(No Model.)

2 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

HEEL NAILING MACHINE.

No. 290,109. Patented Dec. 11, 1883.

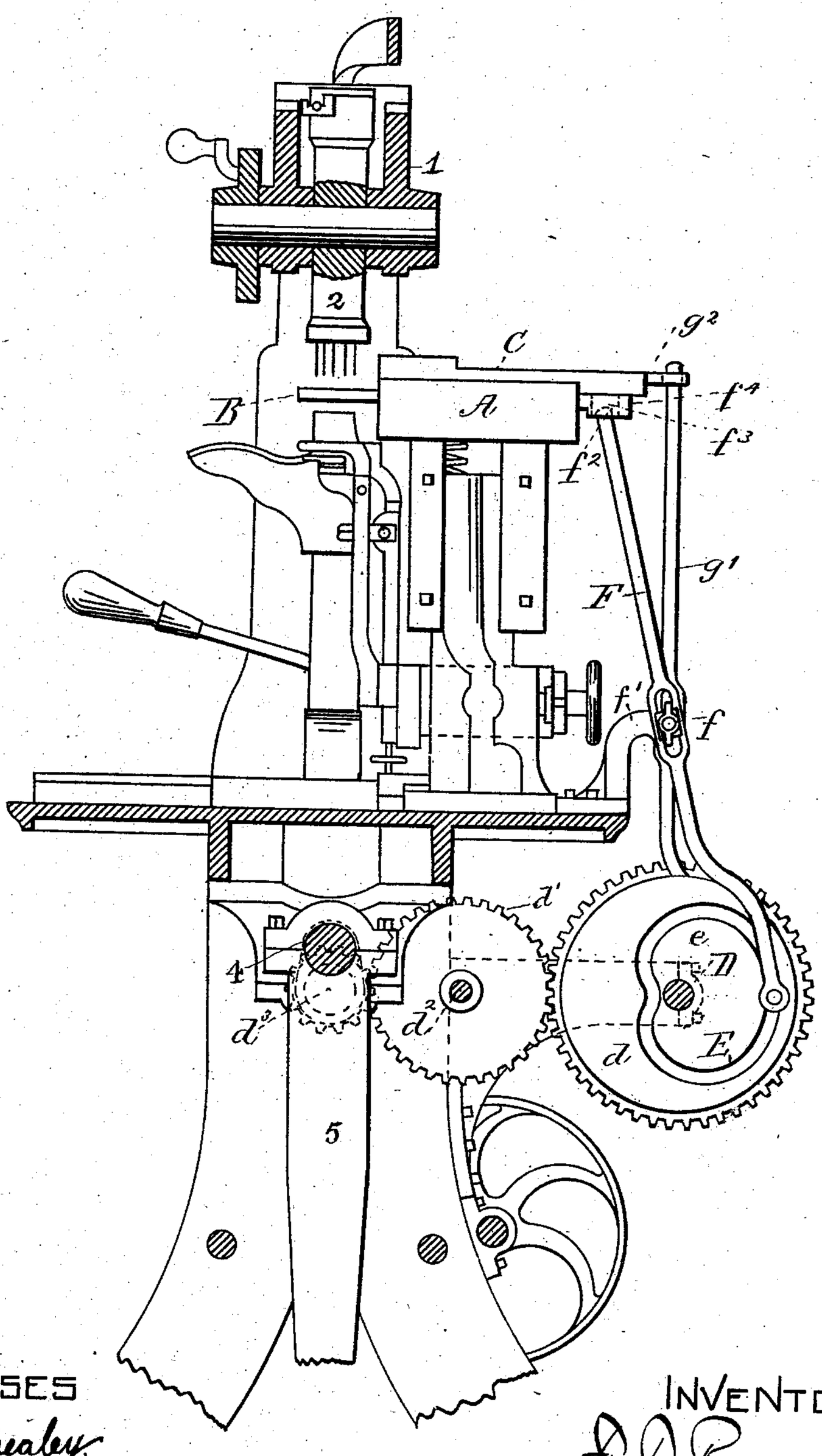

Fig. 1.

WITNESSES

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Fred Harris

INVENTOR

F. F. Raymond 2d

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Clarke & Raymond

(No Model.)

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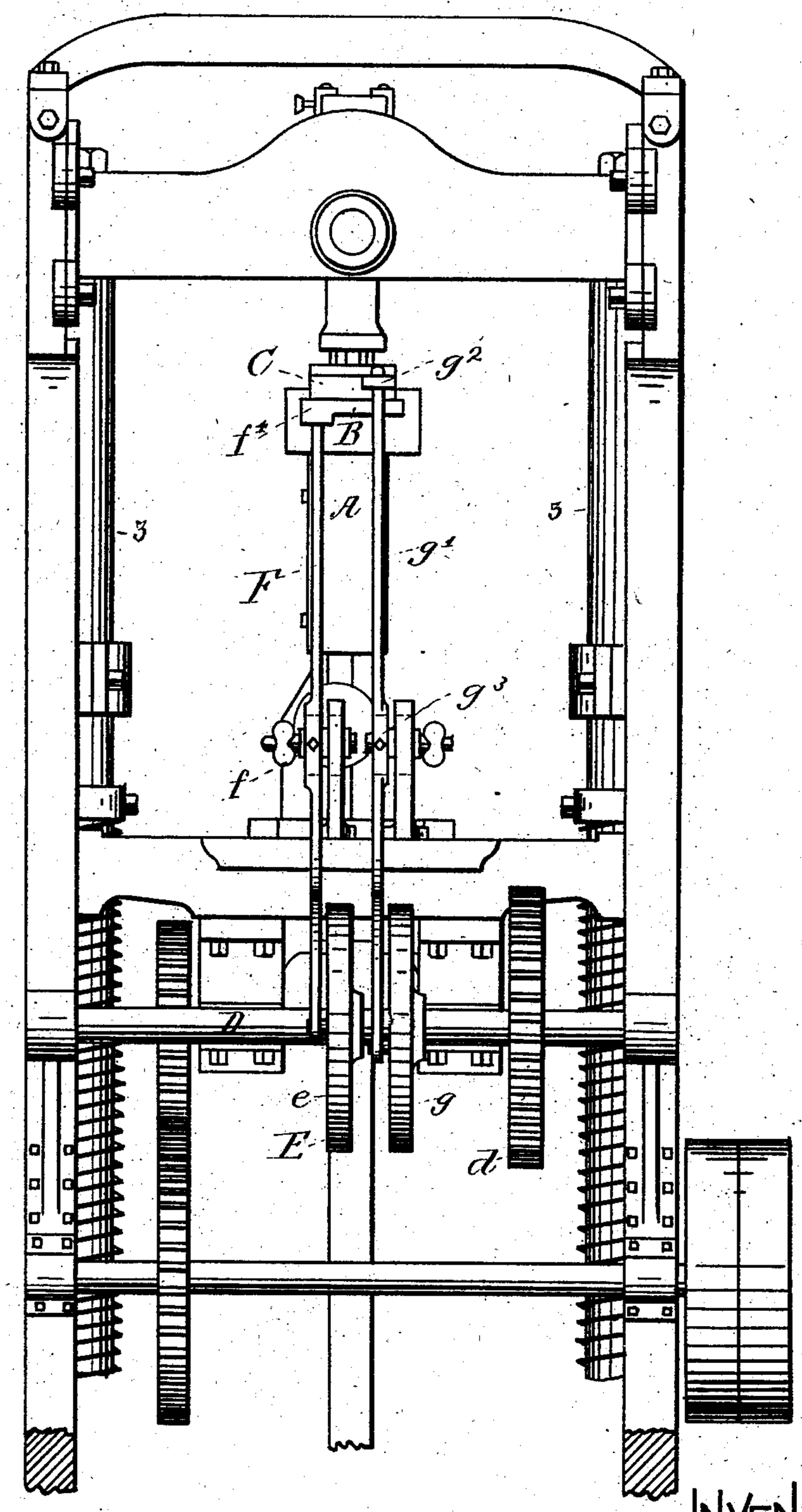

Fig. 2.

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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. 290,109, dated December 11, 1883.

Application filed July 13, 1883. (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 made a certain new and useful Improvement in Heel-Nailing Machines, of which the following is a full, clear, and exact descripion, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature, in which—

Figure 1 is a side elevation of a machine having my invention, and Fig. 2 is an end view thereof.

This invention is an improvement upon those described in Letters Patent No. 252,215 and 259,687, granted Henry A. Henderson, assignor; and it consists, especially, in the specific means, herein described, for automatically moving the templet-plate and nail-holder plate, so that the templet and nail-holder may be moved into and out of operative position in connection with the driver's awls and spanker and with the work at the proper times. The hole-forming, nail-driving, and spanking mechanism, as well as the devices for presenting the work thereto, are fully shown in said Henderson patents, and a brief description thereof, therefore, is all that will be necessary herein.

The cross-head 1 supports the revolving head 2, which preferably has three arms, two of which are represented; but the other is not shown. These arms support, respectively, the awls, drivers, and spanker, and the spanker-block carries the top-lift holding mechanism. The revolving head is either revolved by hand or automatically, as may be desired, and in my Patent No. 287,472 I describe means for automatically revolving it. The cross-head 1 is reciprocated, preferably, by means of rod 3, crank 4, connecting-rod 5, and a lower cross-head. (Not shown in the drawings, but like that of said Henderson patents.) The crank d^4 is upon the crank-shaft d^3, hereinafter referred to. The templet is supported upon a vertically-movable table—such as is described in said patents—and it and the nail-holder are reciprocated at proper times by means of cam-grooves or cams of any other suitable character, carried by a shaft and operated by one of the shafts of the said Henderson machine.

Referring to the drawings, A is the table.

B is the templet-plate, which carries at its front end a templet, such as is described in said patents.

C is the nail-holder plate, which carries at its front end the nail-holder.

The templet is adapted to slide upon the table and the nail-holder upon the templet, as described in said patents. D is a counter-shaft. It is revolved by means of the spur-gears d d', the latter of which is upon the shaft d^2, as shown in the drawings, or upon the crank-shaft d^3, as preferred. This shaft D supports the cams E. The cam-groove E is formed in the disk e, and this groove is so shaped as to move, by means of a connecting-lever, the templet-plate into operative position immediately before the reciprocation of the awls, and out of operative position immediately after the withdrawal of the drivers therefrom, and to hold the templet between these movements either in operative position or out of operative position. It is connected directly with the end of the templet by means of the lever F, which is pivoted at f to the support f'. Its upper end, f^2, enters a slot, f^3, in the backward extension, f^4, of the templet-plate.

The mechanism for moving the nail-holder is of a similar character. A cam-groove in the disk g is used. It is shaped to move, by means of a connecting-lever, the nail-holder into operative position immediately after the withdrawal of the awls from the templet to hold it there, and then withdraws it before the reciprocation of the spanker, and to hold it withdrawn until its next inward movement. The lever g' connects the cam directly with the slotted projection g^2 at the end of the nail-holder. This lever is pivoted at g^3 to the support f'.

The fulcrums f and g^3 of the templet and nail-holder levers are both made movable in the slots of the respective levers, in order that the extent of movement of the upper end of each lever may be adjusted, and therefore each lever has a slot in which the fulcrum-pin may be moved.

Of course any other suitable cams may be used in lieu of cam-grooves. When a vertically-movable table for supporting the templet-plate and nail-holder is used, the connec-

tion between the nail-holder-plate and templet-plate and their respective operating-levers must be such as to permit the vertical movement of said plates upon the said levers during the vertical movement of the table, and this is accomplished, as above explained, by making each projection at the end of each plate, and which receives the end of the operating-lever, slotted, so that free movement of the plates upon the levers is permitted.

It will be observed that by this construction the main shaft of the machine is caused to reciprocate the awls, drivers, and spanker, or either of them, and at the same time to operate the cams which automatically move the templet and nail-holder plates, or either of them.

It is not essential that I use in this machine the awls, drivers, and spanker, for I may use either the awls or drivers in connection with the templet and nail-holder plates, or either of them. Neither, so far as the spirit of this invention is concerned, is it essential that the specific connection between the main shaft and the cross-head be employed, as I may use any other suitable connecting devices for so operating the awls and drivers, or either of them.

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

1. In an organized heel-nailing machine, the combination of the templet-plate B, the cam E, operated as described, and the lever F, all substantially as and for the purposes set forth.

2. In an organized heel-nailing machine, the combination of the nail-holder C, the cam *g*, operated as described, and the connecting-lever *g'*, all substantially as and for the purposes set forth.

3. In an organized heel-nailing machine, the combination of the nail-holder C, the lever *g'*, its movable fulcrum g^3, and cam *g*, all substantially as and for the purposes described.

4. In an organized heel-nailing machine, the combination of the templet-plate B, the lever F, its movable fulcrum *f*, and the cam E, all substantially as and for the purposes described.

5. In an organized heel-nailing machine, the combination of the shaft D, the templet-plate B, nail-holder plate C, the connecting-levers F *g'*, and their operative cams, all substantially as and for the purposes described.

6. In an organized heel-nailing machine, the combination of the table A, adapted to have a vertical movement imparted to it, a templet-plate, B, and its operating-lever F, loosely connected with said plate, so as to permit of its vertical movement in relation thereto, all substantially as and for the purposes described.

7. The combination of the table A, adapted to have a vertical movement imparted to it, the nail-holder plate C, its operating-lever *g'*, loosely connected with said plate, so as to permit of its vertical movement in relation thereto, all substantially as and for the purposes described.

8. In an organized heel-nailing machine, the combination of the cross-head carrying the awls, drivers, and spanker, or either of them, the templet-plate B, the cam E, and connecting-lever F, the said cam being operated to reciprocate the templet-plate, the main shaft, and connecting mechanism, substantially as specified, whereby upon the revolution of the main shaft the head is reciprocated and the cam caused to operate the templet-plate, all substantially as and for the purposes set forth.

9. In an organized heel-nailing machine, the combination of the cross-head carrying the awls, drivers, and spanker, or either of them, the nail-holder plate C, the cam *g*, its connecting-lever *g'*, the said cam being operated to reciprocate the nail-holder plate, the main shaft, and connecting mechanism, substantially as specified, whereby upon the revolution of the main shaft the head is reciprocated and the cam caused to operate the nail-holder plate, all substantially as and for the purposes described.

10. In an organized heel-nailing machine, the combination of the cross-head carrying the awls, drivers, and spanker, or either of them, the templet-plate B, the nail-holder plate C, the cams E and *g*, and their connecting-levers F *g'*, the said cams being operated to reciprocate the templet-plate and nail-holder plate, the main shaft, and connecting mechanism, substantially as described, whereby upon the revolution of the main shaft the head is reciprocated and the cams caused to operate the templet-plate and the nail-holder plate, all substantially as and for the purposes described.

FREEBORN F. RAYMOND, 2D.

Witnesses:
FRED. HARRIS,
WILLIAM J. MEALEY.