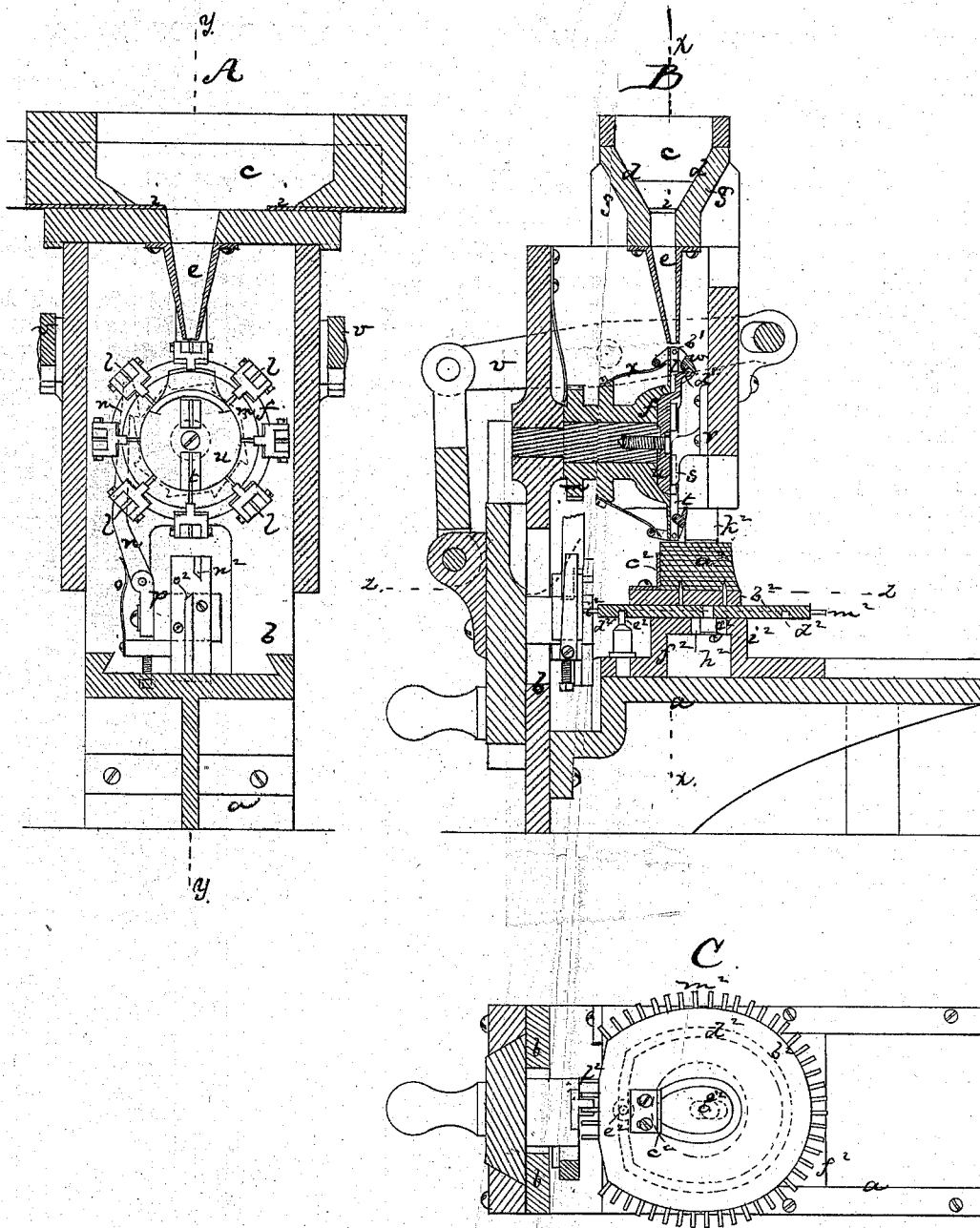


A. KNOWLTON & H. P. FAIRFIELD.

Nail Presenting Mechanism for Boots and Shoes.  
No. 129,834.

Patented July 23, 1872.



WITNESSES,

Mo. W. Frothingham.  
L. H. Salmer.

INVENTORS.

Albion Knowlton.  
Hedley P. Fairfield  
By their Attys.  
Crosby & Gould.

# UNITED STATES PATENT OFFICE.

ALBION KNOWLTON AND HADLEY P. FAIRFIELD, OF BOSTON, MASS.

IMPROVEMENT IN NAIL-PRESENTING MECHANISMS FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. 129,834, dated July 23, 1872.

*To all whom it may concern:*

Be it known that we, ALBION KNOWLTON and HADLEY P. FAIRFIELD, both of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Nail-Presenting Mechanism for Boot and Shoe Heels; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

The invention relates particularly to an organization of mechanism for selecting nails and delivering them one by one, in upright position and regularly or successively, into holes punched for their reception in boot or shoe heels or heel-blanks; the mechanism for turning the heel and presenting its punched holes and the mechanism for receiving and presenting the nails being so connected and so co-operative that at each intermittent action of the machine a nail is presented to the heel and dropped, pushed, or driven into one of the punched holes made in the heel for reception of the nails, the nails being taken or passing from a hopper through a conductor to the periphery of a vertically-setting wheel, passing into radial pockets in said wheel, the wheel being mounted on a stationary axle or pin, and having an intermittent rotative motion. The invention consists, primarily, in an organization of mechanism, or in a machine in which, from a loose assemblage of nails, nails are taken, one by one, carried into position to be dropped or driven into a properly-presented heel, the movements of the heel, in connection with those of the nail holding and presenting mechanism for inserting the successive nails, being automatic.

The invention may be used, and is particularly intended for use, in connection with a nail selecting and presenting mechanism similar to what is shown in United States Letters Patent No. 118,250, dated August 22, 1871, granted to one of us, although it may be used in connection with any other suitable nail selecting and presenting mechanism.

The drawing represents a machine embodying our invention.

A is a vertical section on the line  $x x$ . B

is a vertical section on the line  $y y$ . C is a sectional plan on the line  $z z$ .

$a$  denotes a bed or base-plate, from which extends a vertical standard or frame,  $b$ , having at its upper part a nail-box or hopper,  $c$ . This hopper has inclined sides,  $d$ , and under it is the spout or conductor  $e$ , leading to the periphery of the wheel  $f$ . The width of the open mouth of the spout may correspond with the width of the bottom of the hopper, and the hopper slides upon rails  $g$  and a seat,  $h$ , and has at its bottom plates  $i$ , which, by reciprocating slide movement of the hopper, and as the nails settle by such reciprocating movement, pushes the nails over the opening of the spout, so that they fall head-foremost into the spout, and drop down to the periphery of the wheel  $f$ , the mechanism for compelling each nail to drop head down not being shown. This wheel is made with a series of radial nail-receiving pockets or slots,  $l$ , each slot being of a width and length to receive the nail-head and shank. At the back of the wheel are ratchet-teeth or a ratchet-wheel,  $m$ , with which teeth or wheel engages a drag-pawl,  $n$ , pressed against the wheel by a spring,  $o$ , and jointed at its lower end to a slide,  $p$ . At each downward movement of the slide the pawl acts upon the wheel to turn it, and, by turning, it brings one of the radial slots or pockets into vertical position, and directly under the nail spout or conductor, another of the slots or pockets being at the same time brought into vertical position at the lower side of the wheel, the latter one being charged with a nail, which it holds in position to enter the heel. The upper slot or pocket being thus brought under the nail-tube or spout a nail drops into it from the nail-tube, the nail passing head-first into the slot, and the head bringing up against the periphery of a stationary disk or wheel,  $u$ , a griper or spring-stop,  $v$ , projecting from an arm,  $a'$ , pivoted at  $b'$ , being pressed toward or into the slot by a spring,  $x$ , but being thrown from the slot by the action of a cam-piece,  $d'$ , projecting from the disk  $u$ , as the pocket approaches a position to receive the nail, so that the head of the nail passes freely by the griper. When the wheel next moves, after thus receiving the nail, the griper passes by the cam-piece, and the spring  $x$  then throws the

griper against the nail, and holds it until, by the action of a driver,  $s$ , it is driven down from the slot. At each intermittent movement of the wheel a nail thus enters a nail-slot or pocket, and the wheel, with charged pockets on one side, turns until, by a succession of movements, the first nail reaches a vertical position in the lower part of the wheel. In the front part of the frame  $b$  is a second slide,  $r$ , which carries the driver  $s$ , working in a vertical slot,  $t$ , on the face of the disk  $u$ , on which the wheel  $f$  turns. At each stop of the wheel  $f$  a charged nail-slot,  $l$ , is directly under or in line with the driver-slot  $t$ . The slider  $r$  is connected with the pawl-slide  $p$  by rocker-links  $v$ , and as the pawl-slide moves up, leaving the wheel stationary, the driver-slide moves down, and the driver enters the charged slot beneath it, and drives therefrom the nail, the driver pressing forward and passing by the griper  $w$ . When the driver-slide moves up, after driving the nail, the pawl-slide moves down, and the pawl turns the wheel to present an empty pocket to the nail-tube, and a charged pocket to the driver.

The driver drives or pushes the nail into the heel which is mounted and fed as follows:  $a^2$  denotes the heel or heel-blank, made up of a suitable number of lifts, and, preferably, prepared with nail-receiving punched holes, punched in accordance with the position the nails are to have in the nailed heel. The heel or heel-blank is placed on top of a plate,  $b^2$ , with its breast against a breast-gage,  $c^2$ , which gage may be made adjustable for different heels. The under side of the plate  $b^2$  has a pattern-groove,  $d^2$ , into which extends a pin,  $e^2$ , projecting up from a slide-plate,  $f^2$ , and a center-pin,  $g^2$ , extends down from the plate  $b^2$  into an oblong slot,  $h^2$ , in a block,  $i^2$ , upon which the heel-plate  $b^2$  rests, the plate  $b^2$ , as it is turned on the block, having its movement guided by the pin  $e^2$  and slot  $d^2$  and the pin  $g^2$  and slot  $h^2$ , so that the straight part of the heel and the round part are, in succession brought under the nail-driver and nail-wheel to receive the straight row of nails parallel with the breast, and the circular or curved row of nails concentric with

the circular or curved contour of the heel, and the heel and heel-plate being held down by a suitable spring,  $k^2$ .

The intermittent movement of the heel-plate may be produced as follows: The heel-plate is provided with a series of peripherally-projecting teeth,  $l^2 m^2$ , and the pawl-slide with two inclines,  $n^2 o^2$ . As the pawl-slide moves down, the incline  $n^2$  passes down against one of the teeth—entering between two of them—and, acting laterally upon said tooth, turns the heel-plate slightly, and when the pawl-slide rises the other incline,  $o^2$ , strikes one of the teeth and completes the movement of the plate, the incline  $o^2$  acting before the driver reaches the nail, and the shank of the incline entering between the teeth and locking the plate in position for the action of the driver.

The mechanism may, of course, be greatly modified so far as relates to specific details. The machine is shown as arranged to be worked by hand; but it will be obvious that it may be arranged to be worked by power, both as relates to producing the movements of the nail-receiving wheel, the driver, and the heel-plate, and as relates to producing the movements of the hopper.

We claim—

1. The combination of a nail receiving and presenting wheel, a conductor or tube for delivering nails to said wheel, and a heel-presenting mechanism, substantially as described.

2. Also, the combination of the nail receiving and presenting wheel and the driver, arranged to operate substantially as described.

3. Also, in combination with the nail receiving and presenting wheel, a heel-plate, automatically and intermittently moved, to present the nails in succession in position to be driven, substantially as described.

4. Also, in combination with the wheel  $f$  and the driver  $s$ , the spring-stops  $w$ , substantially as shown and described.

ALBION KNOWLTON.  
H. P. FAIRFIELD.

Witnesses:

FRANCIS GOULD,  
M. W. FROTHINGHAM.