

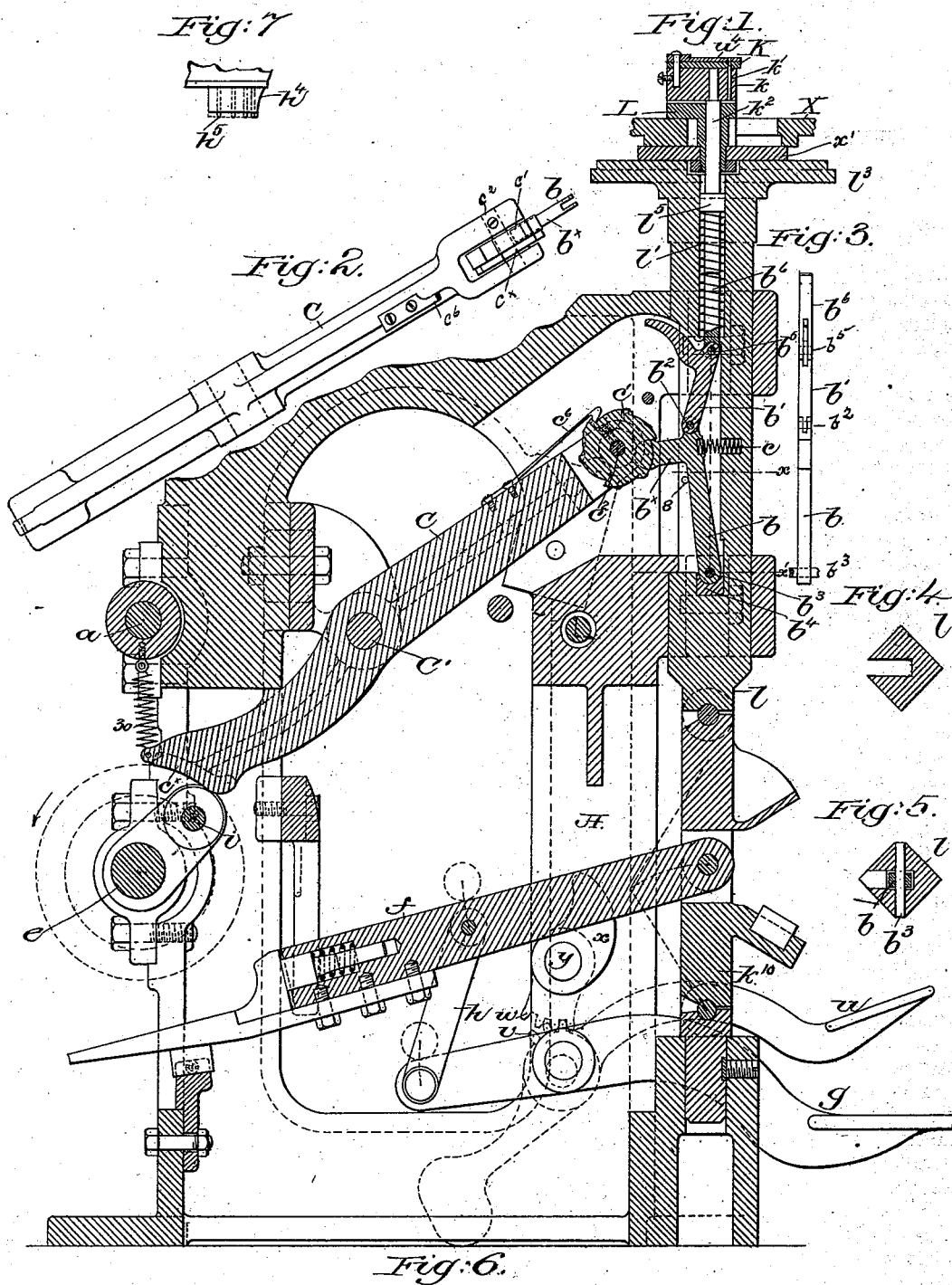
(No Model.)

C. W. GLIDDEN.

HEELING MACHINE.

No. 382,762.

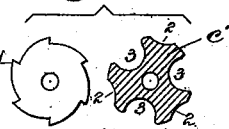
Patented May 15, 1888.



Witnesses.

Fred. L. Emery.  
John F. C. Printkott.

Fig. 6.



Inventor

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by Crosby & Gregory,  
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# UNITED STATES PATENT OFFICE.

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## HEELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 382,762, dated May 15, 1888.

Application filed October 21, 1887. Serial No. 252,995. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. GLIDDEN, of Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Heeling-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In nailing heels to soles in the manufacture of boots and shoes by machinery it is customary to leave the heads of the nails exposed at the outer end of the attached heel, and to thereafter "blind" a top lift upon the protruding ends of the said nails.

It has been described that a heel-blank may be moderately compressed and nailed to a sole, leaving the heads of the nails flush, and thereafter that a top lift may be applied to it and it and the heel-blank be simultaneously subjected to pressure sufficient to compress the entire blank and top lift and leave the latter upon the heads of the nails. The nails employed to attach the heels to the soles are usually partially driven into the heels before the latter are applied to the machine used to attach the heel to the sole.

Desiring to make a heel as solid and substantial as possible, I have so constructed and combined the parts of the machine as to fully drive the partially-driven nails into the heel and sole by the first operation of the machine, leaving their heads flush, or substantially so, with the end of the heel, and immediately thereafter, by, preferably, a further rise of the nail-box, the entire heel is subjected to such pressure as will compact and shorten it upon the nails referred to, the compression being sufficient to leave the heads of the nails protruding from the end of the heel, as when but partially driven into the heel, the said heads thereafter receiving upon them in usual manner the top lift. By subjecting the body of the heel to its maximum pressure before the top lift of better leather is applied thereto it is possible to maintain for the top lift the shape given to it by the die, great pressure of the top lift being objectionable, and so, also, by compressing the stock of the heel after and upon the driven nails by the action of a metal plate at the top of the nail-box it is possible

to make all the heels or the main bodies thereof of substantially equal height and leave their exposed ends smooth and level before the top lift is applied, whereas if the pressure to consolidate the body of the heel is applied through the top lift this cannot be well done, and the top lift so applied cannot be as surely retained upon the heads of the nails.

Figure 1 in vertical section represents a sufficient portion of a heel-nailing machine to enable my improvements to be understood, the section being through the longitudinal center of the lever C; Fig. 2, a top or plan view of the lever C and cam carried by it, together with the upper end of the link b; Fig. 3, a detail of the secondary lifting device; Figs. 4 and 5, sections, respectively, in the lines x and x'. Fig. 6 is a side elevation of the cam removed from the lever C, together with its actuating-ratchet, and a central section thereof; Fig. 7, a detail illustrative of my method of attaching heels and adding top lifts.

The frame-work, the rotating shaft e, crank i, the connecting rod or lever f, the die-bed spindle l, toggle-lever k<sup>o</sup>, to which it is jointed, the treadle g, link h, shaft a, treadle u, pinions v w, shaft y, and cam x, are substantially as in United States Patent No. 203,440, wherein like parts are designated by like letters, except the toggle-lever. The die-bed spindle at its upper end has a head, as l<sup>o</sup>.

The cam-plate x', the trimmer-lever X, the heel-shaped driver-plate L, the nail-box k, the supporting-plate K, top-lift plate w', the rod K<sup>2</sup>, extended from the bottom of the nail-box through the plate L, the shouldered pin l<sup>o</sup>, the spring l' to support it, and drivers k<sup>2</sup>, are all substantially as in United States Patent No. 166,765, dated August 17, 1875. As provided for in the said Patent No. 166,765, the die-bed spindle did not have a rising-and-falling movement, but the pressure exerted in driving the nails into the heel was arranged to be exerted through a last-spindle; but the nail-box referred to and the parts connected with it have been commonly applied to a die-bed spindle having a vertical movement, as in Patent No. 203,440.

In the present invention the die-bed spindle is recessed at one side for the reception of

a secondary lifting device for the nail-box. This secondary lifting device, as herein shown, consists, essentially, of two links,  $b$   $b'$ , jointed together at  $b^2$ , the part  $b$  being pivoted at  $b^3$  to the spindle, and resting on a block,  $b^4$ , seated in the said spindle  $l$ , while the part  $b'$  is pivoted at  $b^5$  to the lower end of a stud,  $b^6$ , made as a plug or rod arranged vertically in the recess of the die-bed spindle just below or at the end of the headed pin  $l^5$ , which supports the rod or shank  $K^2$ , extended down from the lower side of the usual nail-box. The links  $b$   $b'$  constitute a secondary lifter. The link  $b$ , normally acted upon by a spring,  $c$ , to break or spring the joint between links  $b$  and  $b'$ , is provided with an extension,  $b^x$ , having a rounded end which co-operates with the cam  $c'$ , which moves or actuates the lifting device. This cam  $c'$  is herein shown as a wheel or roll having as its support a stud or pin,  $c^2$ , carried by the end of the lever  $C$ , pivoted at  $C'$  on the frame-work, the end of the said lever being forked for the reception of the said cam, the opposite end of the said lever being so shaped and located, as shown, as to be acted upon by the crank  $i$ .

The surface of the cam  $c'$  is very irregular, and has a series of concaved portions, as 2, and pits 3, as best shown in Fig. 6, both the said portions acting in succession upon the rounded end of the extension  $b^x$  of the link  $b$ .

The drawings, Fig. 1, show the die-bed spindle at its second lift, as when the top lift is blinded on the nails, the extension  $b^x$  of the lifting device being in a pit, 3, and not being straightened. The cam  $c'$  has a series of ratchet-teeth, as  $c^x$ , which are engaged by a pawl,  $c^6$ , connected to the lever  $C$ .

With the parts in the position shown in Fig. 1, the operator will depress the lever  $u$  against a shoulder at one side the lever  $f$  and move it, as in United States Patent No. 203,440, to break the toggle-joint  $k^0$ , when the die-bed spindle will descend. As the die-bed spindle descends, the end of the extension  $b^x$  will pass out from the pit 3, and the spring  $c$  will break or throw the lifting device against the stop 8.

To attach a heel to a sole, the die-bed spindle being supposed to be in its lowest position and the nail-box supported above the driver-plate by the spring  $l'$ , the shoe (not shown) being properly held on a last attached to the usual last-holding spindle, as in United States Patent No. 332,032, a heel,  $h^4$ , composed of several lifts having nails  $h^5$  driven partially therein, is laid upon the nail-box, the usual top-lift plate being turned aside, the nails entering the holes in the nail-box. In this condition the operator will elevate the lever  $f$  in position to be struck by the crank  $i$ , which will straighten the toggle  $k^0$ , lift the die-bed spindle  $l$ , and with it the nail-box, until the heel is placed against the sole at the proper place. The arrival of the heel against the sole stops the vertical movement of the nail-box; but the die-bed spindle continues to rise with the

driver-plate  $L$ , in usual manner, until the inner ends of the nails are driven through the heel into the sole, leaving the heads of the nails flush with the endmost lift, as shown by dotted lines in Fig. 7. As the die-bed spindle is lifted, as described, the end of the extension  $b^x$  of the link  $b$ , acted upon by the spring  $c$ , engages the cam  $c'$  opposite one of the surfaces 2, and turns the cam  $c'$  one step on its stud  $c^2$ . This action of the part  $b^x$  on the cam  $c'$  tends to somewhat lift the inner end of the lever  $C$ , placing the short end  $c^x$  of the said lever within the range of the movement of the crank  $i$ , which, meeting the said lever, moves it, causing the cam resting against the said end  $b^x$  to push the link  $b$  into vertical position, thus giving to the stud  $l'$ , pin  $l^5$ , and nail-box an additional upward movement, causing the perforated upper end of the nail-box yet in contact with the outermost heel-lift to act upon the said lift and compress the heel in the direction of its length, while the nails just driven, as described, remain at rest, the compression of the heel in this way from the dotted to the full line position, Fig. 7, leaving the outer ends or heads of the nails protruding sufficiently to receive upon them, in usual manner, the top lift employed to finish the heel. The nail-box having been given an additional lift, as stated, to compress the material upon the driven nails, the operator will depress the treadle  $u$  to break the toggle  $k^0$  and lower the die-bed spindle, and in its descent the end of the extension  $b^x$  will pass from the surface 2, and the link  $b$  will be pushed out by the spring  $c$  against the stop 8. The top-lift plate  $u^4$  will then be turned into position to cover the nail-box, the top lift will be laid upon it or interposed between it and the projecting ends of the nails, and the die-bed spindle will be again lifted in usual manner; but at this second rise of the spindle the end  $b^x$  of the link  $b$  will enter a pit, 3, of the cam and will turn the cam; but the said pit is so deep that when the lever  $C$  is again moved, as stated, by the crank  $i$ , the link  $b$  is not placed in vertical position, but is left in the position Fig. 1. When the end  $b^x$  meets the cam  $c'$  to turn it, the friction of the detent  $c^6$  must be overcome, and as it is essential that the cam  $c'$  be rotated one step when acted upon by the projection  $b^x$ , I have added the spring 30, which holds the lever  $C$  in place and prevents it moving too freely.

The method herein described of attaching heels and top lifts to boots and shoes has been made the subject-matter of claim in application Serial No. 258,514, filed on the 20th day of December, 1887.

I claim—

1. In a nailing-machine, a vertically-reciprocated nail-box to contain the nails to be driven into the heel, and a driver-plate, combined with means to actuate the driver-plate to drive the nails from the nail-box into the heel, and with a secondary lifter to thereafter impart an additional movement to the nail-box only to

compress the heel upon the nails previously driven into the body of the heel to attach it to the sole, substantially as described.

2. The die-bed spindle, the driver-plate  
5 moved by it, and the nail-box supported by a spring above the driver-plate, combined with the secondary lifting devices and cam to operate them, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. GLIDDEN.

Witnesses:

BERNICE J. NOYES,  
F. L. EMERY.