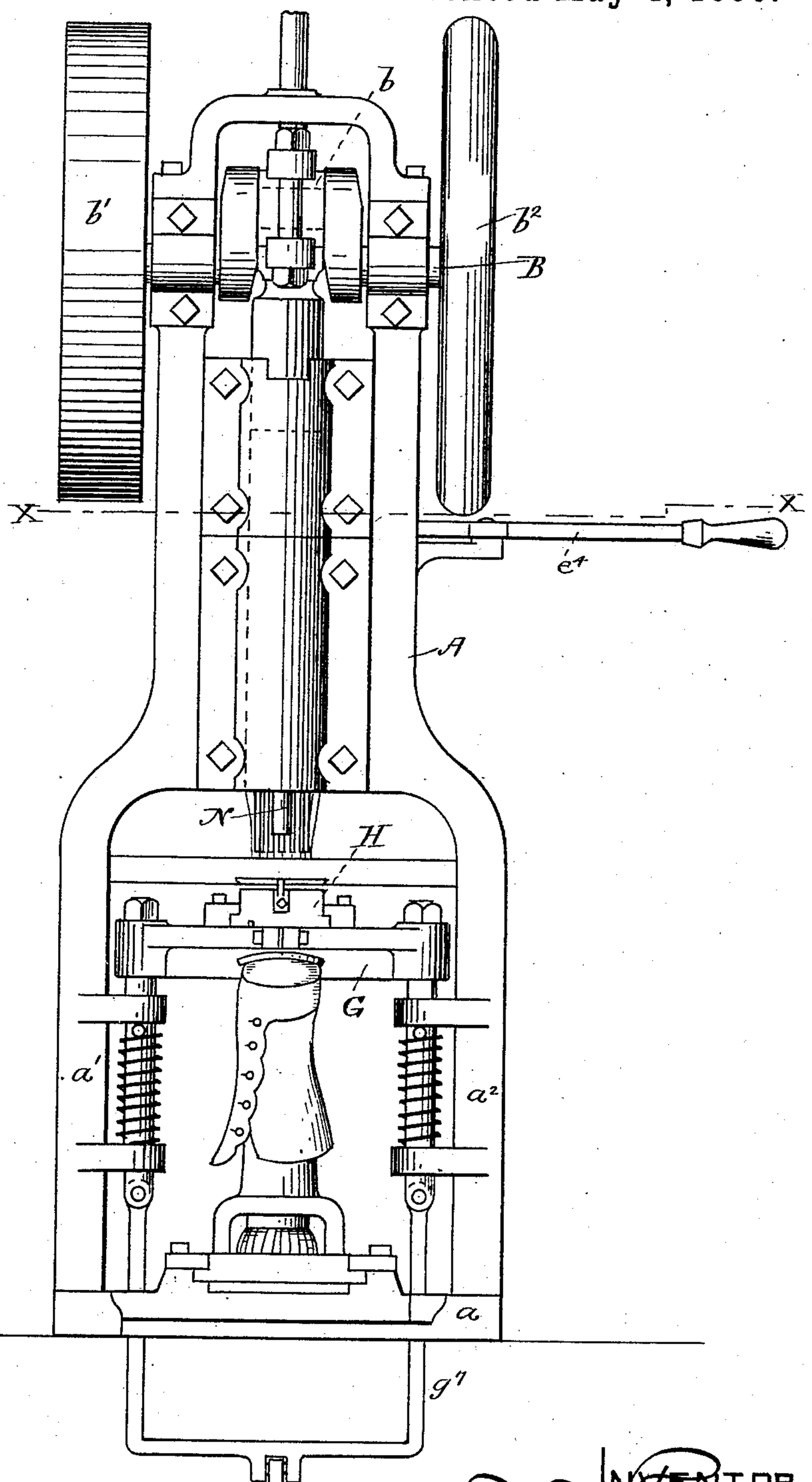
(No Model.)

4 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 341,169. Patented May 4, 1886.



WITNESSES

J. M. Dolan.

Fred. B. Dolan.

INVENTOR

F. F. Raymond 2d

(No Model.)

4 Sheets—Sheet 2.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE

No. 341,169. Patented May 4, 1886.

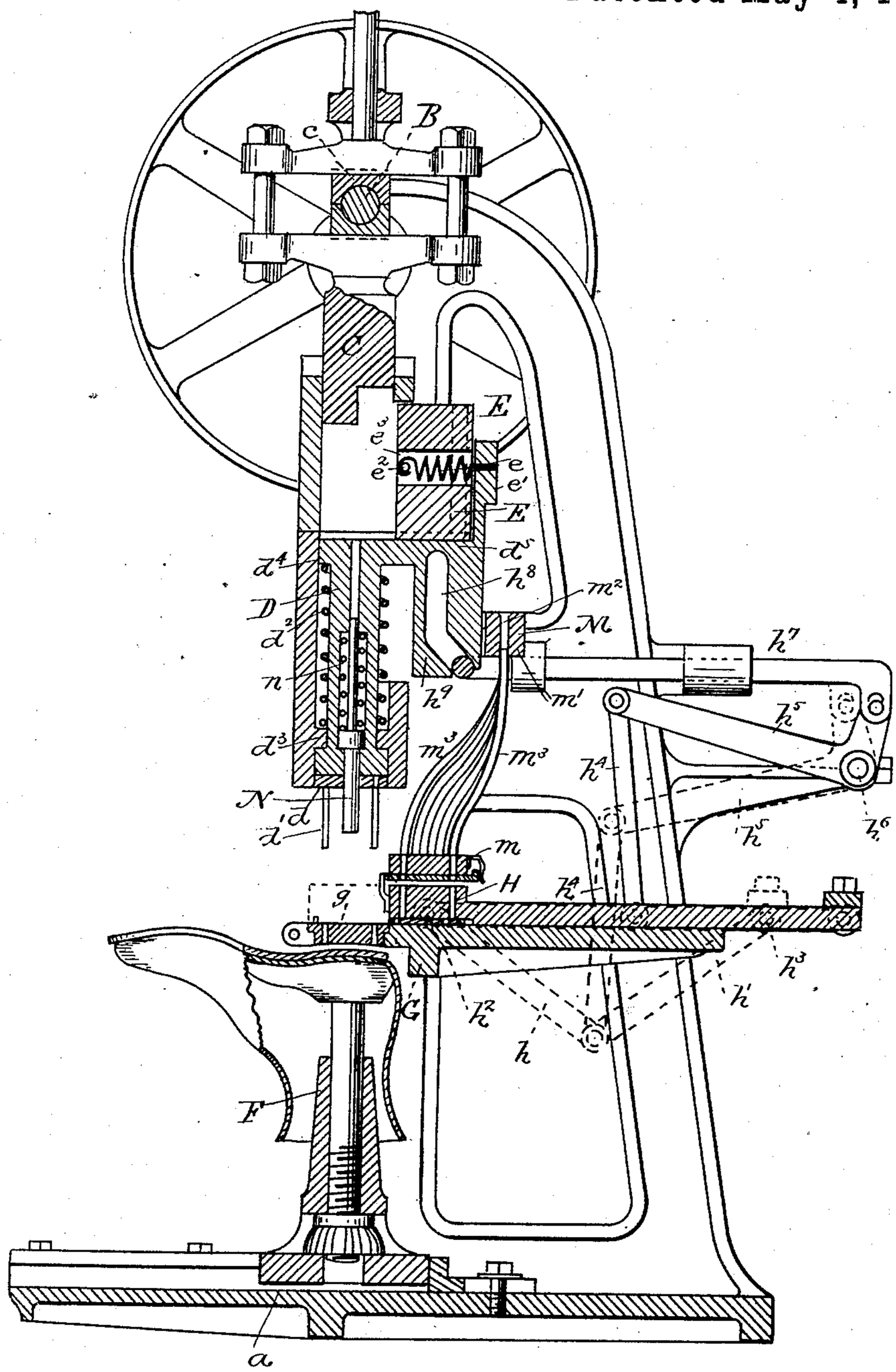


Fig. 2.

WITNESSES

J. M. Dolan.

Fred. B. Dolan.

INVENTOR

F. F. Raymond 2d

(No Model.)

4 Sheets—Sheet 3.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 341,169. Patented May 4, 1886.

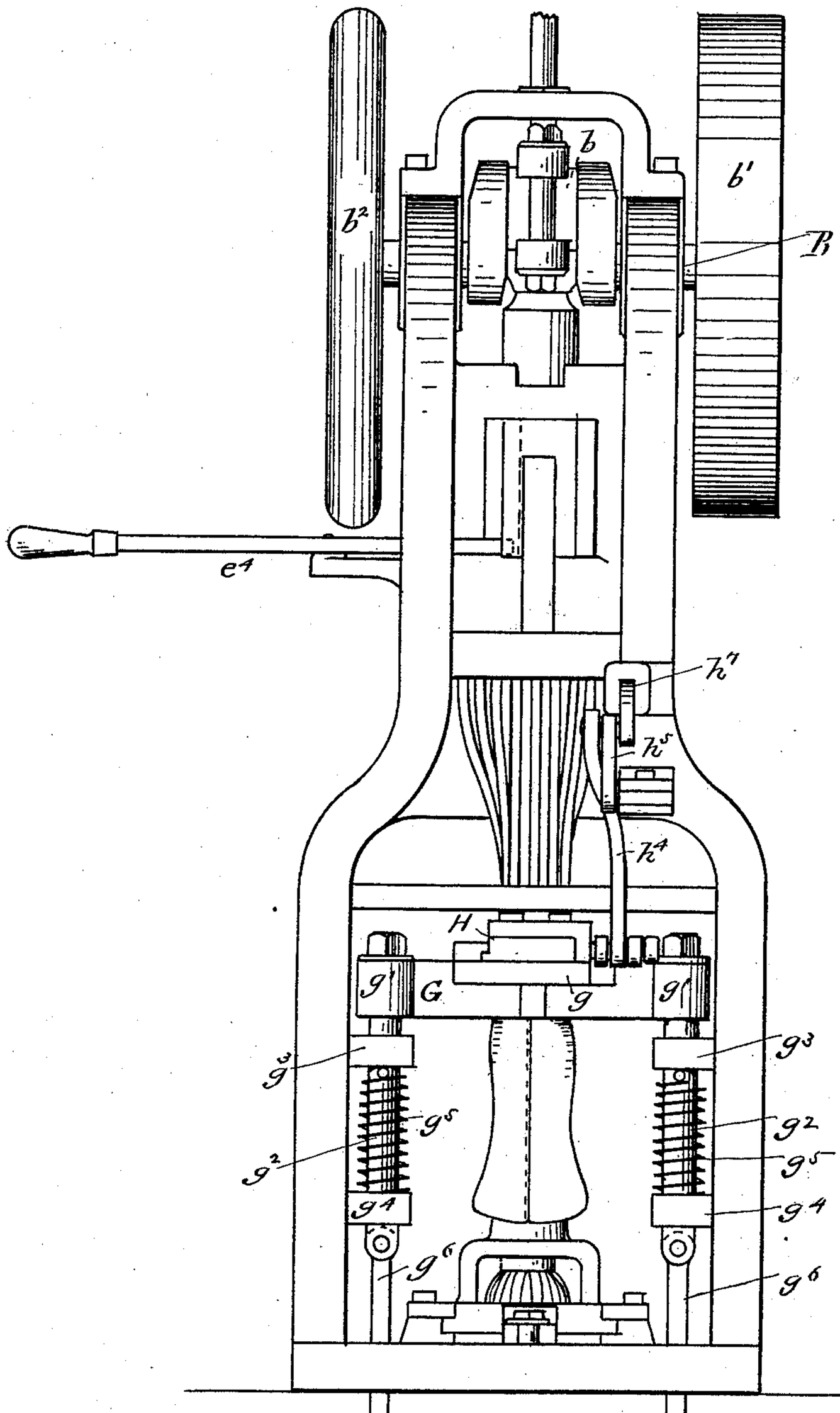


Fig. 3

WITNESSES

J. M. Dolan

Fred. B. Dolan

INVENTOR

F. F. Raymond

(No Model.)

4 Sheets—Sheet 4.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 341,169. Patented May 4, 1886.

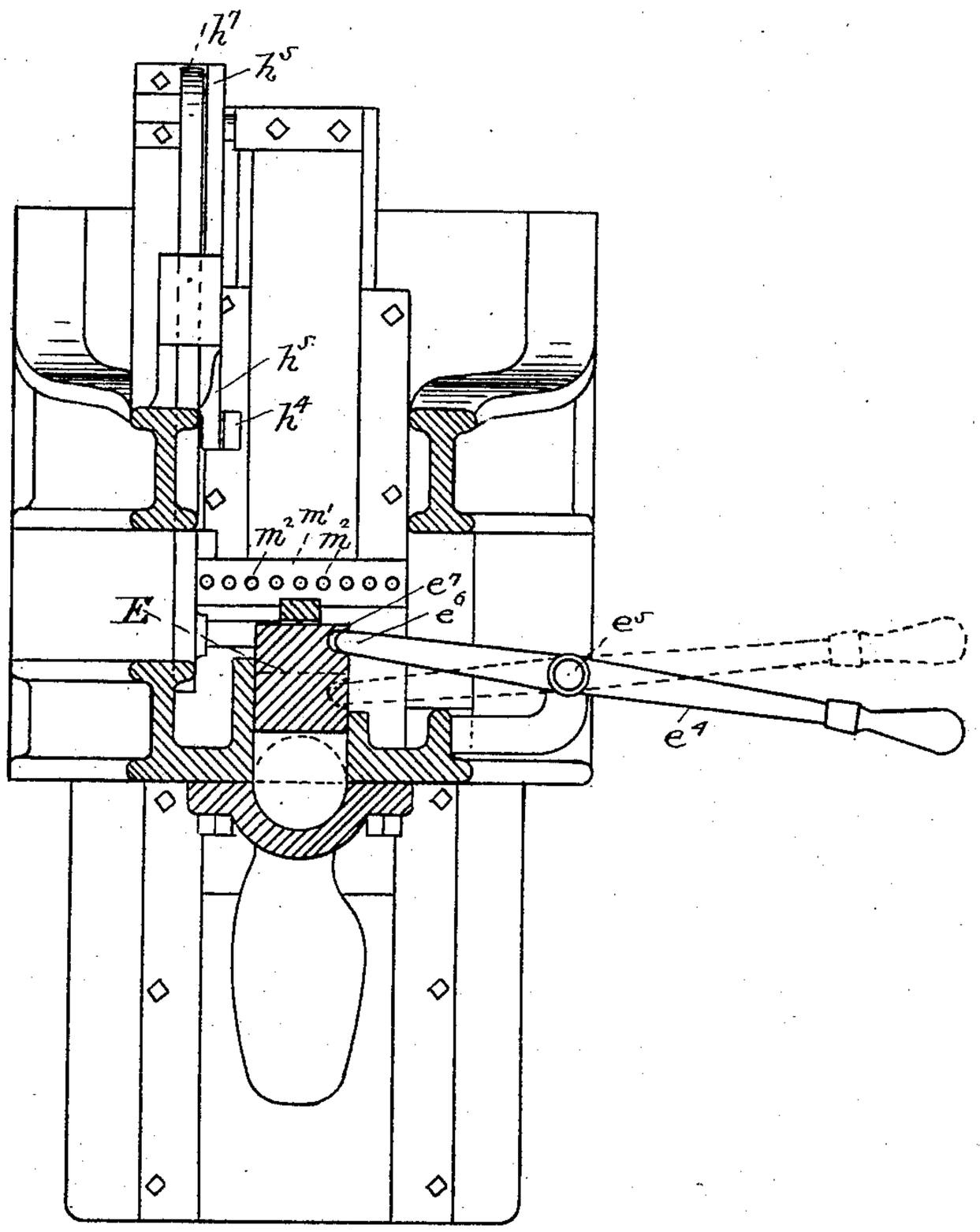


Fig. 4.

WITNESSES

J. M. Dolan.

Fred. B. Dolan

INVENTOR

F. F. Raymond 2d

UNITED STATES PATENT OFFICE.

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

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 341,169, dated May 4, 1886.

Application filed March 15, 1886. Serial No. 195,281. (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-Nailing 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 machine especially adapted for nailing the heel-seats or heel ends of outsoles, &c.; and it relates to various details of organization and construction, all of which will be hereinafter more fully described.

Referring to the drawings, Figure 1 is a front elevation of a machine having the features of my invention. Fig. 2 is a vertical section thereof. Fig. 3 is a rear elevation thereof. Fig. 4 is a horizontal section on the line *x x* of Fig. 1 and a plan view of parts below said line.

A is the frame-work of the machine. It is adapted or arranged for bench-work—that is, to be secured to a bench or table. It comprises the base-plate *a* and the side sections, *a' a²*, extending upward therefrom. The frame supports the short shaft B, which has a crank, *b*, the pulley *b'*, and the balance or fly wheel *b²*. The crank *b* is connected with a sliding head, C, by means of the sliding block *c*. This sliding head is constantly reciprocated in ways in the front of the machine. Below the sliding head is a sliding block, D, which carries or supports a block, *d*, holding a gang of drivers, *d'*. This block has a vertical movement in ways in front of the machine, as hereinafter described, and it is held lifted and returned to its normal position after it has been depressed, as hereinafter explained, by the spring *d²*, which surrounds it and bears against the stationary shoulder *d³* and the shoulder *d⁴* on the block. The block has extending from it a table or support, *d⁵*, which holds or carries a block, E, which is moved horizontally thereon into position beneath the slide C, when it is desired to reciprocate the drivers, and it is withdrawn from between the slide C and the block D by means of the spring *e*, which is attached at one end to the post *e'*, extending upward from the table *d⁵*, and at the other end to the block E at *e²*, the spring extending into a hole, *e³*, formed in the block. The block is moved between the slide C and block D by the lever *e⁴*, which is pivoted at *e⁵* to bring its end *e⁶* into the recess *e⁷* at the lower rear corner of the block. Of course the table *d⁵* is moved with the head D.

In operation, to obtain a reciprocation of the drivers, the operator simply moves the lever *e⁴* to push the block E between the slide C and the head D, and the movement of the slide is then communicated to the block D, and it is moved forcibly downward. The spring *d²* moves the head upward, and as the slide lifts a greater distance than the head the block E is automatically withdrawn from between the slide and the head by the spring *e*, so that only one reciprocation of the block and drivers is obtained, unless the operator holds the block E in position by the lever *e⁴*.

F is the jack. It is arranged to be moved or to slide horizontally on the plate *a* into and out of position below the templet, and it is provided with means for varying its height.

G is the templet-plate. It supports the movable templet-block *g*, and it has the section or sides *g'*, from which extend downwardly the posts *g²* through the holes in the brackets or supports *g³ g⁴*, which are cast with the frame-work of the machine or attached thereto. These posts have springs *g⁵* arranged to bear against the lower brackets and collars on the posts, which serve to automatically lift the templet-block and templet-plate. The templet-plate is depressed by means of these posts and the rods *g⁶*, connected therewith and extending down to the cross-bar *g⁷*, which is connected with a foot-treadle by means of the rod *g⁸*, so that the templet-block is adapted to be moved downward by the foot. The templet-block supports the sliding nail-carrier H, and this nail-carrier may be moved by hand or automatically. In the drawings I have represented it as moved automatically by means of the toggle *h h'*, pivoted at *h²* to the templet-plate and at *h³* to the nail-carrier plate, a link, *h⁴*, the bent lever *h⁵*, pivoted at *h⁶*, the slide-rod *h⁷*, and the cam or cam-groove *h⁸* in the depending section *h⁹* of the table *d⁵*. It will be observed that the shape of this cam-groove is such that the nail-carrier is moved inward so

that its holes register with the holes of the templet before the drivers come in line with its holes, and that it is held locked in that position during the continued downward movement of the drivers, and upon the reverse movement of the head the carrier is moved backward to its original position.

The nail-carrier H may be loaded by hand, or by a stationary holder and distributer, M, and on some accounts I prefer the latter. It comprises a block, *m*, having a sliding bottom adapted to be opened by the movement of the nail-carrier H and closed by a spring. It has holes arranged in the same form or order as the nails in the nail-carrier. A perforated block, *m'*, which has holes m^2 arranged on a straight line—that is, having their openings on a straight line—is arranged over the block *m*, and these holes are connected by tubes m^3 with the nails in the nail-holder block *m*. By arranging the holes m^2 in a straight line the nail-holder *m* and the nail-carrier can be more quickly and easily fed than if the nails were deposited directly into the carrier H. In addition to this, the additional holder provides means whereby the attendant or boy may continue feeding nails while the carrier is delivering nails to the templet. This distributer may also be used in connection with devices for automatically feeding or making and feeding nails such as are described in various patents granted to me, if desired.

In some instances it will be desirable to move the templet-block upon the work with greater pressure than that obtained by the mechanism described for moving down the templet, and when this is requisite I employ a block, N, adapted to be moved downward with the slide D, but somewhat in advance thereof, or so that it will strike the top of the nail-carrier plate before the drivers reach the heads of the nails to be driven. This block is held downward by a powerful spring, *n*, which yields when the block comes into contact with the upper surface of the nail-carrier. It may be attached to the block D in any desired way, and I have represented it as arranged within a recess in the block D, to project into the space surrounded by the drivers, and in this case the driver-block will be perforated or provided with the hole through which it may project. I do not, of course, confine myself to this special arrangement of this auxiliary pressure-block. I would state, also, that the surface of the driver-block may come in contact with the upper surface of the templet-block, imparting an additional compressing force thereto and to the templet-block.

In operation the boot or shoe to be nailed is placed upon the jack or work-support and the jack or work-support moved under the templet. The templet is then moved down by the treadle, or in any other suitable way, and the nail-carrier having been provided with nails, it is moved into position to bring its holes in register with the holes in the templet. The operator then by means of the lever e^4 moves the block E between the slide C and the head D, and the head is immediately forced downward, driving the nails from the templet into the sole or soles of the boot or shoe. Upon the upward movement of the slide, the operator having released the handle e^4, the slide-block E is automatically returned to its normal position, and the head D comes to rest. If the nail-carrier is not moved automatically, an attendant moves it into and out of place by hand. The nails are deposited either directly into the carrier or into the distributer, as may be preferred.

This machine is adapted for use not only in nailing heel-seats, but in nailing any part of the sole to the upper and insole, or in nailing the edge of the upper to the insole or in nailing spring-heels. Its advantages arise from the cheapness of its construction and the facility with which it is operated, as the parts nailed are compressed, a gang of nails fed, delivered, and driven upon one revolution of the shaft or reciprocation of the head D.

I do not confine myself to the especial mechanism herein described for reciprocating the slide C, as I may use any mechanical equivalent therefor.

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

1. In a nailing-machine, the combination of the pulley-shaft B, the constantly-reciprocating slide C, the head D, and the removable block E, substantially as described.

2. In a nailing-machine, the combination of the constantly-reciprocating slide C, the head D, its extension d^5, the block E, reciprocated thereby, and devices for moving it horizontally thereon, all substantially as described.

3. The combination of the constantly-reciprocating slide C, the head D, having the table or support d^5, the block E, the lever e^4, for moving it in one direction, and a spring, *e'*, for moving it in a reverse direction, substantially as described.

4. The combination of the constantly-reciprocating slide C, the head D, the movable block E, and the spring d^2, substantially as described.

5. The combination of the templet-plate G, supporting the templet *g*, the post g^2, rods g^6, cross-bar g^7, and devices connecting them with a treadle, and springs g^5, substantially as described.

6. The combination of the movable templet-plate G, supporting a templet, *g*, the head D, supporting a gang or group of drivers, d^9, the constantly-reciprocating slide C, and the movable block E, substantially as described.

7. The combination of the nail-carrier H, the head D, and connecting devices, substantially as specified, whereby upon the downward movement of the head the nail-carrier is moved into operative position, and upon its upward movement it is moved out of operative position, substantially as set forth.

8. The combination of the cam-plate having a cam-groove, h^8, adapted to be moved vertically with the head D, the nail-carrier, and connecting devices, whereby upon the downward movement of the head the carrier is moved and held in operative position, all substantially as described.

9. The combination of the downwardly-movable templet-block with the head D, carrying a gang or group of drivers, and the yielding pressure-block N, adapted to be brought in contact with the templet or nail-carrier plate upon the downward movement of the drivers, but before the nails are driven, all substantially as described.

10. The combination of the bed-plate *a*, supporting or carrying the frame a' a^2, the said frame a' a^2 carrying or supporting at its upper end the shaft B, means for constantly revolving the shaft, the slide C, operated by said shaft, the head D, and a device for throwing it into and out of connection with the slide C, and a templet-plate supporting a templet, g', all substantially as described.

FREEBORN F. RAYMOND, 2D.

Witnesses:
J. M. DOLAN,
FRED. B. DOLAN.