

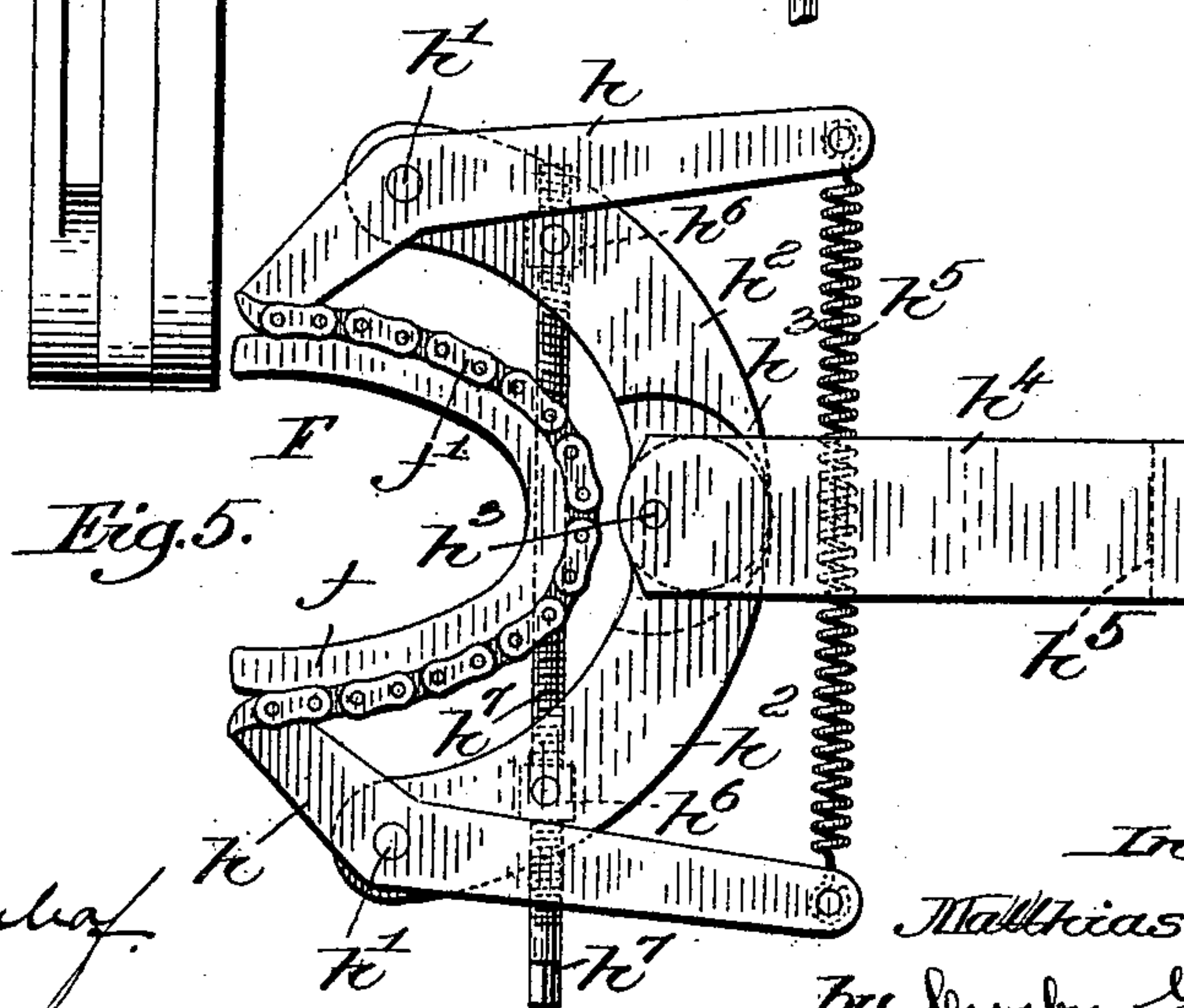
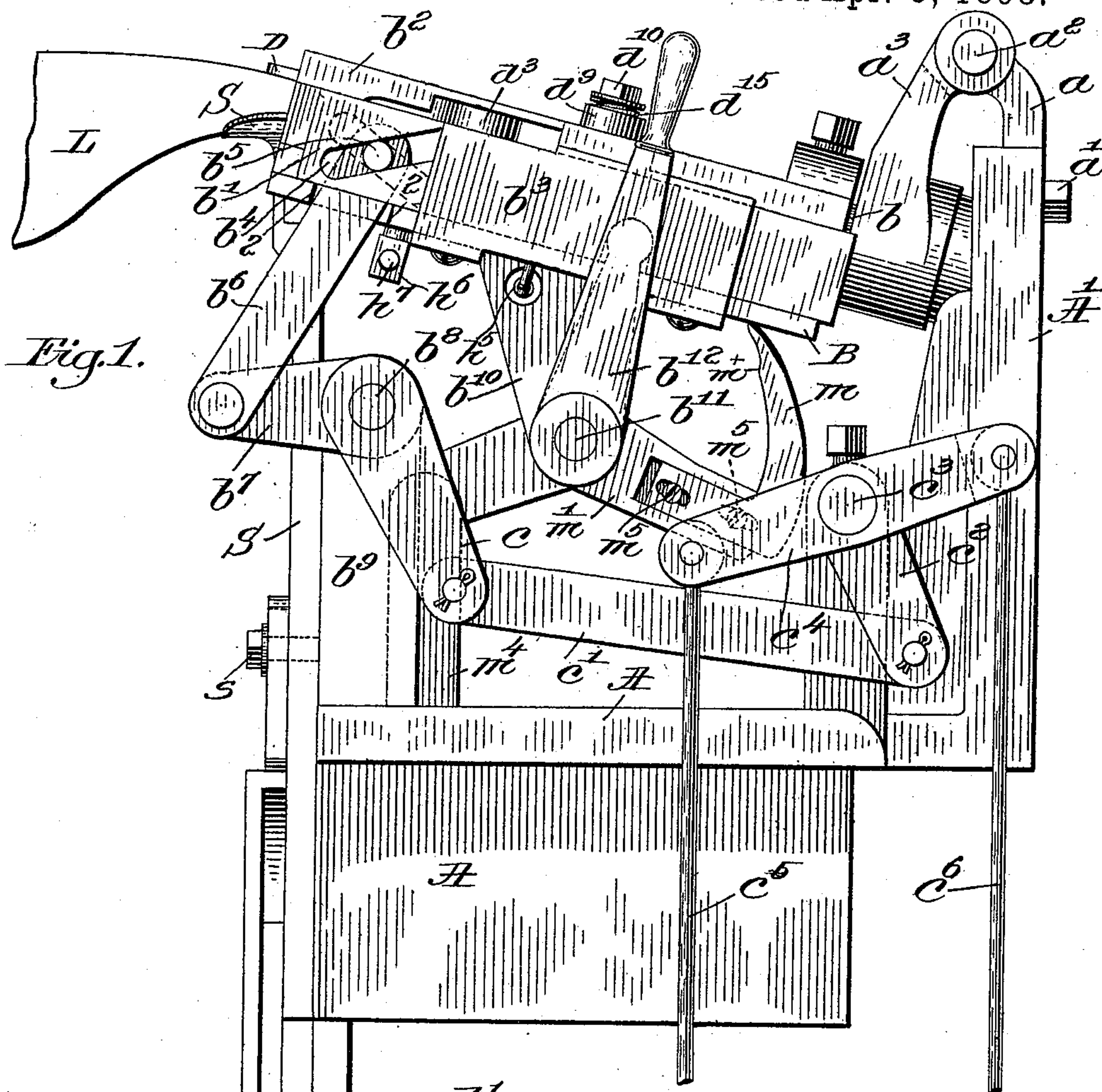
(No Model.)

3 Sheets—Sheet 1.

M. BROCK.
LASTING MACHINE.

No. 601,938.

Patented Apr. 5, 1898.



Witnesses.

Fred. S. Grunberg
Walter E. Lombard

Inventor.

Mattias Brock.

By Crosby Gregory.
Atty.

(No Model.)

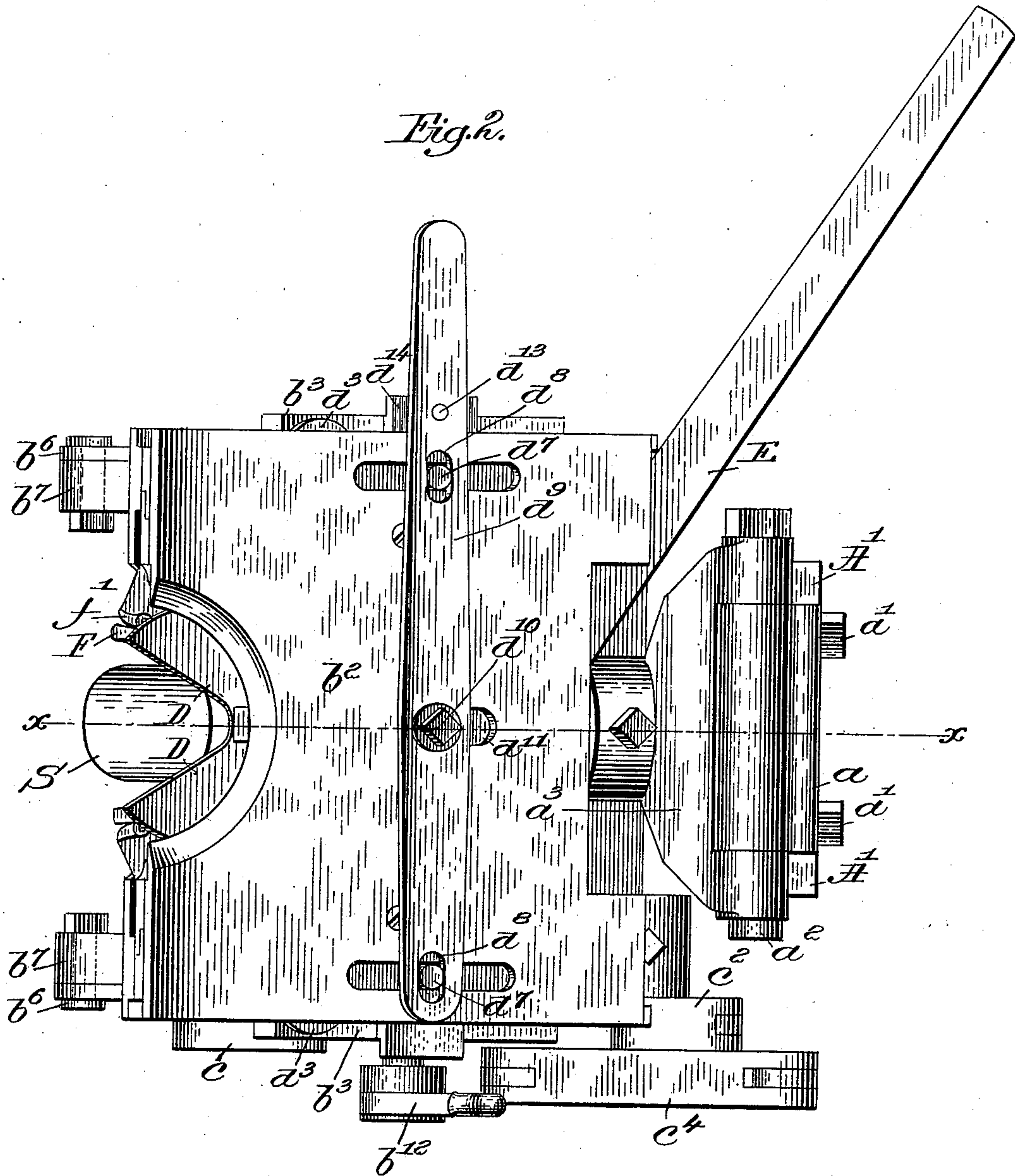
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Fig. 2.



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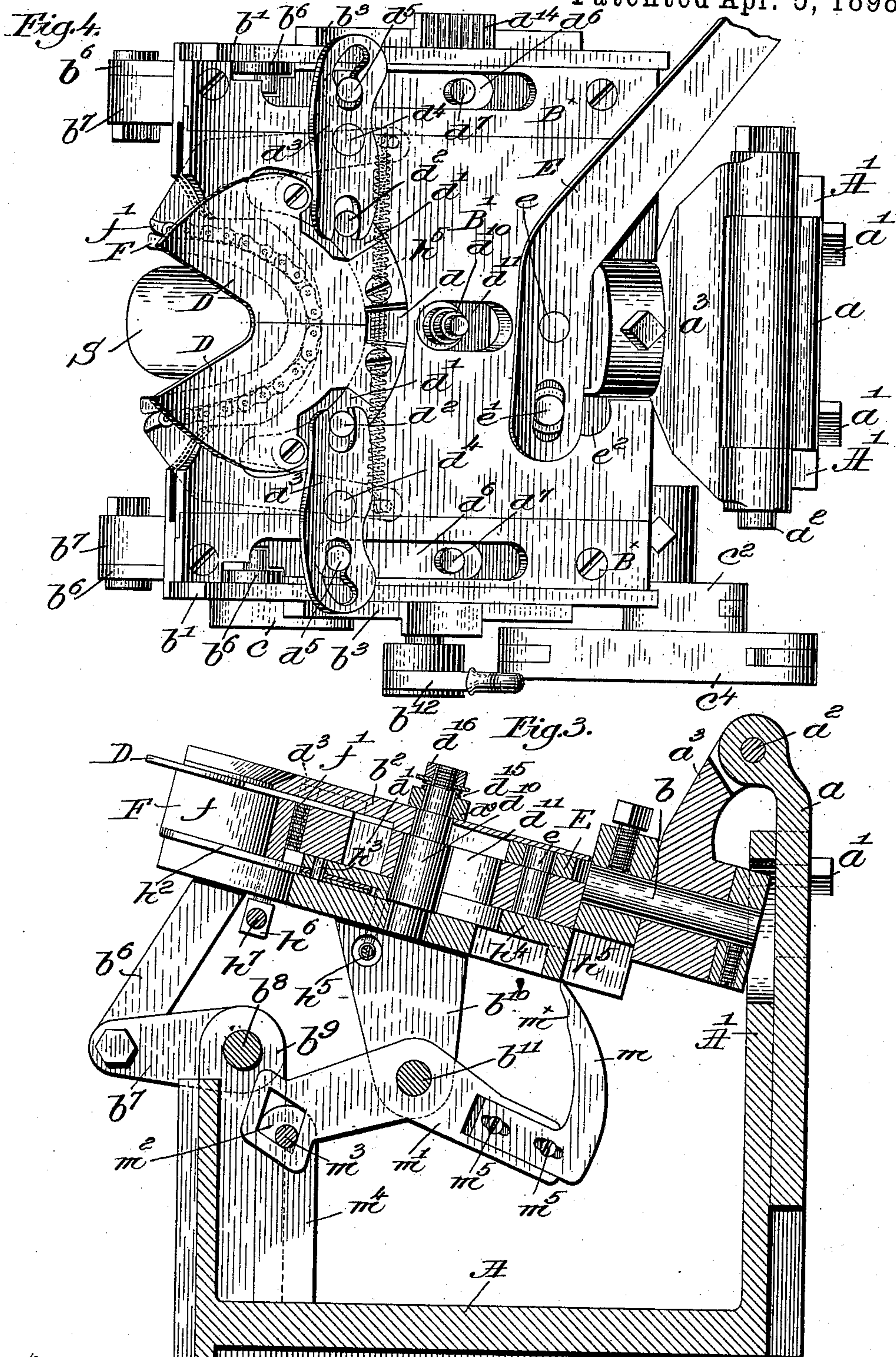
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3 Sheets—Sheet 3.

M. BROCK.
LASTING MACHINE.

No. 601,938.

Patented Apr. 5, 1898.



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UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE CONSOLIDATED & MCKAY LASTING MACHINE COMPANY, OF PORTLAND, MAINE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 601,938, dated April 5, 1898.

Application filed January 15, 1897. Serial No. 619,296. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention relates to machines for lasting boots and shoes, the invention having especial bearing upon the devices for operating in the vicinity of the ends of the last.

In my experiments conducted with the idea of improving lasting machinery I have found that certain advantages are to be gained by giving to the lasting devices and last a relative rising-and-falling movement in an inclined direction as distinguished from a truly vertical direction, as heretofore—for instance, by giving the lasting devices such an inclined rising-and-falling movement that they may be made to move away from or clear themselves of the last when dropped in their lowermost position, or they may be made to follow during their upward or rising movement approximately the inclined line of an overhanging end or portion of the last. One means of producing this rising-and-falling movement in an inclined direction is by providing a fulcrum about which said lasting devices are made to rise and fall, this fulcrum movement also presenting the added advantage that it presents less weight of parts to be moved and less friction; hence is more easily and conveniently manipulated.

My invention further relates to a lasting-machine having an end clasp adapted to embrace the end of the last, the same having the capacity for a combined opening-and-closing movement for adapting itself to wider and narrower or larger and smaller lasts and a swinging movement to adapt it for right or left lasts.

45 The features of my invention will be hereinafter more particularly described, and pointed out in the claims.

In the drawings, Figure 1, in side elevation, illustrates one embodiment of my invention; Fig. 2, a top or plan view of the parts

shown in Fig. 1; Fig. 3, a vertical cross-section on the dotted line xx , Fig. 2; Fig. 4, a view similar to Fig. 2, with the top plate and parts carried thereby removed; and Fig. 5, a detail illustrating one manner of mounting the end clasp in accordance with my invention.

Referring to the drawings, in the particular embodiment of my invention selected for illustration herein, A is a sliding carriage mounted to slide in the direction of the length of the last in suitable bearings or supports, (not shown,) said carriage at its outer end being shown as provided with a vertical bracket A', provided with a suitable guideway for the vertically-adjustable slide a , held in vertically-adjusted position in suitable manner, as by the clamping-screw a' . To the upper end of this slide a is fulcrumed at a^2 a yoke a^3 , provided at its lower end with a suitable bearing for the reception of a trunnion-pin b on the outer end of the head B, the latter having a rolling movement on said trunnion-bearing in the yoke a^3 and a rising-and-falling movement with the yoke a^3 about the fulcrum a^2 .

At its opposite side edges the head B is suitably grooved for the reception of the sliding cam-plates b' , held at their upper edges in position in said grooves by the top plate or cover b^2 , suitably secured to the head, and held laterally in said grooves by the side plates b^3 , also secured to the head. These sliding cam-plates b' at their ends adjacent the last or form L are shown as provided each with an inclined or cam slot b^4 , the cam-slots in the two plates on opposite sides of the head being inclined in opposite directions, said cam-slots receiving the pins b^5 on the upper ends of the links b^6 , which constitute the lifting or swinging supports for the free end of the head, said links b^6 being jointed at their lower ends to the arms b^7 , fast on a shaft b^8 , journaled in suitable bearings b^9 on and preferably constituting a part of the sliding carriage A.

In a bracket b^{10} , depending from the under side of the head B, is journaled the shaft b^{11} , having fast upon its opposite ends the arms b^{12} , one at least of which is shown as and

preferably fitted with a handle by which said shaft may be rocked. These arms b^{12} rise in suitable engagement with the sliding cam-plates b' , so that when said shaft is rocked by means of the handle described it will cause simultaneous forward or backward sliding movement of the cam-plates b' , which, through their cam-slots acting in connection with the pins b^5 on the swinging supports b^6 for the head, will cause said head to be rolled in one or the other direction, according to the direction of the sliding movement of the said cam-plates, this rolling movement being caused by the opposite inclination of the cam-slots, which when the cam-slots are moved in the same direction cause one side of the head to be raised and the other to be lowered. The links or swinging supports b^6 are themselves held against any considerable lateral movement by or with said cam-plates by the walls of the slot in the side of the head in which said links or supports lay, said walls being indicated at 2, Fig. 1 of the drawings.

The shaft b^8 is shown as further provided with a depending arm c , connected by a link c' with the depending arm c^2 on a shaft c^3 , which may be rocked in suitable manner, as by the lever c^4 , fast thereon and provided at its opposite ends with actuating-rods c^5 c^6 , connected, it may be, with treadles. (Not shown.) By depressing the rod c^6 and its end of the lever referred to, the shaft b^8 will be rocked to operate, through the arms b^7 and the swinging supports b^6 , to raise the free end of the head B about the fulcrum a^2 , while depression of the rod c^5 will cause depression or lowering of the free end of the said head also about said fulcrum, and this rising-and-falling movement of the free end of the rod B is in no wise affected by the roll which may have been previously given to the said head by the parts described, because herein the swinging supports cooperate with and in effect constitute a part of the means for imparting the roll to the lasting-head.

The end of the last is preferably held upon a suitable end support, as S, of suitable shape and construction, it, as herein shown, being adjustably connected at s with the sliding carriage A.

Referring now particularly to Fig. 4, the head B is shown as provided at its upper side with a longitudinally-sliding top plate B' , guided at its edges by the gibs B^x , said sliding plate being provided with a semicircular groove d , which receives the correspondingly-curved blocks d' on the under side of and secured to the end lasting devices, shown as wiper-plates D D, suitably shaped at their edges adjacent the last to meet and operate upon the material to be lasted about the end of the last.

The curved blocks d' are shown as provided with pins d^2 , which are engaged by the forked ends of the levers d^3 , fulcrumed at d^4 and having their opposite or outer ends provided with suitable slots to receive the pins d^5 on

the longitudinally-movable actuating-slides d^6 , arranged in suitable guideways in the gibs B^x . These slides d^6 are shown as provided with projections d^7 , which rise through suitable slots in the cover b^2 and at the top of said cover enter slots d^8 (see Fig. 2) in the opposite ends of the adjusting-lever d^9 , fulcrumed upon the center pin or stud d^{10} , carried by the head and passing through a slot d^{11} in the sliding plate B' referred to.

The lever d^9 is extended at one or both its ends to furnish means by which the operator can readily and simultaneously slide the blocks or slides d^6 in opposite directions to thereby change the relative positions of the pins d^5 and through the levers d^3 swing the lasting-plates D to a greater or less extent to adapt the median line of the opening between said plates more or less to approximately the median line of the last, either a right or a left.

The lever d^9 is locked in one or another of the positions into which it is moved after having adapted the lasting-plates D to the shoe to be lasted by means of a suitable locking device (shown as a latch d^{13} , Fig. 2) which engages one or another of the series of teeth d^{14} upon one of the side plates b^3 of the head.

A spring d^{15} , Fig. 3, interposed between the lever d^9 and the nut d^{16} , fitted on the top of the fulcrumed stud d^{10} , holds the latch d^{13} in normal engagement with the series of teeth d^{14} , but permits disengagement of the latch and teeth by slight raising of the said lever when it is desired to move the latter.

Referring again to Fig. 4, the sliding plate B' , which carries the lasting-plates, is provided at its rear end with a rising stud e , upon which is pivoted the lasting-lever E, fulcrumed at one end upon the stud e' , rising from the head B through a slot e^2 in the sliding plate B' . By means of this lasting-lever E the operator is enabled to move the plate B' forward and back at will, causing the levers d^3 , fulcrumed upon the said sliding plate and held at one of their ends by the fixed pins d^5 , to move the lasting-plates inwardly and outwardly—that is, to close and open the same for lasting the material over and upon the last in a manner well understood by those skilled in the art.

Referring now particularly to Figs. 3, 4, and 5, F is a suitable end clasp arranged in a recess in the front of the head on the sliding carriage, the same being herein shown as composed of a strip or band of leather or other suitable flexible material f , (see Fig. 5,) backed up by a chain f' , the latter at its ends attached to the inner short ends of a pair of levers h h , fulcrumed at h' in the ends of the curved arms h^2 , the latter in turn fulcrumed upon a pin h^3 , fast on the end of a slide-bar h^4 , arranged to slide longitudinally in a suitable guideway in the upper side of the head B. The long arms or tail portions of the levers h h are connected by a spring h^5 , which tends to normally open the clasp F.

The rear end of the slide-bar h^4 is provided

with a depending lug h^5 , (see Fig. 3,) adapted for engagement by the upwardly-extended curved finger m , fast on the outer end of a lever m' , loosely fulcrumed upon the shaft b^{11} , carried at the under side of the head B, said lever at its end opposite the finger m being provided with an aperture m^2 , which receives the rod m^3 , held loosely by and between the posts m^4 on the sliding carriage A. The curved finger m is adjustably connected with the lever m' to provide for necessary adjustments by means of the screws m^5 on the finger passing through suitable slots (shown by dotted lines, Fig. 3) in the lever. As the head B is swung upwardly about its fulcrum a^2 the raising of the shaft b^{11} by and with said head causes the lever m' , held at one end by the fixed rod m^3 , to be rocked or turned to cause its curved finger m to engage the lug h^5 on the rear end of the slide-bar h^4 and carry the latter forward in and with relation to the rising head, thereby, through the curved arms h^2 , carrying the levers h and the clasp bodily forward to embrace the end of the last, the pressure and closeness with which said clasp embraces the end of the last depending upon the adjustment of the parts as provided for in my invention.

The curved finger m is preferably provided with a cam-surface m^x of suitable contour, such that when the clasp has been moved nearly forward it will be given a strong final forward movement to tightly embrace the last.

To more or less regulate the normal opening at the entrance to the clasp F, I have herein provided the arms h^2 with lugs h^6 , which depend through suitable openings in the head B, and beneath the latter said lugs are right and left threaded to receive the right and left threaded ends of an adjusting-screw h^7 , squared at its ends or otherwise suitably formed to enable it to be rotated to vary the opening or separation of the said arms h^2 , they being moved to open or close the entrance to the clasp according as the said adjusting-screw h^7 is turned in one or the opposite direction.

The operation of my invention as herein embodied is as follows: The last with the material to be lasted thereupon is arranged upon a suitable usual jack or support with its end, herein shown as the toe end, firmly held down upon the toe-rest S, the lasting devices being down and back out of the way. The operator now preferably engages the handle-lever b^{12} , and through the parts connected therewith rolls the head B to meet the direction and rest of roll of the last. The operator next, and it may be through a suitable treadle, (not shown,) depresses the rod c^6 , Fig. 1, and through the swinging support b^6 raises the free end of the head with the parts thereupon, causing the curved finger m to press the clasp F forward toward the last simultaneously with the upward or rising movement of the clasp by the upward swinging of the

head, so that the said clasp in a more or less opened condition meets the last end and is pushed forward to tightly embrace the same and the material thereupon in order that during the further upward and forward movement of the said clasp the material will be wiped tightly and smoothly upward and about the end of the said last. It will be noticed that this upward swinging movement of the head B with the lasting devices and clasp is about the fulcrum a^2 , the axis of which is arranged (see Fig. 1) preferably above the level of the bottom of the last at the end thereof, so that during the upward swinging movement the parts have also a movement toward the end of the last, the curve or arc of the rising movement of the device shown approximating the line of an overhanging end—*e. g.*, of the toe of a last—so that when fully raised the parts have moved inwardly beyond the most extreme part of the end of the last to hold the material under the overhang tightly against the last. Having raised the parts so that the lasting-plates are at or about the level of the bottom of the last the operator, by means of the lasting-lever E, moves the sliding plate B' bodily forward to cause the lasting-plates D to close over and upon the last to lay the edges of the upper or other material acted upon down tightly upon the bottom of the last, this closing movement of the plates D being repeated as many times as desired prior to the tacking or otherwise securing of the upper upon the bottom of the last. By means of the lever d^9 operating in the manner described the lasting-plates D may be either preliminarily or at any time during their subsequent movements swung more or less to the right or left to adapt them to the median line of a right or left last, so that they shall more effectually move in from the sides of the last, this adjustment for rights and lefts taking place, preferably as herein shown, about an imaginary or actual center which is substantially under or coincident with the middle of the toe of the last. The clasp F may be opened and closed for wide and narrow lasts by means of the screw h^7 described, and the said clasp is further adjustable as to the direction in which it opens to meet right and left lasts by reason of its being mounted upon the arms h^2 , fulcrumed at h^3 on the slide-bar h^4 . As the clasp moves forward to meet the end of the last it has a bodily-swinging movement, together with its carrying-levers h and arms h^2 , about the center h^3 to adapt itself to the last end in whichever direction said last end may point, so that said clasp is automatically adjustable to meet right and left lasts, and since this adjustment of said clasp is about a center substantially under the middle of the toe of the last this adjustment for rights and lefts is effected without chafing or injury to the material of the last. The clasp at its under side preferably rests upon a suitable support—for example, the extended end of the slide-bar h^4 , which holds the clasp

in proper position during its upward-wiping movement.

A clasp constructed and mounted as herein described possesses double advantages—
 5 viz., it is capable of expanding and contracting to fit the varying widths of last or to adapt itself to different curvatures at the ends of the lasts, and it also has in addition thereto the swinging movement to adapt its
 10 median line to the median line of the last end, whether the last be a left or a right, so that I have the adjustability for the width of the last entirely absent in clasps, so far as known to me, heretofore made adaptable for rights
 15 and lefts, and I further have the capacity to adjust for rights and lefts heretofore, so far as I am aware, entirely absent in prior clasps which are adjustable to meet varying widths of lasts. While I have herein shown and de-
 20 scribed my invention in connection with one embodiment thereof, in which embodiment the relative adjustment between the lasting devices and the last is effected by the movement of the lasting devices instead of the
 25 last, my invention is not necessarily limited to this embodiment, for it is evident that the same may be varied in many ways without departing from the spirit and scope of my invention.

30 In the apparatus herein illustrated and described the wiper-plates D, which are one form of lasting devices, act during the upward-swinging movement of the head to engage the material upon the last and wipe the
 35 same ahead of them, so that when they subsequently move inwardly to lay the material upon the bottom of the last they move below any wrinkles which may have been put into said material in the upward wiping of the
 40 same about the last end, the upward-wiping movement of said lasting-wipers taking place in an inclined direction, which may approximate the overhanging of a last end.

The clasp F, which constitutes a form of
 45 upward-wiping means and which is independent of the lasting devices or wiper-plates, also, and I believe for the first time, has an inwardly-inclined movement relatively to the last, which may approximate the line of over-
 50 hang at the end or any other part of a last or form.

Having described my invention, and without limiting myself as to details, what I claim, and desire to secure by Letters Patent, is—

55 1. A support for the last or form, means to engage the material to be lasted and lay the same upon the bottom of said form, the latter and said means having a relative movement in a direction to conform approximately
 60 to an overhanging end of said last or form, substantially as described.

2. A support for a last or form, wipers, and means of which said wipers form a part to engage the material and raise said material
 65 relatively to said form and also carry said material inwardly to fit the same about the end of said form, substantially as described.

3. In a lasting-machine, a support for a last, end lasting devices to lay the material over the bottom of the last, and means independent of said lasting devices to engage the material upon said last, said independent means and last having a relative movement in a direction to conform approximately to the overhanging end of said last, substantially as described. 70 75

4. In a lasting-machine, a support for the last, end lasting devices and upwardly-wiping means, and means to cause a relative movement of said last and the said lasting devices, and upwardly-wiping means in a direction to conform approximately to an overhanging end of said last, substantially as described. 80

5. A support for a last or form, a head, means thereon to engage the material upon said last, the latter and said head having a relative movement in a direction to conform approximately to an overhanging end of said last or form, substantially as described. 85 90

6. In a lasting-machine, a support for a last, a head mounted to swing about an axis at a level above the bottom of said last, means on the said head to engage the material, and means to move said head about its said axis to cause the said material to be laid upon said last, substantially as described. 95

7. The combination with a support for a last or form, and lasting means to engage the material to lay the same over and upon said form and having also a rising-and-falling movement, of an end clasp having a rising-and-falling movement, and means automatically to impart to said clasp and said lasting means a movement longitudinally of the last in addition to said rising-and-falling movement, substantially as described. 100 105

8. In a machine of the class described, a clasp having an entrance adjustable as to its width, combined with means for changing the lateral alinement of said clasp without varying the width of said entrance, substantially as described. 110

9. In a machine of the class described, a clasp adjustable as to its width, and means for bodily swinging said clasp about a center at or in the vicinity of the closed end of said clasp, substantially as described. 115

10. In a machine of the class described, a clasp, laterally-swinging supporting means therefor, and laterally-swinging connections between said supporting means and the end of said clasp, substantially as described. 120

11. In a lasting-machine, end wipers, a suitable support therefor, a sliding member longitudinally movable in said support said sliding member and said wipers having the one curved guiding-surfaces and the other cooperating guiding projections of a curvature corresponding to that of said guiding-surfaces, substantially as described. 125 130

12. In a lasting-machine, disconnected end wipers, a support therefor, and means for imparting a relative movement to said wipers in

a circular path about a common axis of movement, substantially as described.

13. In a lasting-machine, end wipers, a suitable support therefor, a longitudinally-sliding member mounted in said support and carrying said end wipers, a single curved slot and cooperating projecting surfaces furnishing the means for directing the movement of each of said end wipers on and with relation to said sliding member, substantially as described.

14. In a lasting-machine, end wipers, a support for and on which said wipers have a forward-and-back movement, and fulcrumed connections between said wipers and said support, whereby said forward-and-back movement also causes said plates to be moved for relative opening and closing, substantially as described.

15. In a lasting-machine, end wipers, a support therefor, and wiper-operating devices on said support, projection-and-slot connections between the said wipers and said wiper-operating devices, and means for moving said connections bodily forward and back with the forward-and-back movements of the said end wipers, substantially as described.

16. In a lasting-machine, end wipers, supporting means therefor, means to open and close said wipers, and means movable longitudinally in a rectilinear line to impart to said wipers an auxiliary sidewise movement, substantially as described.

17. In a lasting-machine, lasting devices, actuating means therefor, a plurality of supporting members for and to effect rise and fall of said lasting devices, and oppositely-moving cam-surfaces cooperating with the respective supporting members to effect rolling of said lasting devices, substantially as described.

18. In a lasting-machine, lasting devices, actuating means therefor, means to effect rise and fall of said lasting devices in a direction

approximating the overhang at the end of a last, combined with means to roll said lasting devices, substantially as described.

19. In a lasting-machine, lasting devices, actuating means therefor, means to swing said lasting devices to cause rising-and-falling lasting movement, combined with means to roll said lasting devices, substantially as described.

20. In a lasting-machine, the combination of lasting devices with raising and lowering devices therefor, said raising and lowering devices also comprising means for rolling said lasting devices, substantially as described.

21. In a lasting-machine, end lasting devices constructed and arranged to be opened and closed to lay the material over and upon the last or form, said lasting devices having also a forward-and-back movement, a rolling movement to adapt the same to the roll of a last, and a rising-and-falling movement in a direction approximating the line of overhang at the end of a last, substantially as described.

22. In a lasting-machine for boots and shoes, a last or form to hold the boot or shoe to be lasted, combined with lasting devices having a movement to lay the material over and upon said last or form, said lasting devices having in addition a rolling movement in a direction approximating the line of overhang at the end of a last to enable them to lay the material closely about the said overhanging last end, and a shifting movement to the right or left to adapt the said lasting devices to the varying ends of lasts either rights or lefts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MATTHIAS BROCK.

Witnesses:

FREDERICK L. EMERY,
MARGARET A. DUNN.