(No Model.) 4 Sheets—Sheet 1.

C. W. GLIDDEN, Dec'd.

J. E. GLIDDEN, Administrator.

HEEL ATTACHING MACHINE.

No. 589,501. Patented Sept. 7, 1897.

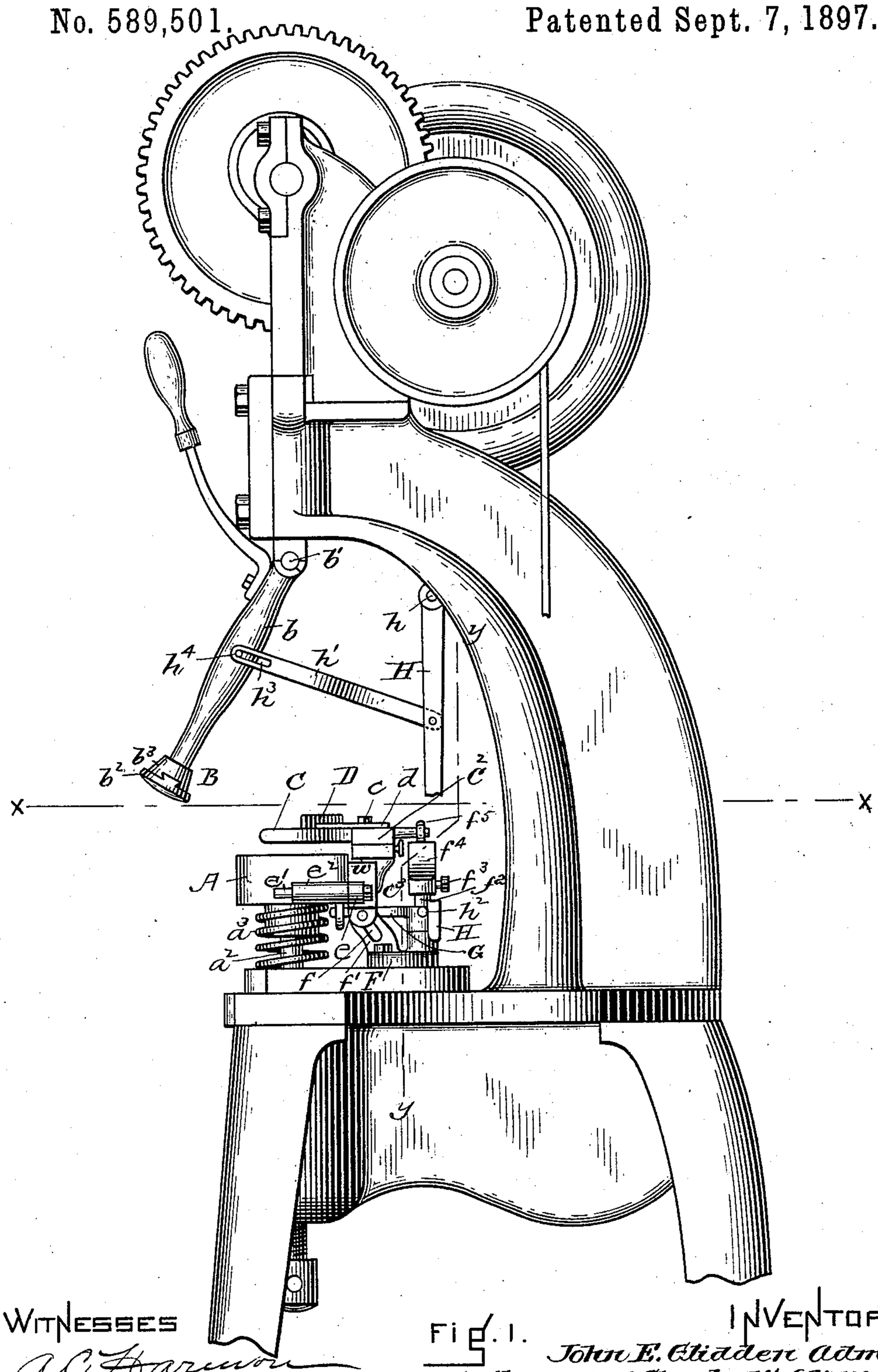

Fig. 1.

WITNESSES

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(No Model.) 4 Sheets—Sheet 2.

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HEEL ATTACHING MACHINE.

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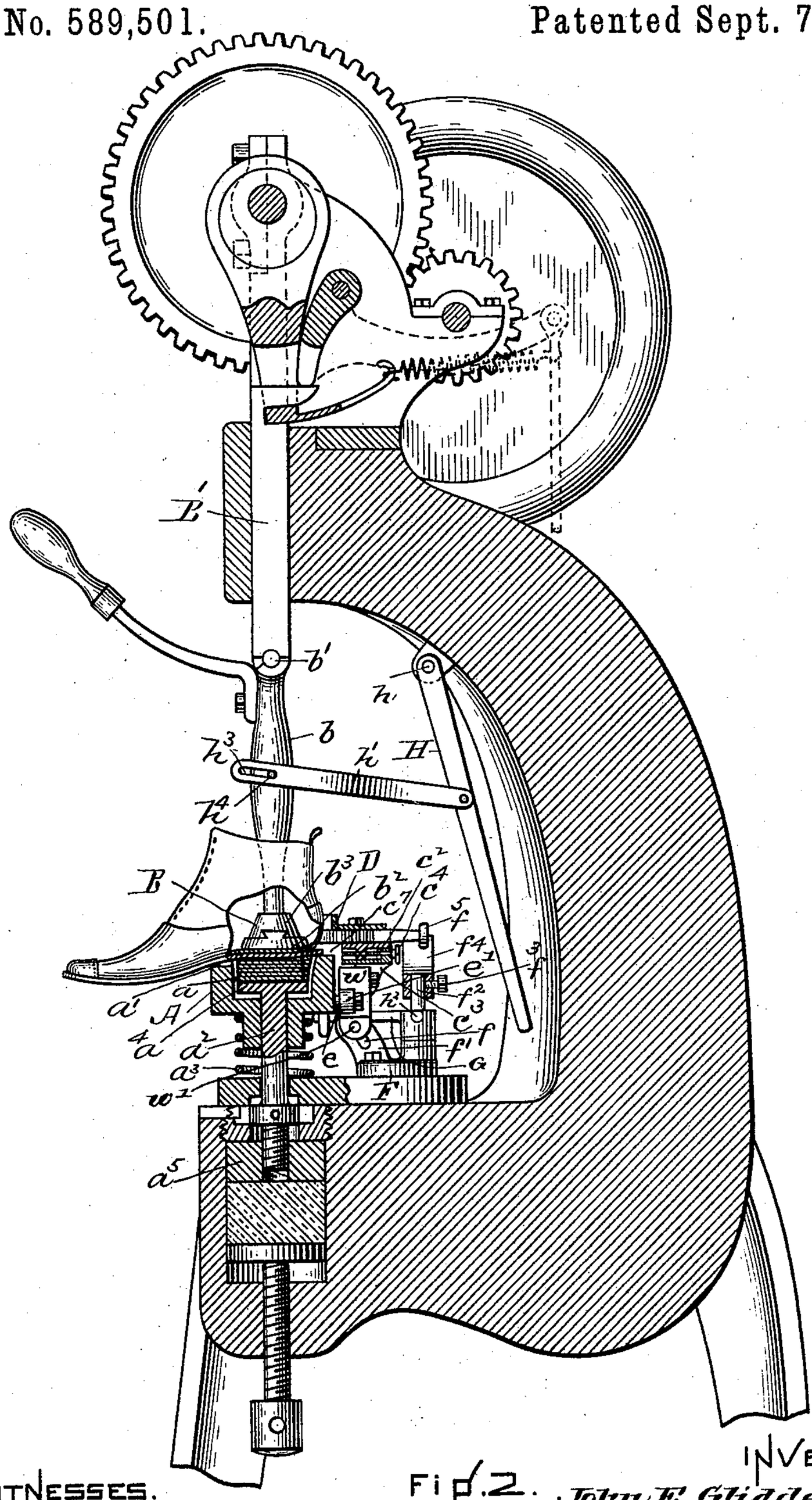

Fig. 2.

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HEEL ATTACHING MACHINE.

No. 589,501. Patented Sept. 7, 1897.

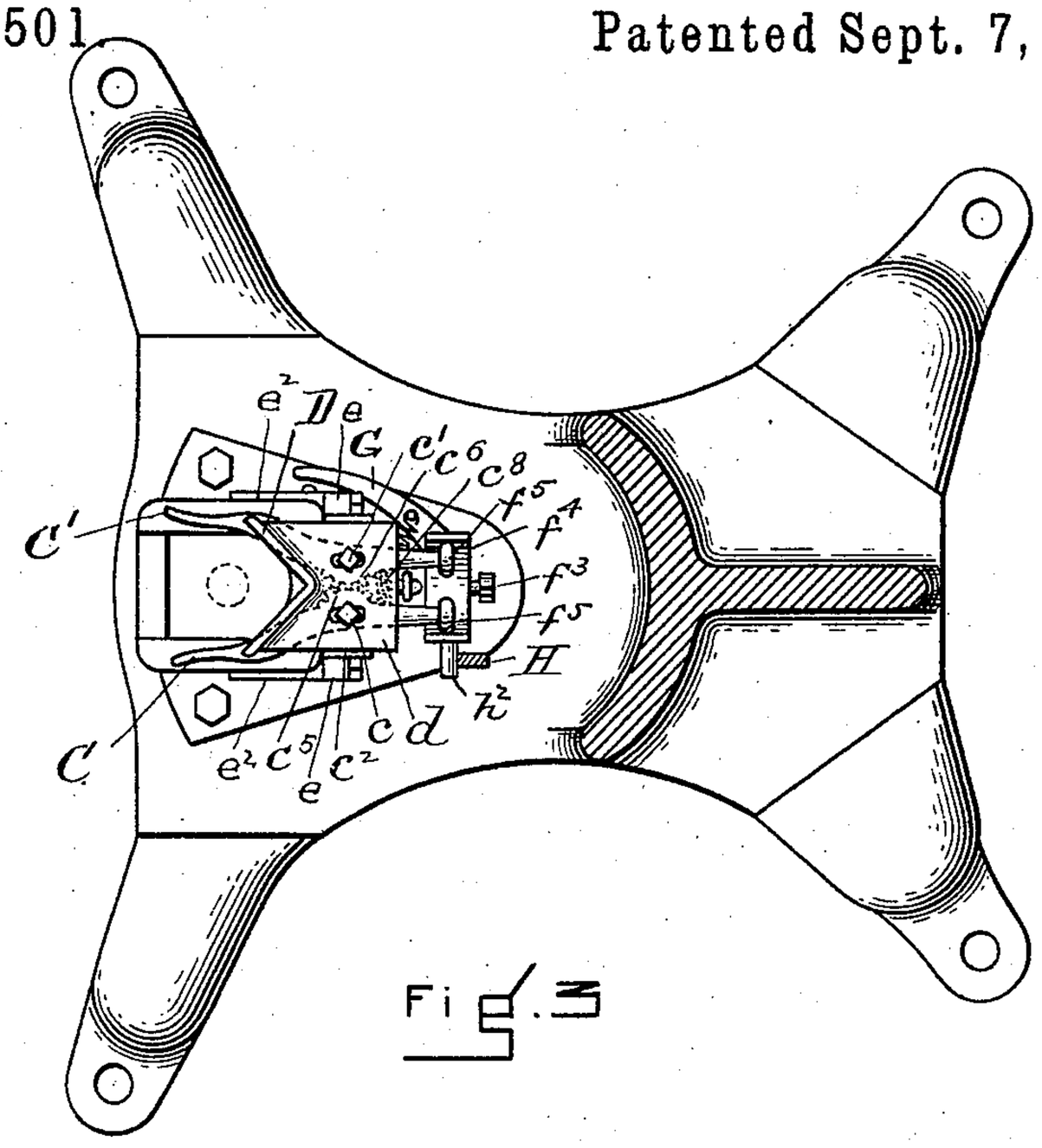

Fig. 3.

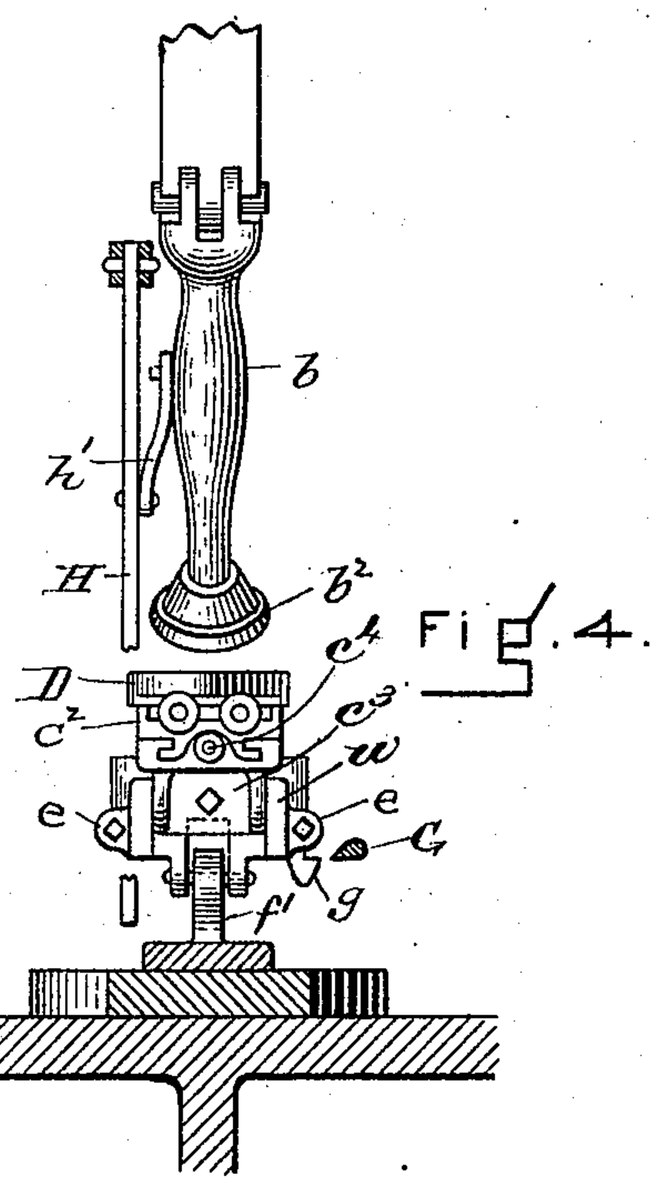

Fig. 4.

WITNESSES

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(No Model.) 4 Sheets—Sheet 4.

C. W. GLIDDEN, Dec'd.

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HEEL ATTACHING MACHINE.

No. 589,501. Patented Sept. 7, 1897.

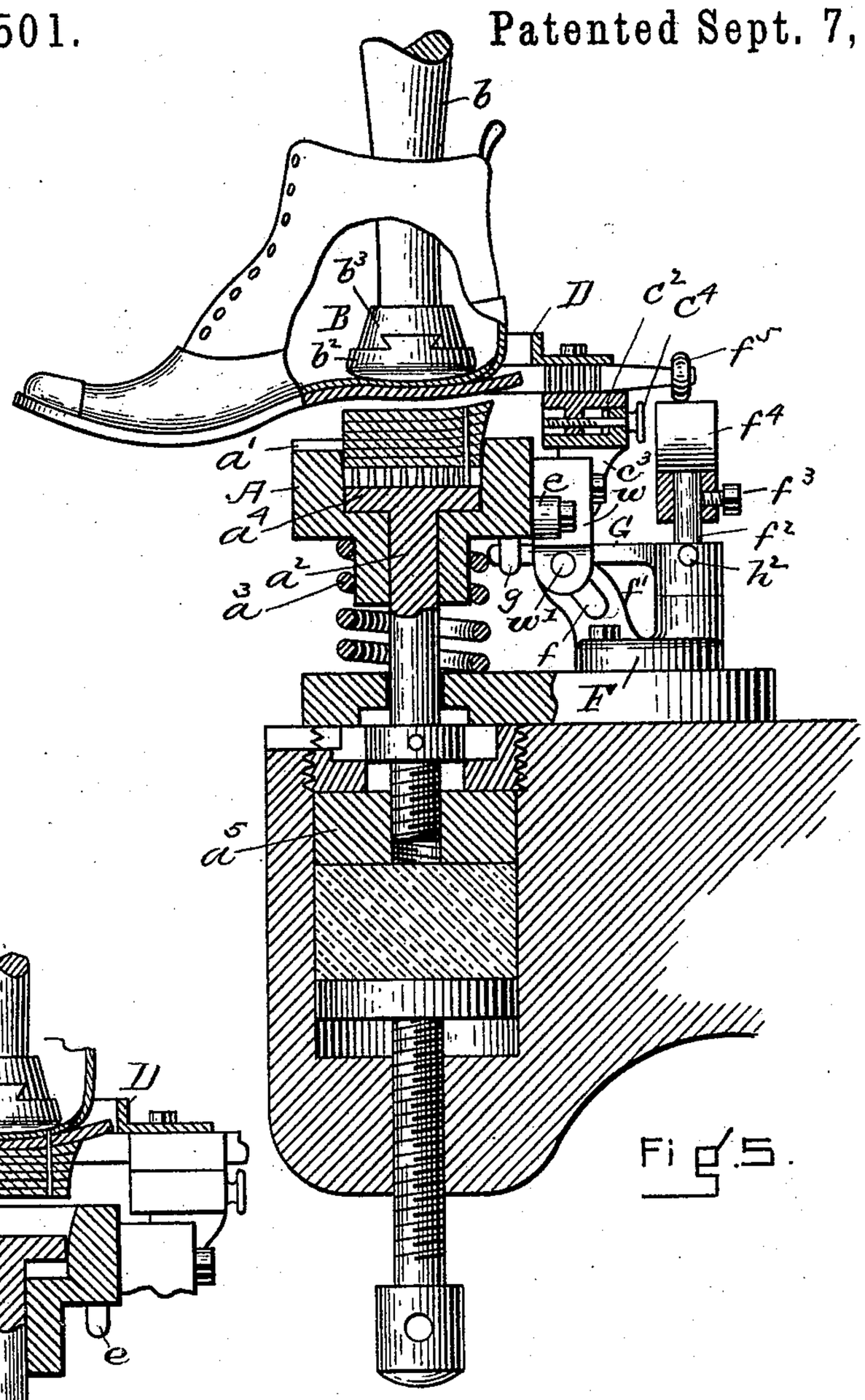

Fig. 5.

Fig. 7.

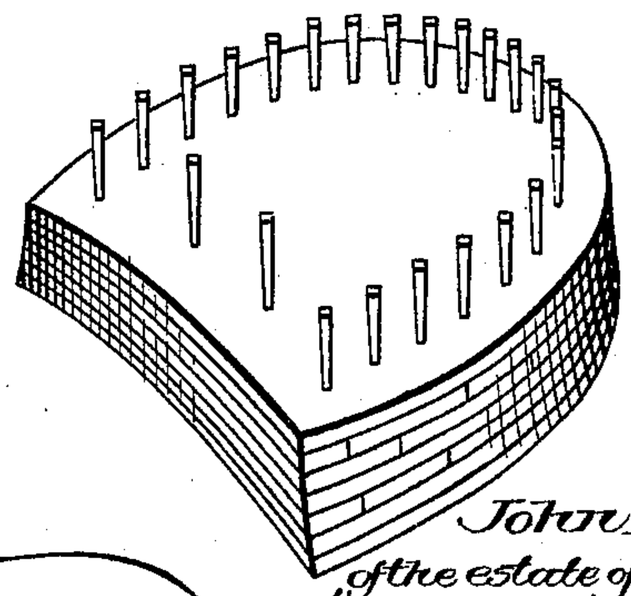

Fig. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN E. GLIDDEN, OF LAWRENCE, MASSACHUSETTS, ADMINISTRATOR OF CHARLES W. GLIDDEN, DECEASED, ASSIGNOR TO JAMES W. BROOKS, PRINCIPAL TRUSTEE, OF PETERSHAM, AND JOHN BROOKS, ASSOCIATE TRUSTEE, OF CAMBRIDGE, MASSACHUSETTS.

HEEL-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,501, dated September 7, 1897.

Application filed August 17, 1896. Serial No. 602,987. (No model.)

To all whom it may concern:

Be it known that CHARLES W. GLIDDEN, deceased, late a resident of Lynn, Massachusetts, invented an Improvement in Heel-Attaching Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Certain types of heels are compressed and loaded with attaching-nails before they are attached to the soles of the boot or shoe. These heels are generally of a larger and coarser kind, but not necessarily so, and it has been customary to center and hold them for attachment in a relatively deep die-holder which conformed to the shape of the compressed heel and the edge of which projected above the outsole of the boot or shoe at the end of the attaching action. This necessitated that the boot or shoe be prepared for the attaching operation by having the section of the sole about the heel which extends beyond the counter trimmed off in order that the top of the heel holder or die should not come in contact therewith. This involves a manipulation which can be avoided, as will hereinafter be described, as if the heel is attached to the sole before its edge is thus trimmed the sole edge can subsequently be removed in the act of trimming the heel.

To carry the invention into effect, there is employed a heel holder or die of a peculiar shape for holding a loaded heel during its attachment to the sole of a boot or shoe, but which is so shaped that it does not come in contact with the edge of the outsole if left projecting at the heel, and there is also used in connection with such a holder devices for centering the heel end of the boot or shoe in relation to the heel and its holder, which centering devices act automatically to center the shoe and also automatically to release it, and which are separated from the heel holder or die to permit of the insertion between them of the untrimmed heel end of the outsole.

The invention will now be described in connection with the drawings, wherein—

Figure 1 is a view in front elevation of a machine having the features of the invention. Fig. 2 is a view in vertical central section thereof, showing position of parts at the end of the downward movement of the shoe and stump. Fig. 3 is a view in horizontal section upon the dotted line $x\ x$ of Fig. 1 and in plan of the parts below said line. Fig. 4 is a view in vertical section upon the dotted line $y\ y$ of Fig. 1 and in elevation of parts in front of said line. Fig. 5 is an enlarged view, principally in vertical section, showing the position of the shoe, heel, and various of the operative parts of the machine immediately preceding the attaching operation. Fig. 6 is a view in perspective of a loaded heel-blank, and Fig. 7 is a detail view representing the position of the parts upon the stopping of the machine.

A represents the heel holder or die. It has the relatively shallow heel-holding cavity or recess a, which is of the shape of the exterior of the heel which is to be held by it, but which does not extend at the sides or back sufficiently to prevent the untrimmed back of the outsole from closing over it in the act of jacking the shoe, (see Fig. 5,) and the front wall of which at a' is cut away to prevent contact of this section of the holder with the shank of the boot or shoe when it is in its lowest position.

The holder or die is downwardly movable on the spindle a^2 against the pressure of the spring a^3, which restores the die and its attachments to their normal or usual elevation. Upon the upper part of the spindle a^2 is the spanking-plate a^4, which forms the bottom of the die or holder and upon the upper surface of which the loaded heel is placed, said plate remaining stationary while the holder or die is moved downward by the jack or stump to attach the heel to the heel end of the shoe by driving the nails through the heel and into the sole thereof during said downward movement. The said spindle a^2 may be adjusted vertically in the nut a^5.

The boot or shoe is presented to the heel held by the die or holder by means of a jack or stump B at the end of an arm b, which is pivoted at b' to a vertically-movable pressure-slide B', the arm being arranged to be swung

outward to the position represented in Fig. 1 to receive the shoe and then inward to a position over the heel and its holder.

The jack or stump is in two parts, the lower part b^2 being united to the upper part by a dovetail tongue, which enters a dovetail recess therein, so arranged that it may be moved laterally or from side to side of the part b^3. It is also wider than said part, and the object of this construction is to permit the shoe and the lower section of the stump to be moved laterally by the shoe-centering devices as the shoe and the stump are being moved into operative position. The shoe-centering devices comprise the arms or side guides C C′, pivoted at c c', respectively, to a plate c^2, which is horizontally adjustable upon the bracket c^3 toward and from the jack or stump when in operative position by the adjusting-screw c^4, the arms or side guides being connected between their pivots by intermeshing gear-sectors c^5 c^6, respectively, so that the movement of one arm or guide will cause a like movement of the other, or so that they shall separate or move uniformly. These arms extend forward from a point back of and above the level of the top of the heel-holder to a position above and upon each side thereof, and they are so shaped as to automatically center the shoe and the plate b^2 of the last or stump as they are moved into position over the holder, the counter of the shoe at its sides coming in contact therewith as the shoe and the jack or stump are being moved between them. These arms are separated from the top of the die by the space c^7, sufficient in extent to receive any projection of the outsole. A spring c^8 back of their pivots acts to close them and to resist with yielding pressure the inserting of the shoe between them.

There is also used for centering the shoe the back-stop D, which is in the form of a V-shaped recess in the front edge of the plate d, the plate and back-stop being above or over the side arms or guides and being secured by the studs which form the pivots of the side guides to the slide-plate c^2, so that they are horizontally movable lengthwise the heel-holder with the side guides. By means of slots formed in said plate in line with the studs c' the back-stop may be made adjustable lengthwise the side guides and independently of them.

The bracket or support c^3, which holds the side guides and back-stop, is herein shown as attached to a foot-piece w, which is supported by the heel holder or die, said foot-piece having ears e upon each side from which extend forwardly studs e', which enter holes formed in ears or lugs e^2 upon each side of the heel holder or die, the said studs being movable horizontally in said holes to permit the foot-piece and bracket or support to be moved away from the heel holder or die as the heel-holder approaches the end of its downward movement, the said backward movement being given the foot-piece and bracket or support by means of an inclined cam or guide in the bracket f', extended upwardly from the stand F. The bracket and foot-piece constitute supporting means for the side guides.

It will be understood that during the first part of the downward movement of the shoe and stump or jack the side guides and back-stop are moved downwardly with it, the shape of the cam f being such that it does not act to withdraw the foot-piece and side guides and back-stop until the sole of the shoe has firmly seated itself upon the heel. The stand F also carries a post f^2, to the upper end of which are secured by the set-screw f^3 upwardly-opening V-shaped or diverging surfaces or cams f^4. These are arranged below the rear ends f^5 of the arms or side guides C C′, which are made in a rounded form or which may have rolls attached to them and which, when the side guides are in their highest position, do not interfere with the opening or closing action thereof, but upon approaching the end of the downward movement of the jack or stump B and shoe the side guides are automatically opened by the contact of their ends with said inclined surfaces or cams f^4, while they with the back-stop are also moved backward by the backward movement of the foot-piece and support or bracket c^3, due to the action of the cam f upon the cam pin or stud w' of the said foot-piece during its downward movement. At the end of this downward movement the heel-holder and bracket c^3 are in their backward position, the back-stop removed from the shoe, and the side guides opened from the shoe are engaged by a latch device to be described, which holds them stationary in these positions while the jack or stump rises to its original position. This latch device comprises the spring-controlled lever G, pivoted to the stud f^2 to swing or move horizontally sufficiently to bring its end into a position to be engaged by the latch g on one side of the foot-piece, the outer surface of said latch and the upper edge of the lever being beveled, so that upon the contact of the latch in its downward movement with the lever the lever will be turned to one side until the hook of the latch has passed below the lever. The lever under the action of the spring moves, engages the latch, and holds said parts in their depressed and opened position. The shoe and attached heel are then readily removable from the heel-holder and from the side guides and back-stop.

It is understood that the backward and opening movements of the side guides and the backward movement of the back-stop are for the purpose of permitting the removal of a shoe having an untrimmed or projecting section of the sole at the heel end from the machine without interfering with the side guides or back-stop.

Upon the outward movement of the heeled shoe and jack or stump by or through the releasing-arm H and link h' the heel-holder, side

guides, and back-stop are released and permitted to automatically resume their original position, the lower end of said releasing-arm upon its outward movement contacting with the short end h^2 of the lever G, thereby causing the latching end of said lever to be removed from the latch g.

There is lost motion between the link and the arm b, provided by the slot h^3 in the link and pin h^4.

The operation of the machine is as follows: The loaded heel-blank is placed in the heel-holder and the boot or shoe upon the jack or stump when it is in its outward position, (shown in Fig. 1,) and the jack or stump is then moved inwardly over the heel-holder and heel, as in Fig. 5, the shoe during such movement being automatically centered over the heel by the side guides and back-stop, the side guides and back-stop having, however, been first adjusted to a predetermined relation to the holder, the side guides automatically conforming to variation in width of the shoe and dividing such variation equally between them, causing the shoe and the movable section b^2 of the jack or stump to be moved laterally one way or the other to conform, and leaving the untrimmed rear edge of the sole extending over the holder. (See Fig. 5.) The machine is then started and the jack or stump and shoe are moved downwardly, the shoe being held centered by the side guides and back-stop until the sole seats itself upon the heel and thereafter the driving of the nails by the continued downward movement of the jack or stump begins, and as the nails are driven the holder or bracket with its attached side guides and back-stop not only descend but are also moved backwardly away from the shoe, and the side guides are at the same time opened away from the shoe, and the cams f^4 hold the said side guides opened, and finally the latch device engages and locks the holder or bracket down, so that the jack or stump, with its shoe having the heel attached thereto, may be lifted from between the side guides and back-stop and the jack or stump be immediately and easily swung outwardly from over the heel-holder in order that the shoe may be removed. This outward movement of the jack or stump causes the heel-holder, side guides, and back-stop to be automatically released and they then automatically return to their original or operative position. The throw of the jack or stump is small in order that the sole may be as near the seat of the heel as practicable before the machine is started.

The back-stop may be attached directly to or formed upon the side guides.

The side guides may have a backward movement only—that is, they need not always have an opening movement.

The jack or stump pivoted at b' may be readily and quickly moved into and out of operative position, thus avoiding the use of sliding spindles having holders attached to them to embrace the heel-covering part of the upper of the shoe.

The means for reciprocating the spindles B′ are common to United States Patent No. 138,677, dated October 25, 1870, so need not be herein further described.

Any mechanical equivalent for the parts named may be used.

Having fully described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a heel-attaching machine, the following instrumentalities, viz: a heel-holder to receive and center a heel-blank, a pivoted jack or stump adapted to receive the shoe to which the heel is to be attached, and automatically-acting, uniformly-yielding side guides having their acting ends arranged above and at opposite sides of the center of said heel-holder, said guides receiving between them the heel-covering end of the shoe to which the heel is to be attached to thus center the heel end of the sole of the shoe correctly over the heel-blank, substantially as described.

2. In a heel-attaching machine, the following instrumentalities, viz: a heel-holder to receive and center a heel-blank, a pivoted jack or stump adapted to receive the shoe to which the heel is to be attached, and automatically-acting, uniformly-yielding side guides having their acting ends arranged above and at opposite sides of the center of said heel-holder, said guides having toothed portions in engagement one with the other, and a spring to hold their outer ends in their normal closed position, substantially as described.

3. In a heel-attaching machine, the following instrumentalities, viz: a heel-holder to receive and center a heel-blank, a pivoted jack or stump adapted to receive the shoe to which the heel is to be attached, and automatically-acting, uniformly-yielding side guides having their acting ends arranged above and at opposite sides of the center of said heel-holder, and having rearwardly-extended arms f^5, said guides receiving between them the heel-covering end of the shoe to which the heel is to be attached to thus center the heel end of the sole of the shoe correctly over the heel-blank, and a cam-surface to act on said rearwardly-extended arms to open the said side guides after the heel is attached, substantially as described.

4. In a heel-attaching machine, the following instrumentalities, viz: a heel-holder for holding and centering a loaded heel-blank, a movable jack or stump provided at its end with a sliding plate, and automatically-acting side guides arranged over the heel-holder at opposite sides of the center and adapted to act on the heel-covering part of the upper of, and to automatically center, the boot or shoe, the plate b^2 moving on the jack or stump as the shoe is moved into position over the heel, substantially as described.

5. In a heel-attaching machine, a heel-holder for holding and centering a heel-blank, and a

movable jack or stump, combined with automatically-acting side guides arranged over the entrance to the heel-holder and adapted to automatically center the boot or shoe and with a back-stop against which the back of the counter of the boot or shoe is adapted to be moved, substantially as described.

6. In a heel-attaching machine, the following instrumentalities, viz: a heel holder or die, a nail-spanking plate, and automatically-acting side guides, the side guides and heel holder or die being connected one to the other to be moved vertically together, substantially as described.

7. The combination with a heel holder or die, and a nail-spanking plate, of automatically-acting side guides, the side guides and the heel holder or die being connected one to the other to be moved vertically together, and a device for automatically locking them in their lowest position, substantially as described.

8. The combination with a heel holder or die, and a nail-spanking plate, of a back-stop and automatically-acting side guides, the said back-stop and side guides being connected to the heel holder or die to be moved vertically therewith, substantially as described.

9. The combination of the heel holder or die, the heel-spanking plate, the automatically-acting side guides, a back-stop, the side guides and back-stop being connected with the die and adapted to be moved vertically therewith, and a device for locking them down at the end of their vertical movement, substantially as described.

10. The combination with a heel holder or die, and a nail-driving plate, of an independent back-stop made vertically movable with said heel holder or die, substantially as described.

11. The combination with the heel holder or die, a nail-driving plate, and a back-stop attached to said holder or die and vertically movable therewith, of means for locking them down at the end of their downward movement, substantially as described.

12. The combination with a heel holder or die, and a nail-driving plate, of automatically-acting side guides connected with said holder or die and means for adjusting them lengthwise the die, substantially as described.

13. In a heel-attaching machine, the following instrumentalities, viz: a heel holder or die, a nail-driving plate, automatically-operating side guides, and supporting means for the said side guides loosely connected to said heel-holder and made longitudinally movable with relation to said holder, substantially as described.

14. In a heel-attaching machine, the following instrumentalities, viz: a vertically-movable spring-supported heel holder or die, a nail-driving plate, automatically-operating side guides, and supporting means for the said side guides loosely connected to said heel-holder and made longitudinally movable with relation to said holder, substantially as described.

15. The combination with a heel holder or die, and a nail-spanking plate, of automatically-acting side guides, and a back-stop adjustable lengthwise the side guides, substantially as described.

16. The combination with a heel holder or die, and a nail-driving plate, of automatically-acting side guides, a back-stop, and means for adjusting the back-stop and side guides together lengthwise of the holder or die, substantially as described.

17. The combination with a heel holder or die, and a nail-driving plate, of side guides, and means for opening the side guides, substantially as described.

18. The combination with the heel holder or die, a nail-driving plate, and automatically-acting side guides, of means for moving the holder or die and guides downwardly and means for opening the said guides at or near the end of said downward movement, substantially as described.

19. The combination with a heel holder or die, a nail-driving plate, and side guides, of means for automatically opening said side guides at the end of the attaching operation, substantially as described.

20. The combination with a heel holder or die, side guides having a vertical movement, and means for opening the side guides during the said vertical movement, of latching means to hold the side guides open in their lowest position, substantially as described.

21. The combination of the heel holder or die, the nail-driving plate, the side guides and means for moving them vertically and for moving backward the side guides near the end of the vertical movement, substantially as described.

22. The combination of the heel holder or die, the nail-driving plate, the side guides and means for moving them backward from the die at the end of the attaching operation, substantially as described.

23. The combination of the heel holder or die, the nail-driving plate, the side guides and means for opening them and moving them backward from the die at or near the end of the attaching operation, substantially as described.

24. The combination of the heel holder or die, the back-stop and means for moving it from the die at or near the end of the attaching operation, substantially as described.

25. The combination of the heel holder or die, the nail-driving plate, the side guides and the back-stop and means for moving the holder or die, side guides and back-stop together vertically, and for opening the side guides and withdrawing the side guides and back-stop from the said holder or die at or near the end of their downward movement, substantially as described.

26. The combination of the heel holder or die, the nail-driving plate, the side guides, the back-stop and heel holder or die, side guides and back-stop being vertically movable together, and means for opening the side guides and moving them and the back-stop backward from the holder or die during the attaching movement, and a locking device for locking them open at the completion of the operation of the machine, substantially as described.

27. The combination with a hollow heel holder or die to receive within it a heel-blank, of pivoted horizontal swinging side guides, and a bracket attached to said holder or die to support the said side guides, the latter rising and falling with said holder or die and being normally located at a sufficient distance above the upper end of said holder or die to enable the projecting heel end of the sole to enter the space between the said guides and the upper end of the said holder or die, substantially as described.

28. The combination of a heel holder or die, a bracket carried thereby and a back-stop also connected to said bracket, substantially as described.

29. The combination of the heel holder or die, a bracket secured thereto, a slide-plate mounted upon said bracket, a screw for adjusting it toward and from the die-cavity lengthwise, and side guides carried by said plate and movable therewith, substantially as described.

30. The combination with the heel holder or die having upon its sides hollow ears or extensions, and a bracket at the rear of the die having horizontal studs to enter the holes of said ears, with side guides supported by said bracket, whereby the bracket is adapted to be moved toward and from the rear of the holder or die with its side guides, substantially as described.

31. The combination of the heel holder or die, the bracket attached to the die to be movable vertically therewith and backward and forward from its rear end and supporting side guides above the die and a back-stop, and a cam for moving the bracket from the holder or die at or near the end of their downward movement, substantially as described.

32. The combination of the heel holder or die, the bracket attached to it to be moved vertically therewith and supporting side guides, as specified, a cam for moving said bracket away from the back of the die at or near the end of its downward movement and a spring for moving said parts upwardly, substantially as described.

33. The combination of the heel holder or die, a bracket attached thereto, to be moved vertically therewith and supporting side guides, a cam for moving said bracket away from the die at or near the end of its downward movement, a device for locking the die and bracket with the side guides separated at the end of their downward movement, and a spring for moving them upwardly, substantially as described.

34. The combination of the heel holder or die, a bracket attached thereto to be movable vertically therewith and supporting side guides, a cam for moving said bracket away from the die at or near the end of their downward movement, a device for locking the die and the bracket with the side guides separated at the end of their downward movement, a device for releasing the said locking or latching mechanism, and a spring for moving them upward substantially as described.

35. The combination with a heel holder or die, and side guides having rearward extensions, of a V-shaped guide or cam into which the said ends are adapted to be moved and by which the side guides are opened, substantially as described.

36. The combination with a heel holder or die, of side guides and means to close said guides, of means for automatically opening said guides at the end of their centering operation, substantially as described.

37. The combination with a heel holder or die, connected side guides adapted to have a vertical movement imparted to them with the holder or die, and a device for locking said holder or die in its lowest position, of a spring for elevating said holder, a pivoted jack or stump, and latching means to retain said holder or die depressed, and a releasing arm or device attached to said jack or stump, said arm in its outward movement acting on said latching means to effect the release of said heel holder or die and side guides, substantially as described.

38. The combination of the heel holder or die, and opening and closing side guides above the die upon each side thereof, and separated from the die by rearward-extending space of sufficient size to receive the untrimmed heel edge of the shoe-sole, as and for the purposes described.

39. The combination in a heel-attaching machine of side guides for centering the boot or shoe as it is presented to the attaching devices, means for automatically opening said guides at the end of the attaching movement, and means to thereafter release said guides and permit them to resume their closed position upon the removal of the shoe with the heel attached to it, as and for the purposes described.

40. In a heel-attaching machine the side guides and means for automatically opening them at the end of the attaching operation and for moving them backward in relation to the jack or stump, as and for the purposes described.

41. The combination of the jack or stump, the side guides and means for opening them, moving them backward and holding them

open and in their backward position at the completion of the action of the attaching mechanism, substantially as described.

42. The combination of the jack or stump, the side guides, the back-stop and means for opening the side guides and moving the side guides and back-stop backwardly and downwardly in relation to the jack or stump and for locking them in said position, substantially as described.

43. The combination of the jack or stump, the side guides, the back-stop and means for opening the side guides and moving the said guides and back-stop backwardly at the end of the attaching movement and for automatically releasing them upon the upward movement of the jack or stump, substantially as described.

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

JOHN E. GLIDDEN,
Administrator of the estate of Charles W. Glidden.

Witnesses:
GEO. W. GREGORY,
THOMAS J. DRUMMOND.