

(No Model.)

3 Sheets—Sheet 1.

G. T. DEMARY.
HEEL NAILING MACHINE.

No. 342,501.

Patented May 25, 1886.

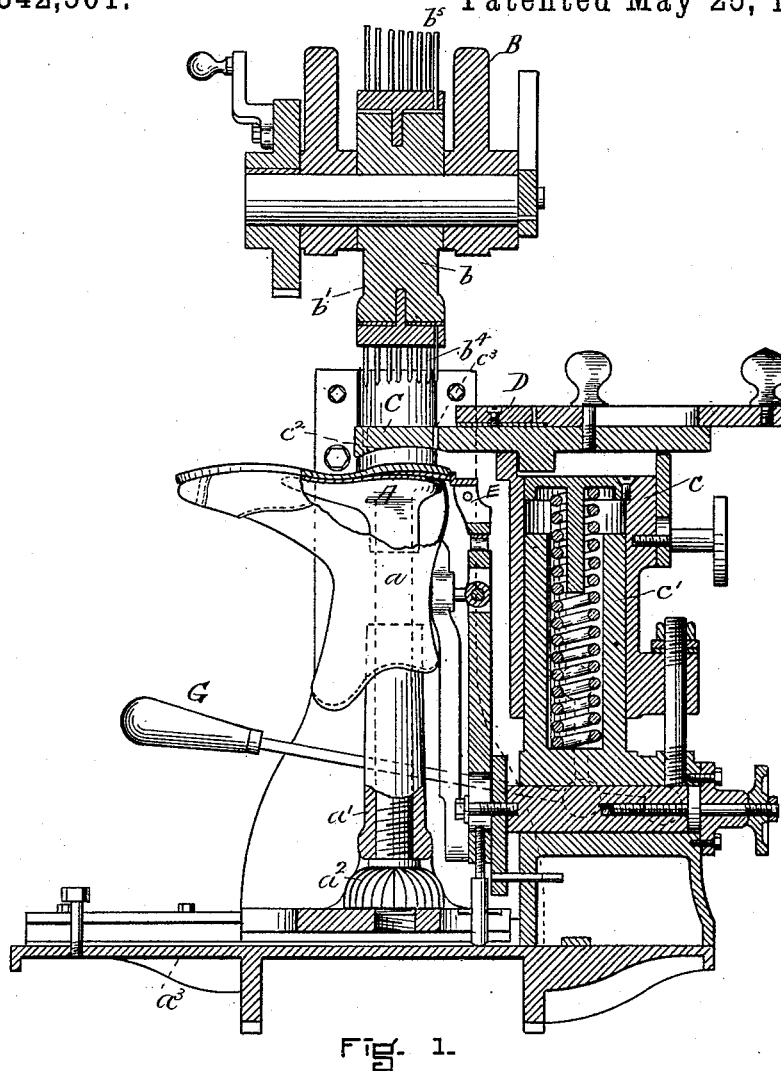


Fig. 1.

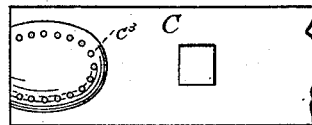


Fig. 7.

WITNESSES.

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by *his atty*
Clark & Raymond.

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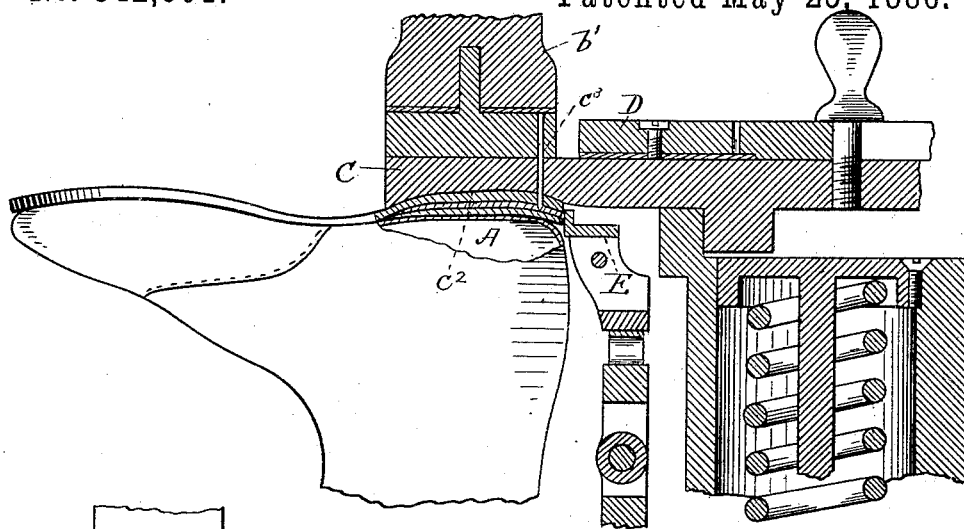


FIG. 2.

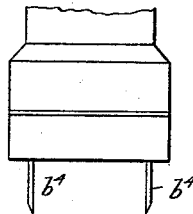


FIG. 3.

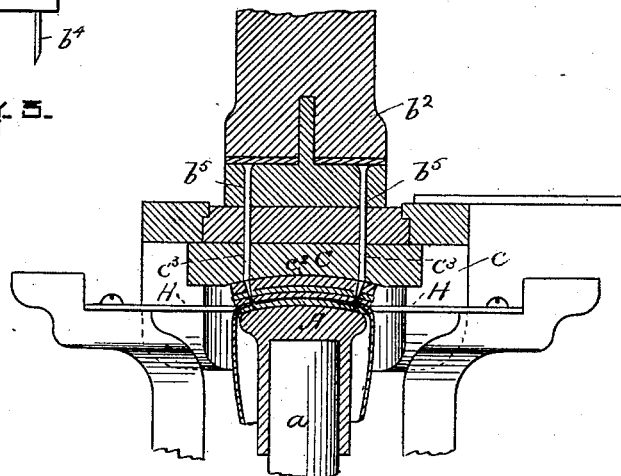


FIG. 4.

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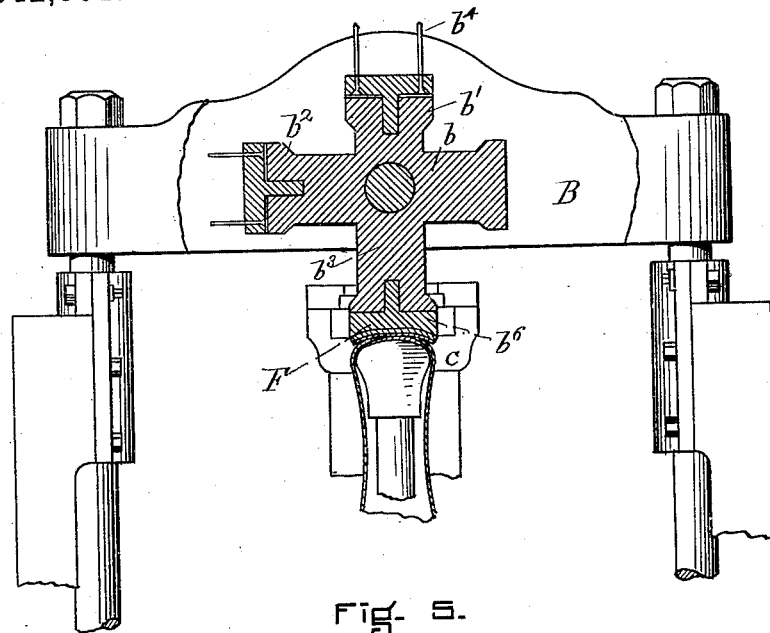


FIG. 5.

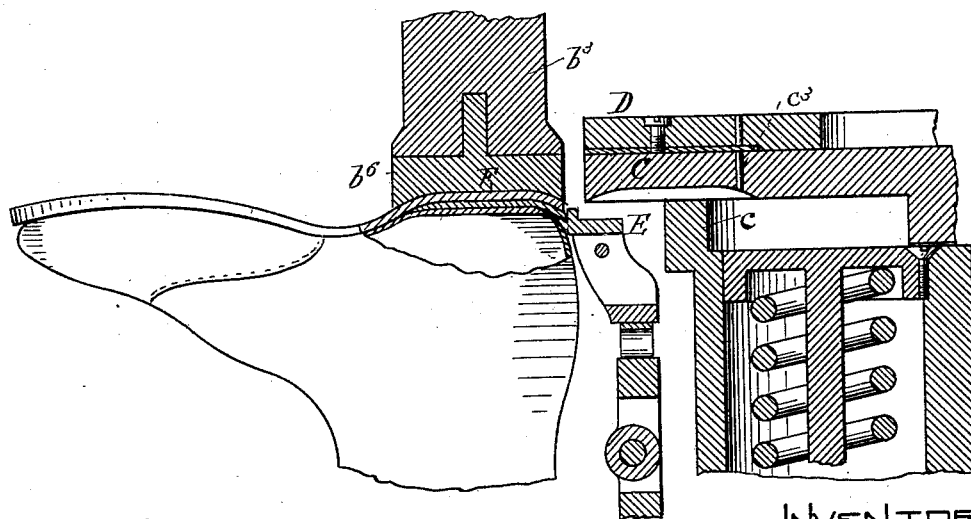


FIG. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE T. DEMARY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
NATIONAL HEELING MACHINE COMPANY, OF PORTLAND, MAINE.

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,501, dated May 25, 1886.

Application filed August 10, 1885. Serial No. 173,935. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. DEMARY, of Boston, in the county of Suffolk 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 is especially applicable for use in nailing what are known as "spring-heels"—that is, a heel which is made not by a pile of lifts secured together for attachment to the outer surface of the outsole, but by one or more lifts which are interposed between the outsole and the insole, so that the outsole is caused to be held, bent, or turned slightly downward, and an increased thickness is obtained at the heel end of the boot or shoe without attaching any lifts or projections to the under or outer surface of the sole. This character or style of heel is very largely used upon children's shoes.

The lifts used in forming the spring-heel extend well forward into the shank of the shoe; and it may be said that the heel begins at the front end of the inserted lift or lifts, and from this position to the back end of the heel its thickness is constantly increased. The surface of the outsole, which covers these lifts, is not flat, as is the surface of the top lift of an ordinary heel, but is rounded from the median central line of the heel toward each edge to conform to the remainder of the sole. The heel portion of these shoes have heretofore been machine-sewed or nailed by hand.

To enable the work to be done by a heel-nailing machine, it is necessary, first, that a proper heel-support be used in order to furnish sufficient bearing for the portion of the shoe that is submitted to the nailing operation; and, second, that the templet or pressure plate be provided with a cavity that shall be the converse in shape to that which it is intended the sole shall have. It is also necessary that longer nails be used for the back of the heel and the side sections immediately adjacent than are used at the shank.

Referring to the drawings, Figure 1 is a vertical central section from front to back of the

central and upper parts of a "National Heel-Nailing Machine" provided with my improvement, a portion of the shoe and jack being represented in side elevation. Fig. 2 is an enlarged view showing in section parts of the templet, nail-holder, their supporting-carriage, the back-stop awls, and holder-block and spanker-arm of the revolving head. Fig. 3 is a front elevation of the awl-block in place and awls. Fig. 4 is a vertical central section of the work-support, shoe-templet, nail-holder, driver-block, and part of arm holding the same, showing the position of the parts upon the completion of the driving of the nails. Fig. 5 is a view in front elevation and vertical section of the upper part of the machine. Fig. 6 shows the nail-holder and templet withdrawn and the spanker in place upon the work. Fig. 7 is a plan view, inverted, of the front portion of the templet-plate.

In Figs. 1, 2, and 6 I have shown a shoe with the spring-heel in vertical section. It will be seen that the heel begins forward of what is ordinarily known as the "heel-seat"—that is, it includes part of the shank, that it extends back to the rear end of the heel-seat or sole, and that it comprises very nearly a third of the entire sole. The curve or inclination of the surface of the sole is well represented in these figures.

The heel-support A is made wide and long to furnish a support sufficiently extended to cover or embrace the whole section of the sole which is submitted to the nailing operation. It is mounted upon a screw-threaded spindle, *a*, which extends into the jack-sleeve *a'*, and is vertically movable by the nut *a''*. The jack is horizontally movable on the table or bed *a'''*.

B is a cross-head, which is reciprocated vertically, as described in the Patent No. 316,894, dated April 28, 1885, to Henderson, or in any other equivalent way. It supports the revolving head *b*, which carries arms *b'* *b''* *b'''*, supporting, respectively, the block carrying a gang of awls, *b''*, the block carrying a gang of drivers, *b'''*, and a pressure-block, *b''''*.

C is the templet or pressure plate. It is supported by the table or carriage *c*, which is vertically movable upon the post *c'*, and the templet or pressure plate is horizontally movable in said carriage or table.

D is the nail-holder; E, the back-stop.

The templet-plate is provided upon its under surface with the cavity c^2 , which is curved to correspond to the shape which the sole at the heel end must have. This cavity is shown in Figs. 1, 2, 4, 6, and 7. This cavity is wider at the heel end and gradually narrowed as it extends toward the shank, and it is deeper at the rear end of the heel than at the front. There are arranged in the templet-plate the holes c^3 , which are disposed to open on their under side into this cavity c^2 at a uniform distance from the outer edge thereof.

The nail holder or carrier has holes which correspond in size and location to the holes in the templet or pressure plate, and has a sliding bottom plate which is provided with like holes, and arranged to be moved automatically to uncover and cover the holes of the nail-holder.

The awl-holder block is longer than is ordinarily used upon a regular heel-nailing machine, and has the awls arranged as to location so as to enter the holes in the nail-holder and templet-plates. They are preferably also tapered upon the outer side only, so that upon entering the heel they are caused to take an inward direction. The driver-block is also made longer than the ordinary block used for holding the drivers in a heel-attaching machine, and holes are formed therein to correspond with the holes in the awl-holder block, and the drivers are held therein.

The spanker-plate has a cavity, F, which is of the same or substantially the same shape as that of the templet-plate.

The drivers vary in length, so that their ends shall be flush with the surface of the templet-cavity at the end of their downward movement.

In operation the shoe is placed upon its support and moved into position under the templet, and the templet-plate is moved down by the handle G, so that its cavity is shut upon the portion of the sole which it is intended to fit, form, and cover. The awls are then reciprocated and the nail-carrier, having been loaded with nails which vary in length—the longer nails being placed in the back holes and the shorter nails in the front holes thereof—is moved into position and the nails discharged into the templet. The drivers are

then reciprocated and the nails simultaneously driven, and they are caused to take an inclined direction inwardly, because the holes which the awls have made are inclined and the nails must follow the direction of the holes. Of course the awl-holes do not extend entirely through the soles; but if the holes are given a certain direction, even if they are of but slight depth, the nails are compelled, if they have a central point, to follow this direction, regardless substantially of the straight movement of the drivers. It will be seen that by this organization and operation of the machine very nearly a third of the sole of the shoe is attached or fastened to the insole by a group or gang of nails simultaneously driven and that the heel portion of the sole is molded under the pressure before the nails are driven, that the awl-holes are formed while it is under pressure, and that the spanker substantially beats out or finishes the shaping of this portion of the sole. The back-stop E, preferably, is yielding, like that described in my application of even date herewith; but, instead of being arranged to locate a heel-blank, it serves to locate the outsole, the back edge of the outsole and of the filling below it coming in contact with the front surface of the stop, which, it will be seen, thus acts as a gage. The side girders, H, act as supports in holding the outsole during the nailing operation, and also serve to center the sole in relation to the cavity in the templet or pressure plate.

The jack may be vertically movable in relation to the templet-plate, instead of making the templet-plate movable in relation to it, if desired.

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

The combination, in a heeling-machine for nailing spring-heels, of the support A, shaped as described, the templet or pressure plate having the cavity c^2 , shaped as specified, a reciprocating gang of drivers, and the reciprocating spanker b^6 , having the cavity F, shaped as described, all substantially as and for the purposes set forth.

GEORGE T. DEMARY.

In presence of—

F. F. RAYMOND, 2d,
FRED. B. DOLAN.