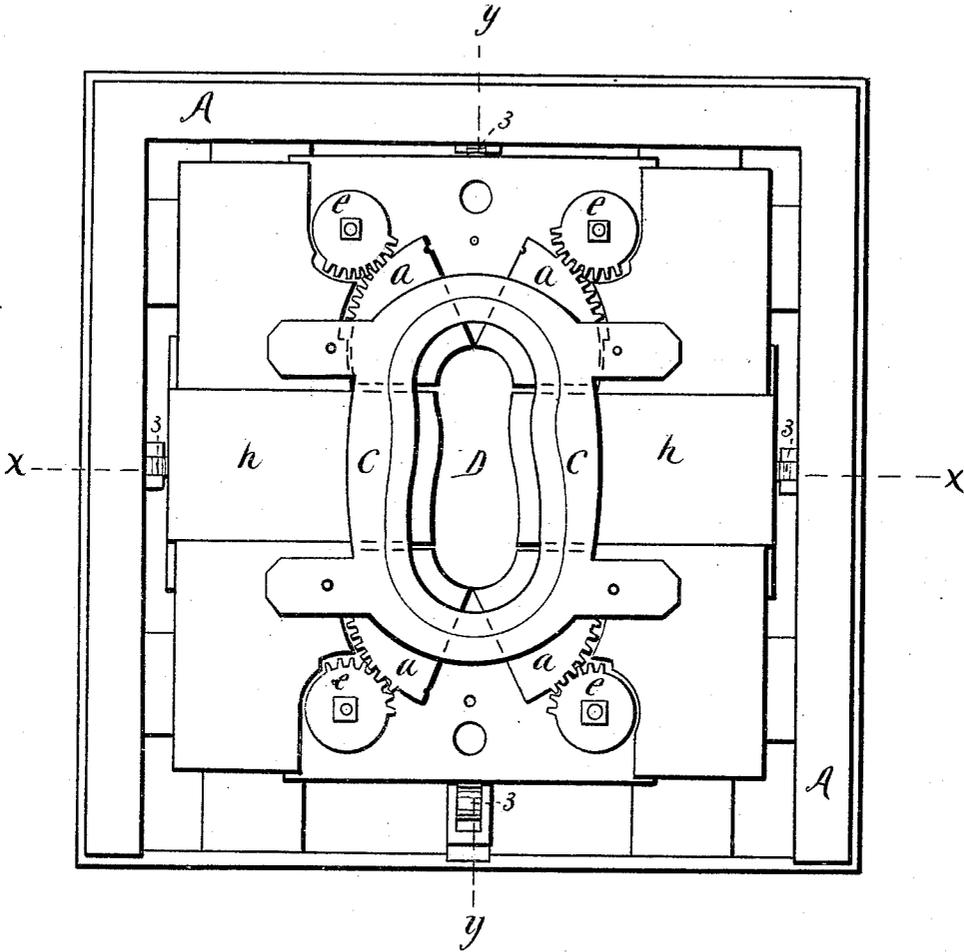


G. HAWKES.
Lasting Machine.

No. 232,964.

Patented Oct. 5, 1880.

FIG 1.



WITNESSES:

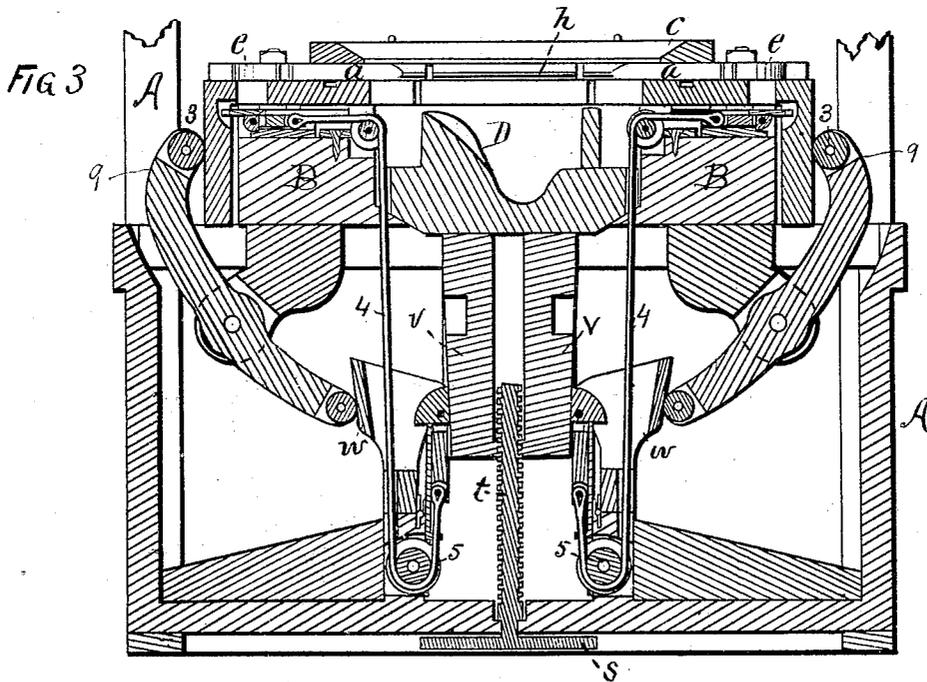
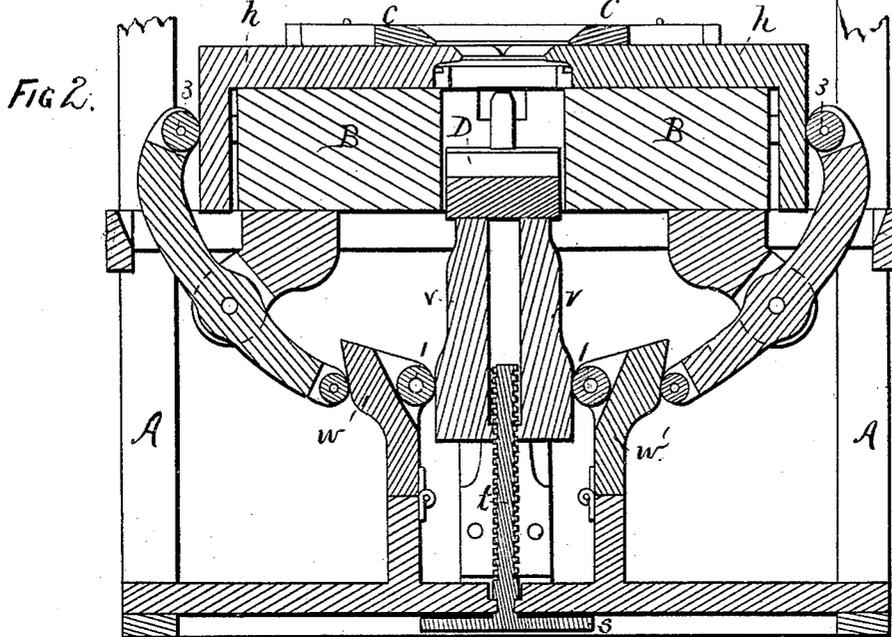
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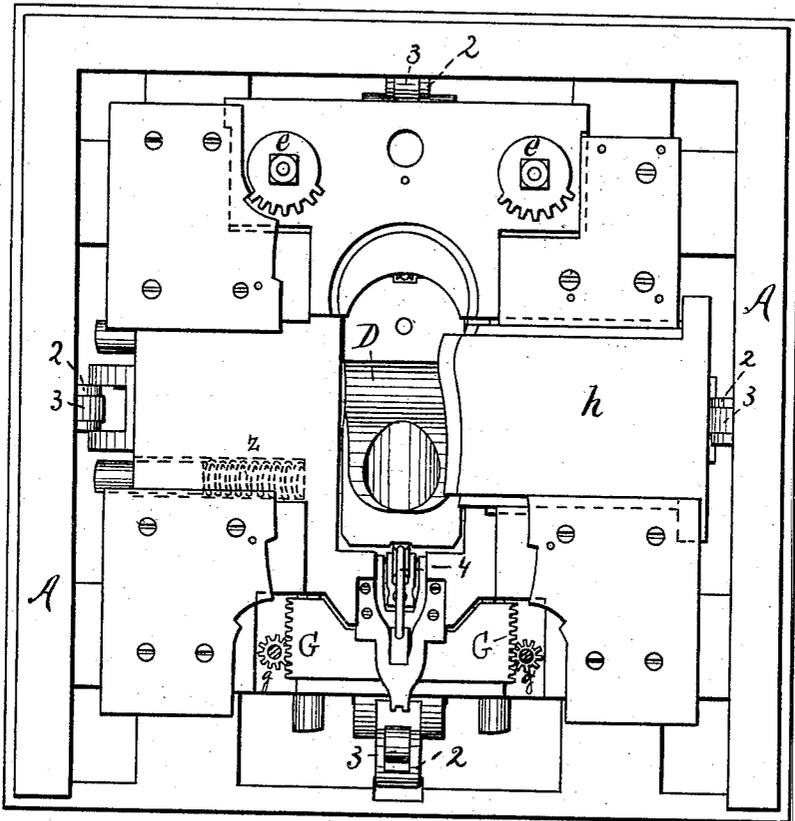
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FIG 4.



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Fig 5.

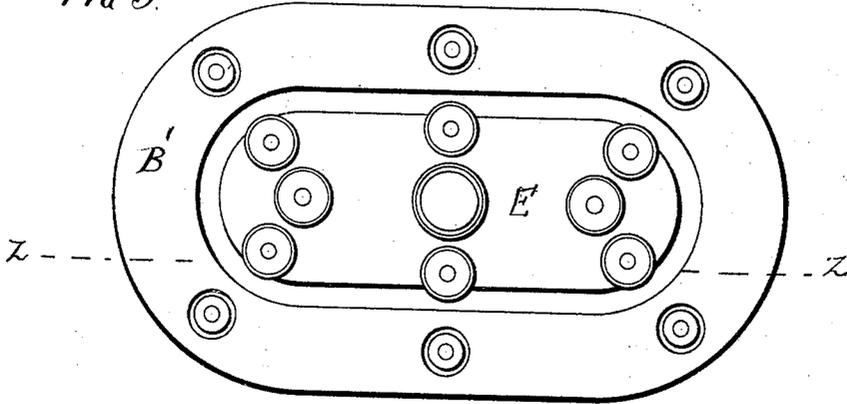


Fig 6.

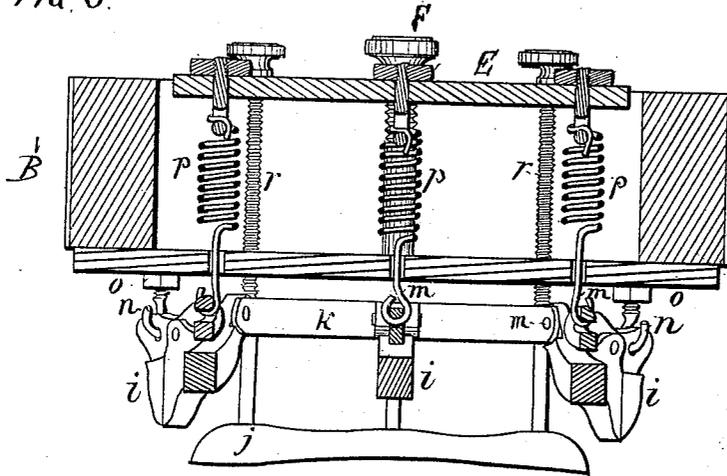
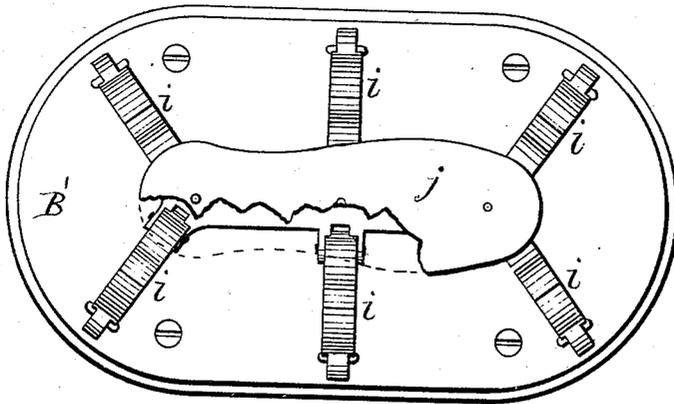


Fig 7.



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UNITED STATES PATENT OFFICE.

GILBERT HAWKES, OF LYNN, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,964, dated October 5, 1880.

Application filed February 2, 1880.

To all whom it may concern:

Be it known that I, GILBERT HAWKES, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful
5 Improvements in Machines for Lasting Boots and Shoes, of which the following is a specification.

The object of my invention is to provide suitable means for holding the uppers of shoes and
10 boots on a last and drawing the lower edges thereof into position for convenient attachment to the soles.

To effect these results I employ new devices and combinations of devices, which constitute
15 the subject-matter of the appended claims.

In the accompanying drawings, Figure 1 represents a plan view of my improved machine, the gripping attachment having been removed. Fig. 2 represents a vertical section through the
20 same. Fig. 3 represents another vertical section at right angles to Fig. 2. Fig. 4 represents a plan view similar to Fig. 1, except that one of the end pieces is withdrawn and some of the lower parts are shown. Fig. 5 represents
25 a plan view of the auxiliary device for gripping. Fig. 6 represents a vertical longitudinal section through the same; and Fig. 7 represents a bottom view of the said auxiliary gripping device.

A designates the main frame of the machine, which is provided at its middle with horizontal cross-pieces that support supplementary frame
30 B. These blocks afford a base for a horizontal yoke, C, which has an inner opening somewhat resembling in shape the sole of a shoe, and
35 large enough to allow the passage of the same.

D designates a last-holder, which is arranged to be moved vertically in frame B, but prevented from falling out of the same. This vertical
40 motion is derived from an internally screw-threaded jack or movable block, V, and a screw-rod, *t*, operated by a wheel, S, which engages with said jack.

By means of these devices a boot-upper or
45 shoe-upper may be raised upon the last until its edge which receives the sole is in the space inclosed by yoke C. I next proceed to draw the said edge of the upper into proper position for attachment to the sole. This is effected
50 by means of devices shown in Figs. 5, 6, and 7. A supplementary frame or recessed block,

B', is hinged to the main frame A, so that it can either be turned down upon yoke C and last D' or turned upward and backward out of the way. Below said frame a sole-shaped down-
55 hold, *j*, is rigidly suspended by means of adjusting-screws *r*, which enable the operator to raise and lower this downhold at will.

I arrange a series of grippers, *z*, each of which consists of a pair of movable jaws suspended
60 respectively from a bar, *k*, and from one of a series of hooks, *n*. Just above the pivot of these jaws an arm formed on one of them is attached to the lower end of a spring, *p*. There are a series of these springs, all connected at their
65 upper ends to a movable plate, E, which is made vertically adjustable by means of a screw-rod, F. These springs operate to close the grippers when the plate E rises and to open them when the said plate falls. The tension of said springs
70 is adjusted by means of nuts *g*.

After the upper is in contact with yoke C, or in the space inclosed thereby, as hereinbefore stated, the downhold *j* is turned down
75 into the space within the curved edge of the upper. The grippers then close upon this edge all around the said blank. It now becomes necessary to fold or bend inward the said edge of the upper, so that it may be in position for the attachment of the sole. To effect this I
80 employ a pair of opening and closing heel-lasting jaws and a similar pair of toe-lasting jaws. Each of the pivoted quadrant-shaped pieces *a* composing the toe-sections and heel-sections is provided with cogs on its curved outer face,
85 so as to mesh with a cog-wheel or segment, *e*, on a shaft, which has a pinion, *g*, engaged by a sliding rack, G. The two racks G G' at one end of the machine are formed on opposite
90 ends of a plate, which is drawn inward by a cord, 4, which, after passing over suitable pulleys, is attached to jack or block V. The said jaws are closed by means of levers 9 of the first kind, which are operated by hinged pieces W
95 on opposite sides of said jack. These hinged pieces are operated by the engagement of rollers attached thereto with cams on the sides of said jack. The upper ends of said levers force inward the movable blocks which carry
100 the gears *e*. The effect is to close the jaws *a* and replace the racks G. The sliding side-lasting jaws *h* are forced inward by means of levers

3, similar to levers 9, and actuated in like manner by cams on the side of the jack and intervening hinged pieces *w'*. Springs (one of which is indicated in dotted lines at Z, Fig. 4) serve to move these side-lasting jaws outward again.

5 The rising of the jack lifts the last and upper into position for the action of the lasting-jaws, and also causes said jaws to close on the projecting edge of said upper and fold it over
10 downhold *j*. A sole is then fastened to said folded edge of the upper in any convenient manner. The shoe is then released by the downward movement of the jack and its action on the levers and jaws.

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

1. The combination of the heel-lasting jaws and toe-lasting jaws with jack V, cords 4, levers 9, and intervening gearing for opening and closing said jaws, substantially as set forth.

2. The combination of sliding side-lasting jaws *h* and opening and closing heel-lasting jaws and toe-lasting jaws *a* with threaded jack V, screw-rod *t*, and intervening levers and gears, substantially as set forth.

3. The combination, with lasting-jaws *h a*, of grippers *i*, downhold *j*, and opening and closing devices for said grippers, substantially as set forth.

4. In combination with a vertical moving block, V, having four cam-faces, four hinged pieces, W W', operated thereby, four levers operated by said hinged pieces, and a sectional frame, *a h*, operated thereby, as stated.

5. The combination of plate E, spring *p*, cross-bar *k*, and hinged jaws, forming grippers *i*, with opening and closing screw F, substantially as set forth.

GILBERT HAWKES.

Witnesses:

ROLAND C. LINCOLN,
CHAS. H. DREW.