubber or other suitable elastic material, adapted to surround the last at or near its tread-surface, with its inner edge pressing against the upper upon the last, mechanism, substantially such as described, for raising and lowering said elastic band along the sides thereof, and causing it to press the upper over upon the inner sole, and a series of crimping-fingers arranged around the heel of the last, and adapted to be mechanically moved inward and downward upon the partially folded edge of the upper and press it firmly upon the inner sole, substantially as described.

2. In combination with the elastic band *L*, arranged to surround the last, and adapted to press against the upper thereon at or near the tread-surface thereof, and mechanism, substantially such as described, for raising and lowering said elastic band along the sides of said last, a series of crimping-fingers arranged around the toe of the last, and adapted to be mechanically moved inward and downward upon the partly-folded upper and press it upon the inner sole, substantially as described.

3. The combination, in a boot and shoe lasting machine, of the standards *J*, *J'*, *J''*, *K*, *K'*, and *K''*, levers *k k* and *l l*, set-screws *m m*, and

the endless band or ring of rubber *L*, all arranged and adapted to operate substantially as and for the purposes described.

4. The combination, with the elastic band *L* and levers *k* and *l*, of the standard *J''*, provided with the arms *O* and *O'*, two or more levers, *O''*, provided with spring-fingers at their upper ends, and connected at their lower ends to the nut *R*, and the screw-shaft *S*, all arranged and adapted to operate substantially as described.

5. The combination of the endless band or ring of rubber *L*, the two end standards *J''* and *K''*, provided at their upper ends with means of clamping said band or ring, and also provided, respectively, with two arms, *O* and *O'* and *P* and *P'*, levers *O''* and *P''*, spring-fingers *r* and *r'*, nuts *R* and *R'*, connected, respectively, to the lower ends of the levers *O''* and *P''*, and the shaft *S*, having formed thereon a right-hand and a left-hand thread, all arranged and adapted to operate substantially as described.

6. The combination of the endless band of rubber *L*, clamp-levers *k l*, standards *J*, *J'*, *J''*, *K*, *K'*, *K''*, rod *n*, spring *n''*, disk *j* or *j'*, and toggle-links pivoted at one end to said disk or disks and at the other end to the rod or rods *n*, substantially as described.

Executed at Boston, Massachusetts, this 9th day of May, A. D. 1879.

RICHARD C. LAMBART.

Witnesses:

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E. A. HEMMENWAY.