

(No Model.)

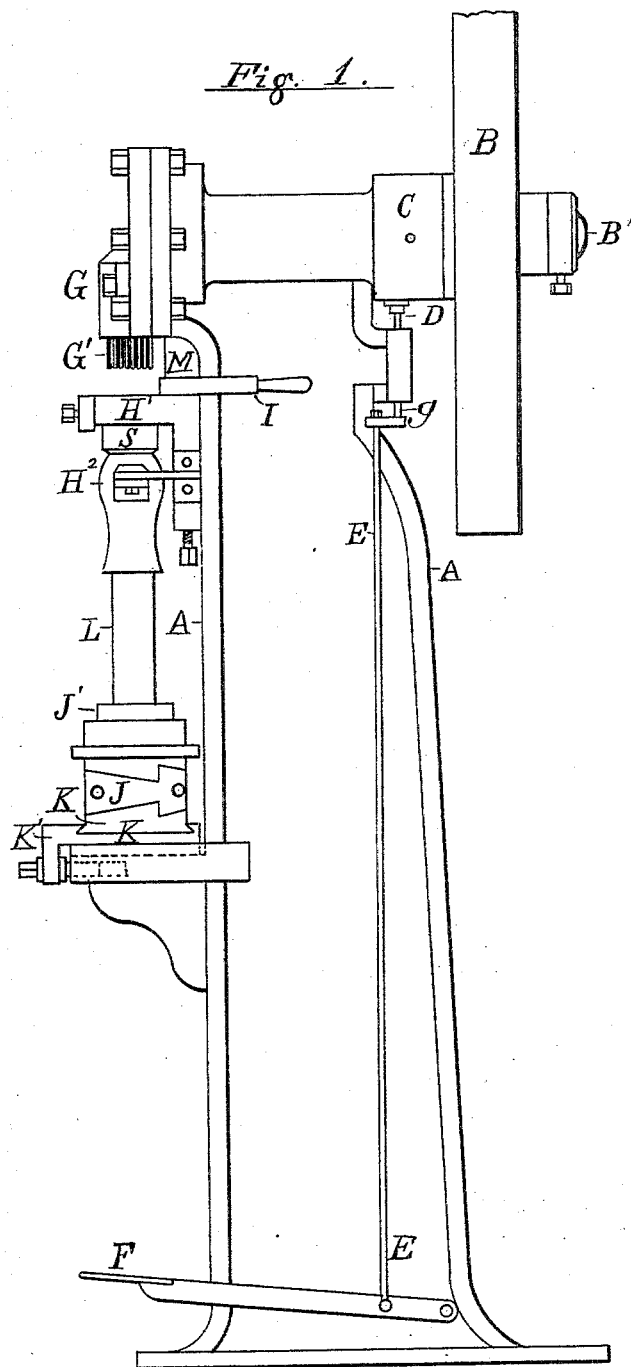
2 Sheets—Sheet 1.

D. WHITLOCK.
HEELING MACHINE.

No. 304,153.

Patented Aug. 26, 1884.

Fig. 1.



Attest.

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Fig. 3.

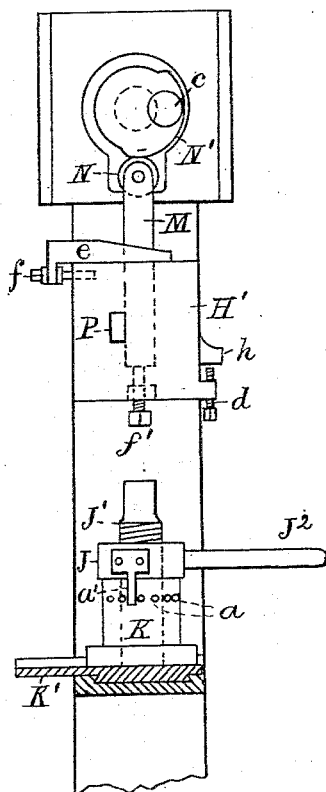


Fig. 2.

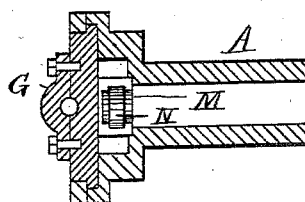
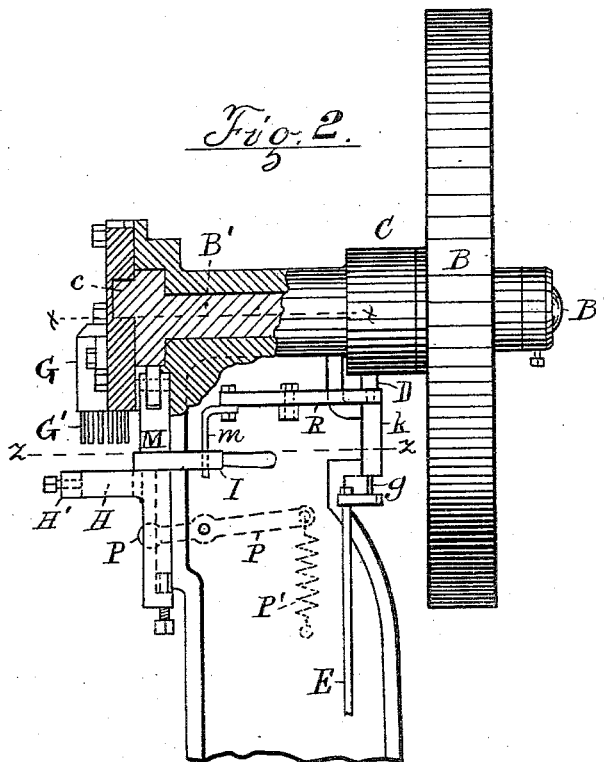
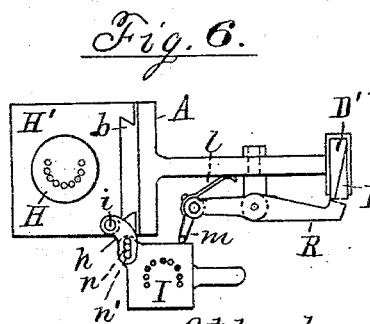


Fig. 4.

Fig. 6.

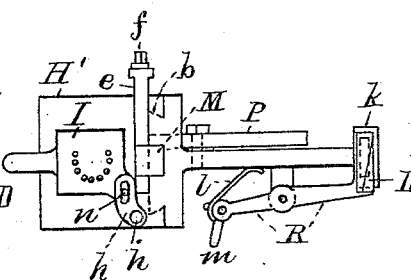


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Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL WHITLOCK, OF NEWARK, NEW JERSEY.

HEELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,153, dated August 26, 1884.

Application filed April 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, DANIEL WHITLOCK, a citizen of the United States, residing in Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Heeling-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in certain means for automatically pressing the heel preparatory to driving the nails, in certain means for clamping the heel upon the shoe prior to such automatic pressing, and in an automatic lock for the clutching mechanism, all as hereinafter fully described and claimed.

Figure 1 is a side elevation of the machine, embodying one form of my invention. Fig. 2 is a side view of the upper half of a machine of alternative construction, and including the clutch-lock, the cross-head and contiguous parts being shown in section at their center line. Fig. 3 is a front view of the working part of such machine with the cross-head removed, and including a sectional view of the transverse carriage shown at K' in Fig. 1, with a clamping device, different from that shown in Fig. 1, mounted upon such carriage. Fig. 4 is a section on line *xx* in Fig. 2. Fig. 5 is a section on line *zz* in Fig. 2, showing the clutch-lock in its normal position, and Fig. 6 is a similar view with the clutch unlocked by the swinging backward of the die-loader.

A is the frame of the machine; B, the driving-wheel; C, the clutch-hub; D, the clutch-shifter; E, the shifter-rod, and F a treadle to start the machine at pleasure by pulling the rod E and depressing the clutch-shifter. The clutch-key is then automatically thrown into the wheel B, and the cross-head shaft B' rotated a single revolution.

My improvement herein relates only to the locking of this clutch-shifter, and the construction of other parts of the clutch mechanism is the same as shown in said Patent No. 287,489. In the same patent are shown also the cross-head, (lettered G herein,) the nail-punches G', the nail-die H, the die-holder H', the heel-gage H², and the die-loader I. In the same patent is also shown mechanism for pro-

ducing a regulated pressure upon the heel before driving the nails; but my present invention substitutes for such attachment a positive connection between the driving-shaft and the die-holder, in such manner that when the shoe is placed upon the last and clamped against the die by hand sufficiently to hold it in the proper position, the rotation of the shaft B automatically effects the heel-pressing before driving the nails. This construction avoids the necessity of using any separate train of pressing mechanism, and thus facilitates the rapid performance of the heeling operation. The last-carriage is shown provided with a hand elevating device—one form in Fig. 1, and another in Fig. 3—for clamping the heel to a proper degree before unlocking the clutch C and starting the pressing and nail-driving operation. In Fig. 1 the clamping is effected by an annular wedge, J, fitted between a seat upon the longitudinal carriage K and the vertically-sliding spindle J', in the top of which spindle the last-standard L is fitted. In Fig. 3 a vertically-movable screw-spindle, J', is shown, fitted to rise and fall without turning in the carriage K, and a nut, J, applied to the top of the carriage affords the means to elevate the spindle and last, when the nut is turned by a hand-lever, J². Holes *a* are shown formed in a circle around the top of the carriage, and a fixed stop, *a'*, is shown secured to the nut J and projected before the holes, so as to strike a pin inserted in any of the latter. To clamp any lot of heels uniformly, the nut is turned to clamp one heel properly, and a pin, as *a'*, is then inserted in the hole nearest the stop, and thereafter the rotation of the nut to the same point will effect the same result with a whole lot of heels of any given height.

The wedge in Fig. 1 is constructed to be used with a lever like that shown at J² in Fig. 3, and may be provided with a similar stop, as *a'*. The hand clamping merely holds the heel upon the shoe in its proper position; but the pressure necessary to force the parts closely together during the driving of the nails is automatically effected by a movement of the die-holder H' toward the last-carriage and the shoe supported thereon. To effect such movement,

the die-holder is made vertically movable over the shoe, is fitted to guides upon the frame beneath the cross-head, and is pressed constantly upward by a spring or weight. Such pressure keeps the holder in contact with a slide actuated by a cam upon the shaft B', and thus secures a correspondence with the movement of such slide.

In the sectional parts of Fig. 2 and in Fig. 3, the head of the shaft B' is shown formed as a cam, N', for actuating such slide, the operative face of the cam being constructed in reference to the crank-pin c, (which moves the cross-head,) so as to press the die-holder downward and produce the maximum pressure upon the heel before the nails are forced into the same. The slide is shown at M in Figs. 2, 3, and 4, as a flat bar fitted within a groove between the die-holder H' and the face of the frame against which the holder is secured by the guides b. (Shown in Fig. 6.) The slide is extended above the top of the die-holder toward the shaft B', and carries a roller, N, fitted to the face of the cam N', against which it is constantly pressed by an adjustable connection with the die-holder. Two means of connecting the slide adjustably with the holder are shown in Fig. 3, one of them being a taper block, e, (shown also in Fig. 5,) fitted across the top of the holder, beneath a shoulder upon the slide M, and provided with an adjusting-screw, f, to move it longitudinally, thus varying the position of the holder relative to the cam and the compression of the heel effected by the latter before nailing. The upper part of the slide, above the taper block e, is thicker than the lower, to form a shoulder for the latter to press upon, and the holder is kept pressed against the block by a lever, P, and spring P', attached to the frame behind the holder, the head of the lever being extended through the frame A and into the holder, as seen at P in Fig. 3. By the construction described the cam operates only to press the holder downward to compress the heel, and the lever P and spring P' operate to lift the holder from the heel when the cam permits, and thus release the heel from pressure and permit the operator to replace the shoe with another. A set-screw, d, is shown secured in one corner of the holder and opposed to a lug, h, above it upon the frame, thus regulating the upward movement effected by the lever P, and determining the relation of the die to the nail-punches. This regulates the penetration of the nails into the heel—as for blind nailing or otherwise—as the die-holder is thus held in a uniform position when a series of heels is clamped beneath it by the hand-clamp on the last-carriage.

In lieu of the taper block e, the shank of the slide may be extended downward behind the holder to an adjusting-screw, f', upon the lower end of the holder, which construction is indicated in dotted lines in Figs. 2 and 3, while the wedge lying beneath the front part of the slide is shown in Fig. 5.

By either of the connections to the shaft B', as described, and by which the die-holder is automatically pressed downward upon the heel, I secure a maximum pressure upon the heel before the nails penetrate it at all, instead of the progressive pressure obtained in certain machines in which the pressure increases during the entire nailing operation.

In Figs. 2, 5, and 6, I have shown in two positions a device to prevent the damage caused to the punches and dies, or to the driving mechanism of the press, if the cross-head be actuated before the die-loader has been removed from the surface of the die. To effect this I provide the clutch-shifter with a self-acting lock, and construct the die-loader to unlock the same automatically when fully removed from the die and its holder H'. As described in my former patent, the clutch-shifter is formed as a vertically-sliding bar, (lettered g, and seen in Figs. 1 and 2.) This bar is fitted to a guide or box, k, beneath the clutch C, and is provided upon the top with a plate, D, carrying a transverse wedge, D'. The pressure of the foot upon the treadle F serves to draw down the wedge D and to start the shaft B' in rotation. To prevent such a movement of the treadle prematurely, I pivot a lever, R, upon the frame between the die-loader H' and the plate D, and form one end of the lever to enter between the plate D and the guide k, and thus hold the same elevated. A spring, l, presses the lever normally into this position, and an adjustable arm, m, is secured to the opposite end of the lever from the shifter, and in the path of the die-loader when swung entirely off of the holder H', in a suitable position for filling with a fresh charge of nails. The die-holder may thus be held against it by the operator or an assistant, while the treadle is depressed, and the proper movements of the clutch and cross-head be effected without danger to the loader, which is then in a safe position. The spring l serves to press the lever against the side of the plate D while the same is depressed by the treadle, and then locks it automatically when the shifter again rises and the loader is drawn from contact with the arm m to convey a charge of nails to the die. The construction therefore renders it impossible to start the pressing or nailing mechanism by the operation of the treadle, except when the die-loader is entirely removed from the vicinity of the die-holder. Fig. 5 shows the loader on the die and the clutch-shifter locked, while Fig. 6 shows the parts in opposite positions.

It is obviously immaterial what means be used for transmitting motion from the driving-shaft B' to the holder H', as the essential feature of my invention consists in the automatic movement of the holder toward the last-carriage before the driving of the nails.

In my former patent, No. 287,489, the die-holder was fitted adjustably to slide upon the frame, for the purpose of regulating the depth

to which the punches should drive the nails; but my present invention differs from that in the die-holder being moved downward before each stroke of the cross-head, and in having a connection to the driving-shaft for thus moving it automatically. The real operation of pressing the heel is thus done independently of the operator, and is effected more uniformly than when governed by the judgment of such workman. The machine will, therefore, with a given lot of uniform heels, nail them to the shoes and turn them out of more uniform height than if variably pressed by the operator during the nailing operation. The heels are also held much more closely and securely in the required position upon the shoe than when the maximum pressure is not attained before the beginning of the nailing operation.

From the above description it will be seen that the invention first claimed herein consists in a certain combination of mechanism for securing the maximum pressure upon the heel before driving the nails therein. To avoid any considerable movement of the last or die-holder in this pressing operation is the object of the mechanism applied to the last-carriage for pushing the last and shoe up to the die by hand before starting the automatic mechanism.

Having thus described my improvements, it will be seen that I do not limit myself to the precise construction shown, but claim the right to use equivalent constructions operating in the same manner, as is common in such cases.

I therefore claim my invention as follows:

1. The heeling-machine herein shown and described, and constructed with the upright frame A, the last-carriage K, movable horizontally, the die-holder movable vertically upon the front of the frame, the driving-shaft B', cross-head G, and nail-punches G', the slide M, inserted upon the front of the frame be-

tween the shaft and die-holder, and the cam N' upon the shaft above the slide, the whole arranged and operated substantially as herein set forth.

2. The heeling-machine herein shown and described, and constructed with the upright frame A, the last-carriage K, movable horizontally, the die-holder movable vertically upon the front of the frame, the driving-shaft B', cross-head G, and nail-punches G', the slide M, inserted upon the front of the frame between the shaft and die-holder, the cam N' upon the shaft above the slide, and the rotary clamping device mounted upon the last-carriage, and adapted to be rotated by hand, the whole arranged and operated substantially as herein set forth.

3. In a heeling-machine of the class herein described, the combination, with the nail-holding die, the die-loader, the punches, and the driving-shaft for operating the punches, of the clutch-shifting mechanism applied to the shaft, an automatically-closed lock operating upon the clutch, as described, and means, operated by the said die-loader when withdrawn from the die, to operate such lock and release the shifting mechanism, substantially as and for the purpose set forth.

4. The combination, with a last-carriage carrying a vertically-adjustable spindle, of the rotating elevator mechanism, a stop connected therewith, and a series of holes and movable pin to serve as an adjustment for said stop, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DANIEL WHITLOCK.

Witnesses:

HENRY F. GÖKEN,
THOS. S. CRANE.