4 Sheets--Sheet 1.

R. C. LAMBART.

Machine for Lasting Boots and Shoes.

No. 167,676. Patented Sept. 14, 1875.

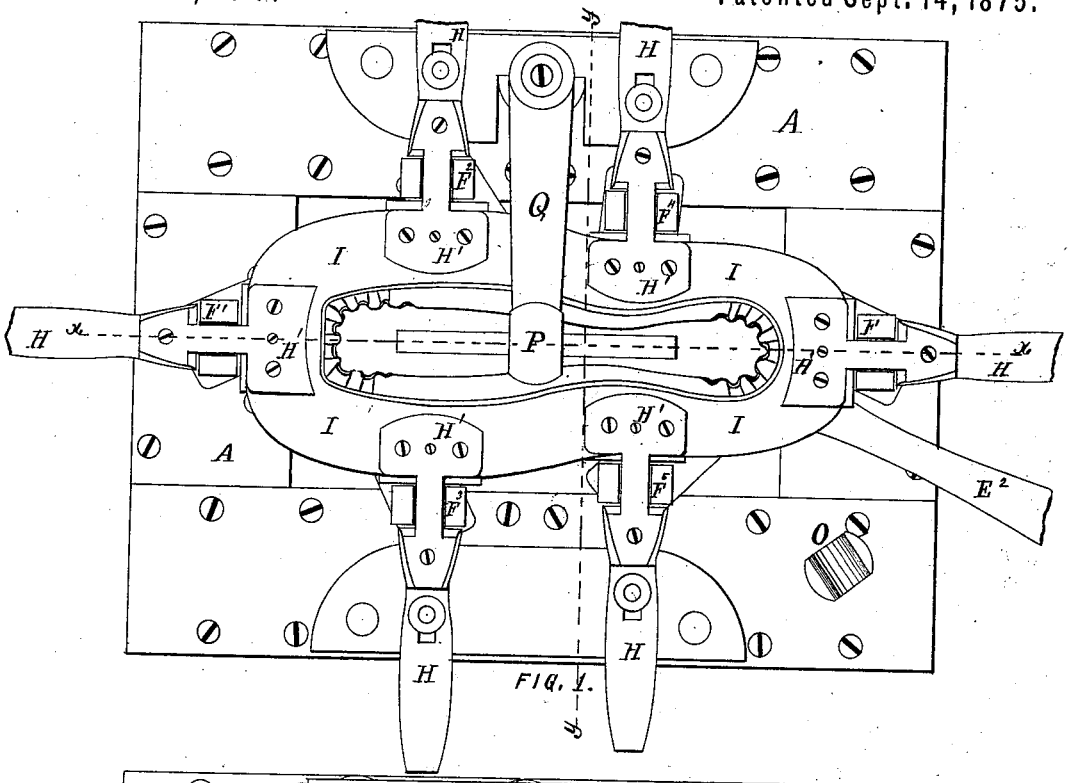

FIG. 1.

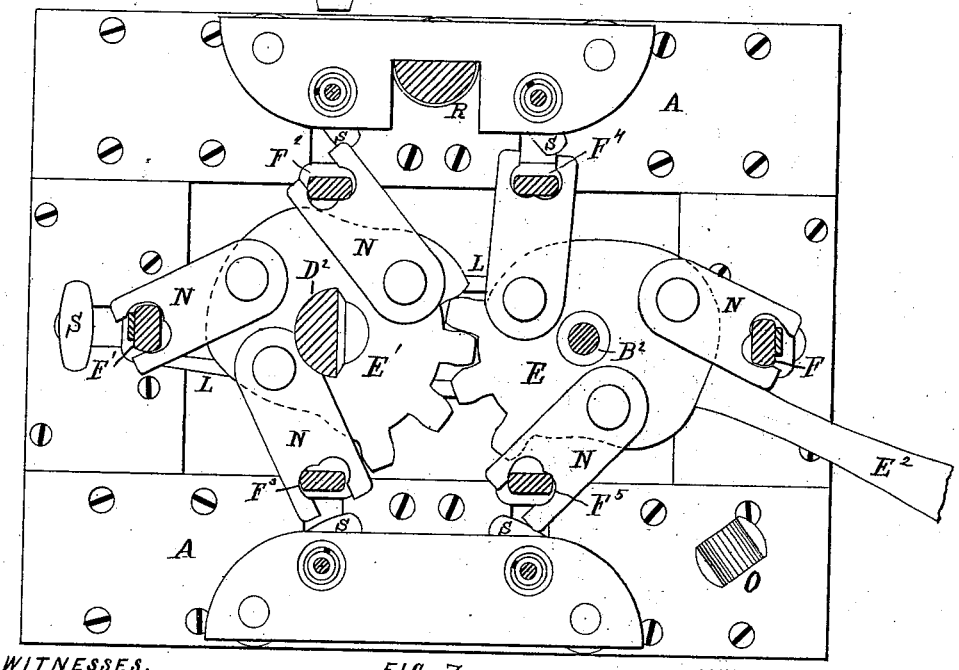

FIG. 7

WITNESSES.

Wm. P. Edwards

B. Andrews, Jr.

INVENTOR

Richard C. Lambart

4 Sheets--Sheet

R. C. LAMBART.

Machine for Lasting Boots and Shoes.

No. 167,676. Patented Sept. 14, 187

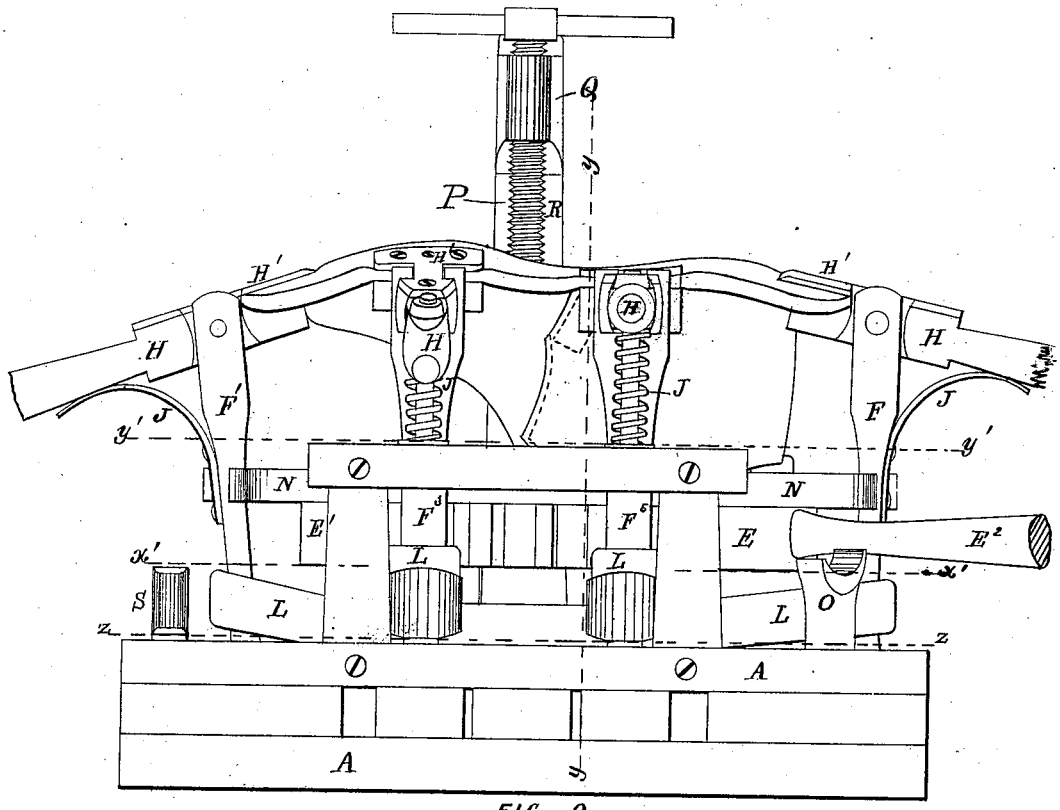

FIG. 2.

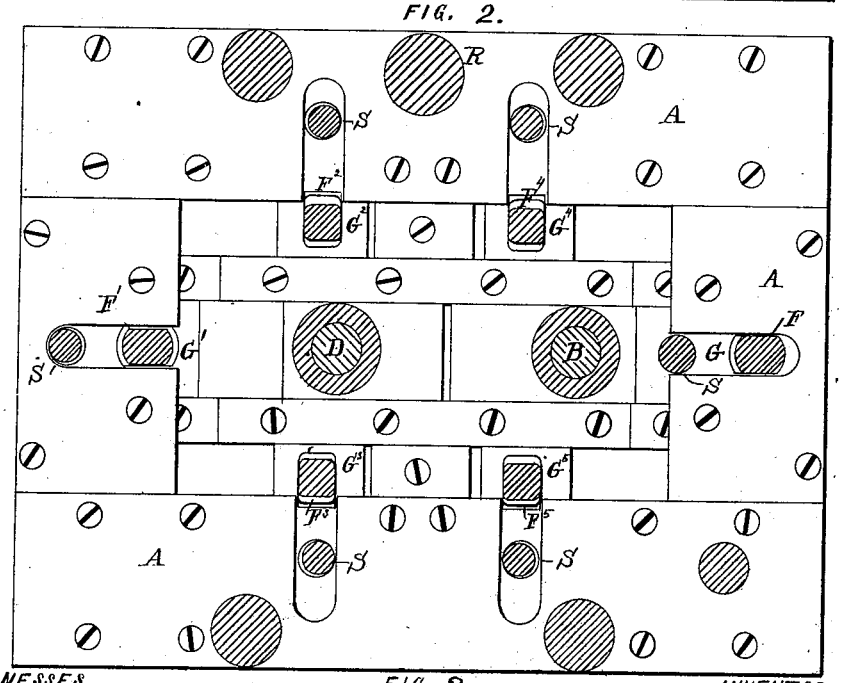

FIG. 8.

WITNESSES.

Wm. S. Edwards

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INVENTOR

Richard C. Lambart

4 Sheets--Sheet 3.

R. C. LAMBART.

Machine for Lasting Boots and Shoes.

No. 167,676. Patented Sept. 14, 1875.

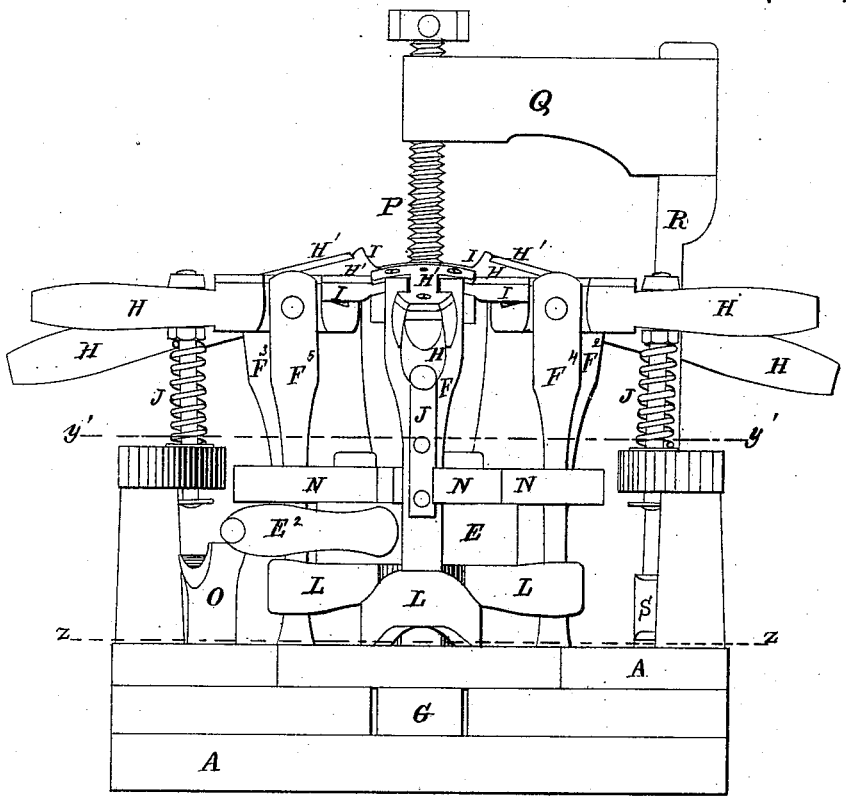

FIG. 3.

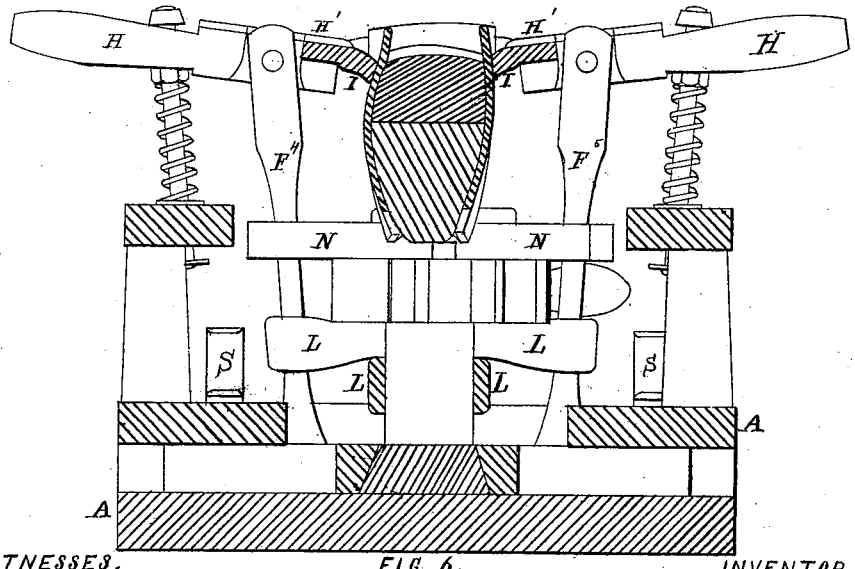

FIG. 6.

WITNESSES.

Wm. P. Edwards

B. Andrews, Jr.

INVENTOR.

Richard C. Lambart

4 Sheets--Sheet 4.

R. C. LAMBART.

Machine for Lasting Boots and Shoes.

No. 167,676. Patented Sept. 14, 1875.

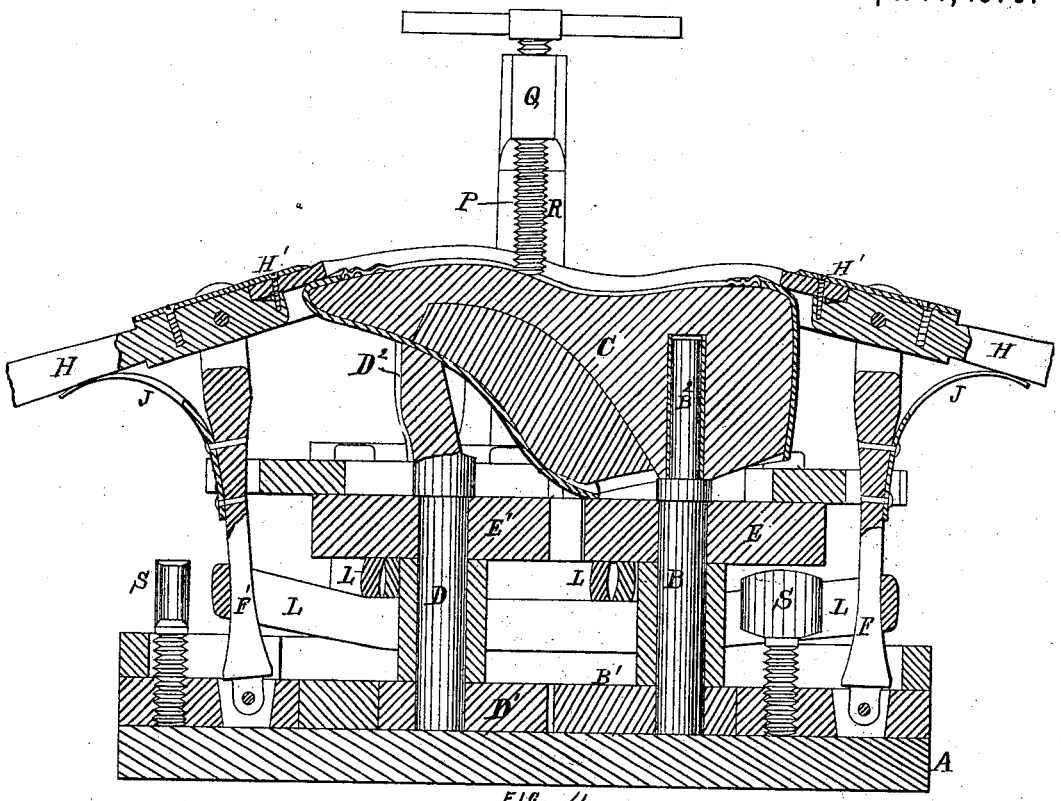

FIG. 4.

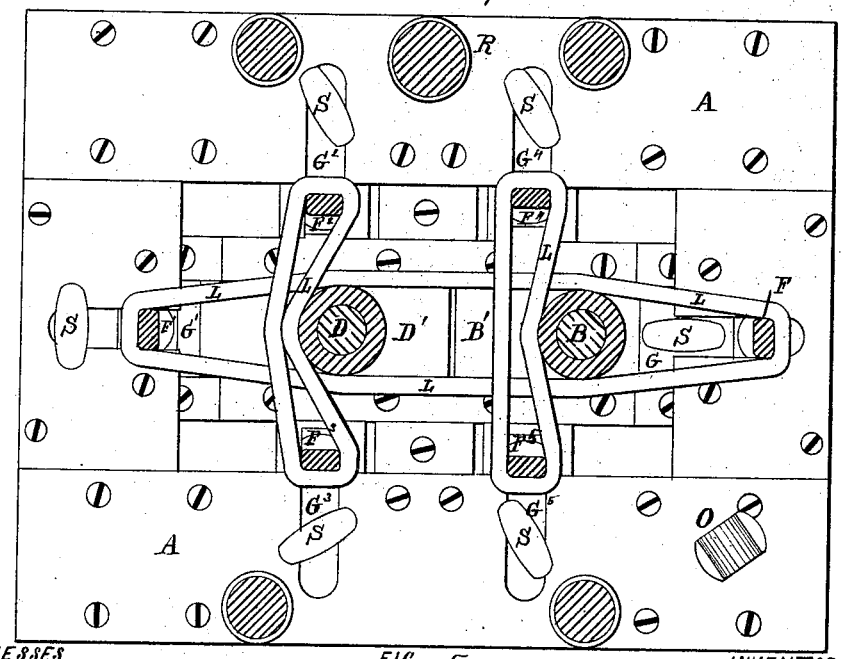

FIG. 5.

WITNESSES,

Wm. B. Edwards

B. Andrews, Jr.

INVENTOR,

Richard C. Lambart

UNITED STATES PATENT OFFICE.

RICHARD C. LAMBART, OF QUINCY, ASSIGNOR OF ONE-HALF HIS RIGHT TO HENRY E. TOWNSEND, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR LASTING BOOTS AND SHOES.

Specification forming part of Letters Patent No. **167,676**, dated September 14, 1875; application filed February 8, 1875.

To all whom it may concern:

Be it known that I, RICHARD C. LAMBART, of Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Lasting Boots and Shoes, 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 onto the bottom thereof in position to be secured to the inner sole; and it consists, first, in the use of an endless band of rubber or other suitable elastic material, arranged to surround the last, and press, by virtue of its retractile force, against the sides thereof, or the leather surrounding said last, in combination with a suitable jack for holding the last in position, and suitable mechanical devices for moving said elastic band upward along the sides of the last until the inner edge of said band rises above the tread-surface of the last and the inner sole attached thereto, and by its retractile force is drawn in over the outer edge of said inner sole, turning the edge of the upper over onto it in proper position to be secured thereto by nails, pegs, or otherwise. My invention further consists in the use, in combination with an endless rubber band, arranged to surround the last and to press by virtue of its retractile force against the sides thereof, of a series of levers clamped at one end to said elastic band and mounted upon suitable fulcrum-pins, about which they may be vibrated at will for the purpose of raising said elastic band to a level with, or above, the tread-surface of the last or the inner sole secured thereto. My invention further consists in mounting the clamp-levers, by means of which the position of the elastic band is controlled, in the ends of pivoted standards, arranged to be vibrated toward or from the last to enable said last to be introduced into, and withdrawn from, the machine. My invention further consists in the use, in combination with a series of pivoted standards, each carrying in its movable end a clamp-lever, secured to, and radiating from, an elastic band surrounding and pressing against the sides of the last, of one or more disks or wheels, arranged to vibrate about an axis or axes parallel or nearly so to the normal position of said vibrating standards, to which said disks are connected by means of a series of toggle-links, all so arranged that a partial rotation of said disks about their axes will move the free or movable ends of all of said standards away from the last, causing the elastic band to be so stretched or expanded that the last may be easily placed upon or removed from the jack, and by a partial rotation of said disks in the opposite direction the elastic band will be allowed to contract till it comes in contact with the upper of the shoe surrounding the last, against which it presses with considerable force. My invention further consists in the combination, with said endless band or ring of rubber or other suitable elastic material clamped to the inner ends of a series of vibrating levers, radiating therefrom in a horizontal direction, or nearly so, and pivoted to the upper ends of a series of standards, pivoted at their lower ends and connected by a series of toggle-links to one or more disks arranged to vibrate about vertical axes, of supports for said disks and pivoted standards adapted to be adjusted toward the center of the machine for the purpose of adapting the machine to last different sizes of boots or shoes, as will be more fully explained. My invention further consists in the use, in combination with an elastic band, supported in the ends of a series of clamping-levers, which are pivoted to the movable ends of a series of vibrating standards, of suitable springs acting upon said standards to force their movable ends toward the last, as will be described. My invention further consists in connecting the two expanding disks together by suitable gearing, so that they may both be rotated at the same time and at one operation, in combination with an endless band or ring of rubber or other elastic material entirely surrounding the last at or near, and parallel to, its tread-surface, and suitable vibrating levers and standards connected to said band by suitable clamps, and to said disks by toggle-links, all so arranged that the machine may be readily adjusted to different sizes of lasts. My inven-

tion also consists in the use, in combination with the clamping-levers for operating the elastic band and controlling its position vertically, of suitable springs, so applied to said clamping-levers as to act to force their inner ends and the elastic band secured thereto in a downward direction.

In the drawings, Figure 1 is a plan of my improved lasting-machine. Fig. 2 is a side elevation; Fig. 3, an end elevation; Fig. 4, a longitudinal section on line *x x* on Fig. 1; and Fig. 5 is a horizontal section on line *x' x'* on Figs. 2 and 3. Fig. 6 is a vertical transverse section on line *y y* on Fig. 1. Figs. 7 and 8 are, respectively, horizontal sections on lines *y' y'* and *z z*, on Figs. 2 and 3.

A is the bed or table of the machine upon which are mounted the operative parts of the machine. B is a standard, set in the block B^1 in a vertical position, and having formed upon its upper end the pin B^2, to fit the hole in the last C. D is a similar standard, set in the block D^1, and having formed upon its upper end the toe-rest D^2, which, with the pin B^2, forms the jack for holding the last. The blocks B^1 and D^1 are fitted to a groove formed for the purpose in the bed A, in which they may be adjusted toward or from each other. E and E^1 are two disks or wheels, having bearings upon the standards B and D, around which they may be vibrated by means of the lever E^2, projecting from one side of the disk E.

In the case shown the two disks E and E^1 are connected by means of cogs or gear-teeth, formed upon a portion of their peripheries, said teeth being made long, to allow of a limited amount of adjustment; but in case it is desirable to adapt one machine to last all sizes of boots or shoes, I propose to operate said disks by two worms, one of which works in teeth formed in the edge of each of said wheels, or in worm-wheels secured to the shafts upon which said disks are mounted, said worms being so mounted upon one shaft and so connected with the sliding blocks that, while said worms are compelled to revolve with their shaft, they may be moved toward or from each other at the same time, and by the same operation that said blocks are moved toward or from each other.

F, F^1, F^2, F^3, F^4, and F^5 are standards, pivoted at their lower ends to the sliding blocks G, G^1, G^2, G^3, G^4, and G^5, which are fitted to grooves formed in the bed A, in which they may be adjusted toward or from the last, the grooves in which G and G^1 are fitted extending longitudinally of the bed, and the grooves in which G^2, G^3, G^4, and G^5 are fitted, extending across the machine at right angles to the grooves in which G and G^1 are fitted. H H are levers, pivoted to the upper ends of the standards F, F^1, F^2, F^3, F^4, and F^5, in a horizontal position, and radiating from the center of the machine with their short arms inward, as shown. I is a band or oval ring of rubber, attached by its outer edge to the inner or short arms of the levers H, by means of the clamp-plates H'. J J are springs, which tend to hold up the outer or long arm of the levers H, and maintain the rubber ring or band I in such a position that its inner edge shall be a short distance below the tread-surface of the last. L L are rubber bands, each of which passes around two of the standards F and F^1, F^2 and F^3, or F^4 and F^5, and serve as springs to draw the upper or movable ends of said standards toward each other, and thus, acting in conjunction with the retractile force of the elastic band I, cause it to be forced hard against the upper of the shoe and press it with great force against the side of the last, as seen in Fig. 6.

By depressing the outer or long arms of the levers H H the elastic band I will be raised, following up the side of the last, pressing hard against the upper of the shoe, till the edge of said band is above the surface of the inner sole, when the retractile force of the band I, (it being understood that the opening in the band when not expanded is smaller than the tread of the last,) together with the force exerted by the springs L L, will cause the inner edge of said band to be forced over onto the top of the last or inner sole, and pressing the leather of the upper over the corner of the inner sole in position to be secured thereto by nails, pegs, or otherwise.

N N are toggle-links, pivoted at one end to the disks E and E^1, and arranged to bear against and embrace the standards F, F^1, F^2, F^3, F^4, and F^5 in such a position that when the disks E and E^1 are vibrated so as to bring the points of attachment of said toggle-links to said disks toward a line drawn through said standards and the axis of a disk, said standards will be forced outward by the action of said toggle-links, overcoming the tension of the springs L L, and stretching the elastic band I till the opening in the same is large enough to allow of the easy introduction or removal of the last with the upper drawn over it. O is a latch, into which the lever E^2 is placed to hold it in position while the last is being introduced or removed. P is a pressure-screw, working in the movable end of the swiveling-arm Q, which is supported by the standard R, the object of said screw being to force the last into position on the jack and hold it there while the levers H H are being manipulated to turn over the upper onto the inner sole. S S are set-screws for securing the sliding blocks G, G^1, G^2, G^3, G^4, and G^5 in the desired position.

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, an endless band or ring of rubber or other suitable elastic material entirely surrounding the last at or near its tread-surface, with its inner edge pressing against the upper upon the last and adapted to be mechanically raised and lowered along the sides thereof, and to press the upper over upon the inner sole, all substantially as and for the purpose described.

2. The elastic band or ring I, in combination with the pivoted levers H H, secured thereto by the clamp-plates H′, substantially as described.

3. In combination with the endless band or ring of rubber I and the vibrating levers H H secured thereto, a series of standards pivoted at one end to a suitable support, and at their upper ends to the levers H H, substantially as described.

4. The disks E and E^1, one or both, having attached thereto one or more toggle-links, N, in combination with one or more pivoted standards, carrying at their upper ends the levers H H, and the elastic band or ring I secured thereto, substantially as described.

5. The disks E and E^1, mounted upon adjustable bearings and connected together by suitable gearing to compel their operation in unison, in combination with the elastic band I, levers H H, standards F, F^1, F^2, F^3, F^4, and F^5, one or more, and one or more toggle-links, N, all arranged to operate as and for the purpose specified.

6. The standards F, F^1, F^2, F^3, F^4, and F^5, one or more, pivoted to adjustable supports, in combination with the elastic ring or band I and levers H, all substantially as and for the purpose described.

7. In combination with the elastic band I, levers H H, and standards F, F^1, F^2, F^3, F^4, and F^5, one or more, the springs L L, arranged to force the movable ends of the standards, the levers H, and band I, toward the last or shoe, substantially as described.

8. In combination with the band I, and levers H, springs J J, arranged to act upon the levers H, substantially as described, for the purpose specified.

Executed at Boston this 10th day of October, 1874.

RICHARD C. LAMBART.

Witnesses:
WM. P. EDWARDS,
B. ANDREWS, Jr.