

G. W. COPELAND & E. WOODWARD.
Lasting-Machine.

No. 215,796.

Patented May 27, 1879.

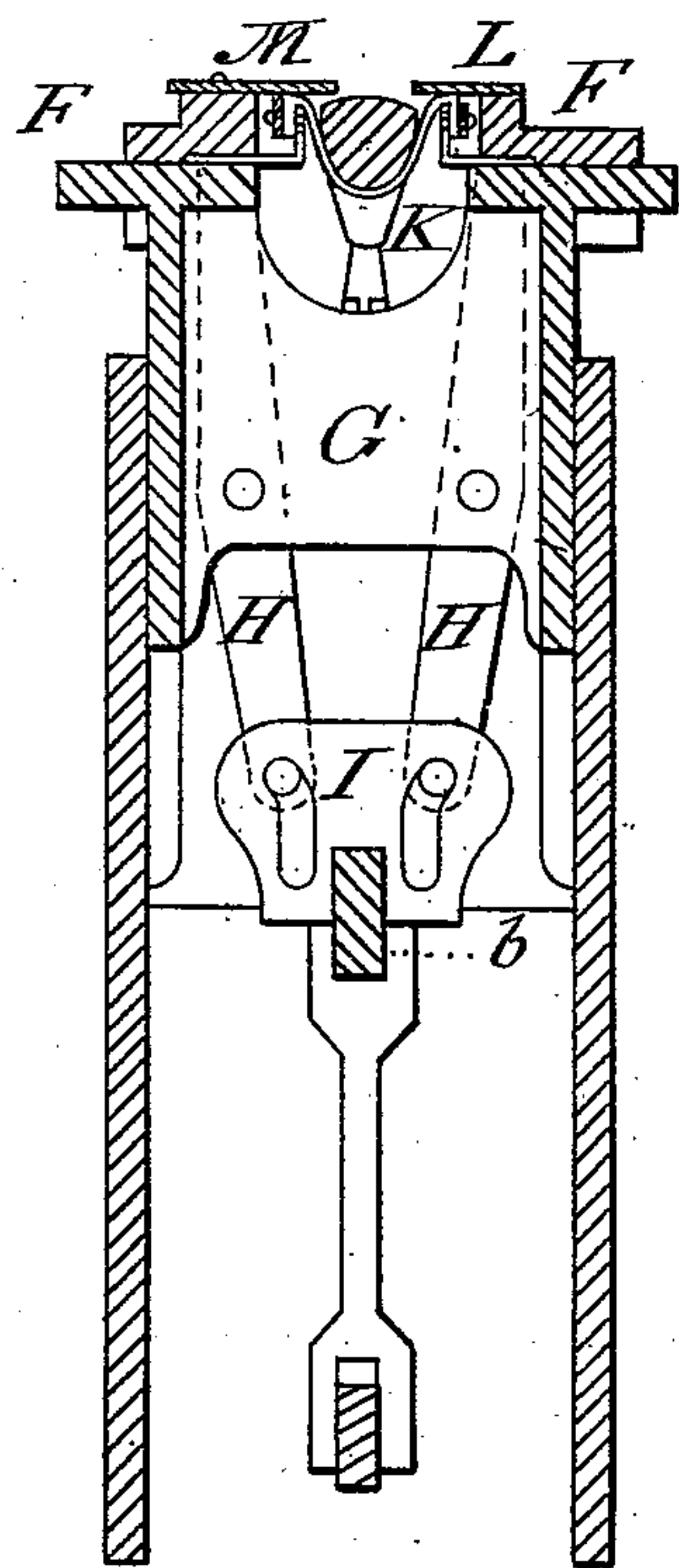


FIG. 2.

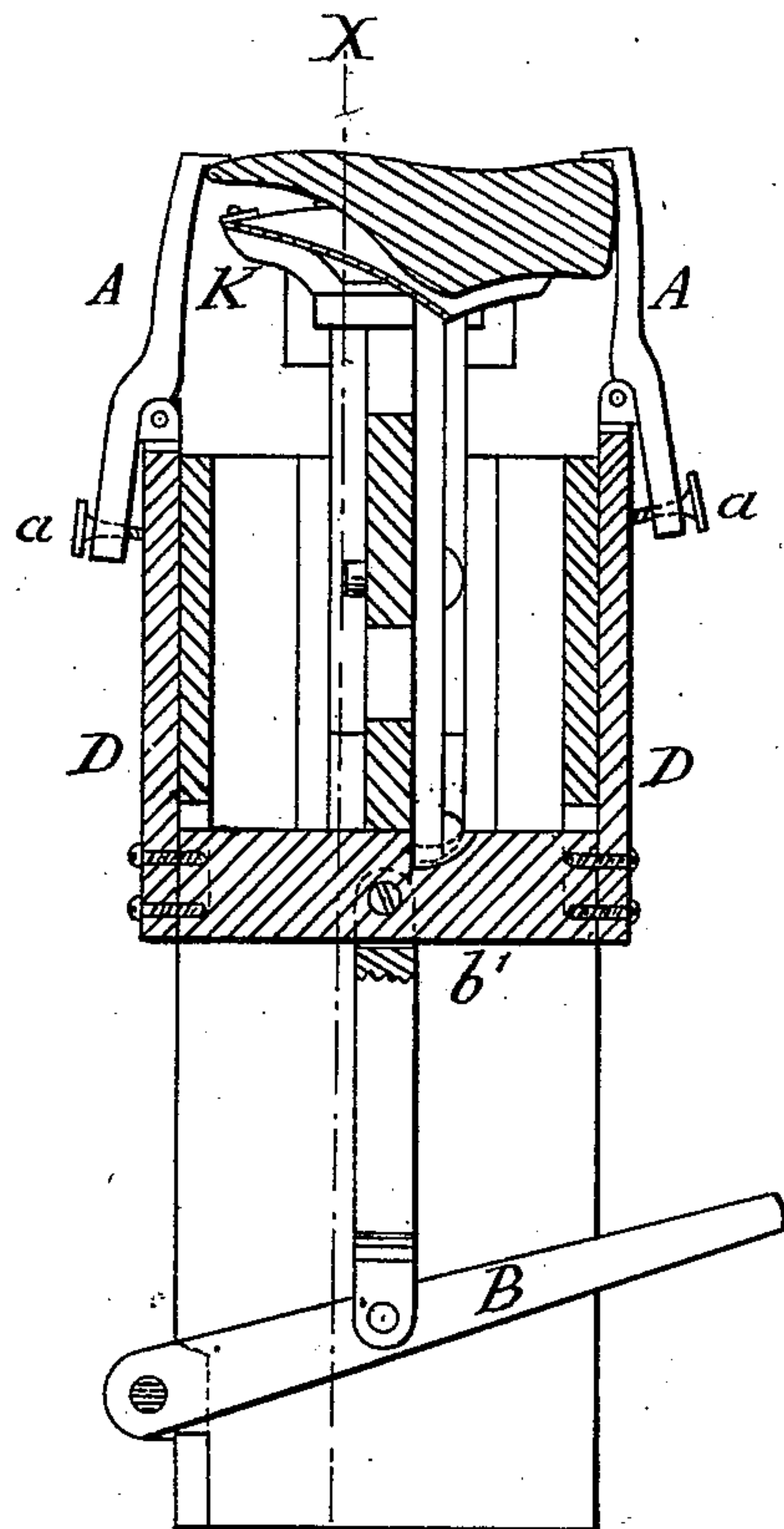


FIG. 1.

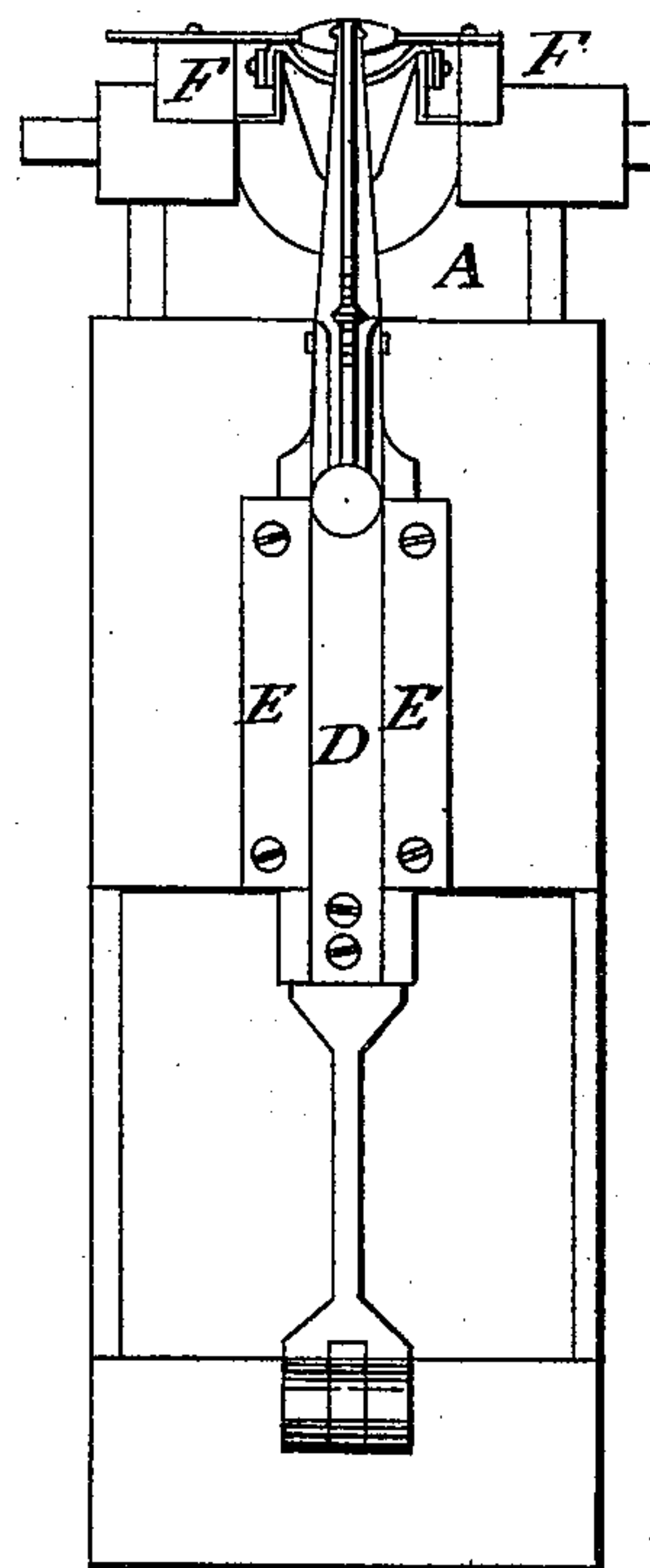


FIG. 3.

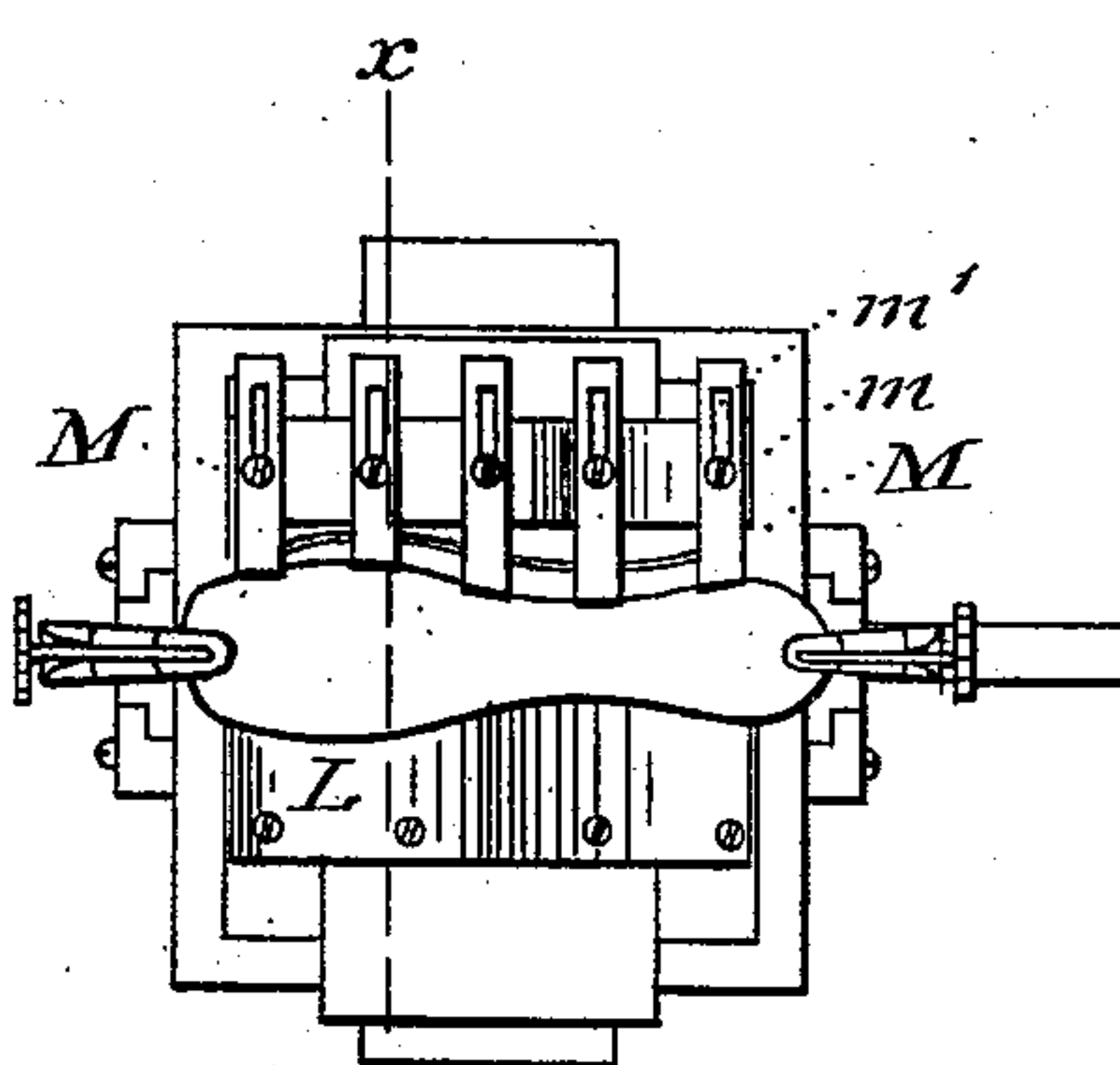


FIG. 4.

WITNESSES
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UNITED STATES PATENT OFFICE.

GEORGE W. COPELAND, OF MALDEN, AND ERASTUS WOODWARD OF BOSTON,
MASSACHUSETTS, ASSIGNORS TO THE COPELAND LASTING MACHINE
COMPANY, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN LASTING-MACHINES.

Specification forming part of Letters Patent No. **215,796**, dated May 27, 1879; application filed
January 24, 1879.

To all whom it may concern:

Be it known that we, GEORGE W. COPELAND, of Malden, in the county of Middlesex and Commonwealth of Massachusetts, and ERASTUS WOODWARD, of Boston, in the county of Suffolk, in said Commonwealth, have invented an Improvement in Lasting-Machines, of which the following is a specification.

This invention has for its object the within-described improvement in boot and shoe lasting machines, having reference particularly to the means described for presenting a last to side-lasting mechanism.

In the drawings, Figure 1 represents a longitudinal central section of our machine; Fig. 2, a vertical section of the same on the line X X of Fig. 1; Fig. 3, an end elevation; Fig. 4, a plan.

The means employed for forcing the last and upper to the side-lasting appliances consist of the toe and heel downholds A, each of which has a vertical movement in relation to the side-lasting mechanism by means of the lever B, cross-bar *b*, and slide-plates D, which move in ways or guides E, to which plates the downholds are pivoted, and on which they are adjusted horizontally by means of the set-screws *a*.

The side-lasting mechanism employed may consist of an elastic girth, strap, or bed, into which the last is forced, and by which the upper is strained and adjusted to the surface of the last, and the edge folded upon the surface of the insole, or any other appliances for side lasting which are calculated to strain the upper to the last, either by a lifting-and-closing action of side-lasting devices in relation to a stationary last, or by a vertical movement of the last in relation to side-lasting mechanism having horizontal movements only, or by a vertical movement of the last in connection with a lifting-and-closing movement of the said lasting apparatus.

The side-lasting mechanism shown by us in illustrating the operation of the said downholds consists of the jaws F, arranged to be closed and opened horizontally on the same plane on cross-heads G by means of the levers H, cam I, and lever B; and the elastic girth, strap, or bed K, attached to said jaws, either

immediately under the plates L or fingers M, as shown, or supported at the edges of said plates or fingers, or otherwise fastened to the jaws.

The fingers M are provided with a lateral adjustability in relation to the median line of the last from heel to toe by means of the set-screws *m* and slots *m'*.

It will be observed that by giving the toe and heel downhold vertical movements in relation to the side-lasting devices, we are enabled to force the last and upper downwardly therein without the necessity of employing any of the additional appliances commonly used in lasting-machines, in which the last is jacked on a spindle under downholds unprovided with vertical movements.

It will be seen, by using the downholds in this capacity, that when the lasting is completed by the closing of the jaws, the edge of the upper may be immediately fastened to the insole, as it is not necessary to remove the downholds during said fastening, because they project from each end of the last upon the insole, and are therefore not in the way of any tacking or other device employed in said fastening, and this constitutes one advantage in their use over the screw, lever, and other appliances for forcing a last vertically in relation to side-lasting appliances when arranged to bear upon the sole of the last between the heel and toe and operated from above.

It will be observed, further, that by the downward movement of the lever B the last is forced into the lasting appliances by the descent of the downholds, and side lasting continued by the closing of the crimping-plates or other folding projection upon the surface of the insole, and that the edge of the upper is laid thereon in position to be united thereto.

We have not shown toe and heel lasting plates in connection with this device, as we did not deem it necessary; but we propose to use downholds provided with said movements in connection with toe and heel lasting appliances in organized machines.

Of course, we may use the vertically-moving downholds in connection with side-lasting devices, which wrap the upper around a station-

ary last, substantially as described in the Copeland and Ballou and Copeland patents, in which case the movement of the downholds would be for the purpose of securely jacking the last upon a spindle or other support before the side-lasting mechanism is operated, and in that respect, of course, they do not assist the side lasting.

In operation the last, with the upper adjusted thereon, is placed under the toe and heel downholds, and by their descent is both jacked and forced into the side-lasting devices and toe and heel lasting mechanism, when necessary, thereby straining and fitting the upper to the last to a certain extent. The lasting is then continued by the advance of folding projections upon the surface of the insole, and completed by the fastening of the edge of the upper thus turned over to the insole.

We do not claim, broadly, a fore and back part presser made movable vertically with relation to the last's bottom, to operate upon the fore and rear part of the last to place it and retain it in position; or the combination of lasting-jaws or devices to press the edges of the upper over upon the inner sole with toe and heel pressers or downholds made vertically movable with relation to the lasting-jaws; or the combination of pressers or downholds which rest upon the fore and back part of the last with mechanism to automatically force them down while fitting the upper about the last; or the combination, with fore and back part pressers having vertical movements in relation to the lasting-jaws, of mechanism to stretch and fit the upper to the last and fold the edge of the upper upon the insole; or automatic devices for forcing a last downwardly with relation to said heel and toe lasting devices, and a girth to strain and fit the upper to the last and turn the edges of the upper over upon the insole; but we do claim the specific combination and arrangement for the jacking of a last and its presentation to side and toe and heel lasting mechanism by the vertical movement of toe and heel downholds, when actuated by mechanism entirely below the upper surface of the insole.

We are aware that English Patent No. 13,382 of 1850, granted Julian Bernard and G. Baptiste Durenille, for the manufacture of boots and shoes, in Fig. 4, Sheet 4, of the drawings, shows devices for holding the insole upon the last at the toe and heel during the lasting process.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a machine for lasting the uppers of boots and shoes, the combination of the downholds A, lever B, cross-bar *b*, and sliding plates D, all arranged to provide a vertical movement of the last in relation to the side-lasting and edge-folding devices, substantially as described.

2. In a machine for lasting the uppers of boots and shoes, the combination of the toe and heel downholds A, jaws F, carrying the folding-plates, and side-lasting mechanism, with the lever B and the intermediate mechanism described for moving said downholds vertically in relation to the side-lasting and edge-folding mechanism, and said horizontally opening and closing jaws, all in the manner indicated, substantially as set forth.

3. In a machine for lasting the uppers of boots and shoes, the combination of the toe and heel downholds A, provided with horizontal adjustment, jaws F, carrying folding-plates, and side-lasting mechanism, with the lever B and the intermediate mechanism described for operating said downholds and said jaws, in the manner indicated, substantially as set forth.

4. In a machine for lasting the uppers of boots and shoes, the combination of the toe and heel downholds A, provided with longitudinal adjustment in relation to each other, operated by the lever B, cross-bar C, and sliding plates D, with side and toe and heel lasting appliances, substantially as and for the purposes described.

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Witnesses:

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