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F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 378,617. Patented Feb. 28, 1888.

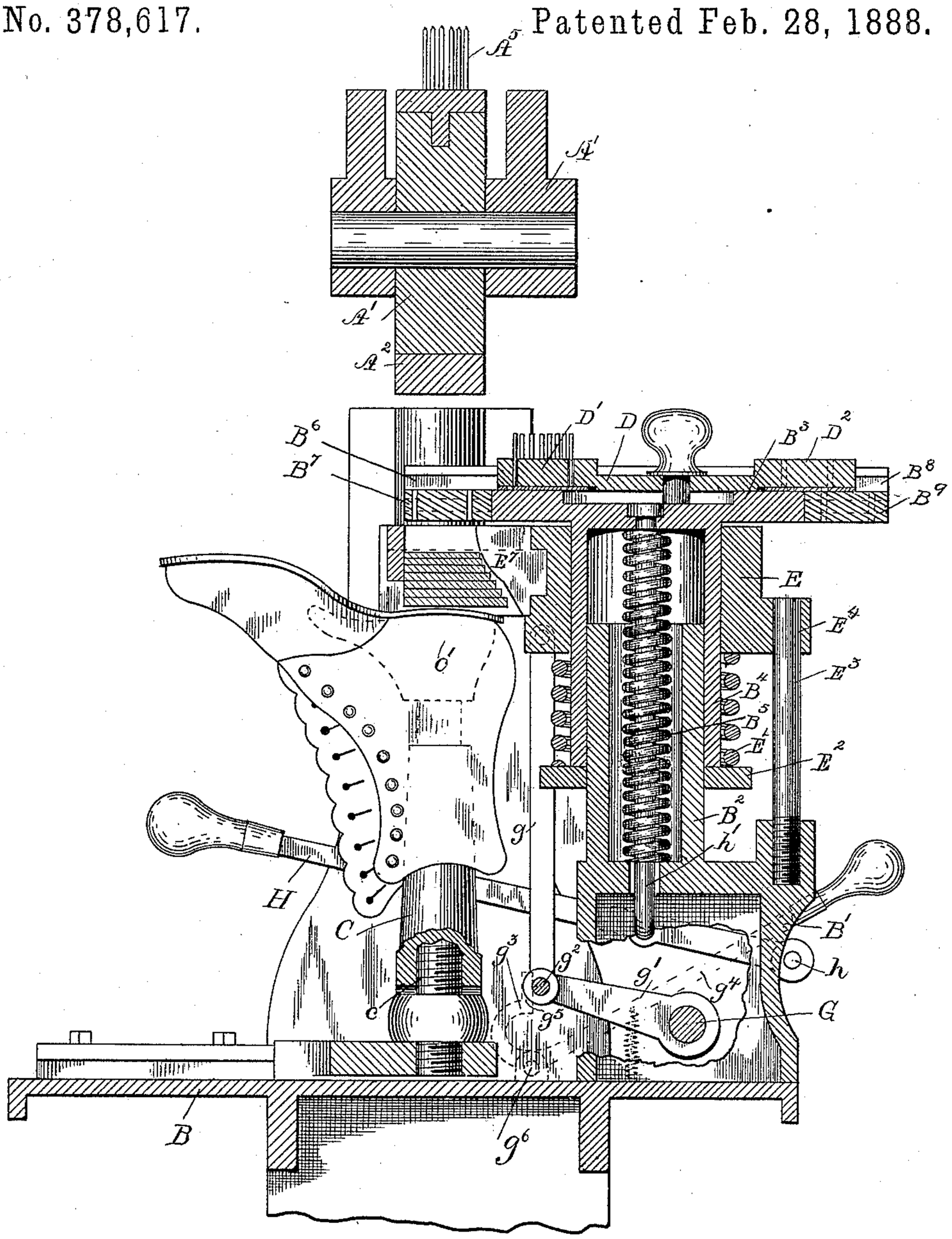

Fig. 1.

WITNESSES.
J. M. Dolan.
E. P. Small,

INVENTOR.
F. F. Raymond

(No Model.)

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F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

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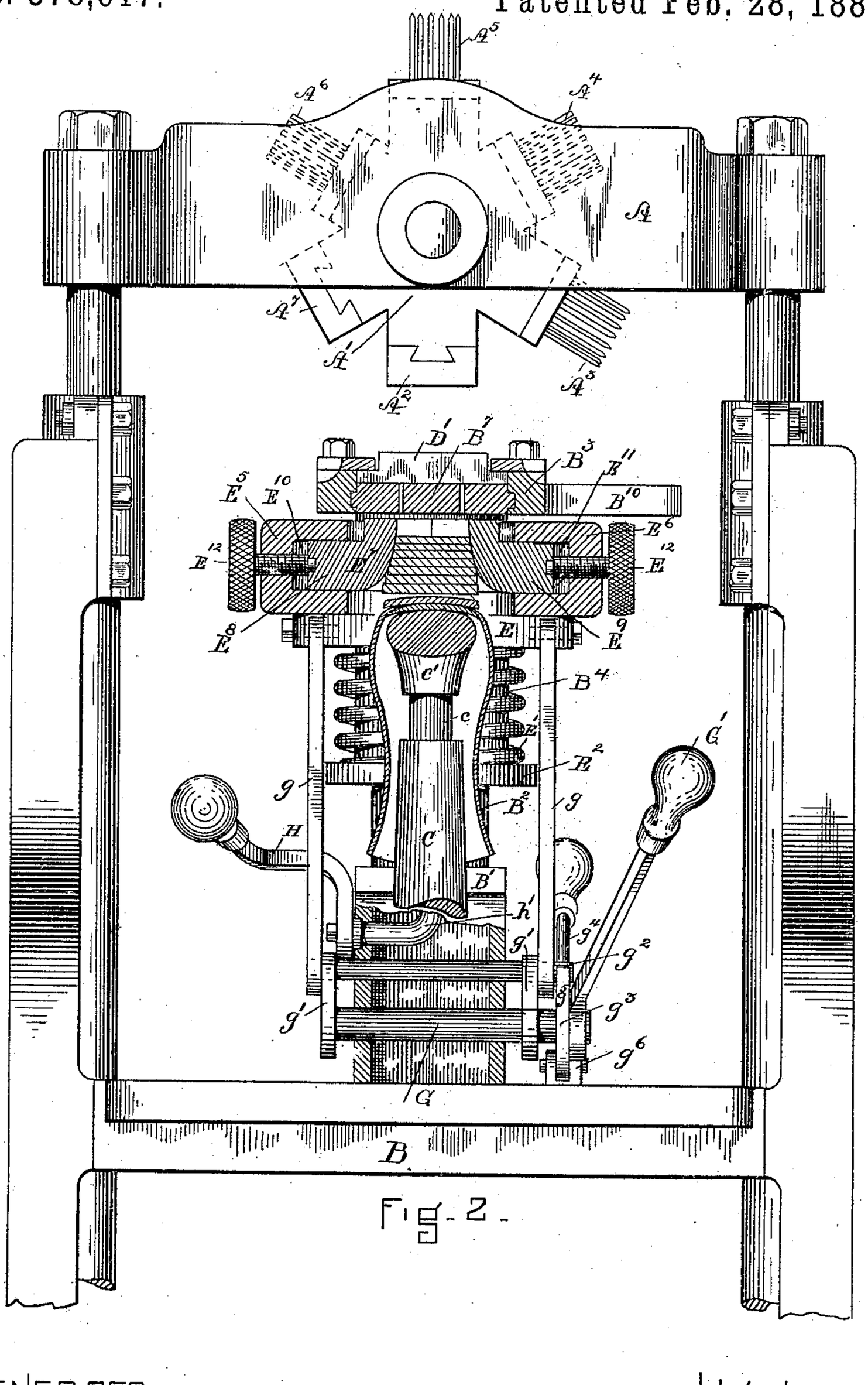

Fig. 2.

WITNESSES.
L. M. Dolan.
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(No Model.) 5 Sheets—Sheet 3.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

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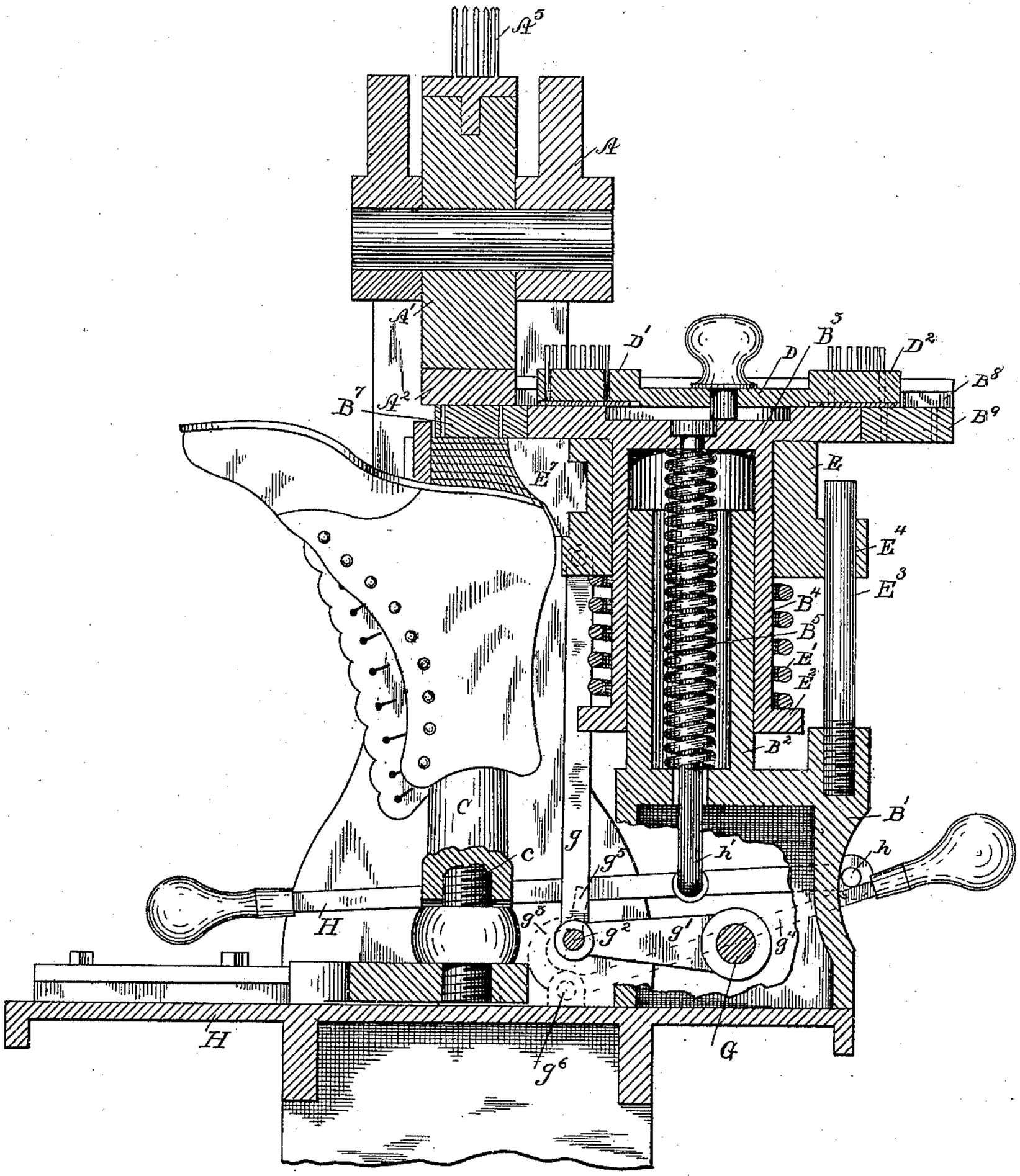

Fig. 3.

WITNESSES.
J. McDolan.
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(No Model.)

5 Sheets—Sheet 4.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

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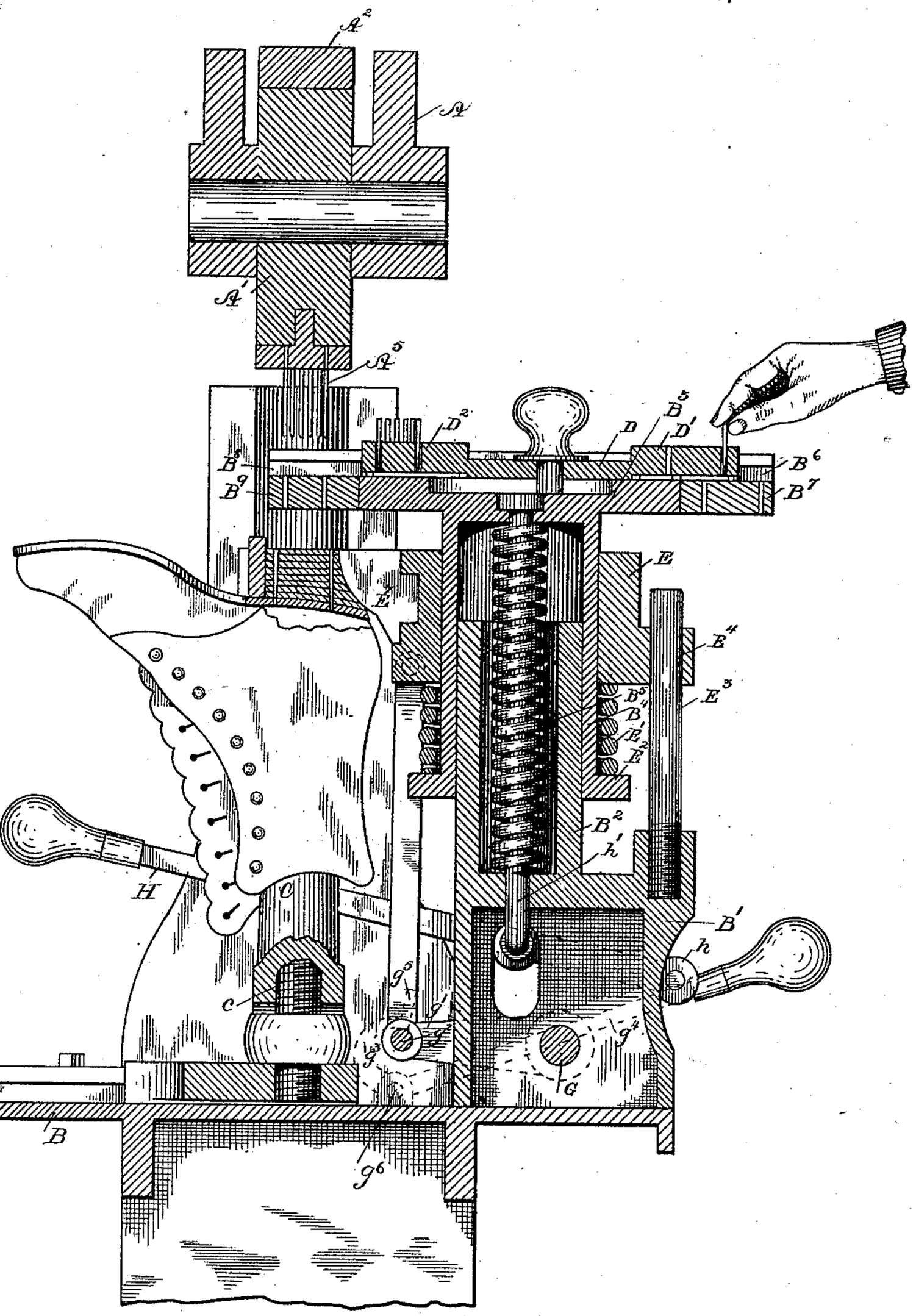

Fig. 4.

WITNESSES.

J. W. Dolan.

E. P. Smaee.

INVENTOR.

F. F. Raymond

(No Model.) 5 Sheets—Sheet 5.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

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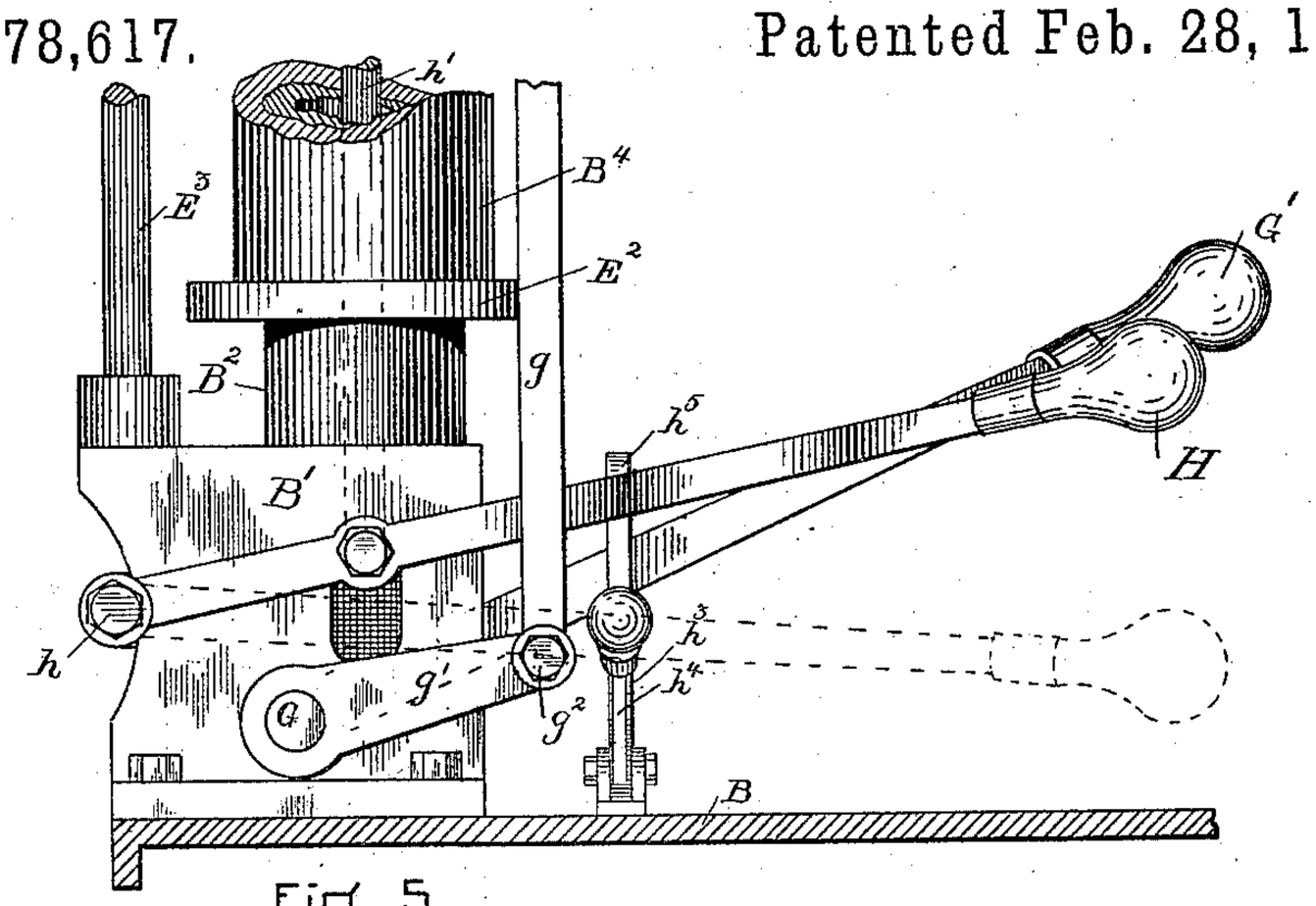

Fig. 5.

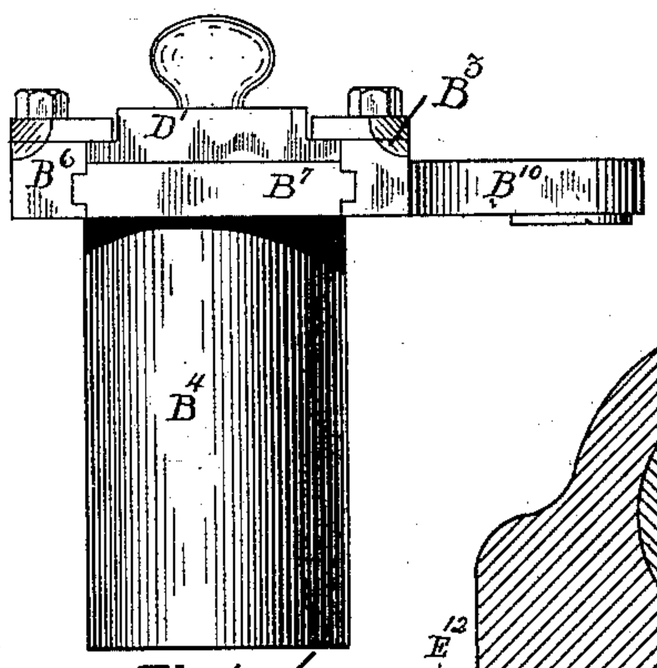

Fig. 6.

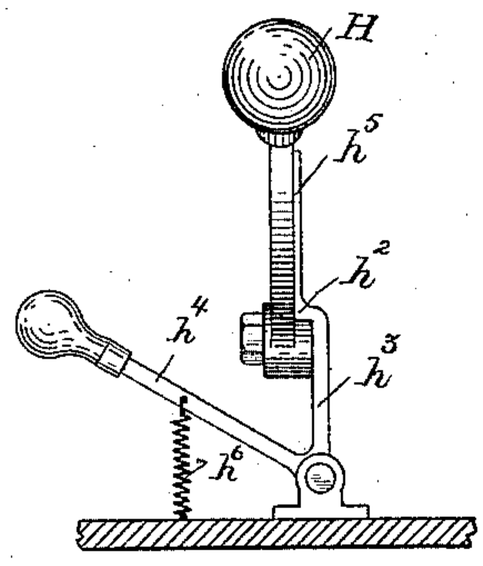

Fig. 7.

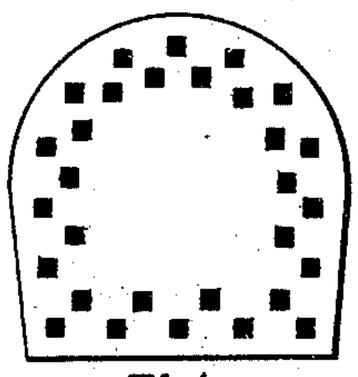

Fig. 9.

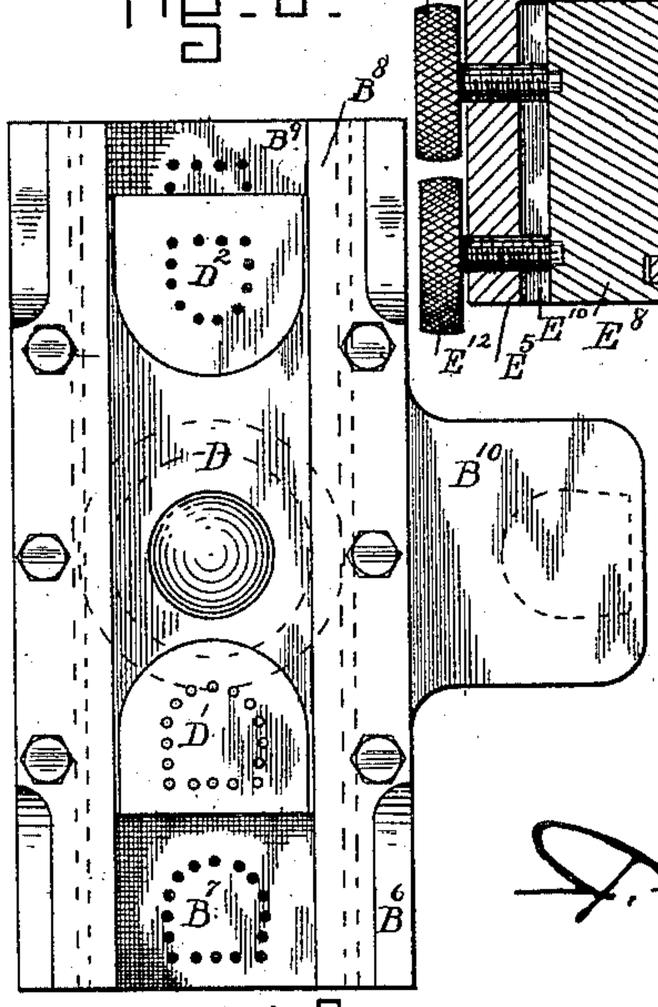

Fig. 8.

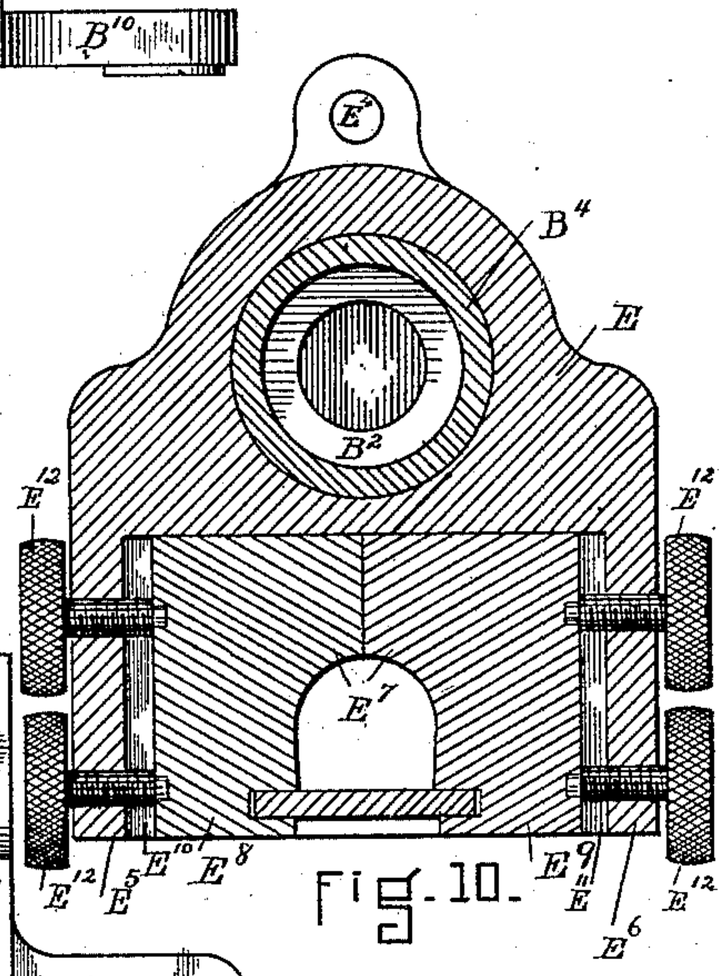

Fig. 10.

WITNESSES.

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E. P. Small.

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UNITED STATES PATENT OFFICE.

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

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 378,617, dated February 28, 1888.

Application filed December 9, 1887. Serial No. 257,366. (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 Compressing and 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 relates to a heel compressing and attaching machine organized to compress the heel-blank and to drive into it two gangs or groups of nails for the purpose of attaching it and for the purpose of securing a finish to the outer surface thereof, for increasing its wear, and for attaching the top lift.

It further relates to a machine organized to first nail the heel-seat of the boot or shoe, to then compress the heel-blank thereon, and to then drive a gang of attaching-nails through the heel-blank into the soles of the boot or shoe.

It further relates to various features of construction and organization, all of which will be hereinafter referred to.

The invention is in some respects an improvement upon that described in my Patents Nos. 344,499 and 346,125; but this invention varies from those described in the said patents, as well as the other of my pending applications, in that it involves the employment of a heel-compressing device with apparatus or mechanism for driving two gangs or groups of nails or slugs, which is movable in relation to the heel-compressing mechanism, so that one gang of nails may first be driven into the heel end of the outsole, the heel then compressed, and a second gang or group driven into the compressed heel, or the heel-blank first compressed and two gangs or groups of nails or slugs driven successively by mechanism into the heel-blank while it is held compressed.

In the drawings, Figure 1 is a view, principally in vertical central section, taken from front to rear of my machine, and showing the central and upper parts thereof, representing the position of the parts before the heel-blank is compressed. Fig. 2 is a view, part in front elevation and part in vertical section, representing, substantially, the same parts as those shown in Fig. 1 and the position which they bear to each other before the heel-blank is compressed. Fig. 3 is a view upon the section shown in Fig. 1, representing the position of the parts upon the completion of the compressing of the heel-blank. Fig. 4 is a view upon the same section representing the position of the parts after the compressing of the heel-blank and the driving of one gang of attaching-nails therein. Figs. 5, 6, 7, 8, 9, and 10 are detail views.

Referring to the drawings, A is the cross-head, which has a reciprocating movement imparted to it, preferably by means described in Patent No. 316,894, granted to Henry A. Henderson. It carries a revolving head, A′, which preferably has an arm supporting a pressure-block, A^2, an arm supporting a gang of awls, A^3, an arm supporting a gang of drivers, A^4, an arm supporting a second gang or group of awls, A^5, an arm supporting a second gang or group of drivers, A^6, and a top-lift or heel spanker, A^7.

B is the bed of the machine. Upon it is mounted a jack, C, which has a sliding movement thereon in suitable ways, and which also has the jack-spindle *c*, vertically adjustable, and carrying a last or work-support, *c*′. (Shown in dotted outline in Fig. 1. The bed B also supports a post, B′, having a circular column, B^2, upon which is mounted a table, B^3. This table has a sleeve, B^4, which surrounds the post B^2, and it has a vertical movement on the post in opposition to the spring B^5. It is also adapted to be rotated or turned upon the post. It preferably has three arms or projections: first, the arm B^6, which supports a templet, B^7; second, the arm B^8, which supports a templet, B^9; third, the arm B^{10}, which supports a top-lift-holding device which is similar to that described in my said Patent No. 346,125. (See Figs. 2, 6, and 8.) The templets B^7 B^9 are removable from their respective holding-arms. There is arranged to be moved horizontally upon the table B^3 a sliding plate, D, which carries at one end the nail-holder D′ and at the other the nail-holder D^2. Each nail-holder has a suitable covering-plate for covering the holes therein, and the nail-holder D is adapted to deliver nails to the templet B^7 and the nail-holder D^2 to the templet B^9.

I prefer that the arms B^6, B^8, and B^{10} be

formed integral with the table B^3 and sleeve B^4, and that the arms B^6 B^8 extend radially from opposite sides of the table and upon substantially the same line, and that the arm B^{10} extend at a right angle from a horizontal line taken through the two arms or projections B^6 B^8. The arms B^6 B^8 afford supports for the removable templets, and the templets, or either of them, may have any desired arrangement of holes—that is, they may have a full line or row, or a double line or row, or a full line with a short exterior or interior line for slugging—or one of the templets—that is, the templet last used—may have a line of slugging-holes only, and, if desired, the templet may be made so as to be reversed in its holder—that is, so as to bring its under surface uppermost. This will enable the templet to be used somewhat longer, and in a slugging-plate will enable the holes to be used both for right and left slugging.

There is mounted upon the sleeve B^4 a plate, E, which has a vertical movement upon the sleeve, being movable downward thereon in opposition to the pressure of the spring E′, which bears upon a collar or projection, E^2, at the lower end of the sleeve and against the under surface of the plate E. The plate, however, does not rotate with the sleeve, having only a vertical movement thereon, and it is prevented from rotating by means of the stud or pin E^3, which enters the hole E^4 in a backward extension of the plate, the plate extending forward from the sleeve to form two arms, E^5 E^6, which are separated from each other by a space sufficiently large to receive a die, E^7. This die may be solid in one part, or it may be in two parts, as represented, and it is carried by the arms E^5 E^6, so as to be movable vertically therewith. When it is made in two sections, E^8 E^9, I prefer that they be shaped substantially as represented in Figs. 2 and 10. The section E^8 has an extension which fits a recess, E^{10}, in the arm E^5, and the section E^9 has an extension which fits a recess, E^{11}, in the arm E^6. The two sections of the die are also made movable in relation to each other by means of the screws E^{12}, which act to keep them closed during the compression of the heel-blank and to permit them to be separated upon the removal of the heel-blank therefrom.

In operation, the heel-blank having been placed in the die-cavity, and the jack having the boot or shoe mounted upon the last brought into operative position in relation thereto, substantially as shown in Figs. 1 and 2, the heel-blank is compressed in the die by the vertical movement of the die downward in relation to the last or heel-support c'. This movement is produced either by bringing one of the templets over the top of the die-block and bringing the pressure-block into position over the templet and causing the machine to make a reciprocation, or by causing the pressure-block to act directly upon the upper surface of the die-block to move the die down. In the first-named case both the die-supporting plate E and the table B^3 are moved vertically and both are locked automatically in their lowest position. In the latter case the die and its supporting-plate E only are moved vertically and the plate locked automatically in its lowest position. In this event the templet which it is desired to use is then swung around into position and the gang of awls which operate therewith reciprocated. This causes the table B^3 to be moved downward and automatically locked in its lowest position and the awl-holes to be formed in the heel-blank. The nails are then delivered to the holes of the templet by the forward movement of a nail-carrier in relation thereto and are driven. To drive a second gang of nails into the heel-blank, or to attach a top lift and to then drive a second gang of nails, the table B^3 is unlatched and forced upward by its spring without, however, unlatching the die-holding plate E. This permits the table B^3 to be rotated to bring the other templet into operative position in relation to the heel-blank, or to bring the top-lift holder into position over it, and a second gang or group of nails is then driven or the top lift attached, and then the second gang or group of nails driven. In this second driving the table B^3 is of course moved downward by the awl-block and automatically locked, as in the first driving, and the nails fed and driven, and it is then released, as before, and turned to bring the original templet into operative position. The die-block plate E is then released, the section of the dies having first been released by turning their holding-screws sufficiently to permit them to leave the heel.

To latch the die-holder plate E in its lowest position, I have represented the plate as connected with the rod G by means of the long links g and the arms g'. These arms and the lower ends of the links are connected by a horizontal cross-rod, g^2, and the latch g^3 at the end of a lever, g^4, is arranged to automatically engage the cross-rod g^2 by shutting over the same upon the end of the downward movement of the plate E and of the cross-rod, and it is held from closing upon the same when the plate E is in its highest position by a bar or extension, g^5. (See Fig. 1.) The releasing-lever G is pivoted at g^6, and its handle is sufficiently long to act as an overbalance, causing the latch g^3 to be moved into position automatically; but as a rule I prefer to use, in addition to this overbalance, a spring acting to draw and hold the latch in operative position and connected with the releasing-lever g^4. The rod G may also have a hand-lever, G′, whereby the die-block is adapted to be moved down by hand before the machine is operated.

The table B^3 is locked automatically in its lowest position by means of the lever H, which is pivoted at h and connected by the rod h' with the table B^3. This lever operates as a hand-lever, whereby the table is depressible by hand, and it is automatically locked in its lowest position by a latch, h^2, (see Figs. 5 and 7,) which

is formed by the arm h^3 of the releasing-lever h^4. This arm has an extension, h^5, which bears against the edge of the lever, being held there by the spring h^6, so that upon the falling of the lever H below the latch h^2 said latch is caused to be drawn over the lever to lock it down. I would say, however, that I do not confine myself to said forms of latching devices for locking the table E and the plate B^3 in their lowest position.

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

1. The combination herein described of a last or work-support, a heel-forming die and a block or plate supporting it, and two series of nail-attaching devices adapted to be used successively in driving two gangs or groups of nails into the compressed heel-blank, substantially as described.

2. The combination of the last or work-support, a table or block, E, the heel-compressing die mounted thereon, the rotary table B^3, the templets B^7 B^9, nail-carriers D' D^2, and the nail-driving devices, substantially as described.

3. The combination of the last or work-support, a heel-forming die, two templets, B^7 B^9, adapted to be moved successively into operative position in relation to the die, and the nail-driving devices, substantially as described.

4. The combination of the last or work-support, the vertically-movable heel-compressing die-holding plate E, the heel-compressing die carried thereby, a latch or lock for holding it locked in its lowest position, and the independently-movable table B^3, substantially as described.

5. The combination of the last or work-support, the independently-movable table B^3 and its templets, the plate E, a heel-compressing die carried thereby, a latch or lock for locking it in its lowest position, and a pressure plate or block to close the upper open end of the die and move it forcibly downward, substantially as described.

6. The combination of the last or heel-support, the plate E, the die supported thereby, the rod G, links g, arm g', and lever G', substantially as described.

7. The combination, in a heel-compressing machine, of the vertically-movable plate E, the die carried thereby, the links g, the cross rod or latch g^2, and a latch, g^3, substantially as described.

8. The combination of a last or work-support, the vertically-movable die-plate E, and die carried thereby, with the rotary table B, the templets B^7 B^9, the nail-carriers D' D^2, and the nail-driving devices, substantially as described.

9. The combination of the post B^2, the table B^3, having a vertical movement on said post, and also adapted to be rotated thereon, the templets B^7 B^9, the plate E, having a vertical movement on the sleeve of said table, and a heel-compressing die carried thereby, substantially as described.

10. The combination of the last or heel-support, the post B^2, the table B^3, having the sleeve B^4 to surround said post, the table being vertically movable upon the post and also being adapted to rotate thereon, the spring B^5, the plate E and die carried thereby, vertically movable upon said sleeve B^4, but held from rotating therewith, the spring E', and independent latching or locking devices for independently locking the plate E and die and the table B^2 and its templet in their lowest positions, and the nail-driving devices, substantially as described.

11. The combination herein described of nail-driving devices, a templet, and a heel-compressing die movable toward and from the templet, as and for the purposes described.

12. The combination herein described of nail-driving devices, a templet, a heel-compressing die movable toward and from the templet, and a latch or locking device for holding the die removed from the templet, substantially as described.

13. The combination herein described of nail-driving devices, a templet, a heel-compressing die movable toward and from the templet, a spring for moving the die toward the templet and holding it from the last or work-support, a latch or lock for holding it depressed upon the last or work-support, and said last or work-support, substantially as described.

14. The combination herein described of nail-driving devices, a templet vertically movable in relation to the last or work-support, and a latch or lock for holding it depressed thereon, a spring for returning it to its normal position, a die vertically movable independently of the movement of the templet, a latch or lock for holding it depressed, a spring for returning it to its normal position, and the last or work-support, substantially as described.

15. The combination herein described of two groups of nail-driving devices, two templets adapted to be brought successively into the same operative position, a heel-compressing die vertically movable in relation to said templet, and a last or work-support, substantially as described.

16. The combination, in a heeling-machine, of a support for the templet and an independent or separate reversible templet-block, as and for the purposes described.

FREEBORN F. RAYMOND, 2D.

Witnesses:
J. M. DOLAN,
E. P. SMALL.