

(No Model.)

6 Sheets—Sheet 1.

M. BROCK.
LASTING MACHINE.

No. 601,935.

Patented Apr. 5, 1898.

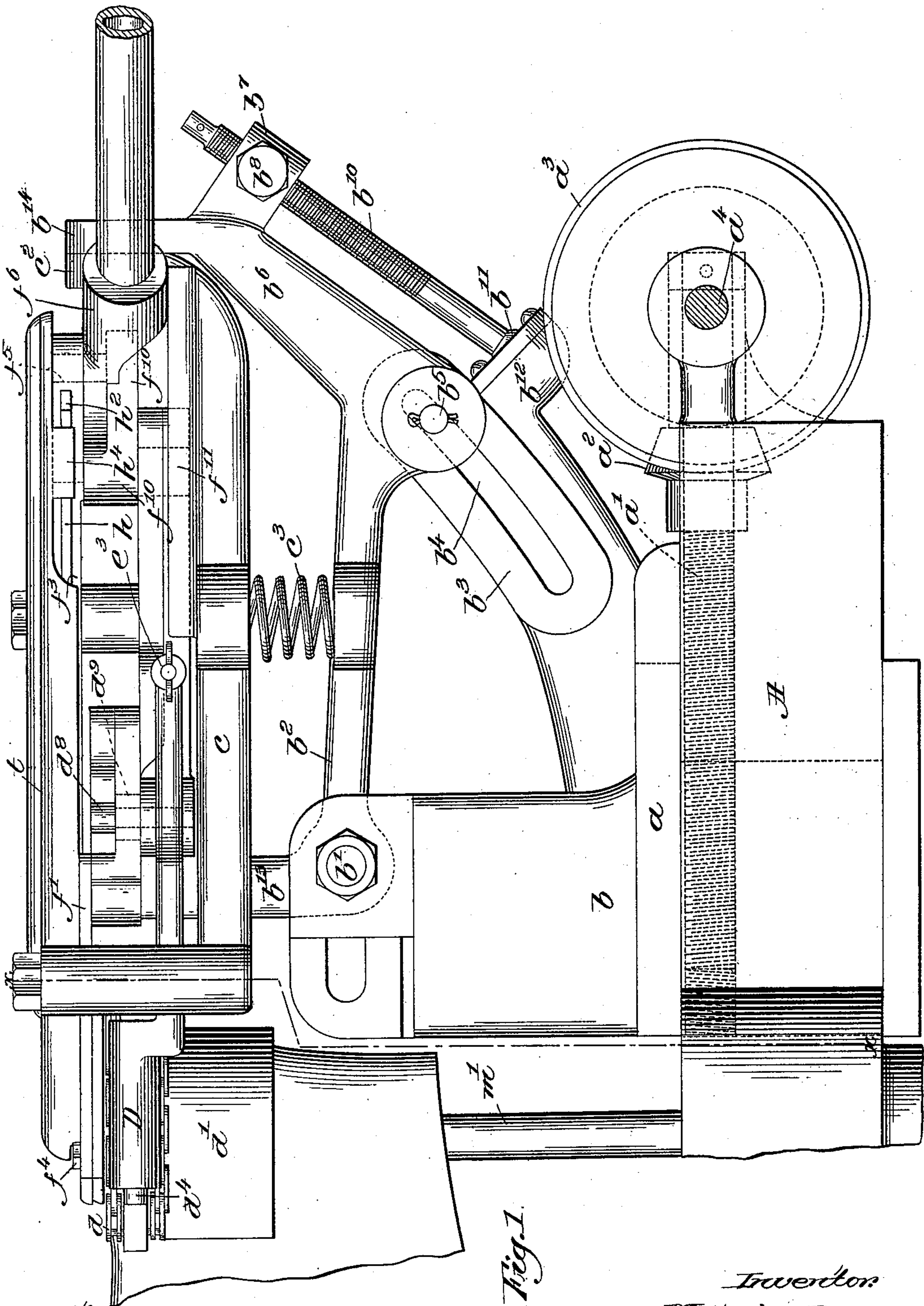


Fig. 1.

Witnesses.
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Edward F. Allen.

Inventor.
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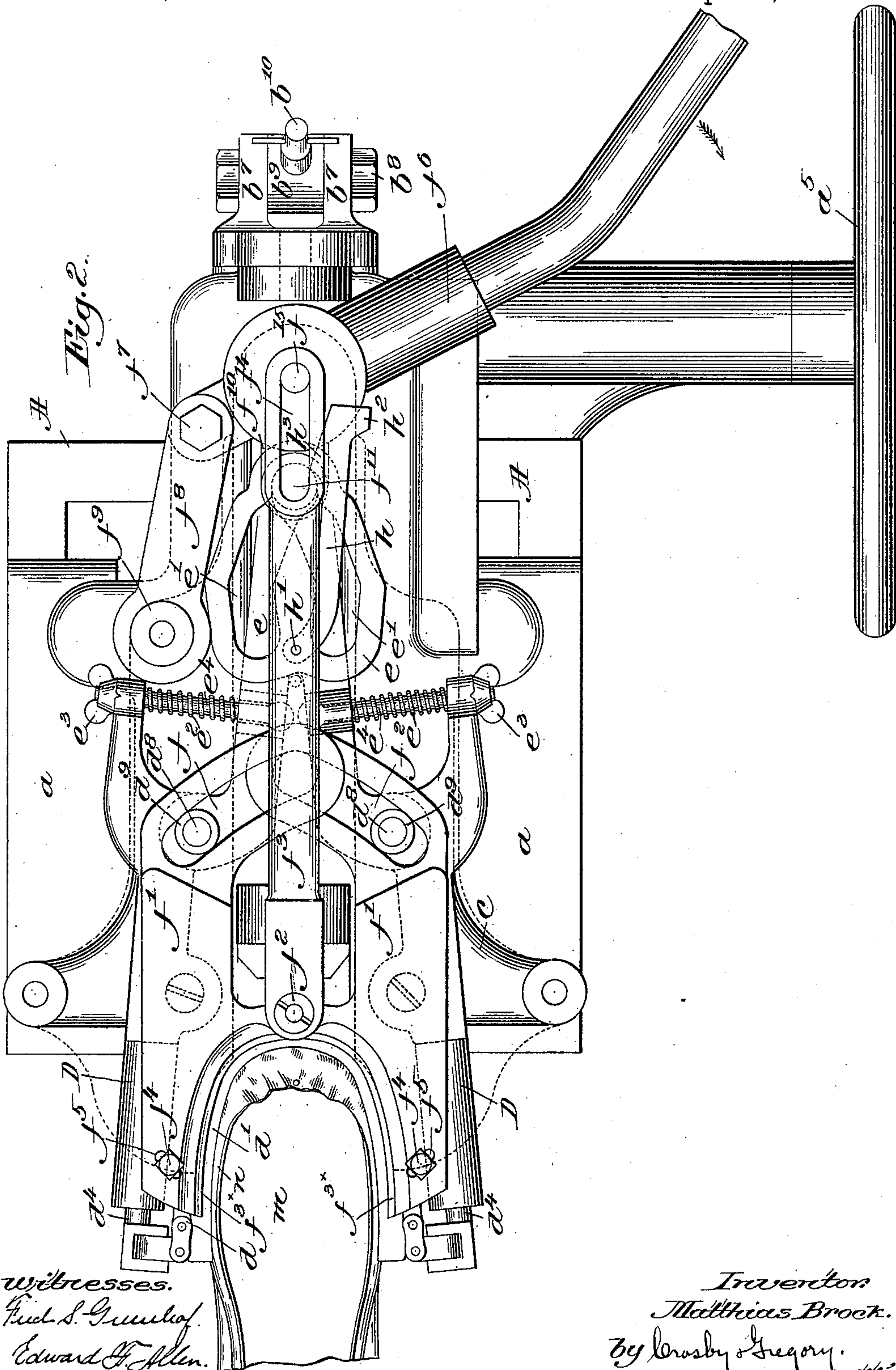
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6 Sheets—Sheet 2.

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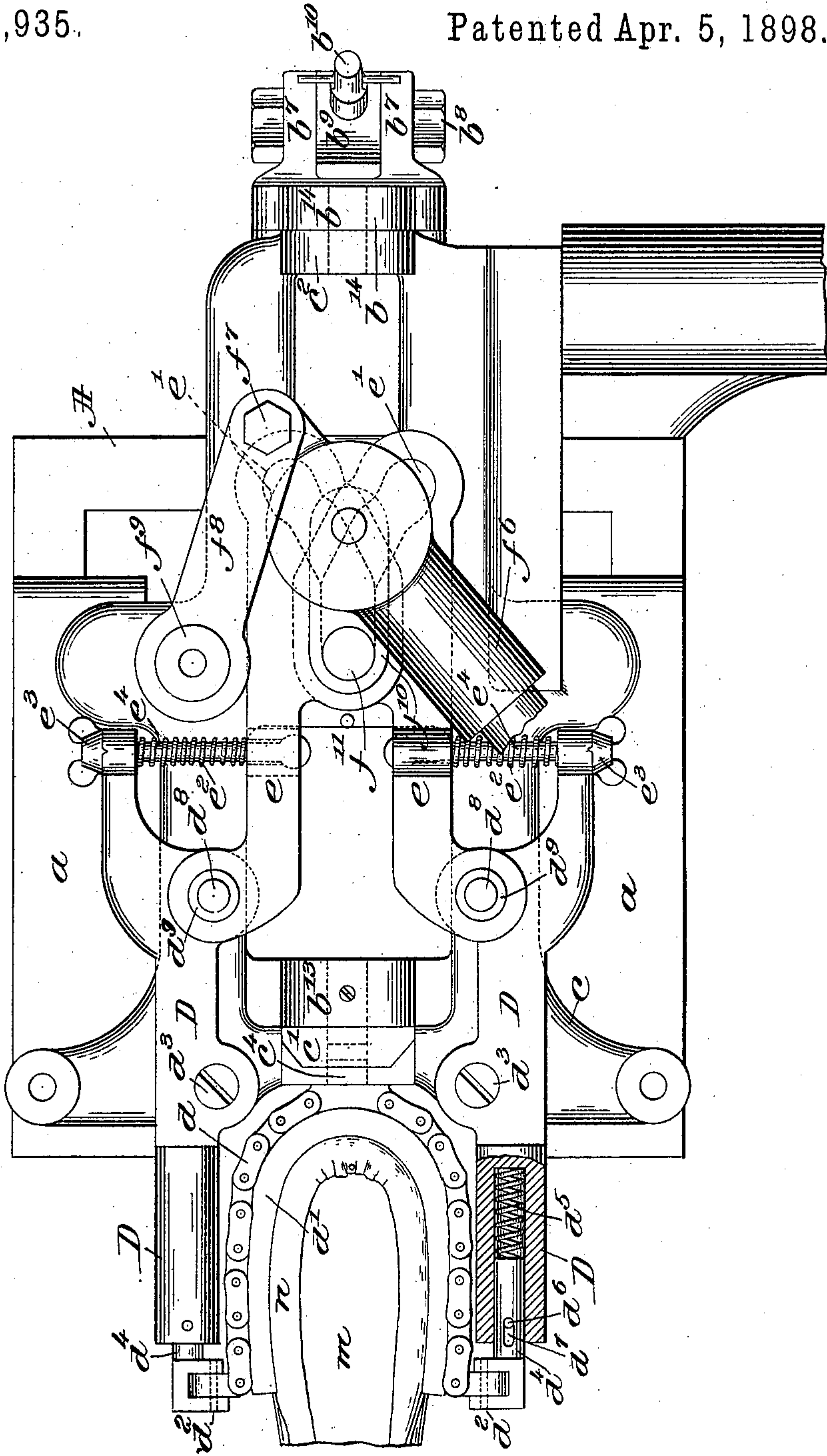
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M. BROCK.
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Fig. 3.



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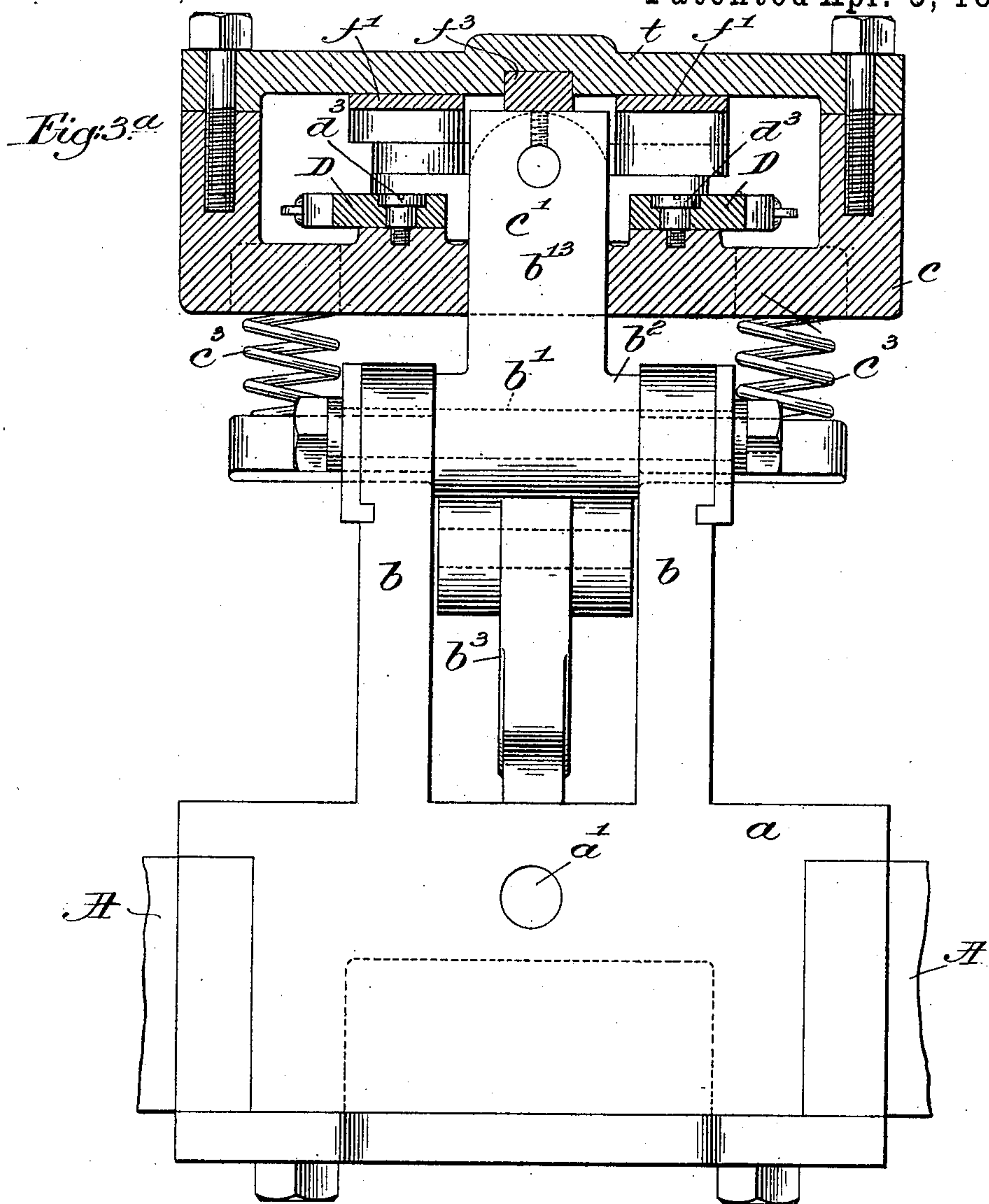
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M. BROCK.
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6 Sheets—Sheet 6.

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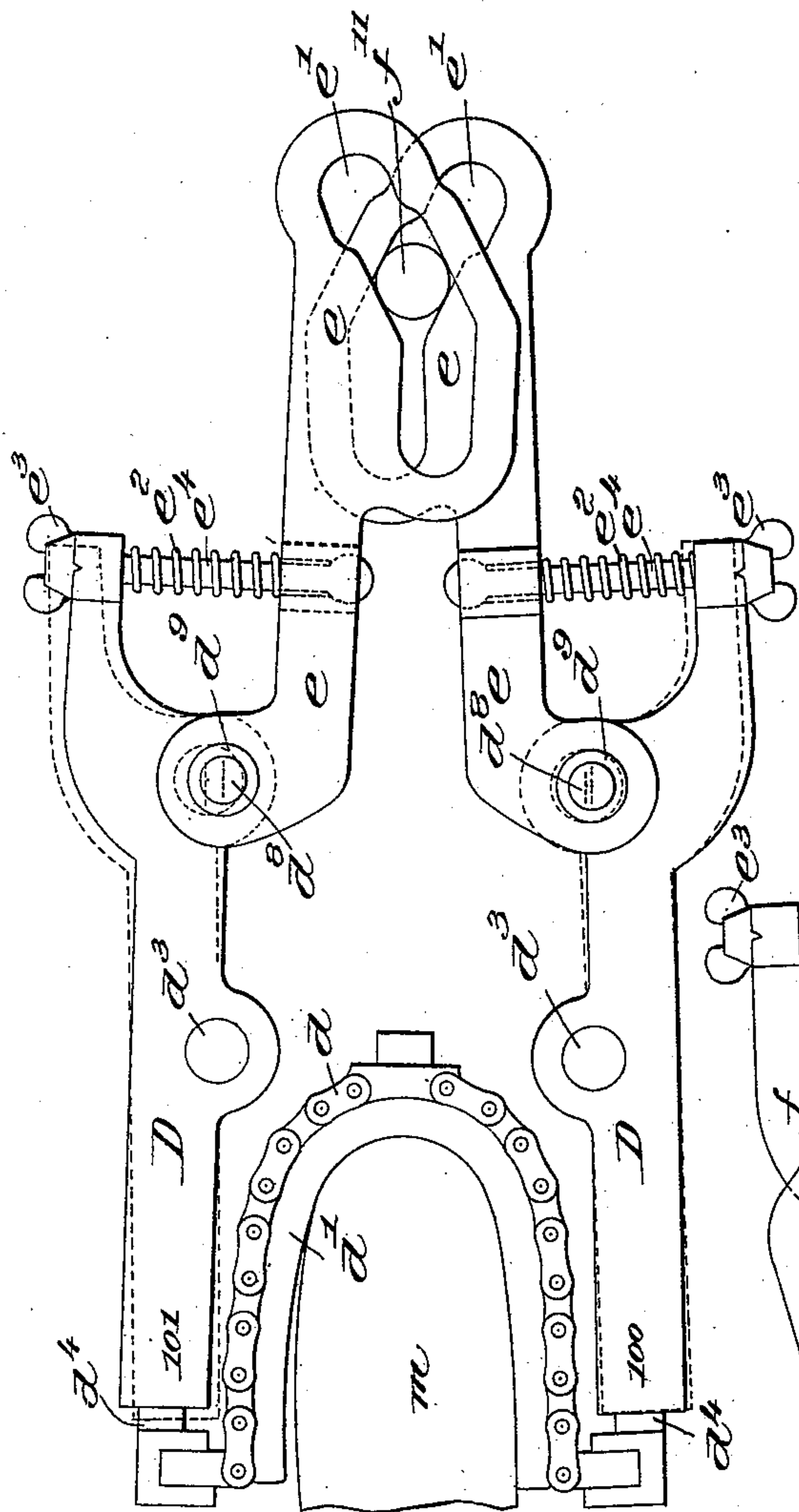


Fig: 7.

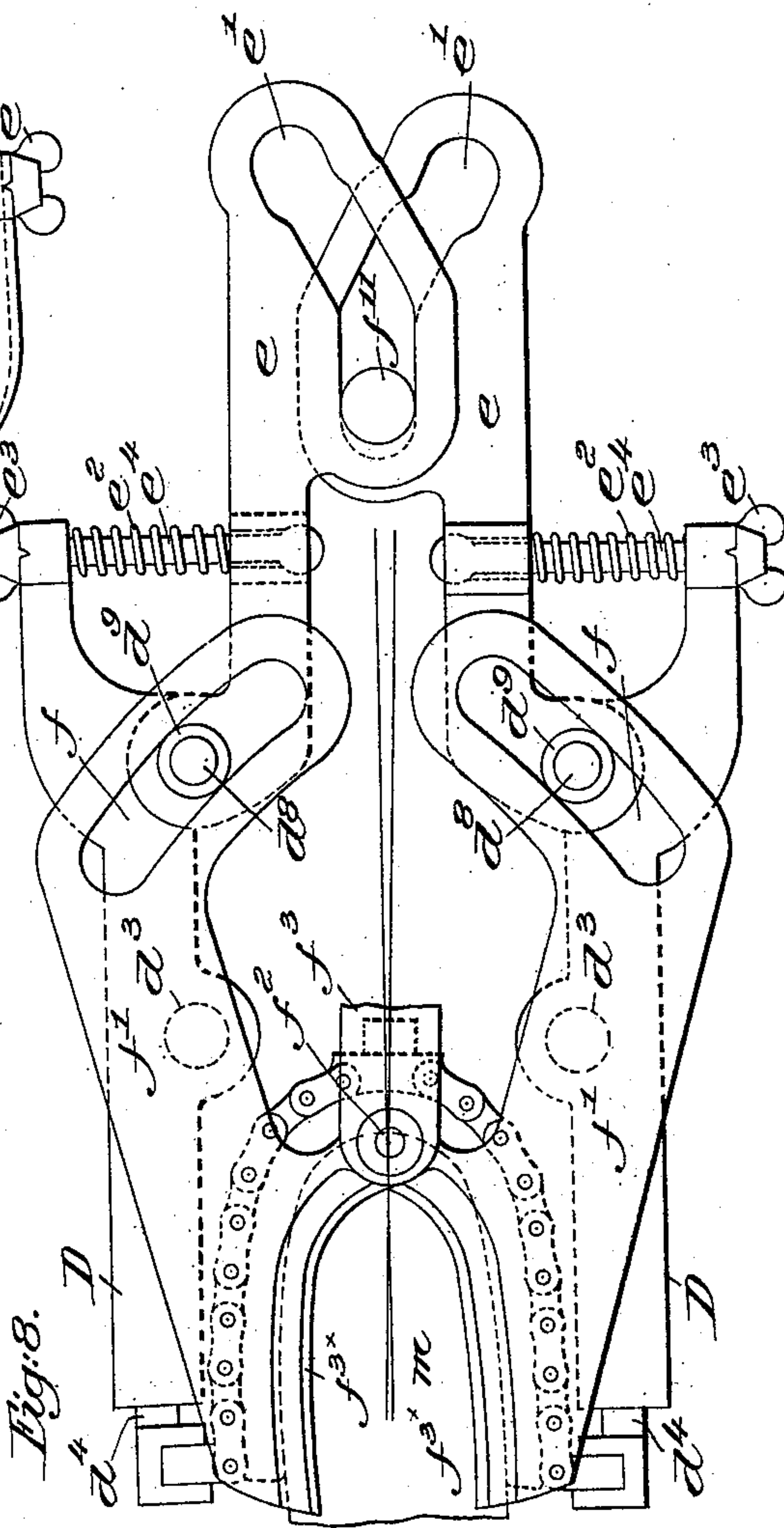


Fig: 8.

witnesses.

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UNITED STATES PATENT OFFICE.

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

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 601,935, dated April 5, 1898.

Application filed February 14, 1896. Serial No. 579,281. (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.

My invention relates to lasting-machines of what is known as the "plate" or "wiping" type, wherein the leather or other material is wiped over and upon the last and the inner sole thereupon, as distinguished from what is known as the "step-by-step" type of machine, having nippers or pincers to grasp the material and pull or stretch it over and about the last.

Lasting-machines of the former or plate type are usually provided with heel and toe wipers in the form of wiping-plates, which prior to my invention have, so far as I am aware, been given a fixed and uniform relative opening-and-closing movement—that is, said wipers always start from the same relative positions and move into the same relative positions regardless of the shape, size, or width of the last. If a wide last is used, it is evident the wipers in their closing movement will meet the leather earlier in their movement and will therefore when stopped in their final position be farther inwardly from the outside or periphery of the last than when a small or narrow last is used. In other words, the wipers when fully closed over a wide last will cover and conceal more of the last and the leather laid over and upon the same than when closed to the same relative positions over a small or narrow last.

Since the uppers or vamps of boots and shoes are usually cut in such proportion to the lasts upon which they are to be arranged as will allow for lapping the edges of said vamps always the same distance over and upon the bottoms of their respective lasts, usually about five-eighths of an inch, it will be clear that the wipers when fully closed over and beyond the inturned edge of the vamp on a wide last will have to be returned or "backed off" farther to expose sufficient leather to receive the

tacks than would be necessary with a narrow last.

As the lasts delivered to the operator of a lasting-machine are not of a uniform width, but always of constantly-varying widths, sizes, and shapes, the operator at the present time is required to spend much of his time in backing the wipers off and on and cannot be depended upon to always position them at the same distances in from the outside of the last, so that great lack of uniformity in the driving of the tacks is always found in practice. If the tacks are not driven uniformly in proper position, they will to a greater or less extent interfere with the subsequent sewing or nailing operations for securing the outer sole or heel in position.

The principal object of my invention is the production of a lasting-machine wherein the lasting devices, whether in the form of wiper-plates or otherwise and whether located at the heel, toe, or elsewhere, may be predeterminedly positioned at the same distance from the outside of the last whatever be the shape, size, or width of the last. While it is not essential that this positioning mechanism be automatic in its action, yet I prefer that it be automatic, and in the subsequent specification and in the drawings I shall illustrate my invention in connection with an automatic mechanism.

My invention further comprehends various novel features of construction and operation relating, among others, to a yielding end clasp for the boot or shoe, made to yield in order that it may adapt itself to various shapes or sizes of heels or toes—such, for instance, as a full-rounded heel or a narrow tapering heel—without prior manual adjustment by the operator.

For the sake of clearness and simplicity I will illustrate and disclose my invention in connection with the lasting devices for the heel end of a boot or shoe; but it is to be understood that my invention is not limited to such devices alone, but is applicable to any other of the lasting devices of a machine, as will be apparent to those skilled in the art.

In the drawings, Figure 1, in side elevation, shows a sufficient portion of a lasting-machine

embodying my invention to enable the latter to be understood, the hand-wheel and its shaft being broken away; Fig. 2, a top or plan view of the parts shown in Fig. 1 with the top plate removed; Fig. 3, a plan view and partial section of the parts shown in Fig. 2 with the top plate and wipers removed, said view showing what I term the "positioning" devices and means for actuating the same; Fig. 3^a, a vertical section on the dotted line $x x$, Fig. 1, looking to the right; Fig. 4, a detail in under side view showing the wipers and actuator therefor. Fig. 5 shows in perspective detail one of the positioning members; Fig. 6, a similar view of one of the levers for actuating the positioning member; Fig. 7, a diagrammatical view illustrating the operation of the positioning devices, and Fig. 8 a similar view illustrating the change in position of the wipers by the positioning devices.

In the embodiment of my invention selected for disclosure of the same and shown in the drawings, A is a part of the column of the well-known McKay-Copeland machine, or it may be a part of any other suitable or desired support, it being provided, as herein shown, with suitable guideways for the sliding carriage a , made longitudinally adjustable in said guideways by a suitable adjusting-screw a' , (shown in dotted lines, Fig. 1,) held against longitudinal movement at one end in the column and threaded to and in a stand b , bolted or otherwise secured to and movable with said carriage, said screw in the present instance being provided with a beveled pinion a^2 , in mesh with a bevel-wheel a^3 , fast on the hand-wheel shaft a^4 , journaled in suitable bearings on the column and provided at its end in position convenient for the operator with a usual hand-wheel a^5 . (See Fig. 2.)

The stand b , as herein shown, is provided with two vertically-extended arms horizontally slotted at their upper ends to receive the pivot-bolt b' , upon which between the said arms is pivoted the plate-holder b^2 , shown as slotted at its rear end at the right, Fig. 1, to receive the curved arm b^3 from the stand b , said arm b^3 being slotted, as at b^4 , to receive a pin b^5 on the plate-carrier b^2 , the latter being provided at its rear end with an upwardly-extended portion b^6 , provided with two rearwardly-extended ears b^7 , between which is pivoted on the bolt b^8 a nut b^9 , (see Fig. 2,) tapped to receive the threaded end of an adjusting-screw b^{10} , suitably connected at its lower end, as by a universal joint b^{11} , with a lug b^{12} on the curved arm b^3 of the stand. By means of the adjusting-screw b^{10} the inclination of the plate-holder b^2 and the parts carried thereby may be adjusted to meet varying springs of last in well-known manner.

The plate-holder b^2 at its opposite ends is provided with vertically-extended ears b^{13} b^{14} , (see Figs. 1 and 3,) to which is pivoted to rotate about a longitudinal axis the plate c ,

the pivot-pins passing through suitable ears $c' c^2$, rising from said plate.

The plate c (see Figs. 1, 3, and 3^a) is shown as yieldingly supported against rotation about its longitudinal axis referred to by suitable springs c^3 , interposed between the said plate at opposite sides its said axis and the plate-holder b^2 .

To the front of the ear c' of the plate c , Fig. 3, I have secured in suitable manner, as by a screw c^4 , the middle portion of the usual clasp-chain d , within which is arranged the flexible clasp d' , adapted to embrace the heel end of the last with the material thereupon.

The ends of the clasp-chain d , and therefore the ends of the clasp secured thereto, are connected in suitable manner, as by the pins d^2 , (shown in Fig. 3,) with the positioning devices $D D$, fulcrumed at d^3 upon the plate c , whereby the positioning devices, or either of them, in the present instance of my invention are operated or moved from and by the last through the medium of the heel-clasp d' and its supporting-chain.

As herein shown, the clasp-chain d is not rigidly connected with the positioning devices $D D$, but is connected at its opposite ends with the respective positioning devices through the medium of the sliding pins d^4 , which carry the pins d^2 referred to, and which are arranged to slide longitudinally in suitable sockets in the ends of said positioning devices, springs d^5 inserted between the bottoms of the said sockets and the ends of the respective pins acting to press the latter normally into their outermost positions limited by the stop-pins d^6 , passed through slots d^7 in the pins. When the clasp is moved forward in usual manner to embrace the heel end of the last with the leather or vamp thereupon, the springs d^5 , by pushing outwardly upon the ends of the clasp, draw the latter tightly about the narrowest or most-tapering form of heel; but should a last be encountered having a full rounded heel said springs will compress sufficiently to enable the heel-clasp to automatically conform to the fuller heel. A heel-clasp embodying my invention is therefore yielding—that is, capable of automatically adapting itself to full rounded or thin tapering heels without attention on the part of the operator.

The positioning devices D at the sides of their fulcrum opposite the points of connection with the heel-clasp have in the present instance of my invention jointed to them at d^8 one of the ends of the positioning-device-actuating levers $e e$, which (see Figs. 3 and 7) are provided with angular slots e' , (shown in dotted lines, Fig. 3, and in full lines, Fig. 7,) said slots e' having each a longitudinal portion adjacent the points of connection of said levers with the positioning devices and a rear angular portion connected therewith, the angular portions of the two slots being extended in opposite angular directions, as shown. Springs e^2 are shown interposed between the

actuating-levers e and their respective positioning devices D , (see Fig. 3,) the springs being limited in their movement by suitable thumb-nuts e^3 , threaded upon the ends of limiting-bolts e^4 , carried by the actuating-levers e and extended through portions of the positioning devices D .

The pivot-pins d^8 , by which the actuating-levers are connected with their respective positioning devices, are herein shown as vertically extended and provided with suitable rollers d^9 , which enter the cam-slots f , Fig. 2, in the wiper-plate carriers f' , jointed at f^2 to the common actuator f^3 , shown as a slide-bar, and provided at their inner ends with suitable wipers or wiper-plates f^{3x} , adjustably secured to their respective carriers by the adjusting-screws f^4 , passing through slots f^5 in the said carriers, although it is to be understood that it is within the province of my invention to form what I have denominated as the "wiper-plates" and their "carriers" integral instead of independent, as herein shown.

The slide-bar actuator f^3 is shown as held against lateral vibration or movement by a suitable guideway or recess in the under side of the top plate t , (see Fig. 3^a,) but is free to move longitudinally therein, said actuator at its rear end (see Fig. 2) being shown as slotted at f^{14} to receive the pin f^{15} , carried by the lever f^6 , fulcrumed at f^7 to the free end of a link f^8 , pivotally connected at f^9 to the plate c .

The hand-lever f^6 at its under side is shown as jointed by means of the pin f^{15} to one end of a short link of f^{10} , Fig. 3, the latter at its opposite end being provided with a downwardly-projecting roller-stud f^{11} , which enters the cam-slots e' in the levers e referred to, so that in the present instance of my invention the hand-lever f^6 constitutes the means for actuating not only the wipers, but also the positioning devices through the medium of their actuating-levers e referred to.

Referring now to Figs. 2, 3, 7, and 8, assuming the carriage a , carrying the operative parts described, to be in its rearmost position, a last m , upon which has been previously arranged a vamp or upper n for a boot or shoe, is placed upon the usual supporting-spindle m' , the operation of the machine being then as follows, viz: The operator by rotation of the hand-wheel a^5 moves the carriage a to the left in the drawings to carry the heel-clasp d' toward and to embrace the heel of the last with the vamp thereupon, said clasp operating, as described, to tightly embrace and adapt itself to the form of the heel of the last. The operator now draws the handle f^6 toward him in the direction of the arrow, Fig. 2, causing its pin f^{15} to travel for a short distance in the slot f^{14} of the wiper-actuator f^3 without moving the actuator or its wipers. During the time of this lost motion, however, the roller-stud f^{11} on the link f^{10} , connected with the hand-lever referred to, moves in the angular portions of the slots e' in the levers e and throws the latter out-

wardly, thereby acting through the springs e^2 to move the inner or free ends of the positioning devices, which are connected with the heel-clasp, inwardly toward the sides of the last to cause the said clasp to tightly embrace said last. If the heel-end of the last should by reason of its being a right or left last of extreme form stand with its median line in a considerable angular position, one end of the heel-clasp connected with one of the positioning devices—for instance, the lower one, (marked 100,) as in Fig. 7—will contact with one side of the last before the other end of the clasp and other positioning device (marked 101) reach the opposite side of the last, so that when one of the positioning devices 100 is thus stopped in its movement by contact with the last the stud f^{11} , following in the slot e' of the lever e of said positioning device and being unable to move it farther, will follow the path of said slot and thereby act through the slot e' of the other lever e to move said other lever and its connected positioning device 101 until the latter has been swung inwardly to meet the opposite side of the last, such position being indicated in dotted lines, Fig. 7. Thus it matters not what may be the angle of the median line of the last the positioning device which first strikes the last will be stopped and the other will continue to move until it also brings up against the opposite side of the last, thereby placing said positioning devices and their roller-studs d^9 in the same relative positions to their respective sides of the last and to the median line of the last, and since the positioning devices stop when and only when they meet the last they must position the roller-studs d^9 always the same distance from the sides of the last whatever the width of the latter.

Any movement of the hand-lever after both positioning devices meet the last acts equally upon and to press or clamp both positioning devices tightly against the sides of the last, and after the positioning devices have been tightly pressed against opposite sides of the last should the slots e' cause a further movement of their levers e such additional movement will be taken up by the springs e^2 without further moving the positioning devices.

The shifting of the positioning devices to adapt themselves to different angles of lasts acts through the roller-studs d^9 to automatically shift the wiper-plates also into positions in alinement with the median line of the last, so that they, as shown in Fig. 8, will move forward and back uniformly at opposite sides of the last.

During movement of the hand-lever to operate the positioning devices for shifting the wipers for rights and lefts, as described, the pin f^{15} reaches the end of the slot f^{14} in the wiper-actuator f^3 at or about the time the roller-stud f^{11} reaches and enters the longitudinal portions of the slots e' in the levers e , so that during further movement of the

said hand-lever, when the roller f^{11} traveling in the said longitudinal portions of the slots e' operates no longer to move the levers e , said pins f^{15} , acting against the end of the slot f^{14} , push the actuator f^3 in the direction of its length and toward the last to thereby impart to the wiper-carriers and their wipers a forward movement over the heel end of the last, said wipers as they are moved forward being given an inward or closing movement by the cam-slots f and roller-studs d^9 on the positioning devices to cause them to wipe or lay the edges of the vamp over and upon the last and the inner sole thereupon.

Since the starting positions of the wiper-carriers are in all cases fixed and determined by the positioning devices, to which they are connected by the roller-studs d^9 , and since the positioning devices when clamped against the sides of the last will of necessity assume always the same positions relatively to said last, the wiper-carrier and wiper must also be brought by the positioning devices always into the same positions relatively to the last, whatever be the width of the latter. In other words, the starting positions of the wipers and their carriers when considered with relation to the sides of the last are always the same, and since the wipers are, as has been stated, always moved the same distance from their starting positions—*i. e.*, since they always have, say, three-quarters ($\frac{3}{4}$) of an inch throw, whatever be the starting-point—it follows that starting from the same points outside a last and moving always a certain distance over and upon the last they will always move to a certain predeterminate position on the last.

If, for example, the wipers are given a movement such as will carry them three-eighths ($\frac{3}{8}$) of an inch over and upon a narrow last, since they start the same distance outside of a wide last they will move three-eighths ($\frac{3}{8}$) of an inch over and upon a wide last. Thus in the present embodiment of my invention the positioning devices by varying the starting positions of the wipers necessarily vary the limits of the inward or lasting movements thereof, and by thus varying the lasting movements of the wipers or lasting devices insure in advance—*i. e.*, predeterminately—the positioning of the said devices at the same distance inwardly from the sides of the last, whatever be the width of the latter, and this position or distance is nevertheless predeterminate, whether such position be regarded as the most inward position of the wipers or any intermediate position into which they may be moved or backed during the return movement of the wipers, for into whatever position they may be moved such position will always be the same relatively to the sides of the last for both wipers or lasting devices, and such position in each case is fixed in advance or predetermined by the positioning devices.

In lasting by machines of this type it is con-

sidered best in all cases that the wipers be first carried completely over and to conceal the overturned portion of the vamp in order to better lay and flatten the overturned edge upon the inner sole, the wipers being thereafter backed off or withdrawn sufficiently to expose the edge of the overturned vamp in order that the tacks may be driven through said smooth and flattened edge into the inner sole and last to hold the upper in its lasted condition. In my invention as herein embodied, to enable the wipers to be thus backed off or withdrawn without moving the hand-lever f^6 the entire length of the slot f^{14} in the actuator f^3 I have provided a suitable device, shown as a latch h , (see Fig. 2,) pivoted at h' to the actuator f^3 and provided at the outer edge of its free end with a toe h^2 and at an intermediate point at its outer edge with a projecting shoulder h^3 . (Shown in dotted lines, Fig. 4.)

The top plate t (see Fig. 4) is provided at its under side and adjacent the latch h with a depending projection h^4 , which, as the actuator f^3 is moved forward by the hand-lever, acts upon the inclined face of the toe h^2 of the latch and just before the end of the forward movement throws the said latch inwardly with its lug h^3 behind the pin f^{15} on the hand-lever, which pin during the latter part of the forward movement is in position against the left end of the slot f^{14} , Fig. 2, said latch thus holding the pin f^{15} at the left end of said slot, so that when it is desired to back off the wiper-plates return movement of the hand-lever in a direction opposite the arrow, Fig. 2, will act through the said latch to immediately withdraw the actuator and the wipers to any desired extent. During this return movement of the actuator the latch h is prevented from moving outwardly to its normal position, Fig. 4, to disengage the pin f^{15} by the inner wall of the depending lug h^4 on the top plate referred to, said lug being made of such length as to hold the latch in its position, confining the pin in the slot, as described, for a period of time sufficient to enable the plates to be backed off to the farthest extent needed. When, however, in this return or backing-off movement the toe on the latch clears the depending lug h^4 , the pressure of the pin f^{15} on the shoulder h^3 of said latch, which shoulder is preferably made rounded or beveled for the purpose, throws said latch back or outwardly into its normal position, thereby freeing the pin and permitting it to move to the opposite end of the slot f^{14} in the actuator, where it remains in position for further use. The positioning devices D shown in this embodiment of my invention perform two distinct functions—first, the shifting of the wiper-plates into proper angular positions to enable them to move uniformly inward from opposite sides of a last, whether it be a right or a left last, and, second, they determine the movement of said wiper-plates, so that they may be predeterminately posi-

tioned upon the last at the same distance from the outside or contour thereof whatever be the size or width of the last.

In the embodiment of my invention herein shown the positioning devices—that is, the means which determine in advance the subsequent movements of the wipers—are actuated in advance of and during the lost motion which precedes the movement of the hand-lever operating the wipers.

So far as known to me it is new in a lasting-machine to provide an operating member with connections between it and the lasting devices whereby initial movement of the operating member in one direction takes place without corresponding movement of the lasting devices, and initial movement of the operating member in the opposite direction causes corresponding movement of the lasting devices. This is particularly true when positioning means are employed, as hereinbefore disclosed.

It is obvious to those skilled in the art that my invention herein described as embodied in a mechanism for lasting the heel end of a shoe is equally applicable to the lasting devices employed at the toe end of the shoe, or, in fact, my invention as herein set forth may be applied to advantage in connection with any of the lasting devices employed in the machine.

My invention is not limited to the particular embodiment or construction herein shown, for it is evident the same may be varied without departing from the spirit and scope of my invention.

End lasting mechanism substantially identical with that herein shown and described is disclosed in another application filed by me May 24, 1897, Serial No. 637,850, which latter application contains claims which are generic to mechanisms having the capacity for automatic adjustment to meet variations in swing presented by the ends of lasts, whether rights or lefts.

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

1. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means acting automatically to cause said lasting devices in their lasting movement to stop always at substantially the same distance inwardly from the sides of the last, whatever be the size or width of the latter, substantially as described.

2. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means to place said lasting devices in starting positions substantially the same distance from the outside of said last, whatever the size or width of the latter, substantially as described.

3. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means cooperating with the last

or the material thereupon for automatically placing said lasting devices in starting positions at substantially the same distance from the outside of said last, whatever the size or width of the latter, substantially as described.

4. In a lasting-machine, the combination with lasting devices, and actuating means therefor, of means cooperating with the last or with the material thereupon to vary the inward limit of lasting movement of said lasting devices, substantially as described.

5. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means to predeterminately vary the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

6. In a lasting-machine, the combination with lasting devices of automatic limit-varying means for automatically varying the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

7. In a lasting-machine, the combination with lasting devices, of means cooperating with the side of the last or the material thereupon for predeterminately varying the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

8. In a lasting-machine, the combination with end lasting devices and means to shift the same laterally to meet right and left lasts, of means to predeterminately fix the limit of lasting movement of said lasting devices always at substantially the same distance inwardly from the outside of the last, whatever be the width of the latter, substantially as described.

9. In a lasting-machine, the combination with end lasting devices, means to shift the same laterally to meet right and left lasts and means to vertically adjust said lasting devices to meet the difference in spring of the lasts, of means to predeterminately fix the limit of lasting movement of said lasting devices always at substantially the same distance inwardly from the outside of the last, whatever be the width of the latter, substantially as described.

10. In a lasting-machine, the combination with lasting devices and positioning devices to vary the inward limit of lasting movement of said lasting devices, of means to successively operate said positioning devices and lasting devices, substantially as described.

11. In a lasting-machine, the combination with lasting devices and predeterminate positioning devices therefor, of a single operating member connected with and to successively operate said positioning and lasting devices, substantially as described.

12. In a lasting-machine, the combination with lasting devices and predeterminate positioning devices therefor, of a single operating member connected with and to operate both said positioning and lasting devices, and

furnishing a lost motion between the beginning of movement of the said operating member and the beginning of the movement of said lasting devices during which period said positioning devices are operated, substantially as described.

13. In a lasting-machine, the combination with the swinging wipers and actuating means to open and close the same, of positioning means coöperating with the last to swing the said wipers or either of them into starting position prior to movement of the same by said actuating means, substantially as described.

14. In a lasting-machine, the combination with swinging wipers, means to reciprocate the same and cam-surfaces thereon to open and close said wipers, of positioning means coöperating with said cam-surfaces to change the position of said wipers or either of them in addition to the change in position imparted thereto by said actuating means, substantially as described.

15. In a lasting-machine, the combination with the swinging wipers provided with cam-slots and means to reciprocate the same, of positioning devices coöperating with the sides of the last and provided with studs entering said cam-slots, substantially as described.

16. In a lasting-machine, the combination with the swinging wipers provided with cam-slots and means to reciprocate the same, of positioning devices provided with pins entering said slots, and means to move said positioning devices toward and from the sides of said last, substantially as described.

17. In a lasting-machine, the combination with lasting devices and an operating member therefor, of a positioning device connected with and to be moved by said operating member against the last, and a spring interposed between said operating member and positioning device to enable the latter to be moved after the former contacts with the last or the material thereupon, substantially as described.

18. In a lasting-machine, the combination with the swinging wipers provided with cam-slots, and a handle connected with and to reciprocate said wipers, of fulcrumed positioning devices provided with pins entering said cam-slots and operating-levers connected with said positioning devices, and themselves provided with cam-slots to be operated by said handle, substantially as described.

19. In a lasting-machine the combination with lasting devices and actuating means therefor of means for predeterminedly varying the movement of said lasting devices by said actuating means to cause said lasting devices to uniformly operate on lasts of varying width, substantially as described.

20. In a lasting-machine, the combination with lasting devices, of means for actuating the same, said means also acting to automatically vary the lasting movement of said last-

ing devices according to the width of the particular last used, substantially as described.

21. In a lasting-machine, the combination with end lasting devices made laterally adjustable to meet right and left lasts, vertically adjustable to meet different springs of last, and capable of rocking to adapt the same to the inclination of the last-bottom, of means to predeterminedly vary the limit of lasting movement of said lasting devices to meet varying widths or sizes of lasts, substantially as described.

22. In a lasting-machine, the combination with end lasting devices and a clasp, and means to shift the said lasting devices and clasp laterally to meet right and left lasts, of means to predeterminedly position said lasting devices at the same distance inwardly from the outside of said last, whatever be the size or width of the latter, substantially as described.

23. In a lasting-machine the combination with lasting devices, a clasp and means to open and close the same; both said lasting devices and clasp having the capacity of lateral shifting or adjustment to meet the varying swings of right or left lasts, of connecting devices between said lasting devices and said clasp whereby lateral shifting of one causes lateral shifting of the other substantially as described.

24. In a lasting-machine, the combination with lasting devices, and a yielding clasp capable of adapting itself to different shapes of lasts at the end thereof, of means to shift said yielding clasp laterally to meet right and left lasts, means to vertically adjust said clasp to meet different springs of lasts and to roll it to meet the angle due to the roll of the last, substantially as described.

25. In a lasting-machine, the combination with lasting devices, of a clasp and positioning devices coöperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of said last, whatever the size or width of the latter, substantially as described.

26. In a lasting-machine, the combination with the end lasting devices, of the positioning devices coöperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of the last whatever be the size or width of the latter, the chain connected therewith and the clasp arranged on said chain, substantially as described.

27. In a lasting-machine, the combination with end lasting devices, the positioning devices coöperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of the last whatever be the size or width of the latter, the chain yieldingly connected therewith and the clasp arranged on said chain, substantially as described.

28. In a lasting-machine, the combination with the swinging wipers, the reciprocating slotted actuator therefor, an operating-lever and a pin moving in said slot and operated
5 by said lever, combined with a latch adapted to hold said lever in position with said pin at one end the slot in said actuator, and means to release said latch, substantially as described.

10 29. In a lasting-machine, the combination with lasting devices, an operating member therefor, connections between said operating member and lasting devices, whereby initial movement of said operating member in one
15 direction takes place without corresponding movement of said lasting devices, and initial movement of said operating member in an opposite direction causes corresponding movement of said lasting devices.

20 30. In a lasting-machine, the combination with lasting devices, and positioning means therefor, an operating member, operating connections between the same and said lasting devices and positioning means, said operating
25 connections automatically causing movement

of said positioning means prior to lasting movement of said lasting devices on movement of said operating member in one direction, but not in an opposite direction.

31. In a lasting-machine, the combination 30 with lasting devices, and positioning means therefor, of an operating member, means connecting the said operating member with said lasting devices and positioning means, said connecting means causing initial movement 35 of said operating member first to operate said positioning means to position the lasting devices prior to effective lasting movement thereof, said connections thereafter connecting
40 said operating member and lasting devices whereby the latter are made directly responsive to the movements of said operating member.

In testimony whereof I have signed my name to this specification in the presence of 45 two subscribing witnesses.

MATTHIAS BROCK.

Witnesses:

FREDERICK L. EMERY,
GEO. W. GREGORY.