(No Model.) 2 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

HEEL ATTACHING MACHINE.

No. 316,177. Patented Apr. 21, 1885.

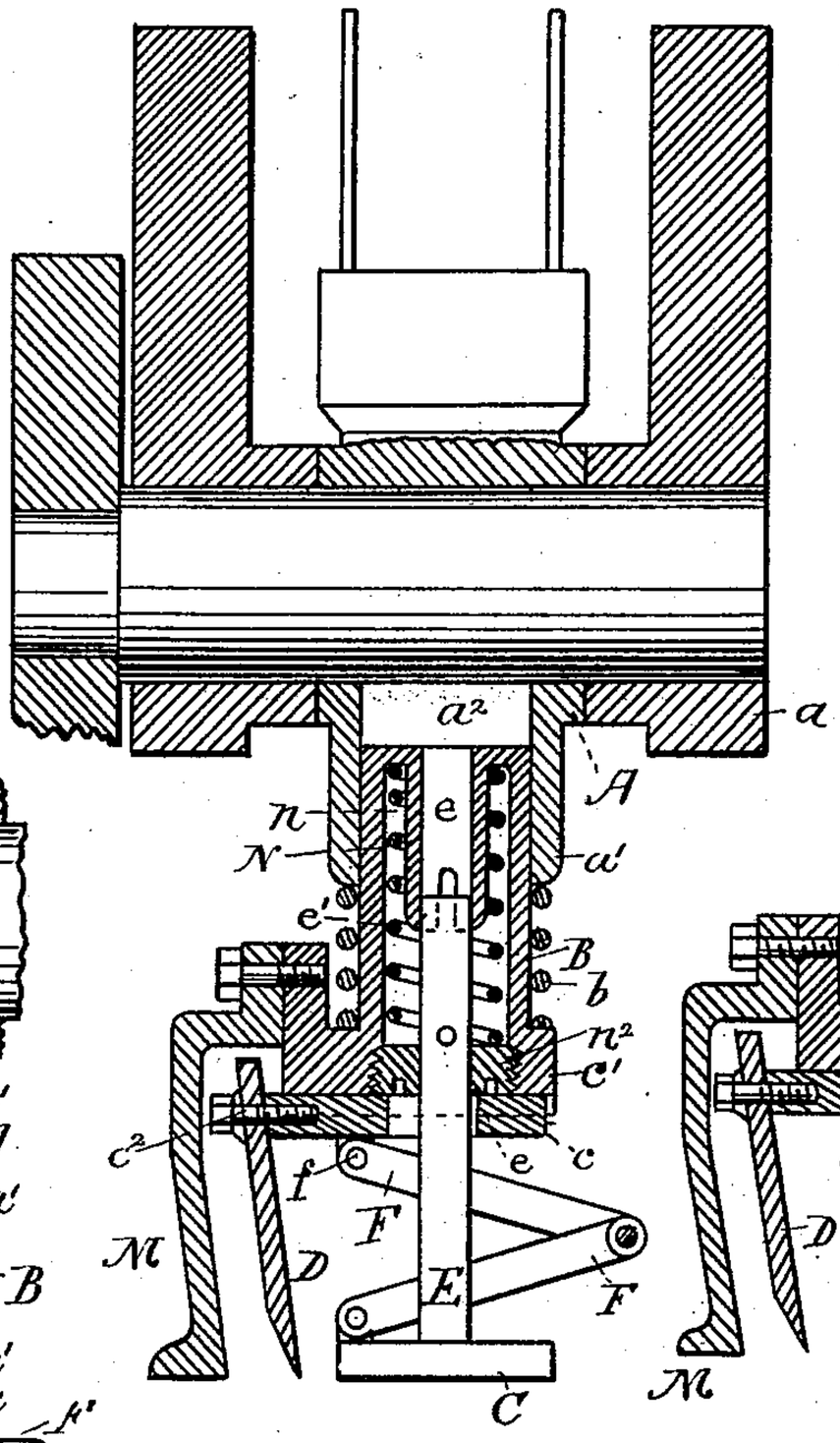

Fig. 4.

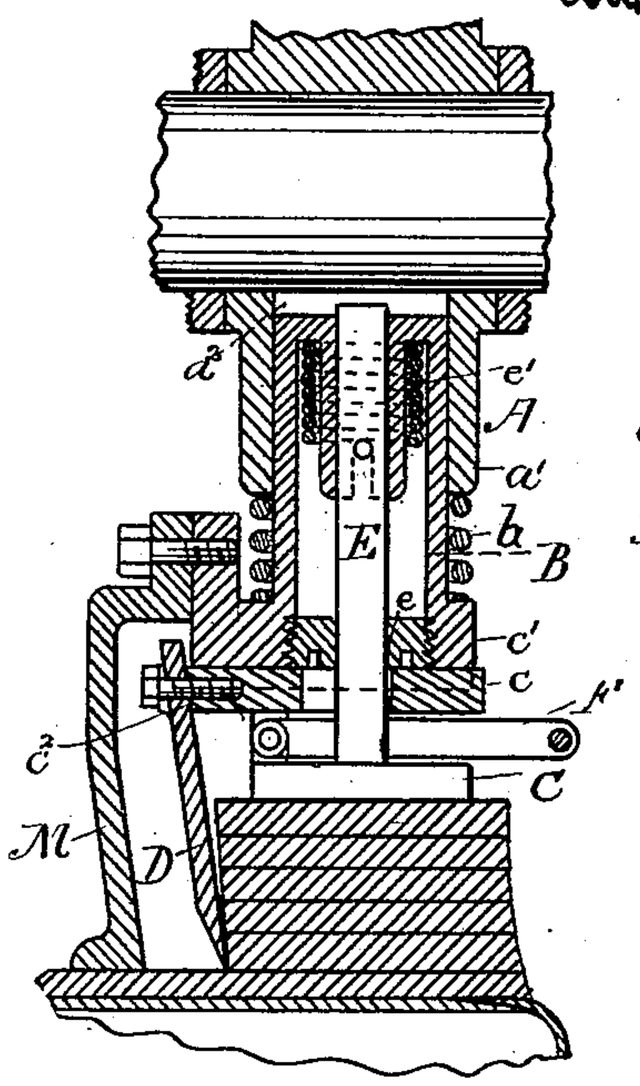

Fig. 2.

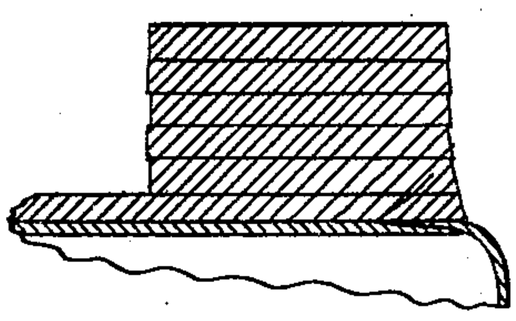

Fig. 1.

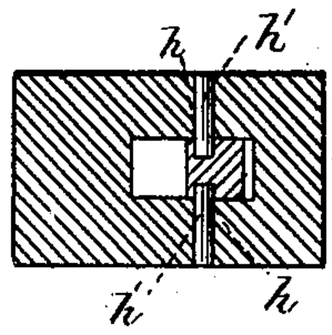

Fig. 5.

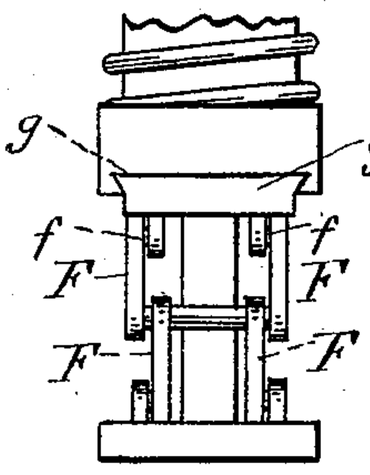

Fig. 3.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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HEEL ATTACHING MACHINE.

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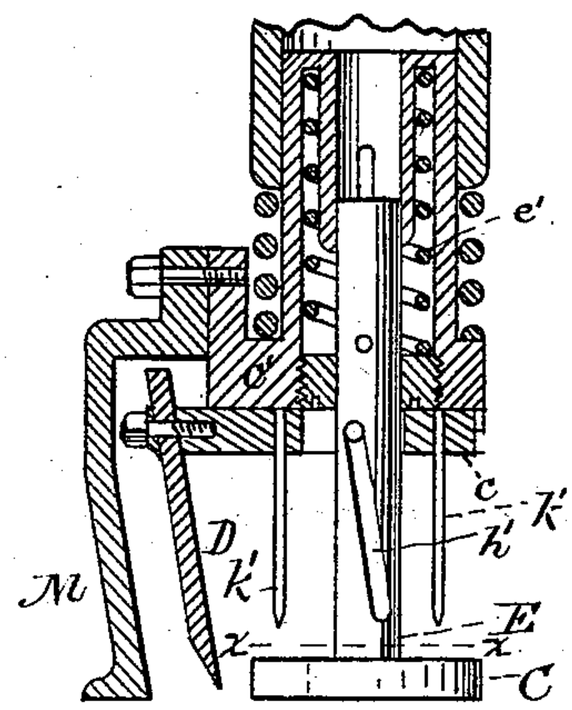

Fig. 6

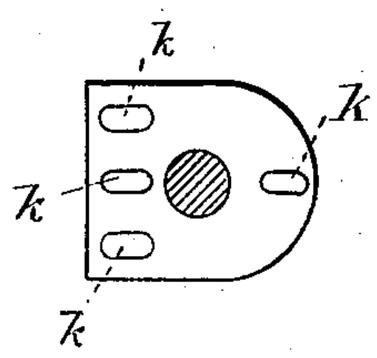

Fig. 7

WITNESSES

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UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS.

HEEL-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 316,177, dated April 21, 1885.

Application filed February 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, of Newton, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Heel-Attaching Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature.

The invention is an improvement upon that described in my application for Letters Patent dated April 25, 1884, Serial No. 129,212, and it relates, especially, to the portion of the invention for breasting the heel.

It is very desirable for certain classes of work that the front edge or breast of the heel be slightly undercut, as this very much improves the appearance of the heel. It is also desirable, in heel-attaching machines organized like the "National Heel-Nailing Machine," not to tip the shoe to the breasting-knife, as is common in the ordinary breasting-machines, for the purpose of obtaining this undercut; and in said application I have described independent ways for guiding the knife while it is being reciprocated for the purpose of obtaining such cut. The present invention relates, especially, to means for so guiding the breasting-knife, and differing from those described in said application in that the vertical movement of the attachment itself causes the cutting-knife to move upon a line somewhat inclined to a vertical path, so that the boot or shoe may be held rigidly upon the last and in a horizontal position, and the breast be undercut as much or as little as desired.

Referring to the drawings, Figure 1 represents in vertical section a portion of the reciprocating head of a National heeling-machine with the revolving head in place thereon, and a portion of a shoe with a heel attached beneath the same, the revolving head having secured thereto my improved breasting device. Fig. 2 represents substantially the same parts at the completion of the operation of breasting. Fig. 3 is a rear elevation of the under portion of the breasting attachment, showing particularly the arrangement of the links connecting the bearing-block with the knife-block, hereinafter referred to. Fig. 4 is a view illustrating the use of the grooves or slots as a substitute for the link connection. Fig. 5 is a horizontal section through the knife-holding block and post, to further illustrate this last-named construction. Fig. 6 represents the knife-holding block provided with a series of awls, and Fig. 7 is a section and plan on and below the line *x x* of Fig. 6.

The invention is represented as applied to the revolving head of a National machine; but it may be applied as well to a National machine having a sliding head, or to any other class of heel-attaching machines.

A is the revolving head, which is supported by the cross-head *a* of the machine and reciprocated thereby, and *a'* is the arm carrying the breasting attachment. It has a tubular or other shaped recess, a^2, for receiving the post B. This post is adapted to be moved vertically in relation to the arm, and is pressed away therefrom when the machine is not breasting by means of the coiled spring *b*. It supports the presser C, and also the knife-holding block *c*. This knife-holding block has a dovetail projection, *g*, which slides in a dovetail recess, *g'*, in the under surface of the block *c'*, formed on the end of the post B. It has an inclined surface, c^2, to which the breasting-knife D is bolted. This post B also has a square or other hole, *e*, for the reception of a rod, E, which extends upward from the bearing-block C, and this bearing-block is moved away from the knife-block when breasting is not proceeding by the spring *e'*, so that the parts when not in operation bear substantially the relation to each other shown in Fig. 1.

The bearing-block C is connected with the knife-block *c* by the links F, the lower of which are pivoted at their lower end to the bearing-block C, and the upper links are pivoted at *f* to the knife-holding block C. (See Fig. 3.)

The operation is as follows: The heel having been moved into place to the breasting attachment, or the breasting device having been moved to the heel, upon the reciprocation or movement of one in relation to the other the bearing-block comes in contact with the upper surface of the heel, and is of course held while the knife-block moves toward it. This

movement of the knife-block toward the bearing-block straightens the links, and as the knife-block is free to move while the bearing-block is rigidly prevented from so doing, it follows that the motion produced by straightening these links is communicated to the knife-block, and consequently the knife-block is being constantly moved inward while the links are being straightened, and as the links commence to straighten out at the beginning of the cutting of the knife, or by the time the cutting-edge reaches the top of the heel, it follows that the farther inward movement of the knife-block must be continuous and regular, the heel support or jack being prevented from being pushed backward during the cutting action of the knife by any suitable back stop.

It will be desirable to make the inclination of the knife of a somewhat greater pitch than the inclination which it is desired the cut shall have, as by so doing the cutting-edge is brought prominently forward, clearance-space is provided, and there is no binding action of the inside of the blade upon the front of the heel-blank during the breasting operation, either while the knife is being moved downward or when it moves back.

It will also be seen that upon the movement away of the heel from the breasting device, that the spring *e'* presses the bearing-blank out, and consequently draws the links apart or separates them, so that the breasting-knife block is moved back to its original position.

It will also be seen that the extent of the movement of the knife-block is varied according to the length of the links and the points of pivoting to their respective blocks. If comparatively short links are used for a given space or separation of the upper and lower pivotal points, then the inclination of the cut will be greater, as the breasting-knife block will be moved a greater distance. If the links are made longer, then the movement is not as great. Of course this movement could be communicated to the knife-block by pivoting the upper link to the block *c'* instead of to the cutting-knife block, and of connecting the links where they join with a lever pivoted to an upper portion of the block *c'* and extending downward therefrom and connected with the knife-block by a link; but for ordinary purposes the method of connection described will answer.

I regard as an equivalent of this construction that represented in Figs. 4 and 5, where, instead of the links, there is shown the rod E, which is made somewhat large and square in cross-section, having on each side an inclined slot, *h*, into which pins *h'*, projecting from each side of the knife-block, enter.

It is of course obvious that as the knife-block approaches the bearing-block the pins follow the slots, and in so following them the knife-block is moved in as the blocks come together, and out as the two blocks are separated, and as the bearing-block is moved automatically outward by the spring *e'*, it follows, of course, that the knife-block is automatically moved outward.

In operation the heel-attaching nails having been driven, the breasting device is moved into position to the heel or the heel to the breasting-knife, and on the reciprocation of the machine the bearing-block comes in contact with the surface of the heel-blank, and the breasting-knife is moved downward in a somewhat inclined path until the presser-block M comes in contact with the shank of the shoe, when its further movement is arrested, and the block C yields upon the spring *e'*.

The block *c* is provided with awls for pricking the heel-blank at the same time the breasting-knife is reciprocated, in order to form in the heels holes for the reception of slugs or additional nails used for securing the top lift, or for ornamental purposes; and in Fig. 6 I have shown the plate as provided with awls *k'*, and in Fig. 7 I have shown the bearing-block C as provided with slots *k*, through which the awls are reciprocated.

In order to provide suitable bearings for the rod or post E, I have formed the post B with the downward-projecting sleeve N, preferably cast therewith, and the spring *e'* extends into the recess *n*, surrounding the sleeve, and bears at its lower end upon the screw-disk n^2, which screws into the block *c'*, in which is also a bearing for the post E.

It will be seen that by this construction a coiled spring for permitting a considerable movement of the bearing-block C in a comparatively limited space is provided, and that without interfering with the proper bearings or support for the rod or post in the block *c'* and its post B.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a heel nailing or attaching machine, the combination of the block *c'*, carrying the movable knife-block *c* and the knife D, and the bearing-block C and its post E, adapted to be moved automatically outward and connected with the knife-block to cause its movement in one direction or the other as it is moved toward the knife-block or away from it, all substantially as and for the purposes described.

2. The combination of the block *c'*, the movable knife-holding block *c*, the breasting-knife D, the bearing-block C, the post E, spring *e'*, and a device for moving the knife-block horizontally in the block *c'*, operated by the bearing-block, all substantially as and for the purposes described.

3. The combination of the arm *a'*, block *c*, movable in relation thereto in opposition to the stress of the spring *b*, and carrying the presser-foot M, the heel-breasting knife D, and the bearing-block C, movable in said block *c* in opposition to the stress of the spring *e'*, and a device connecting the block or its post to the knife-block, for causing its horizontal

movement upon or during the vertical movement thereof, all substantially as and for the purposes described.

4. The combination of the bearing-block C, movable in relation to the block c', the knife-block c, horizontally movable upon the block c', breasting-knife D, the post E, having the guiding-recesses h', and the pins h, attached to the knife-block and entering the recesses, all substantially as and for the purposes described.

5. The combination of the post B, having the sleeve N, with the bearing-block c, its post E, and the spring n, all substantially as and for the purposes described.

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Witnesses:
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