(No Model.) 7 Sheets—Sheet 1.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

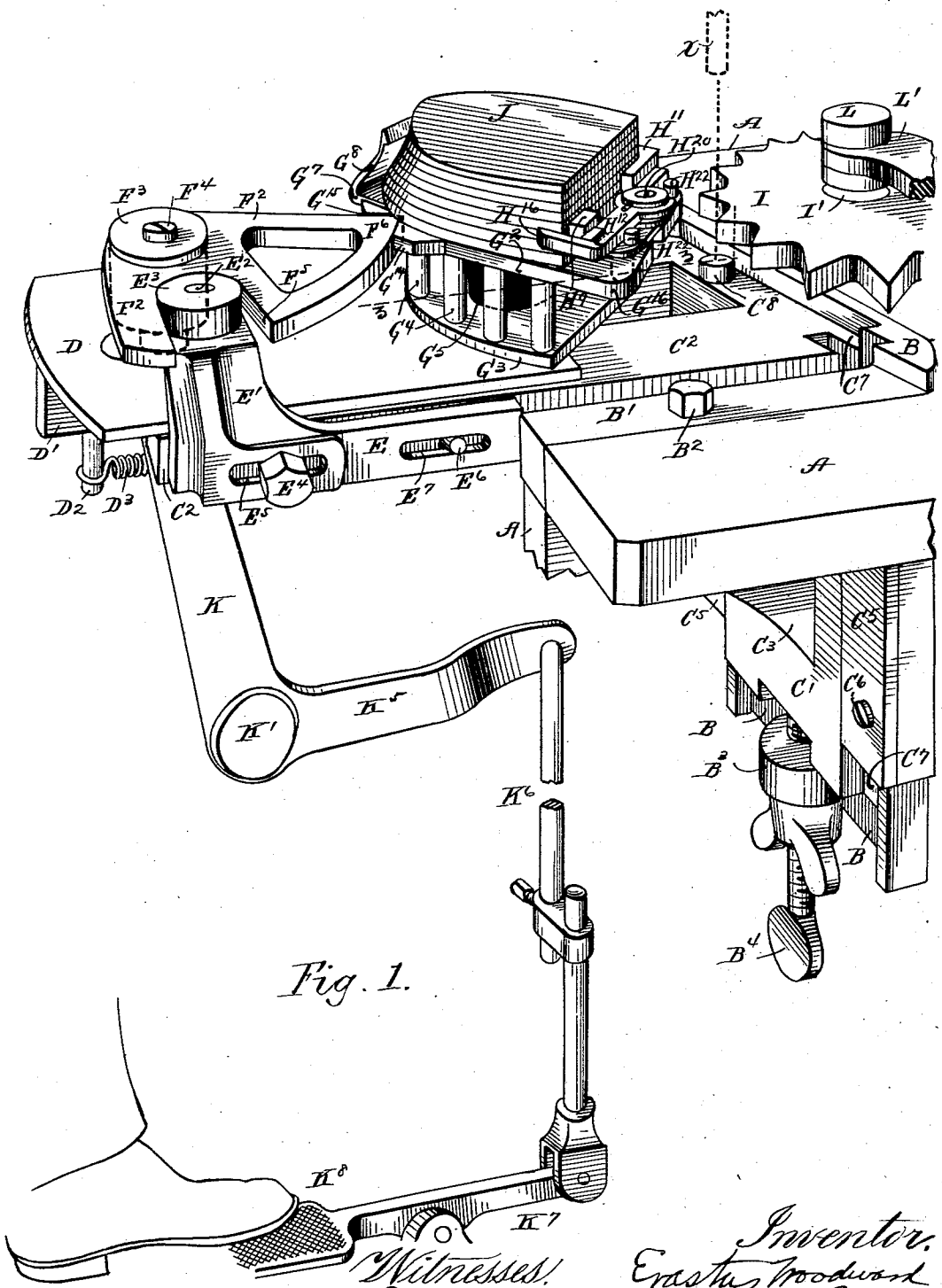

Fig. 1.

Witnesses:
Amy F. Adon
E. L. Harlow

Inventor.
Erastus Woodward
By J. S. Rusk
Atty

(No Model.) 7 Sheets—Sheet 2.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

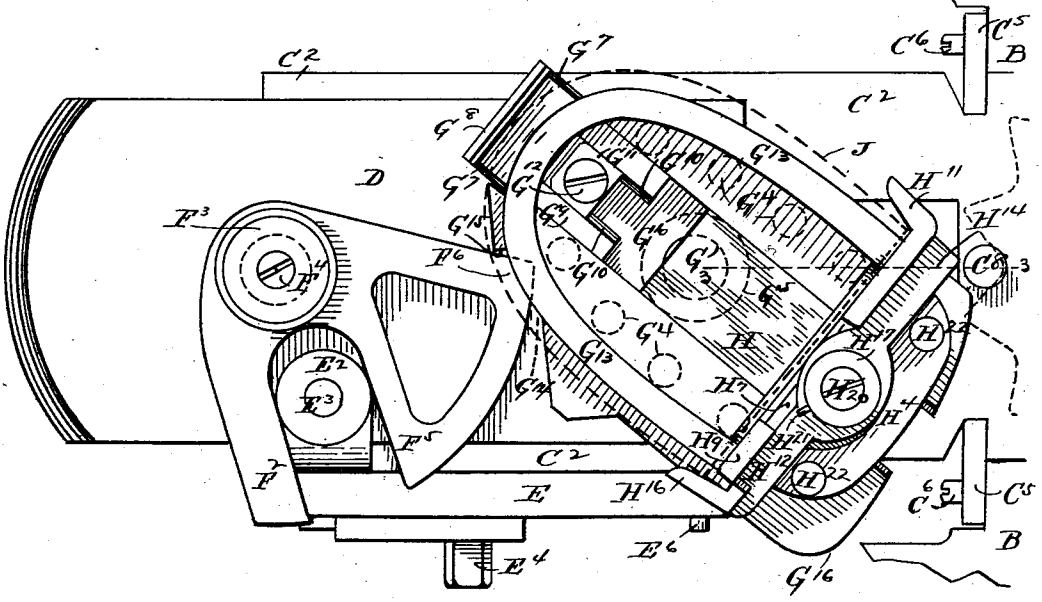

Fig. 2.

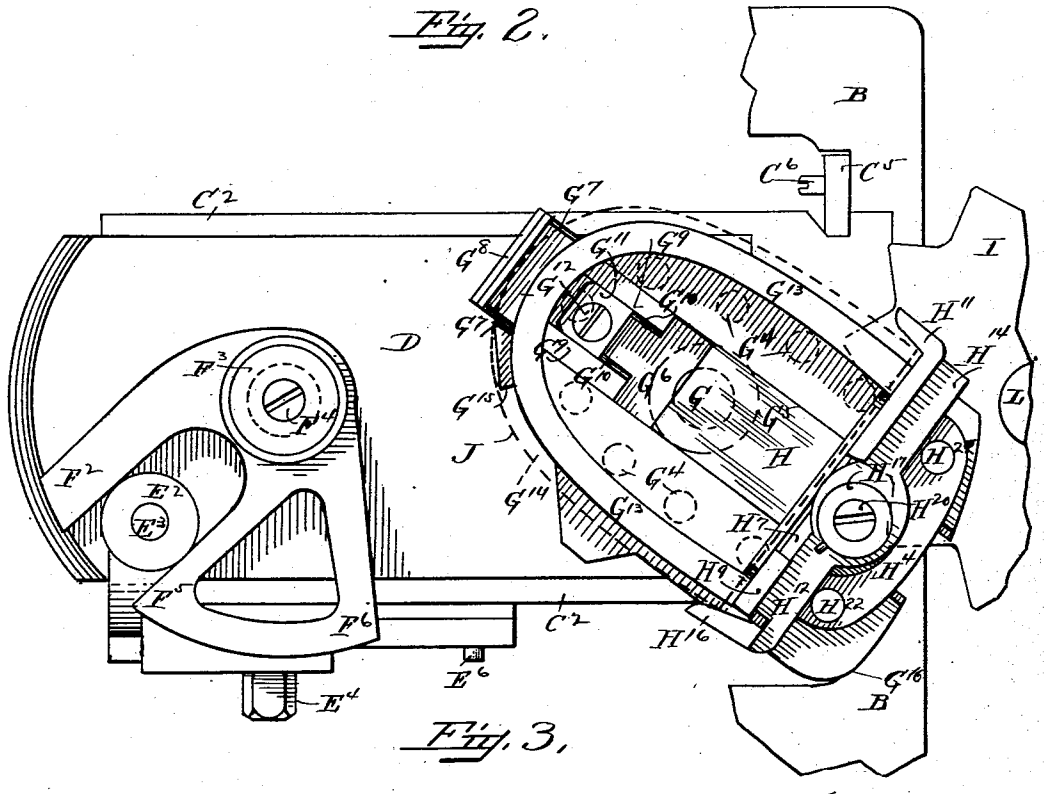

Fig. 3.

Witnesses.
Amy F. Acton
E. L. Harlow.

Inventor
Erastus Woodward
By J. S. Rusk
Atty.

(No Model.) 7 Sheets—Sheet 3.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

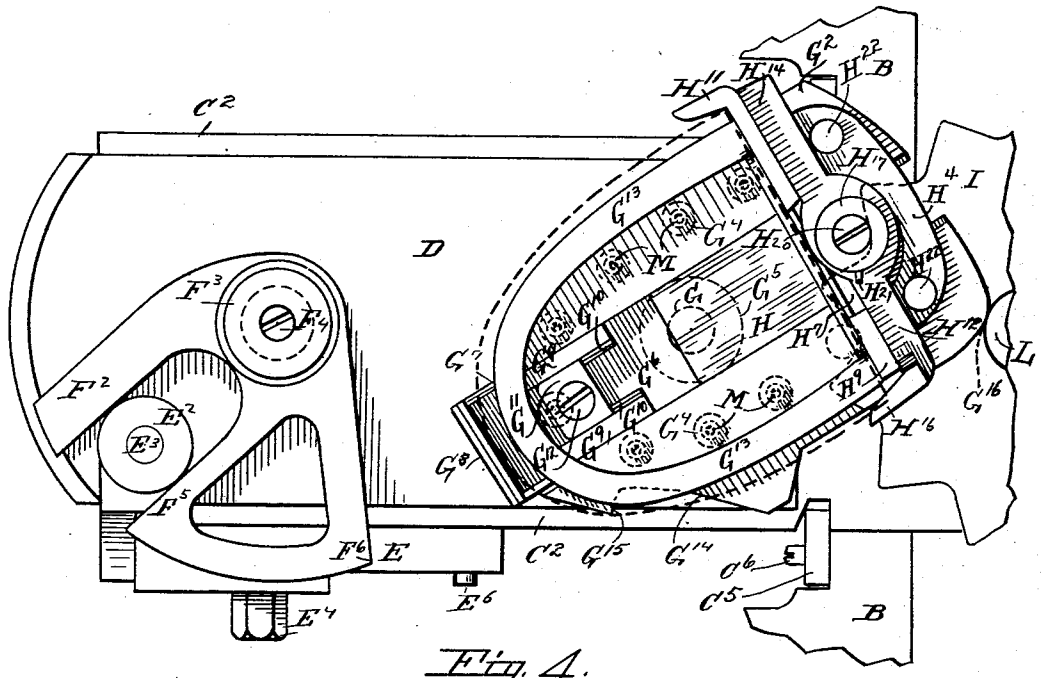

Fig. 4.

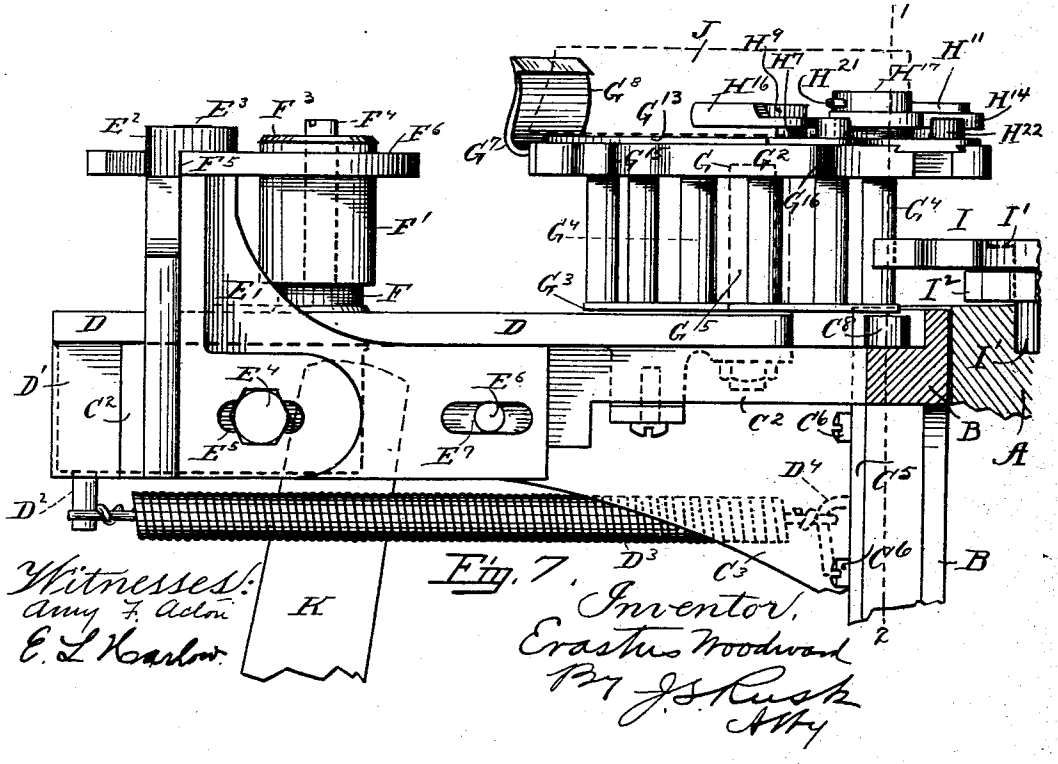

Fig. 7.

Witnesses:
Amy F. Acton
E. L. Harlow.

Inventor,
Erastus Woodward
By J. S. Rusk
Atty

(No Model.) 7 Sheets—Sheet 4.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

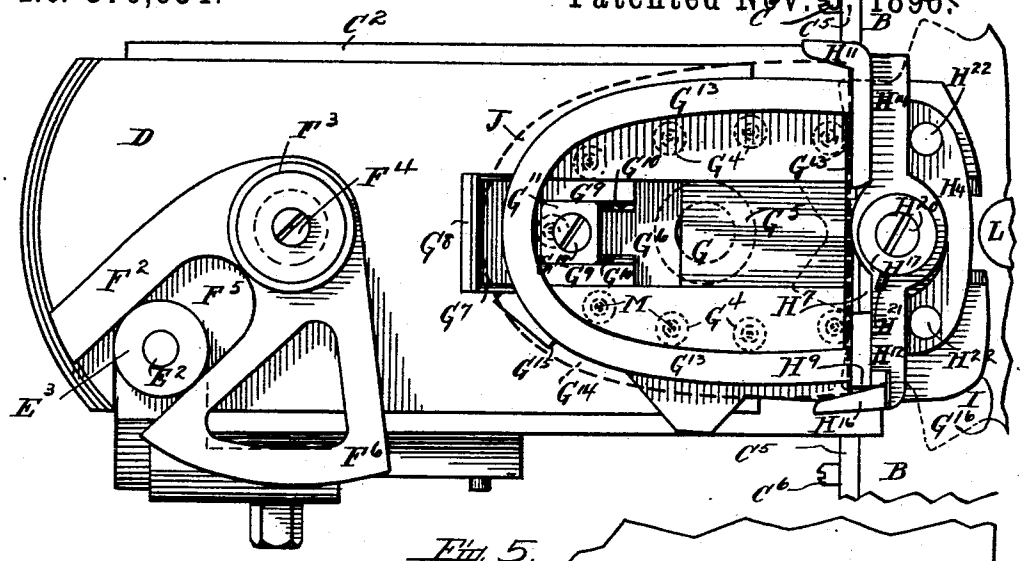

Fig. 5.

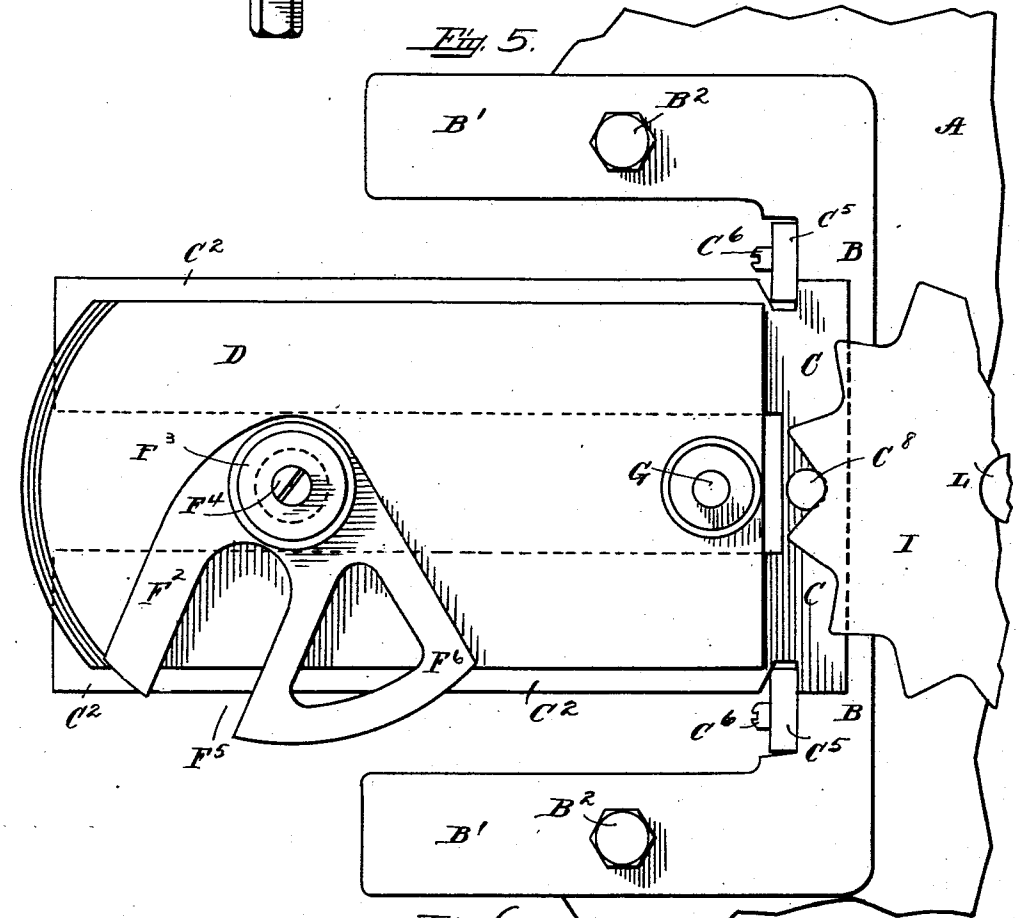

Fig. 6.

Witnesses.
Amy F. Acton
E. L. Harlow.

Inventor.
Erastus Woodward
By J. S. Rusk
Atty

(No Model.) 7 Sheets—Sheet 5.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

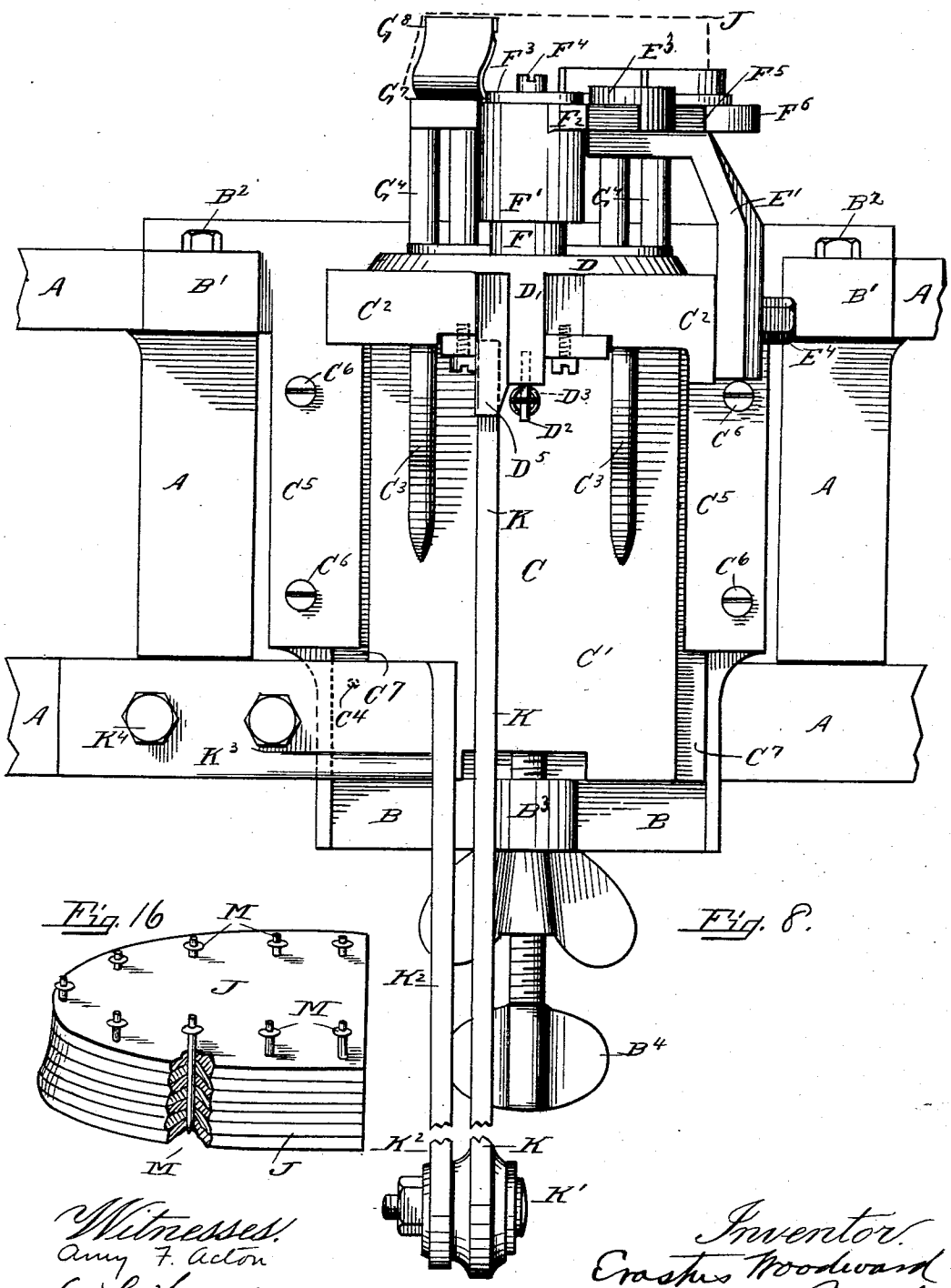

Fig. 16

Fig. 8.

Witnesses:
Amy F. Acton
E. L. Harlow.

Inventor.
Erastus Woodward
By J. S. Rusk
Atty

(No Model.) 7 Sheets—Sheet 6.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

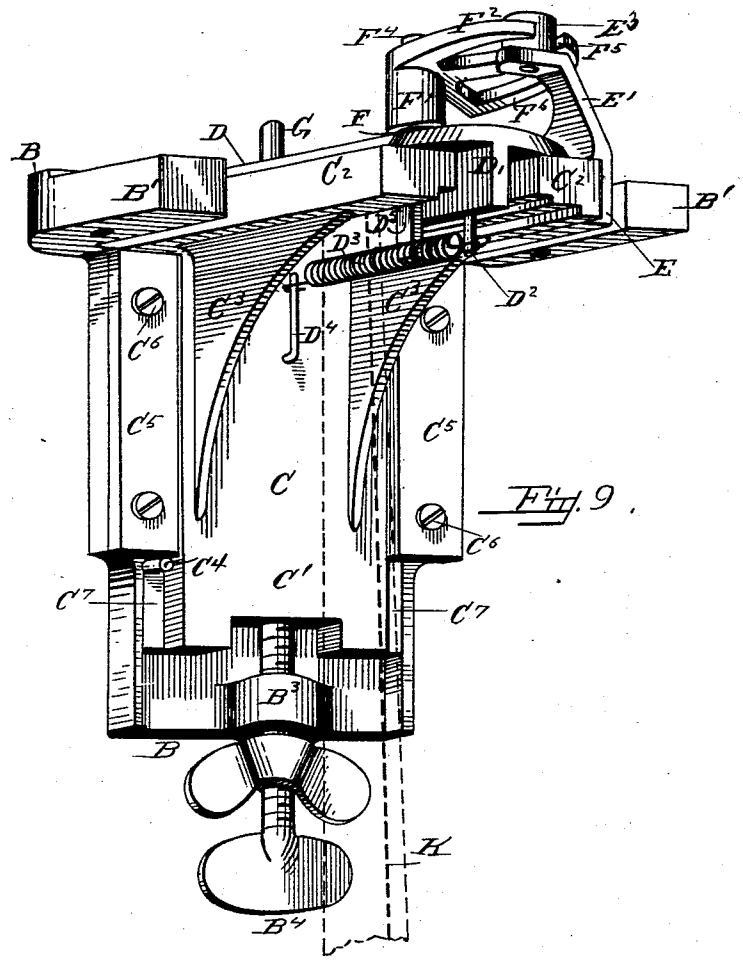

Fig. 9.

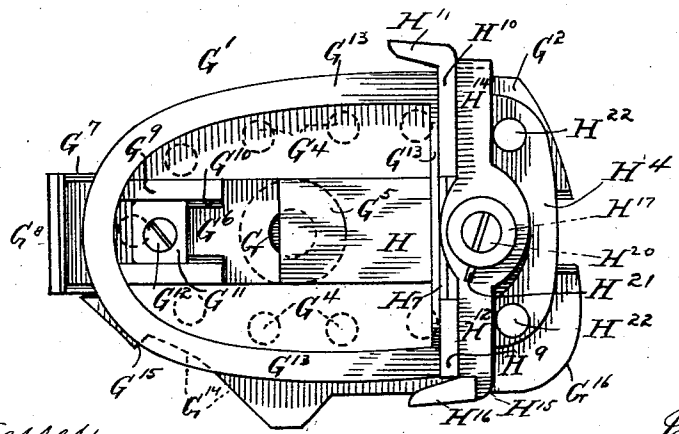

Fig. 10.

Witnesses:
Amy F. Acton
E. L. Harlow.

Inventor:
Erastus Woodward
By J. S. Rugh
Atty

(No Model.) 7 Sheets—Sheet 7.

E. WOODWARD.

MACHINE FOR LOADING HEELS WITH NAILS.

No. 570,654. Patented Nov. 3, 1896.

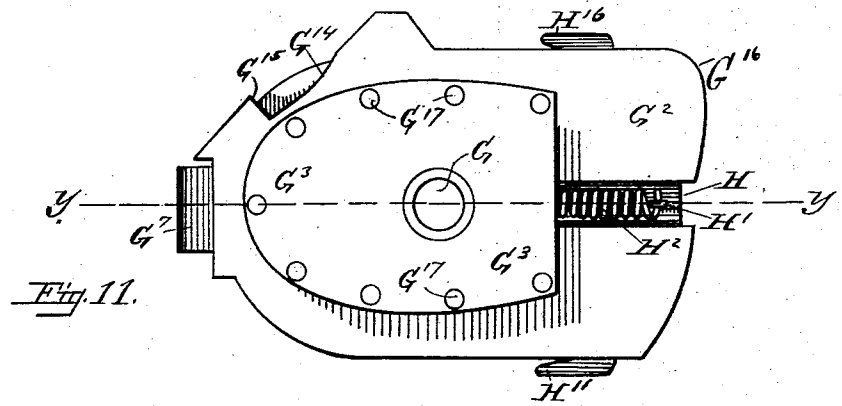

Fig. 11.

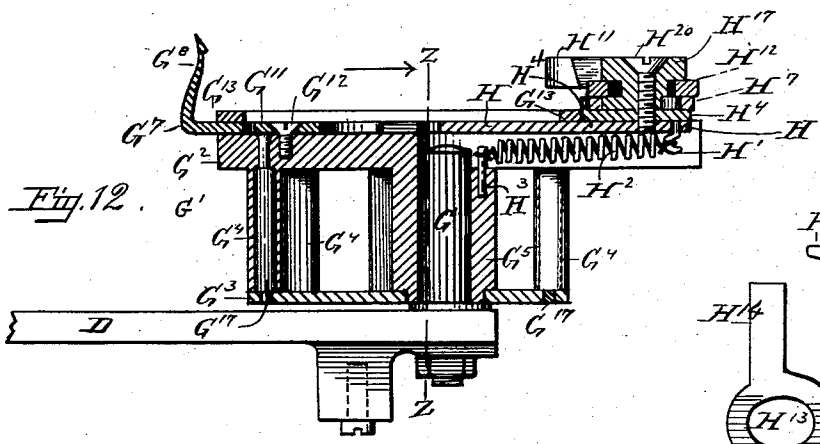

Fig. 12.

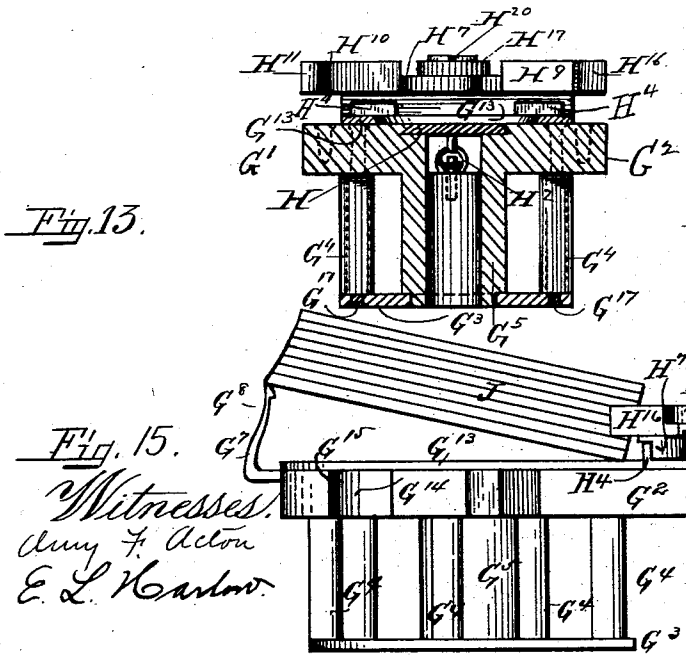

Fig. 13.

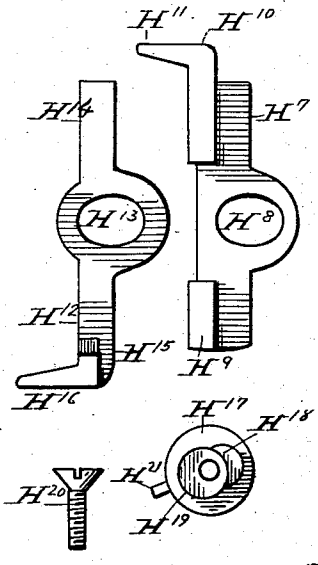

Fig. 14.

Fig. 15.

Witnesses:
Amy F. Acton
E. L. Harlow.

Inventor.
Eastus Woodward
By J. S. Rusk
Atty

UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE WOODWARD MANUFACTURING COMPANY, OF SACO, MAINE.

MACHINE FOR LOADING HEELS WITH NAILS.

SPECIFICATION forming part of Letters Patent No. 570,654, dated November 3, 1896.

Application filed September 21, 1895. Serial No. 563,197. (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 new and useful Improvements in Machines for Loading Heels with Nails; and I hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in heel-loading machines in which nails are partly driven into a pile of heel-lifts in order to form a heel-blank ready to be attached by the same nails to the heel-seat of the boot or shoe, and my improvements are adapted for use in machines of the character shown in my reissued Letters Patent No. 11,486, dated April 16, 1895, and of the character shown in my application for United States Letters Patent for improvements on heel-loading machines, Serial No. 534,963, filed January 15, 1895.

One object of my invention is to provide for the vertical adjustment of the heel-plate and the heel-blank located thereon in relation to the nail-driving mechanism, so that the variations in the heights of the heels to be loaded with nails and the lengths of the nails to be used, which vary according to the thickness of the heels to be loaded, can be provided for; and another object is to provide for the horizontal adjustment of the heel-blank on the heel-plate in relation to the nail-driving mechanism, so that the position of the nail driven into the heel-blank can be arranged with reference to its distance from the breast or front edge of the heel and also from the back edge of the heel.

A further object is to provide for the manipulation of the heel-plate by drawing the same quickly away from the machine after a heel has been loaded, removing the same and placing a heel-blank on the heel-plate, and bringing the heel-plate with the first feeding-point of a series of feeding-points located thereon quickly into position for the loading of the heel-blanks with nails.

These and other objects are accomplished by the mechanism hereinafter described, and shown in the drawings.

My invention consists of certain novel features hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form a part of this application and illustrate a construction embodying my invention, Figure 1 is a perspective view of my improvements, showing the position of the parts when a new heel-blank has been placed on the heel-plate preparatory to passing into position to be loaded with nails and showing a cam-plate for locking said heel-plate in a position to remove a loaded heel and to receive a new heel-blank. Fig. 2 is a plan view of Fig. 1 and showing the parts in plan view in the same relative position as in Fig. 1. Fig. 3 is a plan view showing the position of the heel-plate after it has moved forward into position to be loaded with nails and showing the first feeding-pin of the heel-plate in contact with the feed-wheel by which said heel-plate is revolved, and also showing the other position of the cam-plate when moved out of contact with the heel-plate. Fig. 4 is a plan view showing the location of the heel-plate when the heel is to receive the last nail and showing the last feeding-pin in contact with the feed-wheel, the heel being shown in dotted lines, and also the nails, which are located directly above each feeding-pin, except the last one. Fig. 5 is a plan view showing the position of the parts after the last nail has been driven, with the first and the last feeding-pin resting in the teeth of the feed-wheel, and showing in dotted lines the heel with the nails, one above each feeding-pin, and representing the heel as fully loaded, one nail for each feeding-pin. Fig. 6 is a plan view with the heel-plate removed and showing the position of the feed-wheel and sliding plate. Fig. 7 is a side view showing the first feeding-pin of the heel-plate in contact with the feed-wheel and the cam-plate out of locking position with the heel-plate, and also showing other parts hereinafter described. Fig. 8 is a front elevation taken from the front of the machine and showing in dotted lines a new heel-blank on the heel-plate. Fig. 9 is a perspective view of the fixed and movable brackets and coöperating parts. Fig. 10 is a plan view of the heel-plate. Fig. 11 is a reversed plan view of the

heel-plate. Fig. 12 is a longitudinal sectional view taken on the line *y y*, Fig. 11. Fig. 13 is a cross-sectional view taken on the line *z z*, Fig. 12. Fig. 14 represents several detail views of coöperating parts hereinafter described. Fig. 15 is a side view of the heel-plate, showing a new heel-blank about to be applied to the heel-plate. Fig. 16 is a perspective view of a heel-blank which has been loaded with nails and partly broken away at one point to show the distance the driven nails extend through the heel-blank.

Like letters of reference refer to like parts throughout the several views.

In the drawings, A represents part of the frame of a machine of the character shown in the above-mentioned reissued Letters Patent and the said application for improvements in machines for loading heels with nails, and secured to the said frame A is a vertical bracket B, having two horizontal arms B′, through which bolts B^2 pass and secure said bracket to the frame A of the machine, Figs. 1 and 8. Resting against said fixed bracket B is arranged a vertically-movable bracket C, consisting of a vertical wall C′ and two horizontal arms C^2, and from the vertical portion C′ extend two webs C^3 for strengthening and supporting the horizontal arms C^2. The upward movement of said bracket C is limited by a pin C^4, located thereon, which in the upper limit of movement of the bracket C strikes one of the plates C^5, which are secured on both sides to the bracket B by screws C^6, and said plates C^5 extend over the reduced edges C^7 of the vertical wall C′ of the bracket C and provide a guideway for said bracket C on both sides in its upward and downward movements. The downward movement of said bracket is limited by the lug B^3, cast with or otherwise secured to the lower part of the bracket B, and through an eye in said lug B^3 there is arranged a thumb-screw B^4, the upper end of which bears against the lower portion of the bracket C, and by the movement of said thumb-screw B^4 the said bracket C can be adjusted to the proper height, as may be required, and for reasons which will be hereinafter explained. (See Figs. 1, 8, and 9.)

On the top of the arm C^2 there is located a sliding plate D, having a depending lug D′, extending down in the space between the arms C^2, and to said lug there is secured a pin D^2, to which one end of the coiled spring D^3 is secured, and the other end of said spring is secured to a suitable pin D^4, fastened to the vertical wall C′ of the vertically-movable bracket C, and the function of said spring is to retain said sliding plate D in the positions shown in Figs. 4, 5, 6, 7, 8, and 9, that is, with the inner end of said plate D near the upper part of the vertical wall C′ of the bracket C, as shown in Fig. 6.

Secured to the side of one of the arms C^2 is an adjustable bracket E, (see Fig. 1,) having a vertical portion E′ and at its top a pin E^2, on which is mounted the friction-roller E^3, and by means of a bolt E^4 and slot E^5 the said bracket can be adjusted horizontally in position on the arm C^2, and by means of the pin E^6, projecting from the side of the arm C^2 into the slot E^7 of the bracket E, the said bracket is kept in a straight line in its adjustments.

Secured to and extending upwardly from the sliding plate D is a pin F, (see Figs. 7, 8, and 9,) on which the hub F′ of the cam-plate F^2 is mounted, and by means of the plate F^3 and screw-nut F^4 said cam-plate by its hub F′ is retained on said pin F and adapted to revolve thereon. A recess F^5 is formed in the said cam-plate and fits around the friction-roller E^3, mounted on the pin E^2 of the bracket E, and said cam-plate is also provided with the point F^6, adapted to come in contact with a recess in the heel-plate and hold said heel-plate out of an operative position, as hereinafter described.

Secured to and projecting upwardly from the sliding plate D at the other end from the cam-plate F^2 is a pin G, Figs. 6, 9, and 12, on which the heel-plate G′ is mounted and adapted to revolve, and the said heel-plate is constructed of an upper plate G^2 and the lower plate G^3, with a series of feeding-pins G^4 extending between said plates G^2 and G^3. The hub G^5, which fits over the pin G, (see Fig. 12,) extends from the upper plate G^2, and its lower end passes through an opening in the lower plate G^3, as shown in Figs. 12 and 13, and by means of a series of rivets G^{17}, one of which passes through each of the feeding-pins G^4 and is riveted at each end, as shown in Figs. 13 and 14, the said plates, pins, and hub are held firmly together.

Through the center of the upper plate G^2 there is a longitudinal recess G^6, as shown in Figs. 2, 10, and 12, and in the rear part of said recess there is arranged a plate G^7, composed of a rear upward extension G^8 and two horizontal arms G^9, having inwardly-inclined edges G^{10}, on which edges there is adapted to bear a plate G^{11}, and through said plate is a screw G^{12}, adapted to screw said plate G^{11} down on the arms G^9 of the plate G^7, and thereby hold said plate in a fixed position, so that by means here described it is obvious that said plate G^7 can be adjusted in any desired horizontal position with relation to the top plate G^2 of the heel-plate G′.

A rim G^{13} extends around the outer edge of the upper plate G^2 of the heel-plate, and beneath it are located the plate G^7 and the front plate H, arranged to slide in said longitudinal recess G^6, and both said plates G^7 and H have dovetailed joints with that part of the plate G^2 around the recess G^6 to hold said plates in their proper positions in their forward and rearward sliding movements in said recess G^6. (See Figs. 3, 10, and 13.)

Secured to the under side of the front end of the plate H is a pin H′, to which is secured one end of a coiled spring H^2, and the other

end of said spring is secured to the pin H^3, extending upwardly from the hub G^5, and by means of said spring the cross-plate H^4, secured to the front plate H, is held in contact with the front edge of the rim G^{13}, (see Fig. 12,) and the plate H is held in the position shown in said figure and in other views of the drawings by means of said spring. Located on said cross-plate H^4 is an arm H^7, (see Figs. 12, 13, and 14,) having an eccentric-opening H^8, and on one end a vertical lug H^9, and on the opposite end a vertical lug H^{10} with a right-angle end H^{11}, and located on said arm H^7 is another arm H^{12}, having an eccentric-opening H^{13}, adapted to register with the eccentric-opening H^8 when said arm H^{12} is placed over the arm H^7, and said arm H^{12} is also provided with an extension H^{14}, adapted to bear against the rear side of the lug H^{10}, and another arm H^{15}, adapted to bear against the rear side of the lug H^9, and with a right-angle end H^{16}, located around the end of the said lug H^9.

On the under side of the ring H^{17} are secured two eccentrics H^{18} and H^{19}, and through said ring and eccentrics there is a suitable opening through which the screw H^{20} is adapted to pass and screw said ring H^{17} and plates H^7 and H^{12} down firmly on the plate H^4, secured to the plate H, with the eccentric H^{18} in the eccentric-opening H^{13} and the eccentric H^{19} in the eccentric-opening H^8 of the plates H^{12} and H^7, respectively. By means of said eccentrics working in the said openings it is obvious that by first loosening the screw H^{20} and then taking hold of the pin H^{21} on the ring H^{17} the said eccentrics can be moved and will act at one and the same time and in opposite directions on the plates H^7 and H^{12}, respectively, and move the said plates inwardly or outwardly as the eccentrics are respectively brought toward the ends of the eccentric-openings or against the sides, as it is obvious that when moved against the sides of said openings the eccentrics will move said plates outwardly from one another, as said eccentrics move together and act oppositely on the plates H^7 and H^{12}; but when said ring H^{17} is moved so that the eccentrics are brought toward the ends of the openings instead of the sides the tendency will be to draw said plates inwardly and move the said ends H^{11} and H^{16} toward one another, the said inward or outward movements depending upon the space required between the said ends H^{11} and H^{16} to accommodate heels of varying width at the breast on the heel-plate G', for if a heel wide at the breast is to be loaded the ring H^{17} is moved to cause the eccentrics to act on the sides of the openings H^8 and H^{13} and thereby move the arms laterally away from one another, so as to increase the space between the right-angle ends H^{11} and H^{16}; or if a heel narrow at the breast is to be loaded, by turning the ring H^{17} so that the eccentrics H^{18} and H^{19} move toward the ends of the openings H^{13} and H^8 the ends H^{11} and H^{16} can be made to approach one another to accommodate a heel narrow at the breast, so that by means here described it is clear that heels which vary in width at the breast may be placed on the same heel-plate and loaded, and within ordinary limits, say about one-fourth of an inch in width at the breast, the plates H^7 and H^{12} can be adjusted as above described for such heels; but if the width at the breast should vary greater than this the plates H^7 and H^{12} can be changed to plates of similar construction, but of greater or less width, depending upon the width of the heel at the breast to be loaded. Short pins H^{22}, (see Fig. 1,) secured to the plate H^4, act as guides for the plates H^7 and H^{12} in their lateral movements.

As shown in Fig. 15, to apply a new heel-blank to the heel-plate the breast of the heel is placed between the arms H^{11} and H^{16} against the lugs H^9 and H^{10} of the arm H^7, and by pressing slightly forward against the above-mentioned parts the said plate H, to which the plates H^7 and H^{12} are secured by the screw H^{20}, (see Fig. 12,) moves forward against the tension of the spring H^2 and the rear of the heel is moved down into position against the vertical part G^8 of the rear plate G^7, and the spring H^2, contracting, holds said heel firmly between the front plates H^7 and H^{12} and the upper part G^8 of the rear plate G^7, as shown in Fig. 1, and by the movements above described, that is, the moving forward of the plate H against the tension of the spring H^2 by pressure of the breast of the heel-blank against the parts above described, the rear of the heel can be placed down on the rim G^{13} of the heel-plate past the forward incline of the top G^8 of the rear plate G^7, and the plate H^4, with the arms H^7 and H^{12}, provided, respectively, with the right-angled arms H^{11} and H^{16}, between which the breast of the heel is placed, adapt themselves, against the tension of the spring H^2, to the length of the heel-blank placed on said heel-plate after the rear plate G^7 has been adjusted for locating the position of the driven nails with reference to the breast and back of the heel, as hereinafter fully described.

Referring now to Figs. 8 and 9, there is arranged on the under side of the sliding plate D the depending lug D^5, with which the upper end of the lever K is adapted to come in contact and press the sliding plate D outwardly into the position shown in Fig. 1 against the tension of the spring D^3. The lever K extends downwardly and is journaled on the bolt K', having a support in the lower end of the arm K^2, which is provided with a horizontal arm K^3, secured by bolts K^4 to the frame of the machine. Beyond the fulcrum K' the lever K is provided with an arm K^5 and suitable vertical connections K^6, to which is connected the pivoted treadle K^7, provided with a foot-rest K^8, so that by pressing down on the foot-rest K^8 the upper end of the lever K acts against the lug D^5 and moves the sliding plate D out into the position shown in

Fig. 1, and as said plate moves outwardly the cam-plate F^2, being journaled on the pin F, turns on said pin, and the antifriction-roller E^3, located in the recess F^5 of the cam-plate F^2, moves said cam-plate into the position shown in Fig. 1, with the point F^6 moving into the recess G^{14} in the side of the top plate G^2 of the heel-plate G', and thus locks said heel-plate in the position shown in Figs. 1 and 2, in which position a loaded heel can be removed and a new heel inserted by the attendant. In Figs. 1 and 2 this position of the parts is shown, representing the plate D held out in the position above described with a new heel on the heel-plate, and the heel-plate remaining in its locked position until the foot is removed from the treadle K^7, when the spring D^3 draws said plate D back into the position shown in Figs. 3, 8, and 9, with the first feeding-pin between the teeth of the feed-wheel I, as shown in Figs. 3 and 7, and the cam-plate F^2, being journaled on said plate D, is caused by the inward movement of said plate D, due to the spring D^3 and the friction-roller E^3, to assume the position shown in Figs. 3 and 9.

The object of the adjustable bracket E, previously referred to, is that if a large heel-plate is to be used the bracket would be moved as far away from the heel-plate as necessary, and if a small heel-plate is to be used the bracket would be moved nearer to the said small heel-plate than when a large heel-plate is used. In all cases of adjustment the principle is the same, namely, that the distance the bracket is to be moved is the distance necessary to allow a free revolution of the heel-plate during the loading of the heel, without contact between said heel-plate G' and cam F^2 during such loading. As the heel-plates decrease in size the bracket is moved nearer to the heel-plate, so that when pressure is applied to the treadle to move the plate D outwardly the end F^6 of the cam-plate F^2 will pass quickly into the recess G^{14} of the heel-plate, for if the bracket E was out to the extreme limit necessary for the largest heel-plate it is obvious that unless said bracket was moved inwardly for small heel-plates it would require a longer time for the cam-plate F^2 to engage the recess G^{14} of the heel-plate than where said bracket E is adjusted nearer to said heel-plate, for it would take a longer stroke of the foot to cause the engagement of said cam-plate and heel-plate.

It is evident that as the slide D moves outwardly the cam F^2 begins to revolve toward the heel-plate and the end F^6 of the cam F^2 strikes against the point G^{15} of the upper plate G^2 of the heel-plate, and by striking said point it revolves said plate around until the arc or recess G^{14} of the plate will just fit the arc of the cam, as shown in Figs. 1 and 2, and thereby lock said plate to receive a new heel, and in this position the first feeding-pin G^4 of the heel-plate is in a horizontal line with the teeth of the ratchet-wheel and the lug C^8, as indicated by line 3 3, Figs. 1 and 2, so that as the heel moves inwardly, by reason of the spring D^3, the first feeding-pin will pass into proper position with the feed-wheel I and over the lug C^8, and thus said cam-plate F^2 serves not only, in connection with the recess G^{14}, to lock said heel-plate in position to allow the removal of a loaded heel and the insertion of a new heel-blank to be loaded, but also is the means by which the first feeding-pin of the heel-plate is arranged in a horizontal line with the feed-wheel I, so that said first pin will pass into its proper position with said feed-wheel as the heel-plate moves inwardly after a new heel has been placed thereon to be loaded with nails.

From the above it is clear that the first feeding-pin G^4 is so located by the cam-plate F^2 as to engage with the feeding mechanism upon the engagement of the heel-plate and feeding mechanism before any other pin of said series, so that by providing mechanism which causes the first feeding-pin G^4 to come under the nail-driving mechanism before any other pin of said series it is evident that a nail will be driven into the heel-blank for every feeding-pin on the heel-plate from the first to the last, or, in other words, that there will be as many nails driven into the heel-blank as there are feeding-pins on said heel-plate.

The feed-wheel I and the ratchet-wheel I^2, secured to the under side of said feed-wheel I, are both mounted on the shaft I', located in the frame A of the machine, and said ratchet-wheel may be driven by any suitable operating mechanism to communicate power to the said feed-wheel I, by which said heel-plate G' is operated.

At the top of the vertically-movable bracket C, and between the two horizontal arms C^2, there is arranged a short pin or lug C^8, which lies just below the wheel I and between the teeth thereof. (See Figs. 1, 6, and 7.)

When a new heel has been inserted on the heel-plate G' and pressure is removed from the treadle, the spring D^3, acting on the plate D, moves said heel-plate inwardly to an inner position, so that the first of the feeding-pins G^4 passes between two of the teeth of the feed-wheel I (see Figs. 3 and 7) and directly over the lug C^8. Now as the feed-wheel I is mounted on a fixed shaft, and consequently has always the same horizontal relation to the lug C^8, it is obvious that as the feed-wheel is turned and a new pin G^4 comes into the space between the teeth of the revolving wheel I each pin is located over the lug C^8, so that said lug takes up the blow of the driving mechanism as the nails are driven into the heel by any suitable driving mechanism, as X, (shown in dotted lines, Figs. 1 and 7,) whose line of vertical movement in relation to the lug C^8 and each pin moved over said lug is indicated in Fig. 1 and by line 1 2, Fig. 7.

As the hub G^5 is mounted on the pin G and

adapted to revolve thereon, it is obvious that as the pins G^4 are not all located at points equally distant from the hub G^5 as a center each pin G^4 in the revolution of the heel-plate passes into a depression between the teeth of the feed-wheel I, and as said feed-wheel is fixed on a center and cannot yield the plate D must have a slight inward and outward movement under the control of the spring D^3 as the various pins come into position between the teeth of the feed-wheel I, and said spring tends to hold the pins in contact with said feed-wheel I, but allows an inward and outward movement to the plate D, owing to said pins, as previously stated, being not all located at points equally distant from the hub G^5 as a center. Consequently said plate D is adapted to move slightly inward and outward as the various pins are brought into relation with the feed-wheel I. In said revolution of the heel-plate each pin comes over the lug C^8, and as the last one of the feeding-pins G^4 moves around into position between the teeth of the feed-wheel I and over the lug C^8 the heel-plate assumes the position shown in Fig. 4 and an extended corner G^{16} comes in contact with the knob L, secured to the free end of the arm L', which extends to and is connected with any suitable power-shifting mechanism, and as the wheel continues its movement the said corner G^{16} moves said knob away from its position shown in Fig. 1 and the power is thrown off. The said device may be of the kind shown and described in my reissued Letters Patent hereinbefore mentioned, but, if desired, any other power-shifting mechanism may be used, it only being necessary that some means should be provided on the heel-plate to trip off the power when the last nail has been driven, and as said last nail is driven and the power has been thrown off the heel-plate assumes the position shown in Fig. 5, with the nails driven into the heel corresponding in number and in position to the number of pins G^4 on said heel-plate, so that it is obvious that a greater or less number of nails may be driven, as desired, depending upon the construction of the heel-plate, which may vary suitably for large or small heels and for larger or smaller number of nails to be driven into the heel. When the heel-plate assumes the position shown in Fig. 5, the operator presses on the treadle and throws the heel-plate out into the position shown in Fig. 1, when the loaded heel can be removed and a new one inserted in its place, and the operation continues as above described, the power being put on by pressure of the foot on a suitable treadle connected with the power-shifting operating mechanism as the first feeding-pin of the heel-plate passes into operative position with the feed-wheel I.

From the above description it is obvious that as many nails will be driven into the heel-blank as there are feeding-pins G^4 and that the position of each nail driven into the heel is determined by the position of said feeding-pins, that is, each nail is driven into the heel directly above one of the said feeding-pins, for as each feeding-pin in turn comes over the lug C^8 a driving operation takes place, and as the lug C^8 is in the same vertical plane as the line of motion of the nail-driving mechanism it is evident that the position of each nail driven into the heel-blank is directly above one of the feeding-pins G^4. As shown in Fig. 1 in full lines and in Fig. 2 in dotted lines, a new heel-blank has been applied to the heel-plate before the same has moved into position to be fed by the feed-wheel and to be loaded with nails, and in Fig. 3 the heel-plate has moved, by reason of the spring D^3, into the position shown, with its first feeding-pin in proper position with the feed-wheel, by which the heel-plate is operated, and in Fig. 4 the heel-plate is shown as having been turned by the feed-wheel from the position shown in Fig. 3 until the last feeding-pin has moved into position with the feed-wheel, and, as shown in dotted lines, there has been driven into the heel-blank nails M, one above each feeding-pin G^4, (shown in dotted lines,) and as the last nail is driven above the last feeding-pin the heel-plate assumes the position shown in Fig. 5, in which there is shown in dotted lines a heel-blank with the nails M also in dotted lines, one above each feeding-pin G^4, (shown in dotted lines,) and in this position, as previously described, the operator, pressing on the foot-rest K^8 of the treadle K^7, moves the heel-plate out into position shown in Fig. 1, when the loaded heel can be removed and a new heel-blank inserted to be loaded by the next operation.

As the feeding-pins G^4 are in a fixed position in reference to the pin G, on which the heel-plate revolves, it is evident that by changing the position of the heel-blank in reference to the said pin G as a center the position of the nails driven into the heel-blank in reference to the breast of the heel or back of the heel will be changed, for if the heel be moved forwardly against the arms H^7 and H^{12} it is obvious that the driven nails will be some distance back from the breast of the heel and nearer the back edge of the heel, or if the heel be located back, so that the breast of the heel is just slightly beyond the front pins G^4, the nails driven will be nearer the breast of the heel and away from the back edge of the heel, as shown in Fig. 16 and also in several of the views where the heel and driven nails are indicated in dotted lines, and in some cases this is desirable in order that the back of the heel may be concaved in a style known as the "French heel." Now in such a case if the nails were driven away from the breast and near the back edge of the heel, in shaping the heel by the cutter, after the attachment of the heel to the boot or shoe, the cutter would cut into said nails and destroy the heel, so that by those manufacturers who desire to concave the heels it is necessary to drive the nails as near to the breast of the heel as possible,

and away from the back. In order to accomplish this desired position of the nails in the heel-blank, all that is necessary is to adjust the back plate G^7, for if the said plate is moved inwardly toward the front plates H^7 and H^{12} it is obvious that the breast of the heel will be located a considerable distance forward beyond the line of the two front feeding-pins G^4 and the nails will be located away from the breast and near to the back edge of the heel, and in such case of course the heel could not be concaved, but where it is desired to concave the heel the plate G^7 is moved outwardly away from plates H^7 and H^{12}, as indicated in Figs. 4 and 5, so that the breast of the heel is just slightly beyond the two front pins G^4, in which case the front nails are near the breast of the heel and the other nails do not approach the back edge of the heel, as they would where the front or breast nails are driven farther away from the breast of the heel, so that it will be seen that the adjustment of the back plate G^7 determines the distance the breast-nails are located from the breast of the heel, so that the nearer to the breast of the heel the breast-nails are located the farther distance the other nails are from the back edge of the heel, and, vice versa, the farther away from the breast the breast-nails are located the nearer the back of the heel the other nails are located, and it will be noted that in all cases the two front pins G^4 determine the position of the two front or breast nails in the heel-blank. By this construction the nails can be located in any desired position in reference to the back edge of the heel or breast of the heel, depending upon the shape it is desired to make the heel, and in this way each manufacturer can decide for himself as to the positions the nails will occupy. The heels are always adjusted from the back with relation to the curve of the heel-seat of the boot or shoe. The reason is that a jack is provided on which the shoe is placed, and the nails must all be in the same relation to the back of the heel in order to have the heel come in the right position upon the curve of the heel-seat of the boot or shoe, and the front of the heel is movably adjustable because it is immaterial how far front the breast of the heel comes, but it is evident that the back edge of the heel must always have a fixed adjustment because it must always come in line with the curved edge of the heel-seat of the boot or shoe. The upper surface of the heel-blank, into which the nails are driven, must of course always extend beyond the position of the feeding-pins G^4 in order that the nails be driven into said heel-blank, and it is immaterial how much concave there is to the heel-blank when placed on the machine to be loaded, as the yielding front plates H^7 and H^{12} and adjustable back plate G^7 can be set so as to locate the breast-nails near the breast of the heel and the other nails away from the back edge of the heel-blank, and it is only necessary that the upper surface to receive the nails shall extend over, or, in other words, have its surface above, each feeding-pin, so that the nail can be driven therein as each feeding-pin comes over the lug C^8 and in the line of motion of the nail-driving mechanism.

As previously stated, in some cases, where the front plates H^7 and H^{12} cannot be moved a sufficient distance laterally to accommodate a heel very wide at the breast, new plates H^7 and H^{12} of greater width can be substituted for the shorter ones. So also in cases where the heel is long, or that part of the heel which rests on the heel-p[illegible]e is very long, if the back plate is too short to be properly adjusted to accommodate such a heel-blank, to locate the breast-nails forward and the other nails away from the back of the heel in order to make a French heel, then in such cases a back plate G^8 of greater length can be substituted.

As heel-blanks of different heights or thicknesses may be used on the same machine, it is of course necessary to vary the length of the nails used for loading said heel-blanks, and as the nail must be driven just through the heel-lifts forming the heel-blank it is obvious that where a long nail is used for a heel of greater thickness the bracket C must be adjusted downwardly in relation to the nail-driving mechanism, because said nail-driving mechanism always strikes said nail at a fixed point and has always a certain limit of stroke, so that the nails, when driven, will just pass through the heel-lifts, as shown in Fig. 16.

Now, in the case of thin heels, short nails are used, in which case the vertically-adjustable bracket C must be moved upwardly in order that the nail-driving mechanism, which, as above stated, always strikes said nail at a fixed point and has a certain limit of stroke, will drive said nails just through the heel-lifts forming the heel-blank, so that the object of the vertically-adjustable bracket C is to adapt the machine to different thicknesses of heels and to different lengths of nails, which vary according to the thicknesses of the heels to be loaded on the machine.

As shown in Fig. 16, the nails driven into the heel-blank just extend through the heel-lifts forming the heel-blank and leave a certain amount of the nail above the heel, and the said heel is afterward attached to the heel-seat of the boot or shoe by any suitable heel-attaching mechanism.

I do not limit myself to the construction and arrangement shown, as the same may be varied without departing from the spirit of my invention.

Having thus ascertained the nature and set forth a construction embodying my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for

carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, and mechanism coöperating with said movable plate adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism and to cause engagement of said locking device and the said heel-plate.

2. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, a movable plate on which said heel-plate is mounted, feeding mechanism for operating said heel-plate, a locking device on said movable plate adapted to engage with said heel-plate when said heel-plate is moved from engagement with said feeding mechanism and to hold said heel-plate with the first feeding-point of the said series in line with the feeding mechanism, mechanism coöperating with said movable plate adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism and to cause the engagement of said locking device and said heel-plate, and means acting on said movable plate for moving the first feeding-point of the said series on said heel-plate into engagement with the feeding mechanism upon the release of said heel-plate from engagement with said locking device.

3. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, and mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism and to cause the engagement of said locking device and said heel-plate.

4. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel plate from engagement with said feeding mechanism, and means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

5. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

6. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, a vertically-adjustable bracket carrying the said movable plate and adapted to be adjusted to different heights for heels of varying thicknesses carried by said heel-plate, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and means located on said vertically-adjustable bracket coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

7. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, a vertically-adjustable bracket carrying the said movable plate and adapted to be adjusted to different heights for heels of varying thicknesses carried by said heel-plate, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and an adjustable bracket located on said vertically-adjustable bracket coöperating with said locking device for moving said locking device into engagement with said

heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

8. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, a series of feeding-points on said heel-plate with which said feeding mechanism coöperates, mechanism for engaging with said heel-plate upon the disengagement of said heel-plate and feeding mechanism and adapted to locate the first feeding-point of said series adjacent to and in line with said feeding mechanism, and means for moving said first feeding-point on said heel-plate into engagement with said feeding mechanism.

9. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, a series of feeding-points on said heel-plate with which said feeding mechanism coöperates, mechanism adapted when actuated by the operator to move the said heel-plate from engagement with said feeding mechanism, mechanism for engaging with said heel-plate upon the disengagement of said heel-plate and feeding mechanism and adapted to locate the first feeding-point of said series adjacent to and in line with said feeding mechanism, and means for moving said first feeding-point on said heel-plate into engagement with said feeding mechanism upon the release of said actuated mechanism.

10. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, a series of feeding-points on said heel-plate with which said feeding mechanism coöperates, mechanism for moving the heel-plate from engagement with said feeding mechanism, a locking device for engaging with said heel-plate upon the disengagement of said heel-plate and feeding mechanism and adapted to locate the first feeding-point of said series adjacent to and in line with the said feeding mechanism, and means for moving said first feeding-point on said heel-plate into engagement with said feeding mechanism.

11. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, an adjustable bracket carrying the said movable plate, feeding mechanism for operating said heel-plate, a series of feeding-points on said heel-plate with which said feeding mechanism coöperates, and each point representing the position of a nail to be driven into the heel-blanks, a lug on said adjustable bracket in vertical alinement with said nail-driving mechanism and over which each feeding-point in turn is located, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move said heel-plate from engagement with said feeding mechanism, and means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

12. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, and a locking device adapted to engage with said heel-plate upon the disengagement of said heel-plate and feeding mechanism.

13. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate upon the disengagement of said heel-plate and feeding mechanism, and means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

14. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, mechanism for moving said heel-plate from engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate upon the disengagement of said heel-plate and feeding mechanism, means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism, and means for moving said heel-plate into engagement with said feeding mechanism.

15. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, a series of feeding-points on said heel-plate with which said feeding mechanism coöperates, mechanism for locating the first feeding-point of said series in line with said feeding mechanism upon the disengagement of said heel-plate and feeding mechanism, and means for moving said heel-plate into engagement with said feeding mechanism.

16. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, a heel-holding device on said heel-plate for holding the heel-blanks thereon and consist-

ing of a yielding front plate and a rear adjustable plate, means for holding said rear adjustable plate in its adjusted positions, two movable arms located on said front plate and movable therewith and adapted to be adjusted laterally for heels of varying widths at the breast, and pins for guiding said movable arms in the lateral movements thereof.

17. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism.

18. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism and consisting of a front plate and a rear adjustable plate, and means for holding said rear adjustable plate in its adjusted positions.

19. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism and consisting of a yielding front plate and a rear adjustable plate, and means for holding said rear adjustable plate in its adjusted positions.

20. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism and to move each point in turn in the line of motion of said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said feeding-points and to said nail-driving mechanism.

21. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism and to move each point in turn in the line of motion of said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said feeding-points and to said nail-driving mechanism and consisting of a yielding front plate and a rear adjustable plate, and means for holding said rear adjustable plate in its adjusted positions.

22. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism and consisting of a yielding front plate and a rear adjustable plate, means for holding said rear adjustable plate in its adjusted positions, and two laterally-movable arms located on said front plate and movable therewith and adapted to be adjusted laterally to accommodate heels of varying widths at the breast.

23. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks relatively to the said nail-driving mechanism and consisting of a yielding front plate and a rear adjustable plate, means for holding said rear adjustable plate in its adjusted positions, two laterally-movable arms located on said front plate and movable therewith, means for simultaneously operating said movable arms laterally in opposite directions to accommodate heels of varying widths at the breast, and means for holding said laterally-movable arms in their adjusted positions.

24. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for car-

rying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and consisting of a front plate having two arms which are adapted to be laterally adjusted to accommodate heels of varying widths at the breast and a rear plate which is adapted to be adjusted lengthwise of the heel-plate to vary the position of the heel-blanks on the said heel-plate relatively to the said nail-driving mechanism.

25. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism and to move each feeding-point in turn in the line of motion of the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and consisting of a front plate having two arms which are adapted to be laterally adjusted to accommodate heels of varying widths at the breast and a rear plate which is adapted to be adjusted lengthwise of the heel-plate to vary the position of the heel-blanks on the heel-plate relatively to said feeding-points and to said nail-driving mechanism.

26. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism and consisting of a rear plate and a front plate which is provided with means adapted to be adjusted to accommodate heels of varying widths at the breast.

27. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and consisting of a front plate provided with means adapted to be adjusted to accommodate heels of varying widths at the breast and a rear plate which is adapted to be adjusted lengthwise of the heel-plate to vary the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism.

28. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and consisting of a front plate and a rear plate which is adapted to be adjusted lengthwise of the heel-plate to vary the position of the heel-blanks on the heel-plate relatively to the said nail-driving mechanism.

29. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating the said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted lengthwise of the heel-plate for varying the position of the heel-blanks on the said heel-plate relatively to the said nail-driving mechanism and adapted to be laterally adjusted to accommodate heels of varying widths at the breast.

30. In a heel-loading machine, a nail-driving mechanism, a heel-plate for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism and to move each feeding-point in turn in the line of motion of the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted lengthwise of the heel-plate for varying the position of the heel-blanks on said heel-plate relatively to said feeding-points and to said nail-driving mechanism and adapted to be laterally adjusted to accommodate heels of varying widths at the breast.

31. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate, and means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism and adapted to be adjusted for varying the distance of travel between said locking device and said heel-plate.

32. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of the said nail-driving mechanism for carrying the heel-blanks to be loaded, feed-

ing mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device adapted to engage with said heel-plate, means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism and adapted to be adjusted for varying the distance of travel between said locking device and said heel-plate, and mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism and to cause the engagement of said locking device and said heel-plate.

33. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device on said movable plate adapted to engage with said heel-plate, means coöperating with said locking device for moving said locking device into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism and adapted to be adjusted for varying the distance of travel between said locking device and said heel-plate, and mechanism coöperating with said movable plate adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism and to cause the engagement of said locking device and said heel-plate.

34. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, a series of feeding-points located on said heel-plate at different distances from the axis on which said heel-plate turns and representing the positions of the nails to be driven into the heel-blanks, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks relatively to the said feeding-points and to said nail-driving mechanism, and means for holding each feeding-point in turn in engagement with said feeding mechanism and in vertical alinement with said nail-driving mechanism.

35. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, a series of feeding-points located on said heel-plate at different distances from the axis on which said heel-plate turns and representing the positions of the nails to be driven into the heel-blanks, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks relatively to the said feeding-points and to said nail-driving mechanism, and yielding means for holding each feeding-point in turn in engagement with said feeding mechanism, and in vertical alinement with said nail-driving mechanism.

36. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, a series of feeding-points located on said heel-plate at different distances from the axis on which said heel-plate turns and representing the positions of the nails to be driven into the heel-blanks, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blanks thereon and adapted to be adjusted for varying the position of the heel-blanks relatively to the said feeding-points and to said nail-driving mechanism, a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted for varying the position of the heel-blanks relatively to the said feeding-points and to said nail-driving mechanism, and yielding means for holding each feeding-point in turn in engagement with said feeding mechanism, and in vertical alinement with said nail-driving mechanism.

37. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism and to move each feeding-point in turn in the line of motion of said nail-driving mechanism, means for holding the heel-plate in engagement with said feeding mechanism, and means for causing the first feeding-point of said series to engage with said feeding mechanism upon the engagement of said heel-plate and feeding mechanism.

38. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to said nail-driving mechanism and to move each feeding-point in turn in the line of motion of said nail-driving mechanism, means for holding said heel-plate in engagement with said feeding mechanism, mechanism adapted when actuated by the operator

to move the heel-plate from engagement with said feeding mechanism, and means for causing the first feeding-point of said series to engage with said feeding mechanism upon the engagement of said heel-plate and feeding mechanism.

39. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism and to move each feeding-point in turn in the line of motion of said nail-driving mechanism, a locking device adapted to engage with said heel-plate upon the disengagement of said heel-plate and feeding mechanism and to hold said heel-plate with the first feeding-pin of said series in line with the feeding mechanism, mechanism adapted when actuated by the operator to move said heel-plate from engagement with said feeding mechanism and to cause the engagement of said locking device and said heel-plate, and means for moving the first feeding-pin of said series on said heel-plate into engagement with the said feeding mechanism upon the release of said heel-plate from engagement with said locking device.

40. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points, feeding mechanism adapted to engage with said feeding points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, means for holding the said heel-plate in engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and means for causing the first feeding-point of said series to engage with said feeding mechanism upon the release of said actuated mechanism.

41. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, means for holding the said heel-plate in engagement with said feeding mechanism, and means for causing the first feeding-point of said series to engage with said feeding mechanism upon the engagement of said heel-plate and feeding mechanism.

42. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and adapted to be adjusted to accommodate heels of varying widths at the breast and to vary the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism.

43. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded, feeding mechanism for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel blank thereon and consisting of a front plate and a rear plate which is adapted to be adjusted on said heel-plate to vary the position of the heel-blanks on said heel-plate relatively to the said nail-driving mechanism.

44. In a heel-loading machine, a nail-driving mechanism, a heel-plate in the line of motion of said nail-driving mechanism for carrying the heel-blanks to be loaded and having a series of feeding-points representing the positions of the nails to be driven into the heel-blanks, feeding mechanism adapted to engage with said feeding-points for operating said heel-plate to move the heel-blank thereon relatively to the said nail-driving mechanism and to move each feeding-point in turn in the line of motion of said nail-driving mechanism, and a heel-holding device on said heel-plate for holding the heel-blank thereon and consisting of a front plate provided with means adapted to be adjusted to accommodate heels of varying widths at the breast and a rear plate which is adapted to be adjusted on said heel-plate to vary the position of the heel-blanks on said heel-plate relatively to said nail-driving mechanism.

45. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device consisting of a cam-plate mounted on said movable plate and adapted to engage with a recess in said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and means coöperating with said cam-plate for moving said cam-plate into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

46. In a heel-loading machine, a nail-driving mechanism, a heel-supporting plate for carrying the heel-blanks to be loaded, a movable plate on which said heel-plate is mounted,

a vertically-adjustable bracket carrying the said movable plate and adapted to be adjusted to different heights for heels of varying thicknesses carried by said heel-plate, feeding mechanism for operating said heel-plate, means for holding said heel-plate in engagement with said feeding mechanism, a locking device consisting of a cam-plate mounted on said movable plate and adapted to engage with a recess in said heel-plate when the same is moved from engagement with said feeding mechanism, mechanism adapted when actuated by the operator to move the heel-plate from engagement with said feeding mechanism, and means consisting of a pin provided on its upper end with a friction-roller located within a recess in said cam-plate and located on said vertically-adjustable bracket and adapted to coöperate with said cam-plate for moving said cam-plate into engagement with said heel-plate upon the movement of said heel-plate from engagement with said feeding mechanism.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of September, 1895.

ERASTUS WOODWARD.

Witnesses:
AMY F. ACTON,
E. L. HARLOW.