

No. 644,120.

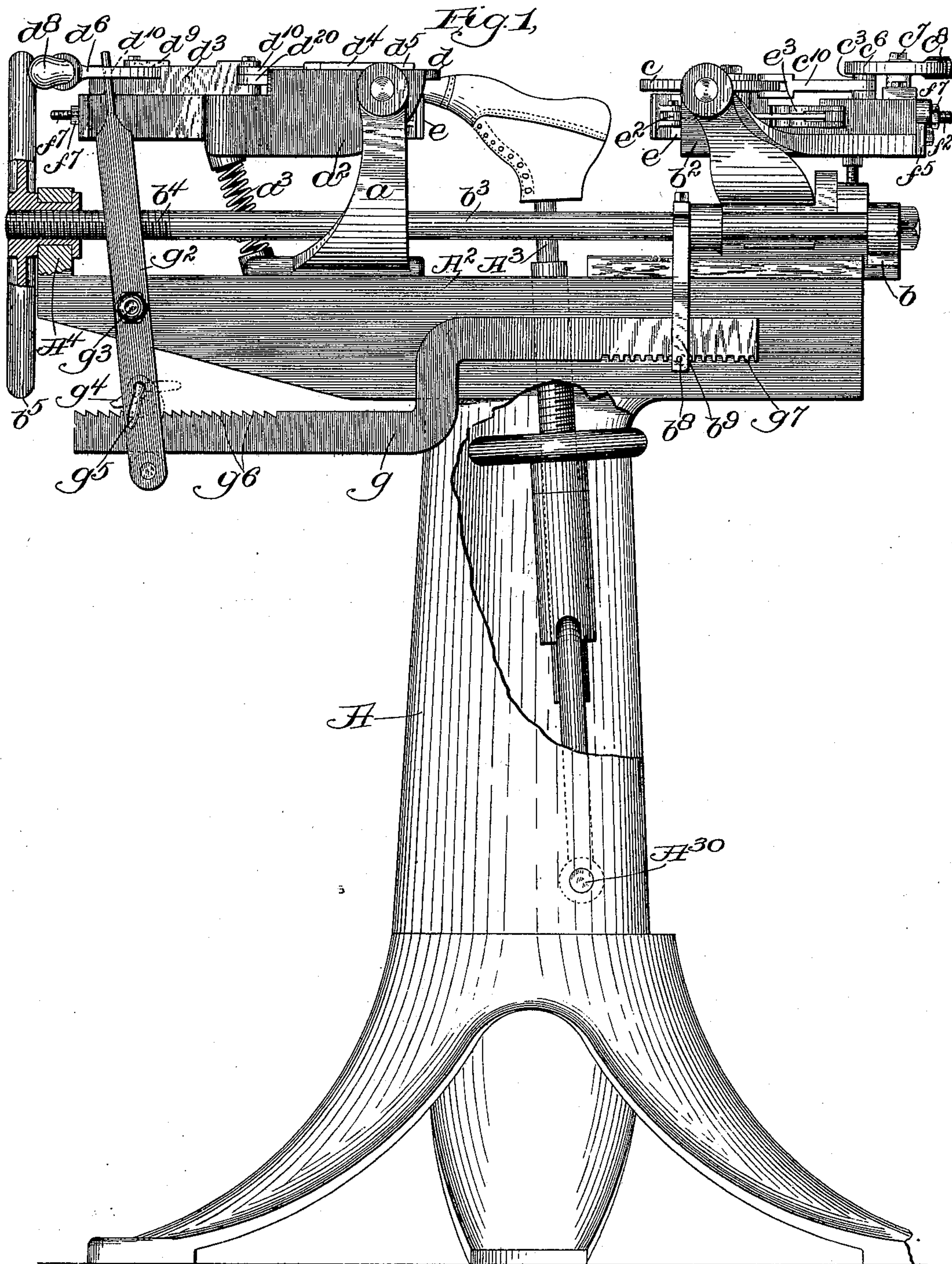
Patented Feb. 27, 1900.

E. WOODWARD.
LASTING MACHINE.

(Application filed Jan. 26, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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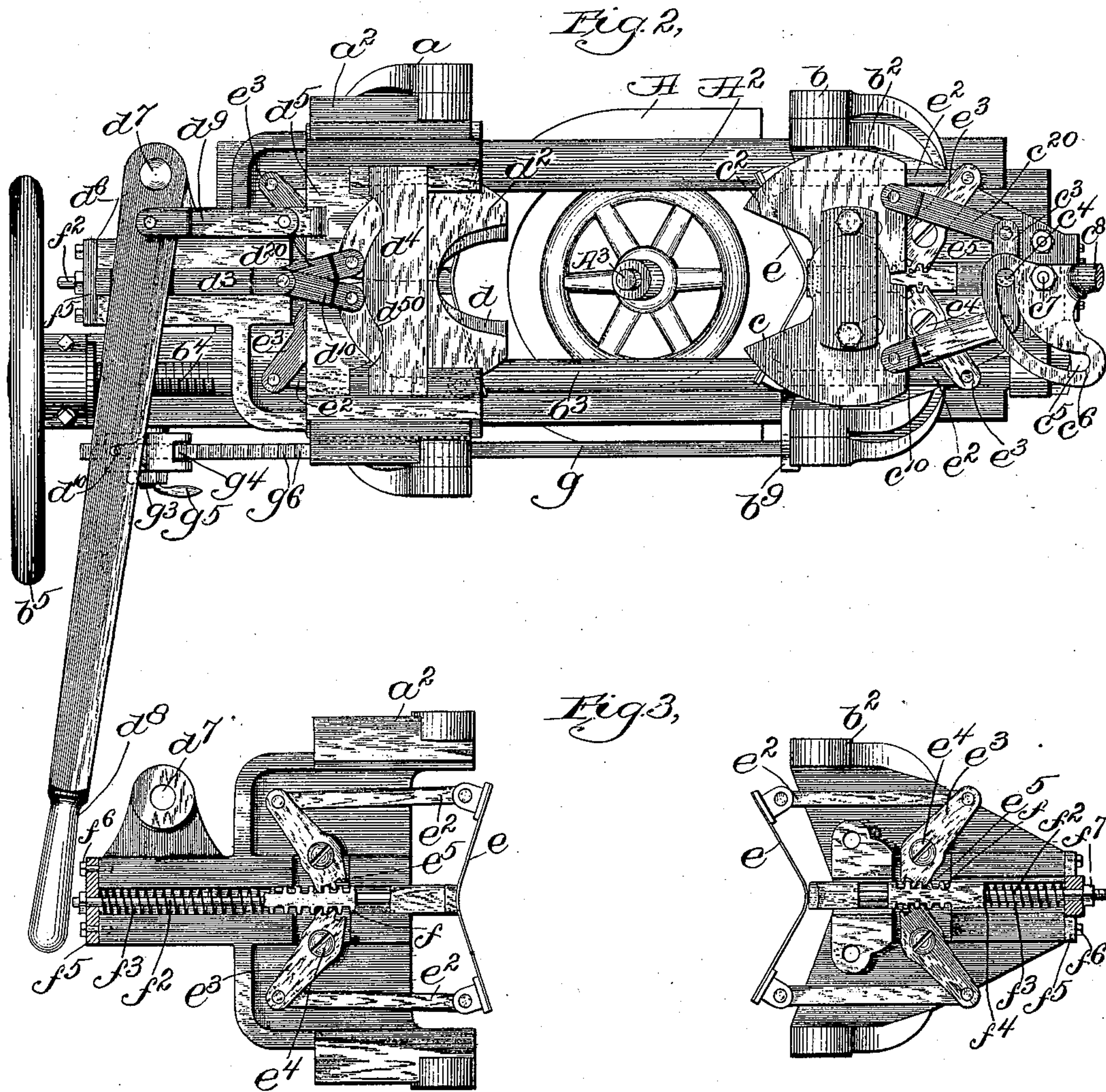
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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE CONSOLIDATED & MCKAY LASTING
MACHINE COMPANY.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 644,120, dated February 27, 1900.

Application filed January 26, 1898. Serial No. 668,001. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, of Somerville, county of Middlesex, and 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 on the drawings representing like parts.

10 The present invention relates to a lasting-machine, and is embodied mainly in a novel arrangement of the wiper-blocks, whereby the wipers will automatically conform to lasts of different pitch, the invention, however, 15 also relating to novel details of construction and arrangement, which will be more fully described hereinafter.

In accordance with the invention, the block for the toe-wipers is pivotally supported beyond the point where the wipers are first engaged by the last as the latter travels toward the same, whereby the said wipers can ride up the inclined surface of the last by the movement of the block on its pivot, so that 25 when the last is finally in operative position the wipers lie parallel to the surface of the last and in closing in are closely in contact therewith, so as to have a uniform operation on the leather along the sides of the last. 30 The said block is normally held in position by means of a spring or other yielding support, so that as the last approaches the block the throat of the wipers will first engage the leather at the toe and fold the same over in place, and riding up the last will position the block, as stated, to provide for the proper operation of the wipers when they are closed in. In substantially the same manner the block for the heel-wipers is adapted to be engaged by the back end of the last, which will tip the same on its pivot until the surface of the last is engaged by the wipers, which thus lie substantially parallel thereto.

The machine is shown as provided with 45 holding devices which are adapted to grip the upper along the sides of the last, the said holding devices comprising flexible strips of suitable material adapted to be engaged substantially at the middle thereof by the toe 50 and heel of the last, respectively, and being so arranged that as the wiper-blocks are drawn

together, bringing the middles of said holders into engagement with the last, the movement of said blocks will operate devices which mechanically close in the said holders 55 until they snugly grip the leather along the sides of the last. Thus in the operation of the machine when the last is jacked the heel-wiper block is drawn toward the toe-wiper block by suitable appliances, and in the movement thereof the holding devices are closed in along the sides of the vamp, and the extreme toe and heel portions are wiped into place, while the wiper-blocks are brought to the proper position to complete the lasting 65 operation by closing in the wipers, which may be accomplished by separate actuating devices.

The machine is further provided with means whereby the wiper-actuating devices can be 70 connected at the proper time in the operation with the appliances for drawing the wiper-blocks into position, so that the final positioning of the said blocks will also cause the closing in of the wipers. The connection, 75 however, is so arranged as not to interfere with the manual operation of the wipers, so that the said wipers can be independently manually operated, if desired, after the initial closure thereof, which is accomplished 80 automatically.

Figure 1 is a side elevation of a machine embodying the invention; Fig. 2, a top plan view of the same; and Fig. 3 a plan view of the mechanism which operates the holding devices, the wipers and their operating mechanism being removed to show the devices aforesaid, which lie underneath the same. 85

The operative parts of the machine are herein shown as mounted on a standard A, having at the top a bed-plate A², upon which is supported the carriage b for the heel-wiper block b² and the posts a, to which is pivoted the toe-wiper block a². The said standard is shown as also affording a support for the jack 95 A³ for the last, the said jack being vertically adjustable in any suitable or usual way, as indicated, and so positioned that it will engage the under surface of the wipers supported on the blocks a² and b² when one of 100 said blocks is moved toward the other.

In jacking a last the same is placed, as

shown in Fig. 1, with the toe portion thereof close to the toe-wiper block a^2 , and the carriage b , which carries the heel-wipers, is caused to travel toward the heel of the last in the operation of the machine. The jack is shown as pivoted at A^{30} , so that the carriage aforesaid will push the last toward the toe-wiper block. To produce the movement of the heel-wiper carriage, the same is shown as provided with a longitudinal rod b^3 , provided at its end with a screw-thread b^4 , coöperating with a female thread in the hub of a hand-wheel b^5 , which is provided with a bearing in an upwardly-extending lug A^4 from the bed-plate A^2 , so that the turning of the said hand-wheel will produce a longitudinal movement of said rod b^3 and the carriage b . After the last is jacked the hand-wheel b^5 is turned, drawing the carriage b toward the heel of the last until the said heel is engaged thereby and the toe portion of the last moved forward into engagement with the toe-wipers, the heel-wipers c c^2 and the toe-wipers d d^2 engaging the leather at the ends of the last and turning the same over into position. The wiper-block a^2 , as has been stated, has a pivotal support beyond the wipers in the direction of movement of the last, so that as the toe of the last engages with the wipers it will tend to tip the said block more or less, in accordance with the pitch of the last, the said wipers conforming to the pitch or slope and as they close in fitting snugly along the surface of the last throughout their entire extent. The movement of the carriage b also causes the operation of the holders e to engage and hold the sides of the vamp along the sides of the last. There are two of such holders e , one for each end of the shoe, the said holders consisting of flexible straps adapted to be engaged substantially at the middle by the heel and toe ends of the last, respectively, and in the further travel of the carriage b to close in until they engage the upper along the sides of the last, so that when the carriage b has been moved into position preparatory to the final operation of the wipers the said holders will lie in contact with the leather at the sides of the last and hold the same snugly in position. To produce such operation, the said straps e are connected at their ends by links e^2 with arms e^3 , pivoted at e^4 to the blocks a^2 and b^2 , respectively, so that as the said arms are moved on their pivots the ends of the straps e will be pressed toward the middle of the last, thus causing the strap which is engaged at its middle by the end of the last to embrace the said last and snugly conform thereto. To produce such movement of the arms e^3 , the said arms are shown as provided with teeth e^5 , adapted to engage with corresponding teeth f upon a longitudinal movable rod f^2 , which is adapted to be moved in response to the closing together of the wiper-blocks, the said rod being herein shown as in contact with the straps e , so that as the said straps engage the last a longitudinal

movement of the rods f^2 with relation to the blocks a and b will be produced, causing the holders e to close in, as above described. 70

The construction of the holders e and their actuating devices is best shown in Fig. 3, the rods f^2 being shown as each provided with a restoring-spring f^3 , which tends to hold it in the normal position, with the holders e open, 75 so as to readily receive the last. As herein shown, the spring f^3 bears at one end against the shoulder f^4 , formed on the rod f^2 , and at the other end against the cap f^5 , secured, as by cap-screws f^6 , to the end of the wiper-block b^2 , the end of the rod projecting through the said cap f^5 and having a threaded end, upon which is secured a nut f^7 , which constitutes a stop to prevent the rod f^2 from moving forward beyond its proper normal position and also affords means for adjusting or 85 varying such normal initial position of said rod. The holders e and their actuating devices are substantially the same for both the toe and heel ends of the last, and while the adjustments are slightly different the same letters of reference have been given to both holders and the parts connected therewith in order to simplify the description. 90

To hold the block a^2 normally substantially 95 level, the rear end of said block is shown as yieldingly supported, as by the spring a^3 , the stress of which is merely sufficient to support the weight of the body of the block without affording any substantial resistance to the 100 movement thereof in conformity with the pitch of the last as the same moves into contact with the wipers d d^2 .

After jacking the last, as has been stated, the operator turns the hand-wheel b^5 , drawing the carriage b toward the heel of the last and moving the last itself into engagement with the wipers d and d^2 , this operation being continued until the holders e have been moved by the coöperation of the heel and toe of the 110 last with the rods f^2 into their operative position, so that the upper is snugly held against the sides of the last throughout. The same movement carries the blocks a^2 and b^2 to the proper position with relation to the last and 115 forces the toe and heel ends thereof under the throat portions of the wipers, smoothing the leather into place at the toe and heel. The machine is then ready for the final operation, which consists in closing in the wipers, 120 the heel-wipers c and c^2 being shown as connected by links c^{10} and c^{20} with a cross-head c^3 , having a stud c^4 , projecting into a cam-slot c^5 in a portion of the lever c^6 , pivoted at c^7 and having an arm c^8 for actuating the same, 125 the said arm c^8 being herein only partially shown, since the operation thereof is obvious.

The toe-wipers d and d^2 are similarly connected by links d^{10} and d^{20} with a longitudinally-movable rod d^3 and are shown as held 130 in position by a plate d^4 , which overlies the surface of the said wipers and is connected to a carriage d^5 , upon which the said wipers are mounted, the said carriage being longitudi-

nally movable in the wiper-block a^2 , which is provided, as shown in Fig. 2, with suitable guides therefor. The said plate d^4 is shown as provided with a curved engaging surface d^{50} , which is adapted to engage the ends of the links d^{10} and d^{20} , so that the longitudinal movement of the rod d^3 will separate the said links and throw the ends of the wipers d and d^2 toward each other to wipe in the leather along the edges of the last. The construction and arrangement of the wiper mechanism, however, is not material to the invention and may be varied or departed from at will without departing from the invention.

To operate the toe-wipers, the arm d^3 is shown as adapted to cooperate with a lever d^6 , pivoted at d^7 upon a portion of the wiper-block a^2 , the said lever being shown as provided with a handle d^8 , adapted to be operated by the attendant. The said lever is also shown as connected by a link d^9 with the independent carriage d^5 for the wipers, the connection between the link d^9 and the said lever being nearer the center thereof than is the connection between the lever and the rod d^3 , so that in the movement of the said lever the said rod d^3 will travel a greater distance than that traveled by the link aforesaid. In the movement of the lever, therefore, the wipers as a whole will be moved toward the last through a slight distance, thus completing the operation of lasting the extreme toe portion, and at the same time will be closed in to operate upon the leather along the side edges of the last.

In accordance with the present invention the wiping operation at the toe portion of the shoe is adapted to be automatically accomplished in response to the initial operation of the machine—viz., that of bringing the heel-wiper block toward the toe-wiper block to properly position and hold the last prior to the final wiping operation. To this end, the rod b^3 is shown as connected by means of a connecting-piece g with a lever g^2 , pivoted at g^3 upon a portion of the bed-plate A^2 and adapted to engage with the lever d^6 , being herein shown as projecting upward through an opening d^{10} in said lever, so that the longitudinal movement of the rod b^3 is transmitted to the lever d^6 and through the same to the toe-wipers. In order, however, that the said toe-wipers may not be prematurely operated, and also to afford means whereby they may be independently manually operated, the said connecting-piece g is adapted to be connected to and disconnected from the lever d^6 at will, the lever g^2 being herein shown as provided with a pawl g^4 , having a handle g^5 , the said pawl being adapted to cooperate with ratchet-teeth g^6 , formed on the connecting-piece g , so that when the said pawl is in the position shown in dotted lines, Fig. 1, the movement of the connecting-piece g will be transmitted to the lever d^6 , and when the said pawl is thrown to the full-line position the said piece g will be capable of moving inde-

pendently. In the operation of the machine, therefore, the pawl g^4 will be thrown out of engagement with the teeth g^6 and the hand-wheel b^5 turned until the wiper-blocks are nearly in their proper position for operation and the holders forced into engagement with the sides of the welt, and at this period the pawl is thrown into engagement with the teeth g^6 , so that in the final movement of the hand-wheel the last is carried to its final position and the toe-wipers closed in over the toe of the last. To finish the operation, therefore, nothing then remains but to operate the heel-wipers, which can be accomplished as hereinbefore described. After the operation is thus completed, however, if the operator desires to examine the toe portion of the shoe it is obvious that by throwing the pawl g^4 out of engagement with the teeth g^6 he can open the wipers to examine the toe and close the same, repeating the operation if necessary.

As herein shown, the connecting mechanism between the heel-wiper-carriage actuator and the toe-wipers is so arranged that a primary or initial adjustment can be effected, if desired, the connecting-piece g being shown as provided with a series of teeth g^7 , adapted to engage with a cross-pin b^8 in a yoke b^9 , which is connected with the rod b^3 and which affords the means for connecting the same through the connecting-piece g with the lever d^6 .

It is not intended to limit the invention to the specific construction herein shown and described, since modifications may obviously be made without departing from the invention.

I claim—

1. In a lasting-machine, the combination with the heel and toe wipers, of a wiper-block for each set of wipers means for yieldingly holding said block in a predetermined normal position, and a jack for the last so positioned that said last will longitudinally engage the undersurface of the wipers and cause the said wiper-block to tip, whereby the said block is free to move in response to the engagement of the wipers and the last, substantially as described.

2. In a lasting-machine, the combination with the heel-wiper block and the toe-wiper block and means for moving one of said blocks toward the other to bring the said blocks respectively adjacent to the toe and heel ends of the last, of a pivotal support for each block beyond the point at which the wipers first engage the surface of the last, and a jack for the last so positioned that said last will longitudinally engage the under surface of the wipers and cause the said wiper-blocks to tip, substantially as described.

3. In a lasting-machine, the combination with a toe-wiper block; of the toe-wipers thereon and means for closing the same; a pivotal support for said toe-wiper block beyond the point at which the said wipers are first engaged by the last, the said block be-

ing yieldingly held in a predetermined position upon said pivotal support; a heel-wiper block; means for moving said heel-wiper block toward the toe-wiper block to force the last into engagement with the same; and a jack for the last so positioned that said last will longitudinally engage the under surfaces of the wipers and cause the said wiper-blocks to tip, substantially as described.

4. In a lasting-machine, the combination with the heel and toe wipers; of pivotally-supported wiper-blocks therefor; a jack for the last so positioned that the said last will engage the under surfaces of the wipers and cause the said wiper-blocks to tip; means for bringing together said jack and wipers whereby the wipers are caused to ride along the inclined surfaces of the last until they are brought to a position to operate on an upper on the last; and an actuating device for the wipers adapted to cooperate with the means aforesaid for bringing together the jack and wipers, as set forth.

5. In a lasting-machine, the combination with a jack for the last, of the wipers, mechanism whereby said jack and wipers are brought together so that the latter are in position to operate on the upper on a jacked last, an actuating device for closing in the wipers, and means for connecting said actuating device with the mechanism aforesaid, or disconnecting it therefrom, at any point in the operation of said actuating device whereby said wipers may be automatically or manually operated, substantially as described.

6. In a lasting-machine, the combination with the toe-wiper block, of the toe-wipers thereon and means for operating the same, a pivotal support for said toe-wiper block beyond the point at which the said wipers are first engaged by the last, a jack for the last so positioned that said last will longitudinally engage the under surface of the wipers and cause the said wiper-block to tip, a heel-wiper block, means for moving said heel-wiper block

toward the toe-wiper block to force the last into engagement with the latter, and means for closing in the toe-wipers in response to the movement of the heel-wiper block aforesaid, substantially as described.

7. In a lasting-machine, the combination with the pivotally-supported toe-wiper block; of the toe-wipers thereof and means for operating the same; the pivotally-supported heel-wiper block; the jack for the last so positioned that the said last will engage the under surfaces of the wipers and cause the said wiper-blocks to tip; means for moving said heel-wiper block toward the toe-wiper block to force the last into engagement with the said toe-wiper block; and an adjustable connecting device whereby the movement of the heel-wiper block may be transmitted to the toe-wipers, as set forth.

8. The combination with the toe-wipers; of the toe-wiper block; a carriage for said toe-wipers supported upon said block; and an actuating-lever for said carriage and wipers fulcrumed on said block, the point of connection between the said lever and said carriage being nearer the fulcrum of the lever than the point of connection between the lever and the wipers, substantially as and for the purpose described.

9. The combination with the toe-wipers; of an actuating-lever therefor; the heel-wipers; the movable heel-wiper carriage; means for moving said carriage toward the toe-wipers; a rod adjustably connected with said carriage; and a device for connecting said rod with the toe-wiper-actuating lever at any point in the movement of said rod.

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

ERASTUS WOODWARD.

Witnesses:

H. J. LIVERMORE,
JAS. J. MALONEY.