

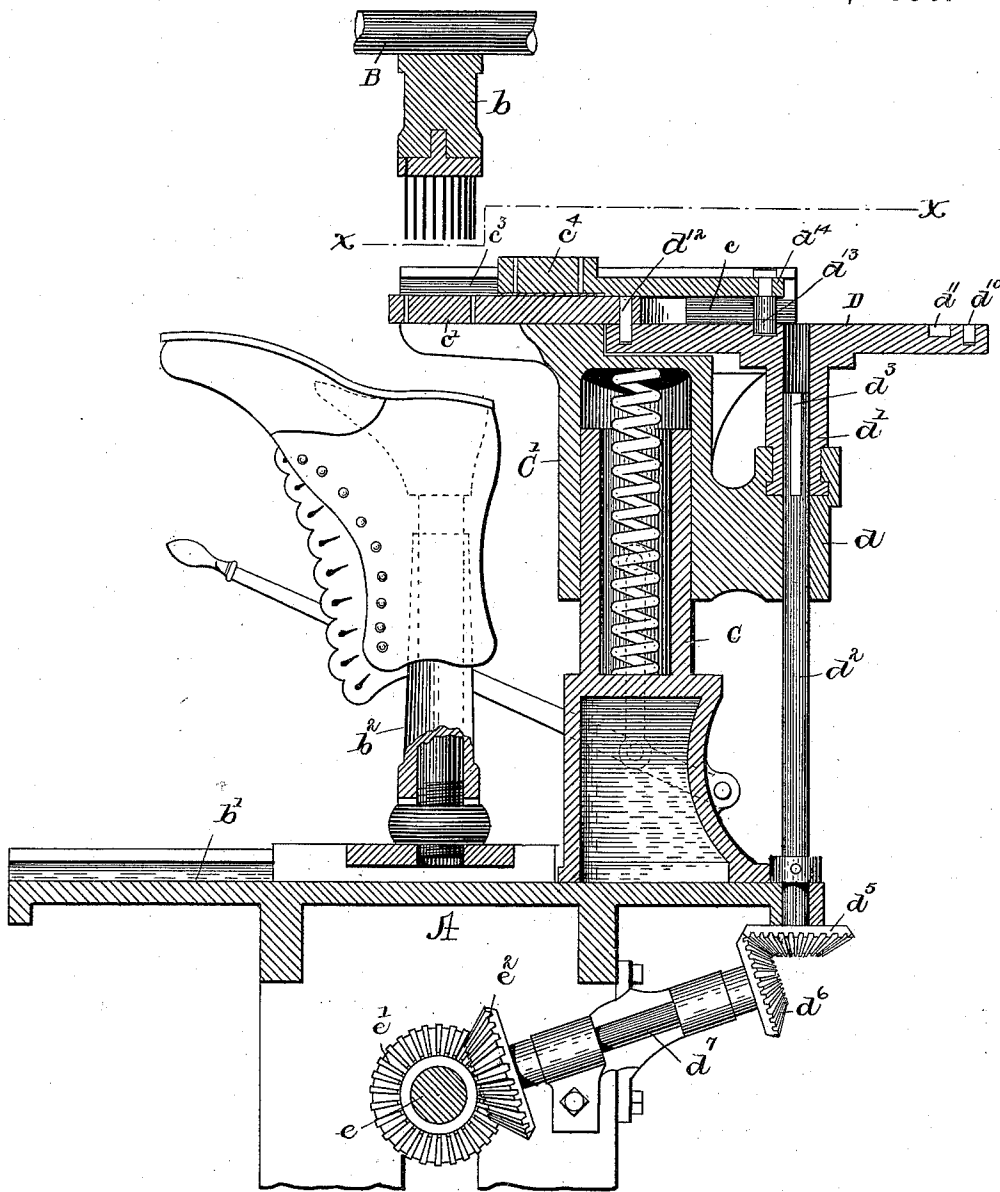
(No Model.)

2 Sheets—Sheet 1.

F. F. RAYMOND, 2d.
HEEL NAILING MACHINE.

No. 561,607.

Patented June 9, 1896.



WITNESSES.

J. M. Dolan
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Fig-1-

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T. T. Raymond

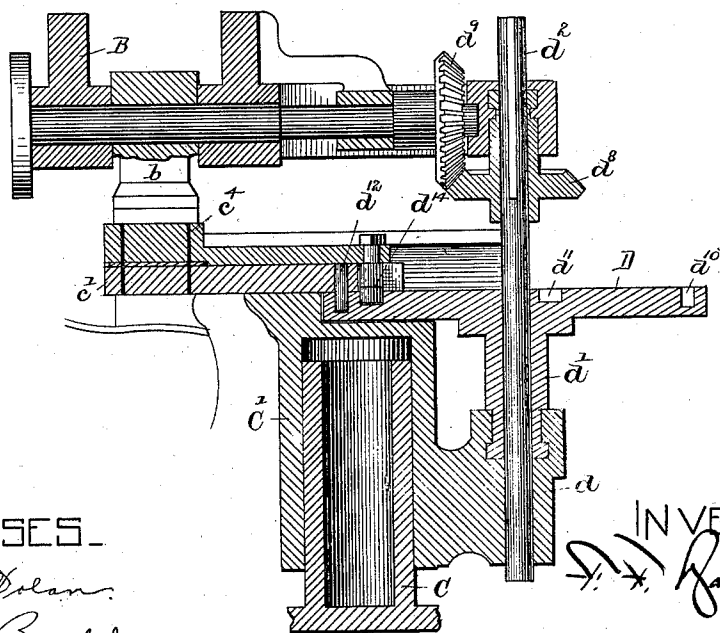
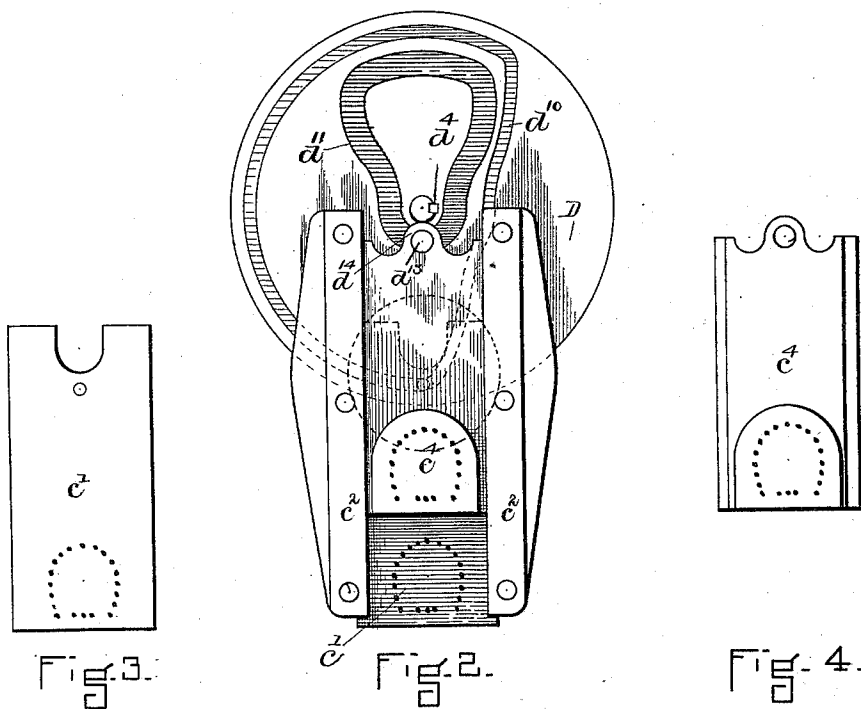
(No Model.)

2 Sheets—Sheet 2.

F. F. RAYMOND, 2d.
HEEL NAILING MACHINE.

No. 561,607.

Patented June 9, 1896.



WITNESSES.

J. W. Dulan
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Fig. 5.

UNITED STATES PATENT OFFICE.

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JAMES W. BROOKS, OF PETERSHAM, AND JOHN BROOKS, OF CAMBRIDGE,
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HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,607, dated June 9, 1896.

Application filed July 13, 1889. Serial No. 317,399. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, 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 is an improvement upon the "National" heeling-machine, so called; and it relates especially to means for automatically moving the templet-plate and nail-carrier plate of said machine, which means are carried by the vertically-movable table or carriage carrying said templet-plate and nail-carrier plate, and which may be automatically operated by connection with one of the shafts of the machine, or may be operated by hand. The devices in question comprise a cam having two cam-tracks and a long hub, a support or bracket for said cam attached to or integral with the vertically-movable table, cam-pins connecting the templet-plate and the nail-carrier plate with the cam-grooves of the cam, and when the movement of the cam is automatic, as it generally will be, a shaft connected by bevel-gear with one of the rotary shafts of the machine and entering the long hub of the cam with which it is connected by a fast feather, and upon which the cam is caused to be moved up and down with the table. This employment of a cam in this connection does away with the necessity of the hand movement of the plates by the boy or attendant and with the latches which are now used for locking both plates in and out of operative position, and does away with the liability of the breaking of the plates from carelessness on the part of the boy or operator.

Referring to the drawings, Figure 1 is a view in vertical section taken from the front to back of the central portion of a National machine having the features of my invention. Fig. 2 is a view in plan of parts to which the invention appertains below the dotted line *xx* of Fig. 1. Fig. 3 is a plan view of the templet-plate and its cam-pin. Fig. 4 is a plan view of the nail-carrier plate and its cam-pin.

Fig. 5 is a view in section illustrating a slight modification of the invention.

I have shown in the drawings only so much of the National machine as is necessary to enable the invention to be properly described and understood.

A is the frame of the machine.

B is the reciprocating cross-head. *b* is the rotary head carried thereby.

b' is the bed of the machine upon which the jack *b*² is mounted to slide, and upon which the post C, on which the carriage C' is vertically movable, is supported. The carriage C' is vertically movable, as described in Patent No. 316,894 to Henderson. The carriage has in its upper part a guideway *c* for the templet-plate *c'*, and the templet-plate *c'* is held in the guideway by cap-plates *c*², which also furnish the guideway *c*³ for the nail-carrier plate *c*⁴. At the back end of the upper part of the carriage is a cam D. This cam has a suitable bearing in a bracket *d*, attached to or made integral with the table. It also has the long hub *d'*, which receives the upper end of the operating-shaft *d*², the shaft having a fast feather *d*³, which enters a recess or groove *d*⁴ in the hole of the hub. This permits of the vertical movement of the cam in relation to its operating-shaft.

The operating-shaft *d*² has at its lower end a bevel-gear *d*⁵, which meshes with a bevel-gear *d*⁶ on a shaft *d*⁷, which is operated by the crank-shaft, as will be hereinafter specified; or the cam may be connected by means of a vertical shaft extending upward, and upon which it is vertically movable, or which is vertically movable in relation to its operating-gear with the rotary head. This connection is represented in Fig. 5, where the shaft *d*² has at its upper end a bevel-gear *d*⁸, carried by a bracket attached to the reciprocating cross-head and arranged to slide upon the shaft by means of a fast feather or spline, and meshes with a bevel-gear *d*⁹, carried on the end of the rotary head shaft. When this construction is employed, the movement or rotation of the rotary head also causes the rotation of the plate-operating cam, whereby the templet-plate and the nail-carrier plate are automatically moved into and out of opera-

tive position. The operative cam d has two cam-grooves, the cam-groove d^{10} and the cam-groove d^{11} . The cam-groove d^{10} preferably is made narrower and deeper than the cam-groove d^{11} and receives a cam-pin d^{12} , attached to an arm of the templet-plate, (see Fig. 1.) the cam-pin depending from the arm to enter the groove. This cam-groove is shaped to give the templet-plate the necessary movements—that is, to move it into position after the spanking of the top lift and before the descent of the awls, and to hold it there during the driving of the awls and the driving of the nails, and to withdraw it before the descent of the spanker. The cam-groove d^{11} is wider and shallower than the cam-groove d^{10} , and it receives a cam-pin d^{13} , which depends from an arm d^{14} , extending from the nail-carrier plate. This cam-groove is shaped to move the nail-carrier plate into position beneath the drivers after the reciprocation of the awls, but before the reciprocation of the drivers, and to then withdraw the nail-carrier plate practically simultaneously with the templet-plate, and to hold it withdrawn until it is necessary to again move it forward.

In Fig. 1 I have represented the shaft d^7 as inclined and as connecting the vertical shaft d^2 with the crank-shaft e , the crank-shaft having the bevel-gear e' , which meshes with the bevel-gear e^2 , upon the lower end of the inclined shaft d^7 . Of course the shaft d^2 may have no vertical movement, in which event the cam D is movable upon it, or it may be movable with the cam in the gear which operates it.

When the construction represented in Fig. 5 is employed, the rotary head b may be turned automatically in any desired way. I prefer, however, to use for this purpose the mechanism represented in Patent No. 317,647 or a modification thereof. When this organization is employed, it will be seen that the rotary head and the templet and nail-carrier plates are automatically operated in unison.

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

1. In a heel-attaching machine, the combination of a stationary last or work-support, a table provided with a vertical movement in relation to the last or work-support, a cam mounted upon said table, to be moved vertically with it, and having two cam-grooves, a templet-plate carried by said table, and connected with one of the grooves of the cam by a cam-pin; a nail-carrier also mounted upon said table, to be moved vertically therewith, and connected with the second cam-groove of said cam by a cam-pin, the cams being connected to provide the templet and the nail-

carrier with the movements specified at predetermined times in respect to the height of the table, and means for automatically rotating said cam, as and for the purposes described.

2. In a heel loading or nailing organization, the combination of a templet having holes through which nails are adapted to be driven and movable from an operative to an inoperative position; a nail-carrier having holes by which nails are adapted to be fed to the holes of the templet and movable from one position in relation thereto, to another; a single cam-disk having two cam-grooves, one of which is connected with the templet and the other with a nail-carrier, whereby upon the rotation of said disk, both the templet and the nail-carrier are adapted to be moved or operated, and whereby they are maintained in their proper relation to each other, as and for the purposes described.

3. In a nailing or attaching machine, the combination of a vertically-movable table, a cam mounted upon the table to be vertically movable therewith, and having a cam-groove constructed to control the movement of a templet-plate; a templet-plate mounted upon said table, to be vertically movable therewith, and connected by a cam-pin with the groove of the cam, whereby the cam and the plate are movable vertically together with a common supporting-table, as and for the purposes described.

4. In a heel-nailing machine, the combination of a vertically-movable table, a cam supported thereby, and movable vertically therewith, provided with a cam-groove; a nail carrier mounted upon the vertically-movable table to be vertically movable therewith, and having a cam-pin connected with the cam-groove of the cam, whereby the cam and the nail-carrier are movable vertically together, and with their table or support, as and for the purposes described.

5. In a heel-nailing machine, the combination of a vertically-movable table, a cam carried thereby, and having a long hub which extends into a bearing for it, forming a part of the table and movable with it; a slideway across the top of the table over the cam in which a plate is adapted to be horizontally reciprocated, and a shaft for turning said cam partially supported by the table, and having a sliding connection with the cam or part which actuates it, as and for the purposes described.

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Witnesses:

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