(No Model.)

3 Sheets—Sheet 1.

I. FRÉCHETTE.

LASTING MACHINE.

No. 567,566. Patented Sept. 8, 1896.

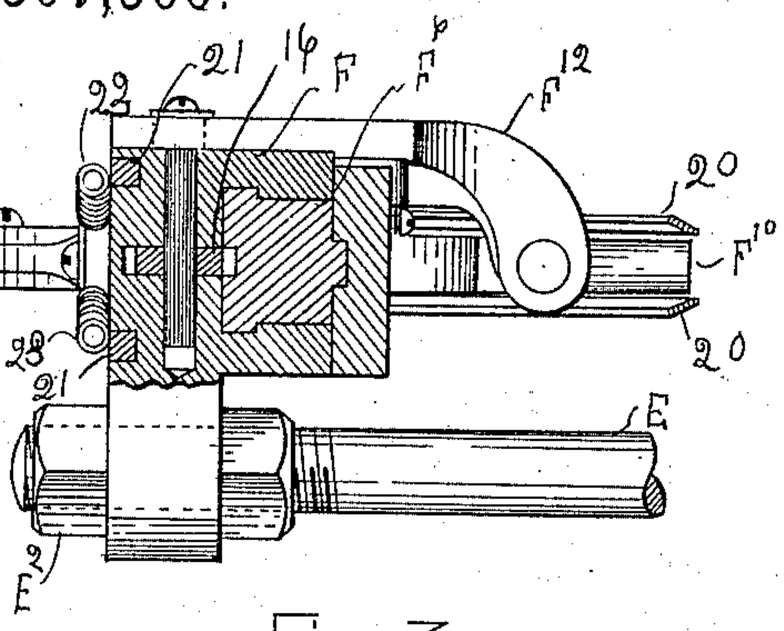

Fig. 3

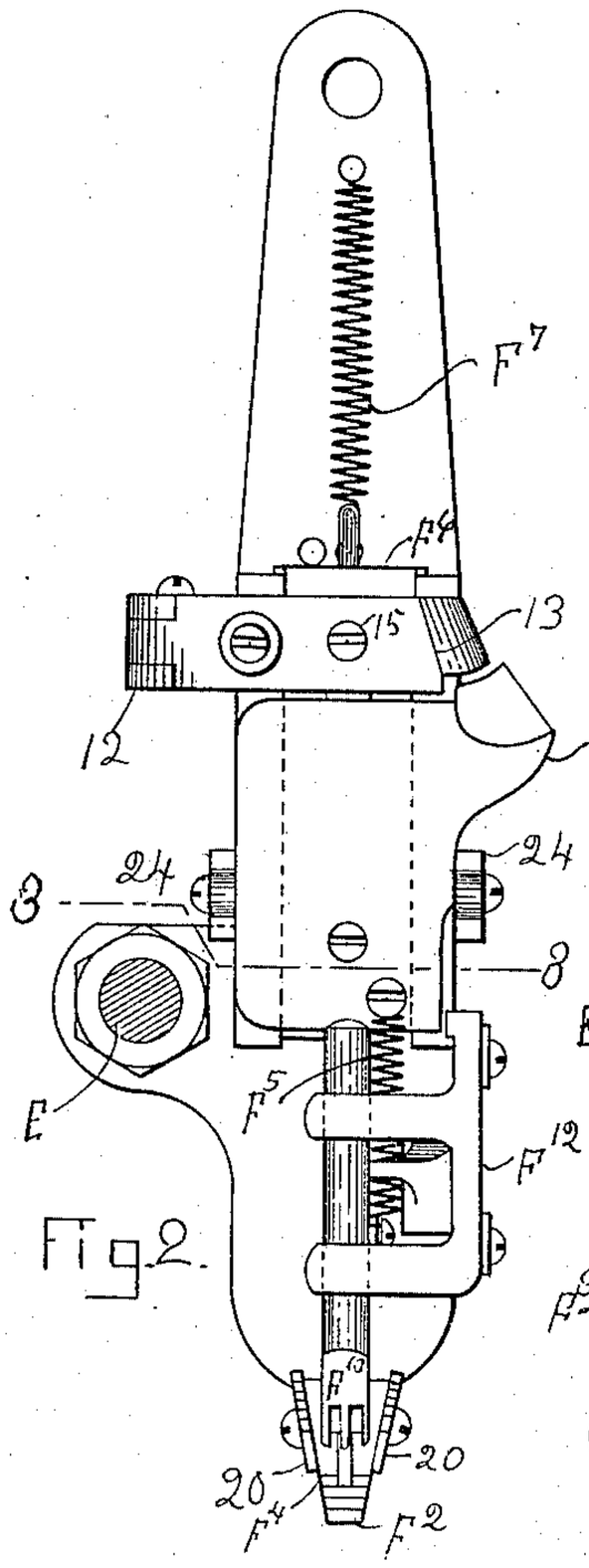

Fig. 2.

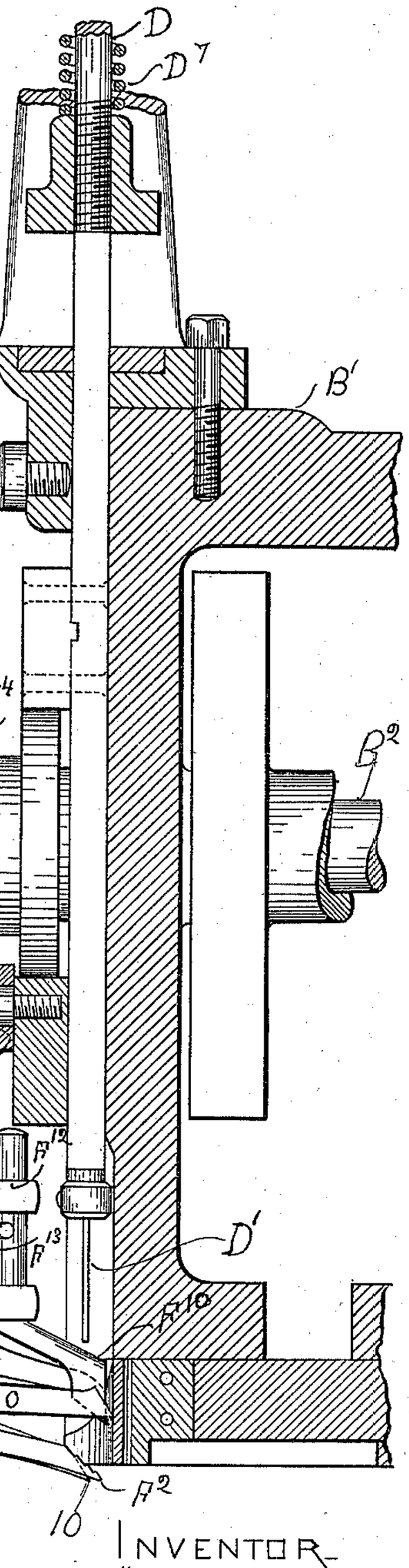

Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

I. FRÉCHETTE.

LASTING MACHINE.

No. 567,566. Patented Sept. 8, 1896.

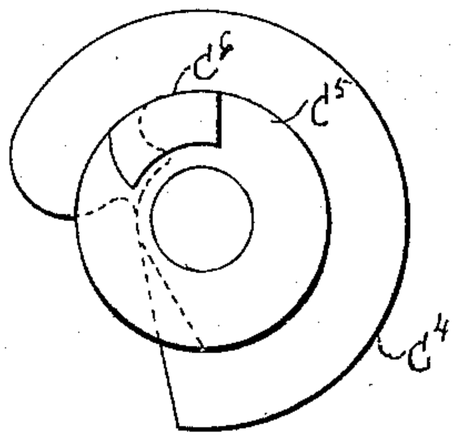

Fig. 8.

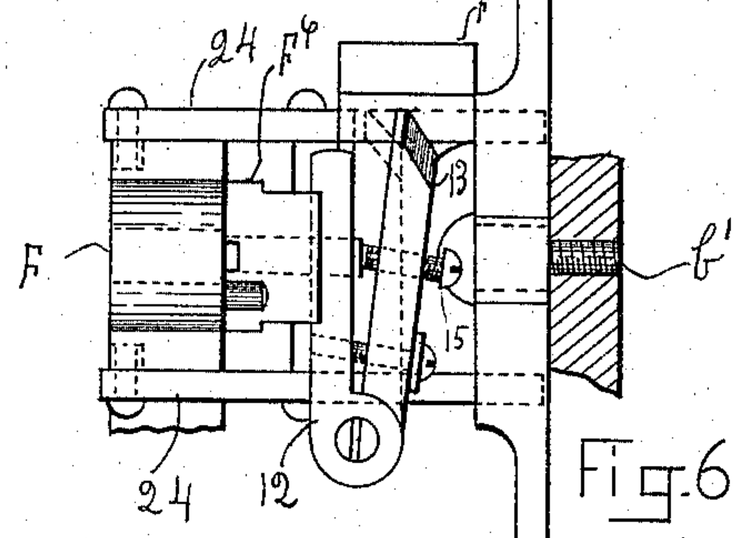

Fig. 6.

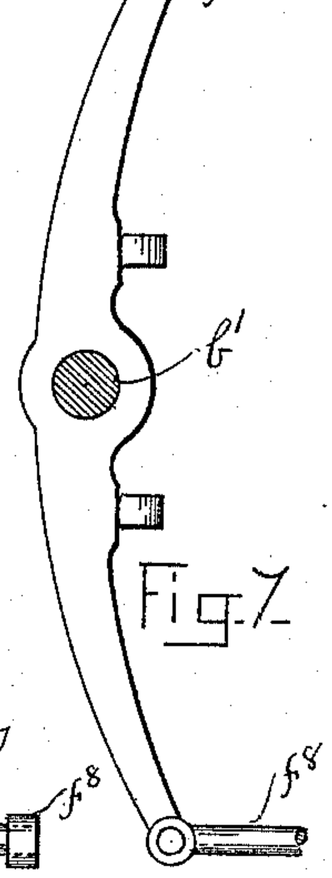

Fig. 7.

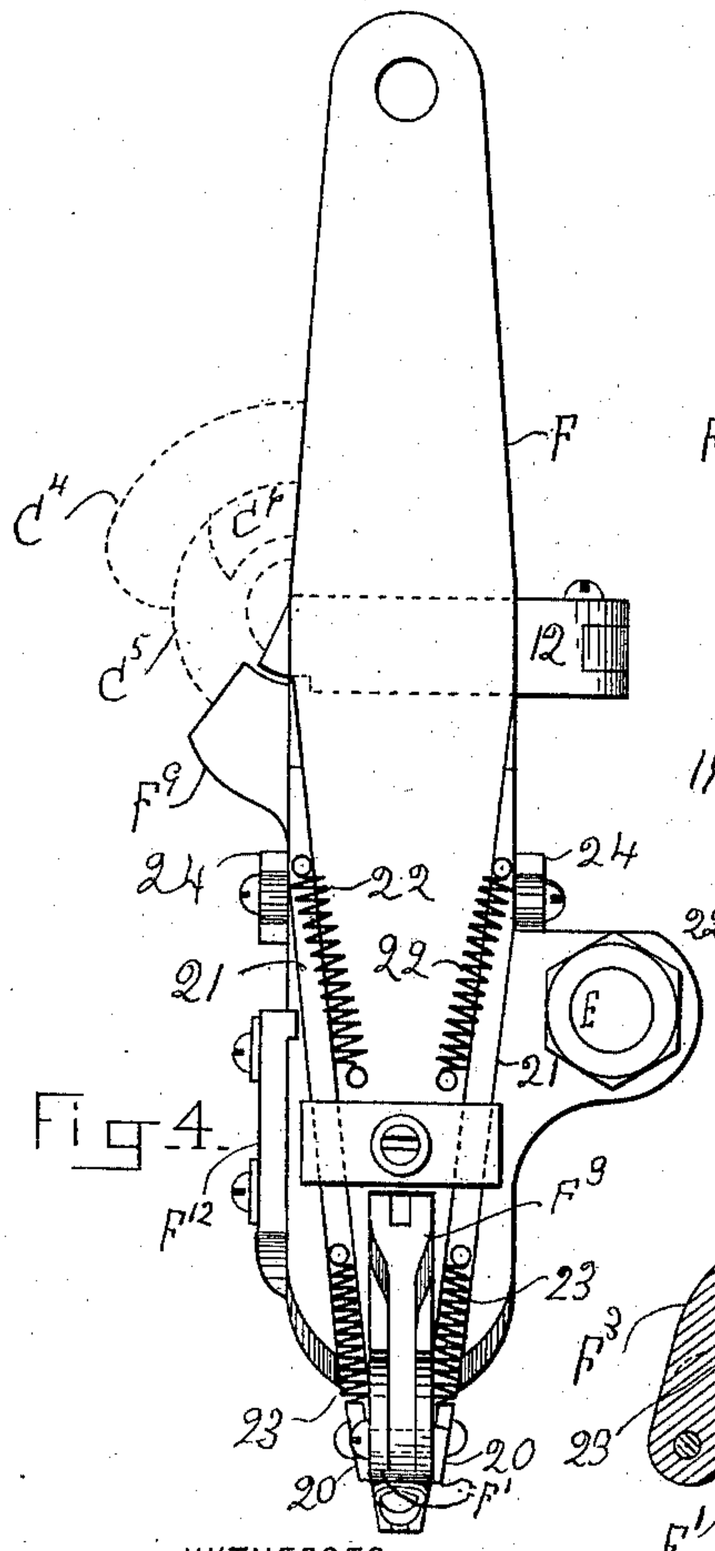

Fig. 4.

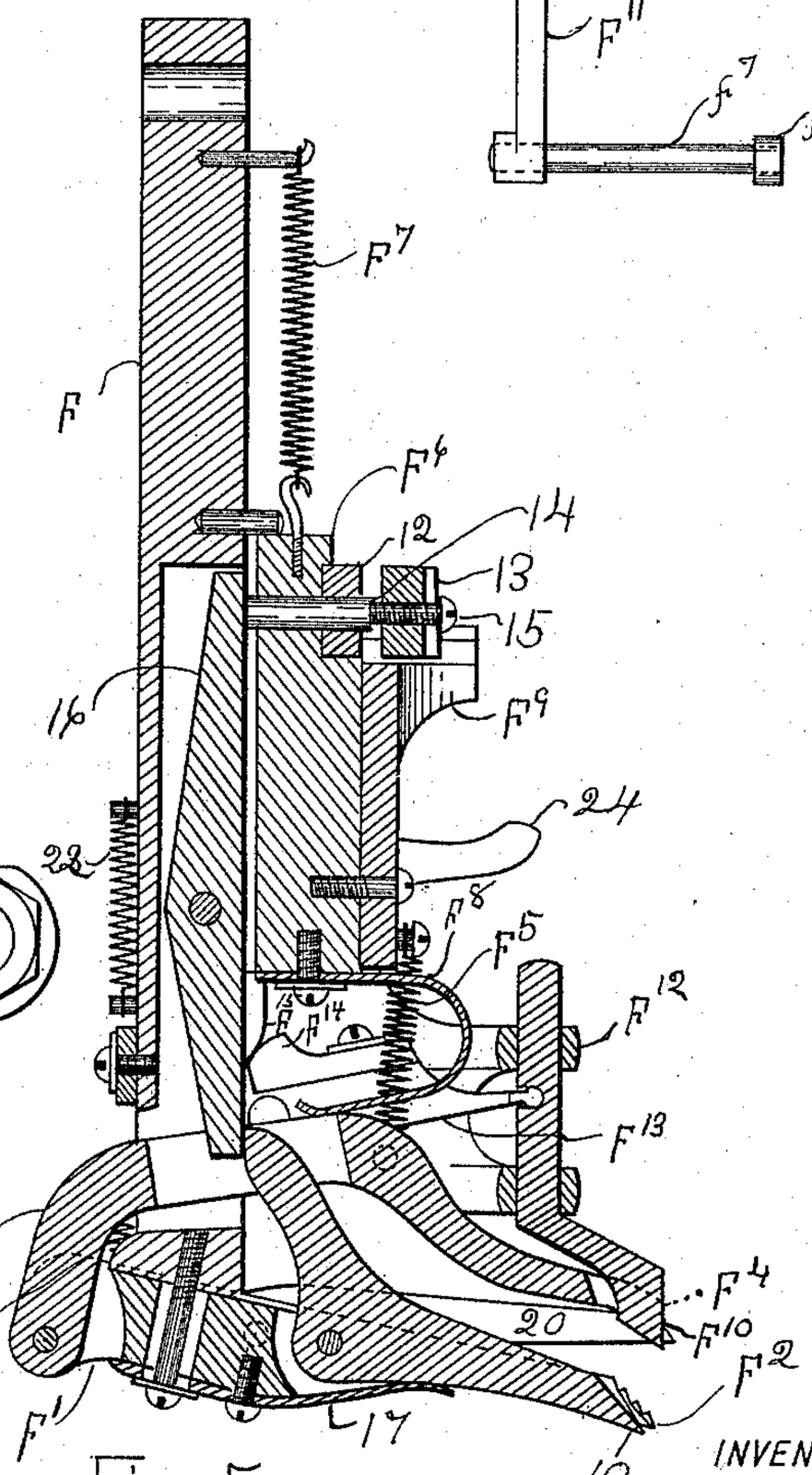

Fig. 5.

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(No Model.) 3 Sheets—Sheet 3.

I. FRÉCHETTE.

LASTING MACHINE.

No. 567,566. Patented Sept. 8, 1896.

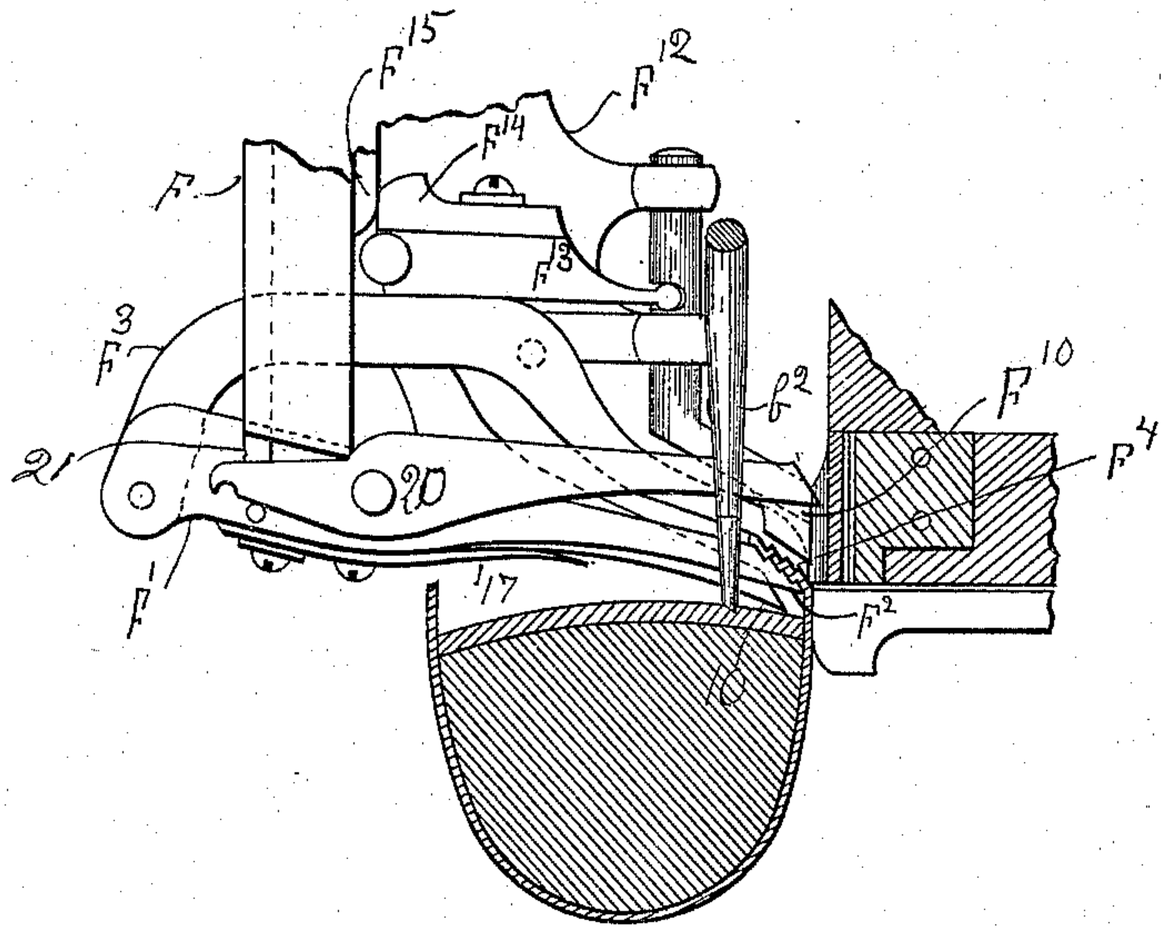

Fig. 9.

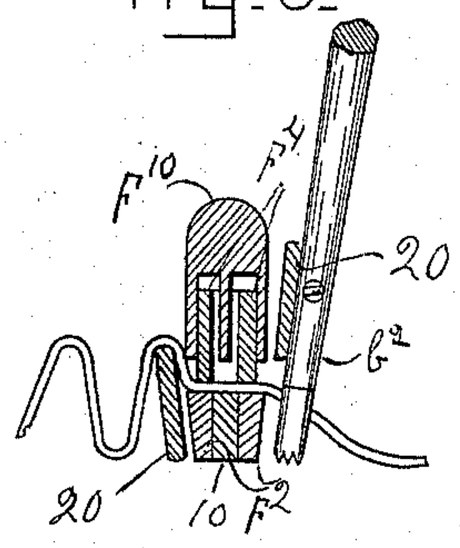

Fig. 10.

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UNITED STATES PATENT OFFICE.

ISAÏE FRÉCHETTE, OF MONTREAL, CANADA, ASSIGNOR TO THE CONSOLIDATED HAND METHOD LASTING MACHINE COMPANY, OF NASHUA, NEW HAMPSHIRE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,566, dated September 8, 1896.

Application filed October 2, 1893. Serial No. 486,931. (No model.)

To all whom it may concern:

Be it known that I, ISAÏE FRÉCHETTE, of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain Improvements in Lasting-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to lasting-machines. It is an improvement on that class of machines in which the last is held in the hands of the operator while the upper is drawn and held by a pair of pincers, said pincers operating successively on different parts of the upper, as in lasting by hand. More specifically, it is an improvement on the machine described originally in Letters Patent of the United States of America No. 482,349. It pertains to improvements in the pincers mechanism, in the mechanism for plaiting the upper, and in mechanism coöperating with the pincers for stretching the upper over the last, and to other features of construction, all of which will be more specifically described and claimed hereinafter.

This invention will be represented and described in the present instance as forming a component part of the machine originally described in said Letters Patent No. 482,349, and only so much of the mechanism will be described and represented in the drawings as is considered necessary for an understanding of the parts comprising this invention and its combination with the other coöperating parts of said machine. For a complete understanding of the mechanism herein described reference is had to said Letters Patent No. 482,349. It may be here stated that the shoe is prepared for lasting by first putting the upper onto the last, drawing it over at the toe, and preferably at the sides also, and there securing it to the inner sole by tacks or other fastening devices. It is then taken in hand by the operator and held up to the machine in position for commencing the work. A single pair of pincers is employed and the last is supported, moved, and turned by the hands of the workman, as required, in order to present successive portions of the upper to the action of the pincers. For convenience the last as hereinafter employed will be made to include the upper and inner sole.

In the accompanying drawings, Figure 1 is a side elevation of the mechanism embodying this invention and a section of the machine to which it is applied, the machine portion being represented in sections to better illustrate matters of combination. Fig. 2 represents the mechanism comprising this invention detached from the machine proper, and is an elevation looking from the rear. Fig. 3 is a plan of a section on line 3 3 of Fig. 2 Fig. 4 is a front elevation of the mechanism shown in Fig. 2. Fig. 5 is an elevation of a longitudinal vertical section thereof. Fig. 6 is a plan, and Figs. 7 and 8 represent details to be referred to hereinafter. Fig. 9 is a sectional side elevation of the lasting devices in action. Fig. 10 represents a detail to be referred to hereinafter.

It will be understood that frame B′, which comprises the head of the machine, is mounted upon a suitable column (not shown) and supports the revoluble shaft B^2. Said shaft constitutes the main shaft of the machine, and on it are fixed the operating cams, through which motion is imparted to the operative parts of the machine.

In the front end of the frame B′ is a groove to which is fitted the vertically-movable bar D, to the lower end of which is suitably applied the fastening-driver D′, and to the upper end of which is suitably applied a coiled spring D^7, while on the shaft B^2 is a cam C^4. All of said parts are more fully described in Letters Patent No. 482,349. It will be understood that the said bar is lifted by the cam C^4, and is depressed by the spring D^7, for driving the fastening device through the overturned upper into the inner sole.

To assist the workman in holding and manipulating the last, a downhold or rest b^2 is employed and an edge-guide, the arrangement being such that when the last is pressed upwardly, its bottom against the rest and its edge bearing against the edge-guide, the upper will be in position for the pincers to come forward and take hold thereof. The rest has its bottom end preferably pointed to penetrate the inner sole and hold the last against lateral movements. Said rest is fully described in Letters Patent No. 482,349. It is there described, however, as being moved

upwardly by a cam and downwardly by a spring. Such vertical movements, although preferable, are not considered as essential to the use of said rest in connection with this invention.

In suitable bearings of the head-frame B′ is mounted a sliding rod E, to the front end of which, between the adjustable ends E′ E′, is secured the vertical bar or frame F, having in its upper end a suitable bearing to fit the rod E^2, projecting over the front of the head-frame B′ and keeping said bar in an upright position. The rod E is reciprocated endwise in its bearings by mechanism (see patent No. 482,349) in one direction by a cylinder-path cam of such a pitch and depth as to move the rod E toward the rear of the machine, and with it the pincers-carrying bar F, this movement being sufficient to move the jaws of the pincers into position for gripping the upper and allow sufficient time for the pincers to close and get a firm hold upon the upper and the last-depressing lever to operate for effecting an upward strain of the upper and then allow the rod E to be acted upon and forced forward by a spring giving a forward movement to the pincers for plaiting the upper over the last-bottom, and then, after a slight standstill, its resisting surface allows a still further forward movement of the rod. During the standstill above referred to the fastening is driven and the pincers-jaws immediately release their grip upon the upper.

To the lower end of the bar F is detachably secured by a suitable screw and slot the shank F′ of the lower pincers-jaw F^2, so that it may be moved toward or from the head of the machine. Said shank F′ is made to support the last-depressing lever 10, being pivotally connected therewith and made with a slot to accommodate the horizontal arm of the lever 10, as shown in Fig. 5. To the rear end of said shank F′ is pivoted the shank F^3 of the upper pincers-rod F^4, being kept in a raised position by the spring F^5.

In grooves in rearwardly-projecting ribs upon the bar F is mounted the rectangular sliding block F^6, which is normally held in an elevated position by the spring F^7. To the lower end of block F^6 is secured one end of the U-shaped spring F^8, the other end being made to bear upon the shank F^3 of the upper pincers-jaw, Figs. 1 and 5. The block F^6 has adjustably secured thereon the cam-block F^9, the upper end of which projects to the rear and is grooved upon its upper side, so that when said block is in its lowermost position it will fit the periphery of the cam C^6, with which it engages when the bar F has been moved to the rear. The revolution of the cam C^6 depresses the blocks F^6 F^9, and with them the spring F^8, thus moving the shank F^3 downward and causing the jaw F^4 to move toward the jaw F^2 and grip the upper and and retain said grip until the completion of the pull.

To insure the edge of the upper being directed properly into the pincers-jaws and to obviate the liability of its becoming improperly engaged with the jaws, the shield-guide F^{10} is employed. To that end a bracket F^{12} is made to support the vertical arm of said shield-guide, being adjustably secured to the block F by suitable screws and slots, so as to permit the shield-guide being positioned conformably to the requirements of the pincers-jaw F^4, Figs. 1, 2, and 5, and allowing vertical movements of the shield-guide-carrying arm to accommodate the necessary lifting and lowering movements of the shield-guide. A lever F^{13} connects with one end of the shield-guide-carrying arm, its opposite end being pivotally fulcrumed on a pin projecting from the bracket F^{12}, and carries a cam-block F^{14}. Said cam-block is adjustably secured to the lever F^{13} by suitable slot-and-groove connection and has its cam-face in position to be engaged by the cam-projection F^{15} on the block F^6, the arrangement being such that the block F^6, descending, operates through the lever F^{13} and connections described, depresses the shield-guide-carrying arm and consequently the shield-guide F^{10}. The downward movement of the shield-guide is about equal to the downward movement required of the pincers-jaw F^4 in order to close the pincers-jaws. Said shield is made with projections extending downwardly, one at either side of the pincers-jaw F^4, and preferably it has also a third central projection extending downwardly in a groove or recess formed therefor in the pincers-jaw F^4, Fig. 2. The shield is positioned so that its bottom-edge face sets normally below the bottom face of the upper pincers-jaw F^4 when lifted, Figs. 1 and 5. Said projections have their bottom-edge faces inclined and smoothed, so that in the downward movements of the shield and jaw the shield-edge faces engage the upper first and cause it to move slidingly into position for being gripped by the pincers-jaws. The downward movement of the shield is arrested just before the pincers close upon the leather, and as the pincers open the shield is lifted by the uplifting pincers-jaw.

In operation of the machine described in Letters Patent No. 482,349 the straining of the upper is effected by the pincers moving horizontally over the last. For the purposes of lasting certain classes of work such operation of the pincers is all that may be required, but in lasting other kinds and qualities it is found desirable, particularly in lasting certain portions of the upper, to have the leather strained and stretched upwardly before it is carried over the last-bottom for receiving the fastening device. In order to effect this desired strain of the leather upwardly, the pincers having been made to close and grip the edge of the upper, the last is moved relatively to the pincers. In the present instance this movement is effected in a line downwardly from the pincers by mechanism as follows, to wit: A block 12, secured to the block F^6,

Figs. 5 and 6, carries a cam-block 13, being hinged thereto at one end of the block 13, so as to permit movement of the free end of block 13 in a horizontal plane toward and from the block 12. Fitting loosely in and projecting through the blocks F^6 12 is a plunger 14, one end of which bears against screw 15 in block 13, its other end bearing against the lever 16, at or near the top end thereof. Said lever 16 is supported in a recess in the block F, being pivotally fulcrumed to the block F, and bears its bottom end against the vertical arm of lever 10, Fig. 5. Said lever 10 is itself supported in a slot in the shank F′ of the lower pincers-jaw F^2, being pivotally fulcrumed to the shank F′, its horizontal arm extending forwardly and downwardly through the pincers-shank F′ and terminating with its outer end projecting so as to bear upon the last at a point just below the bottom of the pincers-jaw F^2. A spring 17, secured to shank F′ and bearing upwardly against the lever 10, holds the lever in position normally with its horizontal arm in the recess of the pincers-shank, as shown in Fig. 5. The block 13 has on its free end a cam-face to be engaged by the cam C^6, the arrangement being such that the pincers, having closed upon and firmly gripped the edge of the upper, a further movement of the cam C^6 forces inwardly the free end of block 13, transmitting movement through the plunger 14 and lever 16 to the lever 10, and moving said lever 10 so as to cause the bearing end thereof to drop downwardly away from the pincers-jaw F′, carrying with it the last, and consequently stretching the leather upwardly in a line substantially perpendicular to the last-bottom. A further movement of the cam C^6 allows the pincers to move forwardly over the last-bottom and simultaneously releases the block 13, allowing the bearing end of lever 10 to lift gradually into its normal position. The slack of the upper is taken up by the pincers moving horizontally over the last-bottom, holding the upper and placing it for receiving the fastening-tack, which movement of the pincers and overlaying of the upper are accompanied by the wiper described in said Letters Patent No. 482,349. The screw 15, being adjustably supported in the block 13, allows movement to regulate the amount of motion transmitted to the lever 10, and consequently the amount of stretch applied to the upper, as occasion may require. The lever 10 serves a further purpose, *i. e.*, that of a downhold to bear upon the inner sole closely adjacent to the line of upward strain and hold it firmly in position against displacement by reason of the strain applied to the upper.

It will be understood that when lasting the toe portions of the upper there will be more slack of the leather to be lapped over upon and secured to the inner sole, so that the leather at these points has to be laid in folds upon the inner sole. To assist the pincers in the work of folding and laying the surplus material at these points a mechanism is employed, as follows: At one side of the pincers-shank F′ is a plaiter-blade 20, consisting of a thin blade, and being pivotally connected with the shank F′ to permit vertical rocking movements, its forward end being extended to a position closely adjacent to one side of the pincers-jaws and having a width in excess of the thickness of the pincers-jaw F^2, Fig. 1. In a suitable groove in the front face of block F, at one side thereof, is a vertically-movable rod 21, having connection with the spiral spring 22, by which it is pressed downwardly, its bottom end bearing against the plaiter-blade 20, and operating to hold the forward end of the plaiter-blade lifted, with a yielding tension, to a position above the lower pincers-jaw. A spiral spring 23, having one end secured to the rod 21 and its opposite end to the rear extension of the blade 20, serves as a yielding connection between the said rod and plaiter-blade. Pivotally fulcrumed to the block F^6 is a lever 24, one end of which engages the rod 21, its opposite end being extended to a point beneath the rocking lever F^{11}. At the opposite side of the pincers-shank F′, and similarly arranged, is a mechanism in duplicate of blade 20, springs 22 23, rod 21, and lever 24. The lever F^{11} has its fulcrum-pin secured to the machine-frame B′, and from its ends extend arms f^7, having connections f^8 extending downwardly to a treadle (not shown) supported at the bottom of the machine-column and movable for rocking the lever F^{11} on its fulcrum-pin. The right or left arm of the lever F^{11} is depressed according to whether it is desired to last the left or right hand corner of the toe. The depressed arm of lever F^{11}, acting upon the corresponding lever 24, operates to lift the rod 21 and depress the plaiting end of the plaiter-blade 20 to a position at one side of the pincers-jaw F^2, Fig. 10, so that as the pincers-jaws next close upon the upper a portion of the upper is folded over the raised-edge face of the plaiter-knife, being held on one side by the pincers-jaws and on the opposite side by the portion previously attached to the inner sole. By this arrangement a series of folds are formed in the upper running toward the center of the last, Fig. 10, which folds may be pressed down flat upon the sole or the raised portions cut off to permit the outer sole being attached.

In connection with the devices herein described a securing mechanism is employed for suitably fastening the overlaid portions of the upper to the inner sole, for a description of which, as also for a description of parts not herein fully described, reference is had to Letters Patent No. 482,349, above referred to.

I claim and desire by Letters Patent to secure—

1. In a machine for lasting and the like, a gripper for the upper, a lever pivoted to said gripper, and means for moving the end of the

lever away from said gripper whereby the last is moved away from the gripper and the upper is stretched; substantially as described.

2. In a lasting-machine, the combination with a pincers mechanism having an upper and lower jaw, said lower jaw being provided with a recess in its end face, and actuating means having provision for causing the jaws to open, close upon and hold the upper, of a rest to bear upon the last-bottom, being supported in said recess of the lower pincers-jaw and normally held therein, and mechanism for moving the rest against the last in a direction from the pincers-jaws, whereby, during the hold of the jaws upon the upper, the last is moved for straining the upper relatively thereto; substantially as described.

3. In a machine for lasting and the like, a pincers mechanism comprising an upper and a lower jaw with means for operating said jaws, said lower jaw being provided with a recess, a lever pivoted in said recess, and means for depressing said lever; substantially as described.

4. In a machine for lasting and the like, a frame, a pincers mechanism comprising a lower and an upper jaw upon said frame, said lower jaw being provided with a recess, means for operating said pincers mechanism, a bell-crank lever pivoted in the recess in said lower jaw, a second lever upon said frame bearing against said bell-crank lever, and a plunger for actuating said second lever; substantially as described.

5. In a machine for lasting and the like, a frame, a gripper for the upper upon said frame, a last-depressor for operating upon the last upon said frame, a plunger through said frame and operating upon the last-depressor, and a plate hinged upon said frame and operating upon said plunger; substantially as described.

6. In a machine for lasting and the like, a frame, a gripper for the upper, a last-depressor for operating upon the last, a movable plate upon said frame, a lever in operative connection with said last-depressor, and a plunger upon said movable plate acting upon the lever; substantially as described.

7. In a machine for lasting and the like, a gripper for the upper, a last-depressor for operating upon the last, a plunger operating upon the last-depressor, and means for regulating the throw of the plunger; substantially as described.

8. In a machine for lasting and the like, a gripper for the upper, a last-depressor for operating upon the last, a movable plate, a projection upon said plate having operative connection with the last-depressor, and means for regulating the length of said projection from said plate; substantially as described.

9. In a machine for lasting and the like, a gripper for the upper, a last-depressor for operating upon the last, a movable plate, and a screw projecting from said plate, said screw having operative connection with said last-depressor; substantially as described.

10. In a machine for lasting and the like, a gripper for the upper, a lever pivoted upon said gripper, means for depressing said lever, and a spring upon said gripper bearing upon said lever for returning it to its normal position; substantially as described.

11. In a machine for lasting and the like, a plate provided with a recess, a slotted lower pincers-jaw upon said plate, a bell-crank lever pivoted in said slot to said pincers-jaw, a spring upon said lower pincers-jaw and bearing upon said lever, an upper pincers-jaw pivoted to said lower jaw, means for operating the pincers-jaws, a lever pivoted in the recess in said plate, said lever bearing upon one arm of the bell-crank lever, a second plate movable upon said first plate, a plunger through said movable plate bearing upon the lever in the first plate, a plate movable upon said movable plate, and a screw in said last-mentioned plate bearing upon said plunger; substantially as described.

12. In a machine for lasting and the like, a gripper for the upper, a last-depressor, means for depressing the same, mechanism for moving the gripper over the last to lay the upper thereon, and means for causing the last-depressor to gradually recede during the movement of the gripper over the last; substantially as described.

13. In a machine for lasting and the like, a frame, a gripper for the upper, a last-depressor, mechanism for moving the gripper over the last to lay the upper thereon, a movable plate upon the frame, said plate having a cam-face, connections between said plate and the last-depressor for operating the latter, and a member movable across said plate and over its cam-face whereby the last-depressor is depressed and then gradually recedes; substantially as described.

14. In a machine for lasting and the like, a frame, a gripper for the upper, a last-depressor, mechanism for moving the gripper over the last to lay the upper thereon, a plate pivoted upon the frame, said plate having a cam-face, connections between said plate and the last-depressor for operating the latter, and a member movable across said plate and over its cam-face whereby the last-depressor is depressed and then gradually recedes; substantially as described.

15. In a machine for lasting and the like, a gripper movable toward and away from the upper, a guide for the portion of the upper to be gripped, and means for moving said guide toward and away from the upper with said gripper; substantially as described.

16. In a machine for lasting and the like, a gripper for the upper, a bracket extending to coöperate with the gripper upon said mechanism, a guide in said bracket, and means for reciprocating said guide toward and away from the upper; substantially as described.

17. In a machine for lasting and the like, a

gripper for the upper, an adjustable bracket upon said machine, a guide in said bracket extending to coöperate with the gripper, and means for reciprocating said guide; substantially as described.

18. In a machine for lasting and the like, a gripper for the upper, a guide extending to coöperate with the gripper, a lever pivoted to the frame and connected with said guide, an adjustable cam-block upon said lever, and a plunger adapted to operate upon said cam-block; substantially as described.

19. In a machine for lasting and the like, a gripper for the upper, a guide extending to coöperate with the gripper, a lever pivoted to the frame of the machine and connected with said guide, said lever having a cam-surface, and a plunger adapted to operate upon said cam-surface; substantially as described.

20. In a machine for lasting and the like, a gripper for the upper, a guide extending to coöperate with the gripper, means for reciprocating said guide, and means for regulating the amount of movement of said guide; substantially as described.

21. In a machine for lasting and the like, a gripper for the upper, an adjustable bracket, a guide carried by said bracket and extending to coöperate with the gripper, a lever pivoted upon said bracket and connected with said guide, and means for reciprocating said lever; substantially as described.

22. In a machine for lasting and the like, a pincer-jaw, a second pincer-jaw, a guide, a plunger operating upon said second pincer-jaw, and connection between said plunger and the guide; substantially as described.

23. In a machine for lasting and the like, a pincer-jaw, a second pincer-jaw, means for moving said second pincer-jaw upon said first pincer-jaw, and a guide provided with walls embracing said second pincer-jaw; substantially as described.

24. In a machine for lasting and the like, a gripper for the upper, and a plaiter extending beyond the grasping-face of said gripper over which to lay said upper; substantially as described.

25. In a machine for lasting and the like, a gripper for the upper, and a plaiter extending beyond the grasping-face of the gripper and at the side thereof; substantially as described.

26. In a machine for lasting and the like, a pincer-jaw, a second pincer-jaw, and a plaiter secured to the side of the first-mentioned pincer-jaw and extending beyond the pincer-face of said jaw; substantially as described.

27. In a machine for lasting and the like, a gripper for the upper, and a movable plaiter extending beyond the said gripper over which to lay the upper; substantially as described.

28. In a machine for lasting and the like, a gripper for the upper, and a plaiter pivoted at the side of said gripper; substantially as described.

29. In a machine for lasting and the like, a gripper for the upper, a plaiter extending beyond said gripper over which to lay the upper, and means for normally holding said plaiter out of operative position; substantially as described.

30. In a machine for lasting and the like, a frame, a gripper for the upper secured thereto, a lever pivoted to swing at the side of said gripper, one end of said lever lying adjacent to the gripper, a plunger on said frame operating upon the other end of said lever, a spring between the plunger and the frame for normally depressing the plunger, and means for raising said plunger; substantially as described.

31. In a machine for lasting and the like, a frame, a gripper for the upper secured thereto, a lever pivoted to swing at the side of said gripper, one end of said lever lying adjacent to the gripper, a plunger on said frame operating upon the other end of said lever, a spring between the plunger and the frame for normally depressing the plunger, and a lever pivoted to said frame connected to said plunger; substantially as described.

32. In a machine for lasting and the like, a frame, a gripper secured thereto, a lever pivoted to swing at the side of said gripper, one end of said lever lying adjacent to the gripper, a plunger on said frame, means for reciprocating said plunger, and a yielding connection between the plunger and the lever; substantially as described.

33. In a machine for lasting and the like, a frame, a gripper secured thereto, a lever pivoted to swing at the side of said gripper, one end of said lever lying adjacent to the gripper, a plunger on said frame, means for reciprocating said plunger, and a spring connecting the plunger to said lever; substantially as described.

34. In a machine for lasting and the like, a gripper for the upper, and a plaiter upon each side of said gripper, said plaiters extending beyond the gripping-face of said gripper; substantially as described.

35. In a machine for lasting and the like, a gripper for the upper, a plaiter upon each side of said gripper, said plaiters extending beyond the gripping-face of said gripper, and means for throwing either of said plaiters out of operative position relative to the gripper; substantially as described.

36. In a machine for lasting and the like, a frame, a gripper for the upper secured thereto, a plaiter pivoted to swing upon each side of said gripper, one end of each of said plaiters lying adjacent to said gripper, plungers on said frame operating upon the other end of said plaiters, levers pivoted to the frame and connected to said plungers, and a rocking lever acting upon said levers; substantially as described.

37. In a machine for lasting and the like, a frame, a gripper for the upper secured thereto, a plaiter pivoted to swing upon each side of said gripper, one end of each of said plaiters

lying adjacent to said gripper, plungers on said frame, springs connecting said plungers with the other end of said plaiters, springs between the plungers and the frame, levers pivoted to the frame and connected with said plungers, and a rocking lever acting upon said levers; substantially as described.

Signed at Lynn, Massachusetts, this 25th day of August, A. D. 1893.

ISAÏE FRÉCHETTE.

Witnesses:
C. B. TUTTLE,
A. M. TUTTLE.