(No Model.) 4 Sheets—Sheet 1

F. RICHARDSON.

MACHINE FOR SECURING HEELS TO BOOTS AND SHOES.

No. 259,720. Patented June 20, 1882.

Fig. 1.

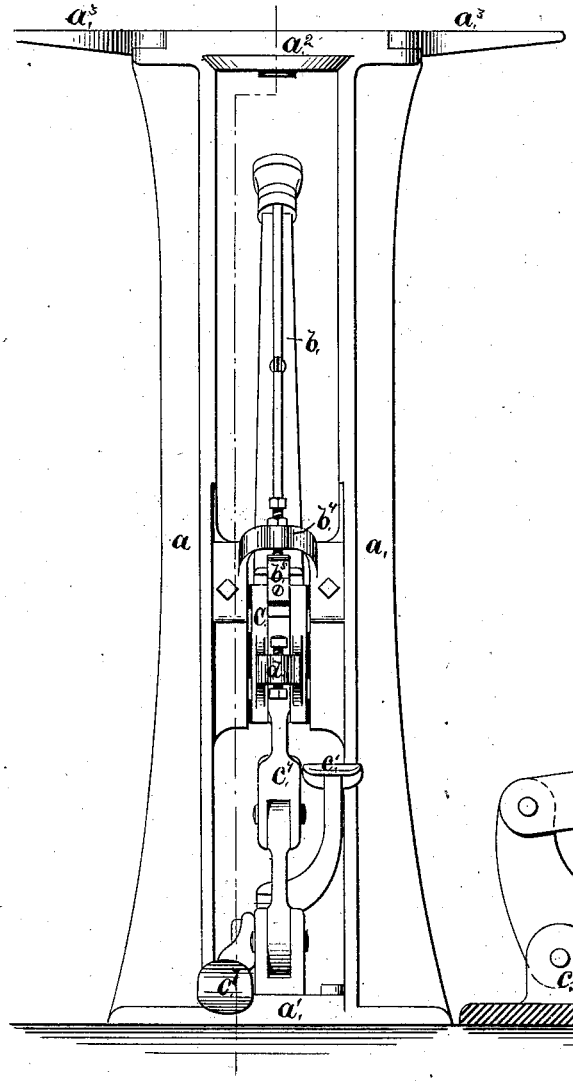
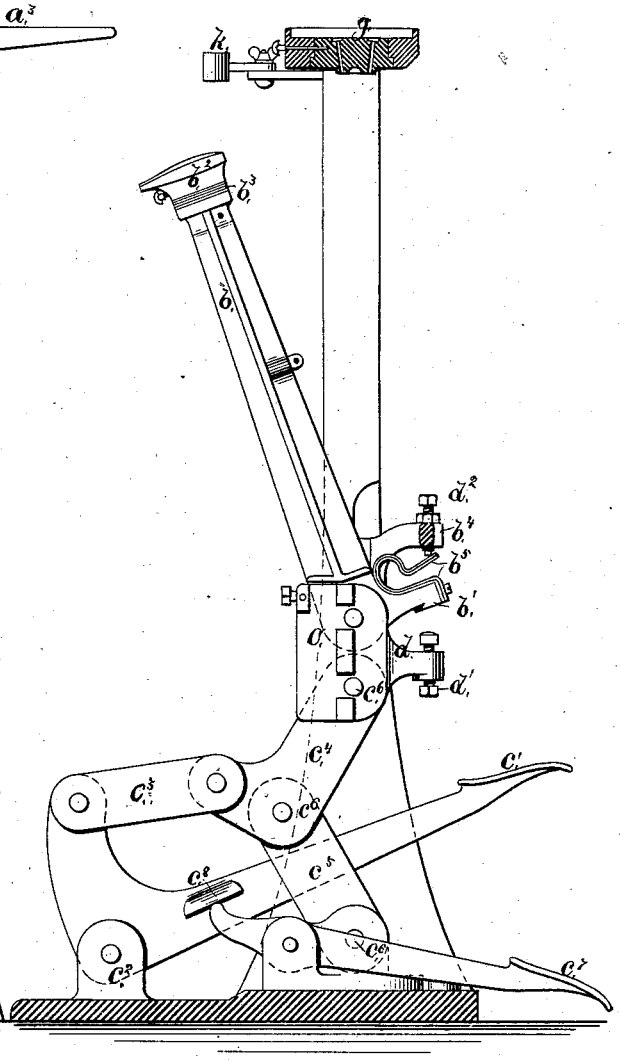


Fig. 2.



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(No Model.) 4 Sheets—Sheet 2.

F. RICHARDSON.

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Fig. 3

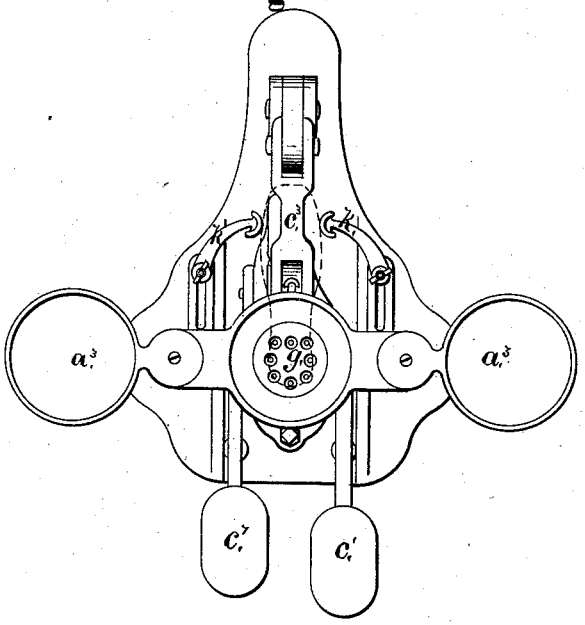
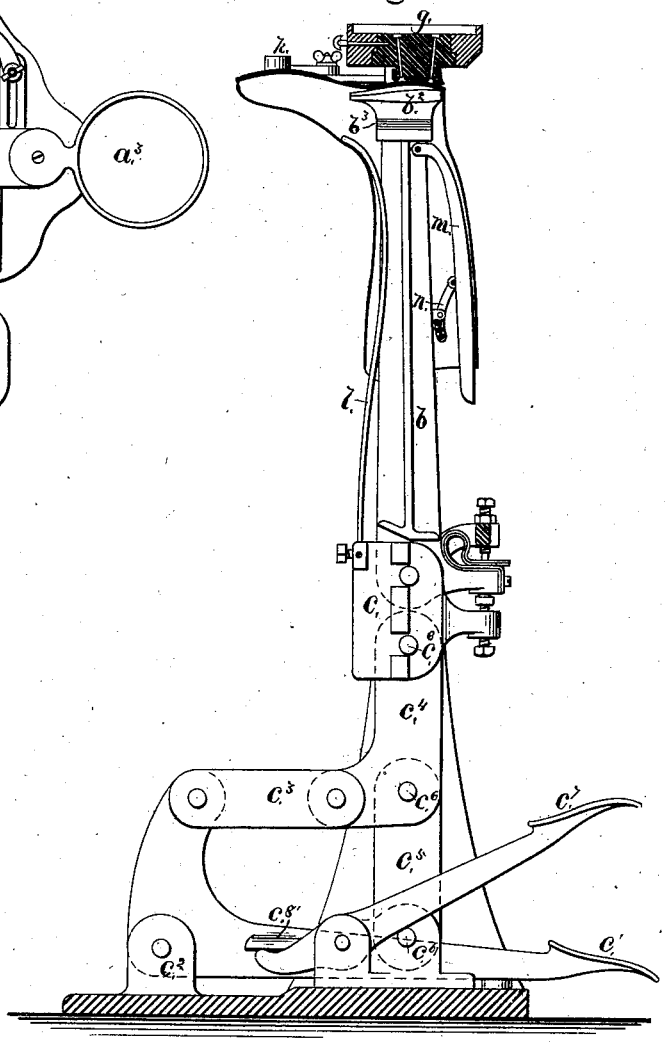


Fig. 4.



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F. RICHARDSON.

MACHINE FOR SECURING HEELS TO BOOTS AND SHOES.

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Fig. 5.

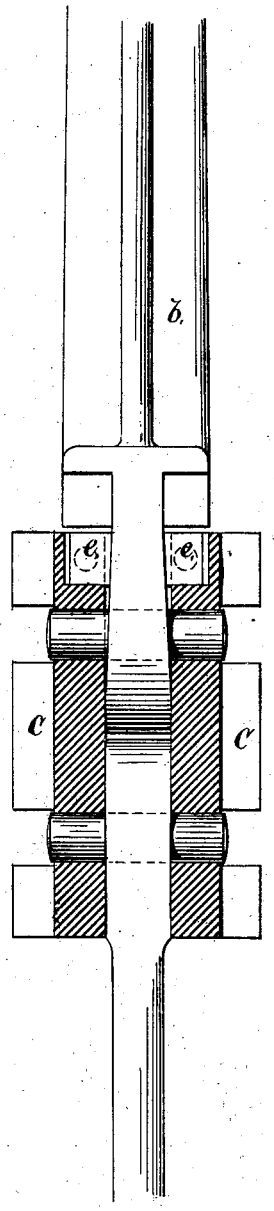


Fig. 6.

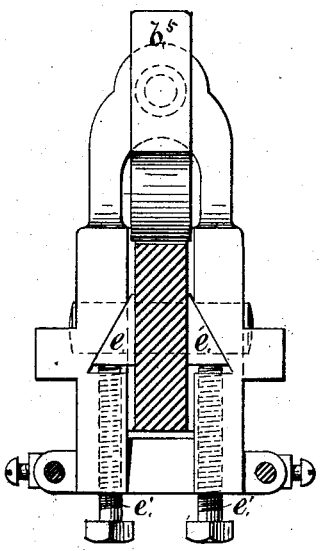
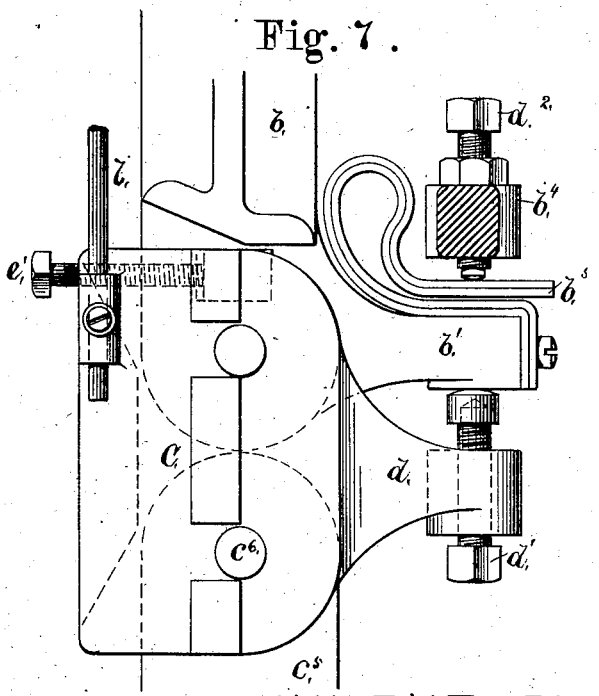


Fig. 7.



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F. RICHARDSON.

MACHINE FOR SECURING HEELS TO BOOTS AND SHOES.

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Fig. 8.

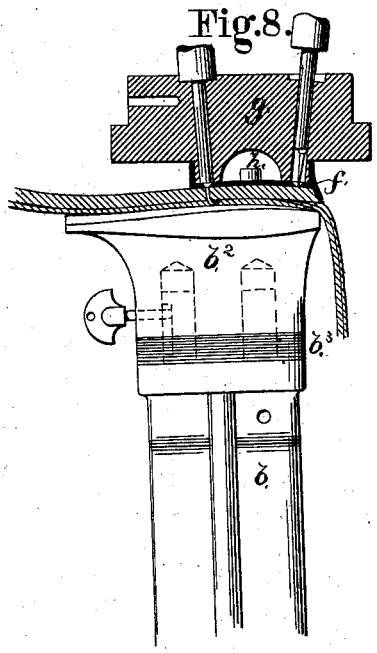


Fig. 11.

Fig. 9.

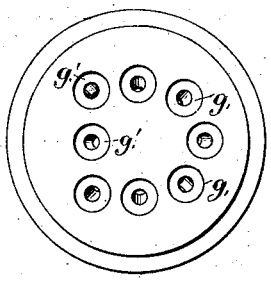
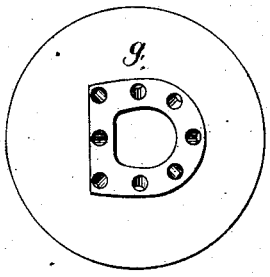


Fig. 10.



WITNESSES:

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Wm. L. Roop

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UNITED STATES PATENT OFFICE.

FREDERICK RICHARDSON, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR SECURING HEELS TO BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 259,720, dated June 20, 1882.

Application filed February 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK RICHARDSON, of the city of Providence, county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Machines for Securing Heels to Boots and Shoes; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings forming part of this specification.

The invention has reference to an improved machine for securing metal heel-shells to boots and shoes; and it consists in the peculiar construction of the jack on which the boot or shoe is supported, and by which it is firmly pressed, with the heel or heel-shell, against a die through which the nails are driven.

It further consists in the peculiar construction of the die, and the means for securing the same, in the devices for adjusting the boot or shoe, in the method of adjusting the jack laterally, in the devices for driving the nails, and other details, which will be more fully set forth hereinafter.

Figure 1 is a front elevation of my improved heeling-machine. Fig. 2 is a side view, one side of the standard being removed so as to show the jack and the operating-levers more clearly, the upper and lower parts of the machine being shown in section, the broken line shown in Fig. 1 indicating the line of the section in Fig. 2. Fig. 3 is a top view of the machine, showing the trays for holding the nails and tools and the adjustable guides for the front part of the sole used to adjust the boot or shoe in the machine. Fig. 4 is a side view, partly in section, showing a boot or shoe heel firmly clamped against the die ready for nailing; also, the guides by which the boot is held in the proper position. Fig. 5 is an enlarged view of the hinged end of the jack, partly in section, showing the lower end of the jack and the method of adjusting the same. Fig. 6 is a horizontal section, showing the wedges by which the jack is adjusted. Fig. 7 is an enlarged side view of the hinged end of the jack, showing the cushioned bearing and the manner of adjusting the position of the jack with reference to the die. Fig. 8 is an enlarged view of the upper end of the jack, showing the method of adjusting the last portion of the jack and the method of driving the nails through the die and the holes in the heel-shell. Fig. 9 is a top view of the die. Fig. 10 is a bottom view of the same. Fig. 11 is a view of the driver.

Similar letters of reference indicate corresponding parts.

In the drawings, *a a* represent a metal frame or standard, having a firm and broad base, *a'*, and a support for the die at a^2, the two sides *a a*, the base *a'*, and the die-support being preferably cast in one piece.

a^3 a^3 are two trays, pivoted to the standard so that they may be swung into the most convenient position to facilitate the work, as the nails and the tools used in securing the heels are placed on these trays.

b is the jack supporting the heel portion of a metal last, b^2, at its upper end, and pivoted with the arm *b'* at its lower end. The jack is pivoted in the sliding block *c*, which is operated by means of the post-treadle *c'*, pivoted in the fulcrum c^2, and forming a bell-crank lever, the longer arm of which ends in the foot-plate, and the shorter arm is connected with the bell-crank c^4 by the link c^3. The bell-crank c^4 is connected with the slide *c*, and is pivoted in the angle to the link c^5. When, therefore, the foot-plate end of the bell-crank *c'* is depressed the bell-crank c^4 is brought forward, the pivot in the angle connecting it with the link c^5 approaches a straight line, with the pivot connecting the bell-crank c^4 with the slide and the lower pivot of the link c^5 forming a compound toggle-jointed-lever press, by which the slide *c* is moved upward, and a firm support when the three pivoted bearings c^6 are in a perpendicular line. The slide *c* will therefore be raised when the foot-treadle *c'* is depressed, and, if the jack *b* were firmly secured to the slide *c*, it would be forced against the die-holder a^2 and firmly held.

As the compound levers, when the foot-treadle is fully depressed, are in a locked position, it becomes difficult to release them quickly and bring the foot-treadle into the original raised position. To facilitate this I place the supplemental foot-lever c^7 alongside the lever *c'*, so that the short end of lever c^7 will engage with the same, and when the lever *c'* is depressed the lever c^7 will be raised, so that

by placing the foot on the lever c^7 the compound levers will be quickly released and the foot-treadle on the lever c' raised, the whole forming a simple, yet powerful compound-lever arrangement, by means of which the heel is firmly pressed against the boot and shoe, and as firmly supported, while the same can be quickly released.

To facilitate the placing of the boot or shoe on the jack and the removing the same, the jack is pivoted in the slide and provided with the arm b', which comes in contact with the fixed stirrup or bearing b^4 and raises the jack into the perpendicular position, as shown in Fig. 4.

To prevent any sudden shock, and also to bring the jack gradually to the desired position, the spring b^5 is placed between the arm b' of the jack and the fixed bearing b^4 to act as a cushion or buffer, and this spring may therefore be of any other suitable form that will accomplish the desired result.

In securing metal heels or heel-shells to boots or shoes great accuracy is required. As the heel-shell is already finished and usually enameled, it cannot be trimmed to conform to the boot or shoe, and must be at once placed in the proper position, so as to conform to the counter and sole. It becomes necessary, therefore, to adjust the jack accurately to the die on which the metallic heel or heel-shell is placed, and such adjustment must be in all directions.

Besides the vertical adjustment by means of the blanks b^3 placed between the jack and the heel portion of the last b^2, I provide the first bearing, b^4, with the adjusting-screw d^2, as is more fully shown in Fig. 7 on an enlarged scale, and I place on the slide c the arm d, on which the adjusting-screw d' is placed to form an adjustable rest for the arm b' on the jack. By these screws d' and d^2 the jack can be adjusted in the direction from the front to the rear of the boot or shoe.

To allow for the lateral adjustment of the jack, the pin on which it is hinged is made a loose fit and the wedges e e are placed in the upper end of the slide c and are adjusted by means of the screws e' e' to bear against the sides of the jack, and thus adjust the same by forcing one or the other of the wedges against the side of the jack. The jack may, however, be adjusted laterally by hinging the same in adjustable slides.

f is the metallic heel-shell, provided with a central boss, to which the wearing-surface is secured by means of a screw, and the die g is provided with a projection, over which the heel-shell fits accurately, and with a cavity to receive the central boss.

g' g' are holes, the upper ends of which are countersunk to receive the enlarged portion g^2 of the driver i while the portion g^3 of the driver enters the holes proper. The holes g' g' are made at an angle, as shown clearly in Fig. 8, so as to direct the nail favorable for clinching the same. The countersunk enlarged portion of the holes g' g' forms a guide for the driver, in which the shoulder formed by the enlargement g^2 rests when the nail is driven the proper distance.

k k are guides, which can be readily adjusted to any size of boot or shoe, so that when one heel has been properly secured and the guides adjusted other boots or shoes of the same kind may be quickly placed in contact with these guides and the heels secured in the proper position. The guides k k may be quickly changed to fit other kinds or sizes of boots or shoes.

In rubber boots it is necessary to adjust the boots uniformly on the jack, so that all the heels will be placed in the proper position, and to further insure such an adjustment I place the guide l, consisting in a strong wire loop, the ends of which are secured in c, as is shown in Fig. 4, and the looped end enters the boot-top and reaches to the instep, as is shown. There is sufficient spring to this loop l to draw the boot well forward, and thus secure the heel portion of the boot against the metal last in the proper position to receive the heel-shell.

m is a hinged guide for the rear portion of the boot-top. This guide may be adjusted by the hinged arm n, which can be secured by inserting the pin into any one of the series of holes made in the arm n, and thereby the guide m may be made to extend more or less from the jack to suit the size of the boot-top, and when once adjusted will form a guide for all boots of the same dimensions. Metallic heel-shells must be secured to the boot or shoe very firmly, so as to stand the knocks and rubs to which the heels are subjected.

In driving the nails through the holes in the shells a stronger hold is secured when the nails are driven through the sole at an angle and clinched on the inner sole. To secure the best possible hold of the heel-shell on the sole I drive the nails at an angle so as to point toward the center of the heel and clinch the nails toward the center, as is shown in Fig. 8.

The die g is provided with the holes g', the direction of which is toward the center. All the nails will therefore enter the sole at an angle, and the heel-shell and sole become practically one piece.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for securing heels to boots and shoes, the combination of the fixed die g, the sliding block c, the jack b, secured thereto, and a foot-lever arrangement, substantially as set forth, by which the jack is forced upward against the die to hold the boot or shoe and the heel in place, as described.

2. The combination, with the sliding block c and the jack b, of the bell-crank levers c^4 and c', and the links c^3 and c^5, constructed to force the jack against the die, and the lever c^7, constructed to release the levers and allow the jack to descend, as described.

3. The combination, with the sliding block

c, of the hinged jack *b*, provided with the arm *b'*, the stop b^4, and adjusting-screw d^2, constructed to adjust the jack with reference to the die, as described.

4. The combination, with the sliding block *c*, provided with the arm *d* and the adjusting-screw *d'*, of the hinged jack *b*, provided with the arm *b'*, and the stop b^4, provided with the adjusting-screw d^2 constructed to adjust the jack, as described.

5. The combination, with the hinged jack *b*, provided with the arm *b'*, and the stop b^4, provided with the adjusting-screw d^2, of the spring b^5, interposed between the arm of the jack and the stop, as described.

6. In a machine for securing heels to boots and shoes, the swinging trays a^3 a^3, pivotally secured near the die as and for the purpose described.

7. The combination, with the jack operated by foot-power, substantially as described, and the die *g*, of the adjustable guides *k k'* in advance of the die to bear against the side edges of the sole of the boot or shoe, whereby the bottom of the boot or shoe is held in proper position with reference to the die *g*.

8. In a heeling-machine, the combination, with the jack *b*, heel-last b^2, and blanks b^3, for adjusting the length of the jack, of the die *g*, provided with holes through which the nails may be driven and with a projection constructed to receive the heel-shell, as described.

9. In a machine for securing metallic heels to boots or shoes, the combination, with the die *g*, provided with the holes *g'*, having an enlarged countersunk recess at their upper end, of the driver *i*, provided with the enlargement g^2, forming a shoulder constructed to drive the nails and secure the heel-shell, as described.

10. The combination, substantially as before set forth, of the sliding block *c*, the jack pivoted thereto, and the guide *l* rigidly secured to said sliding block.

11. The combination of the jack *b*, pivoted guide *m*, and the adjusting-link *n*, adapted to adjust said guide with relation to the jack, substantially as and for the purpose described.

12. The combination, with the die *g* and the hinged jack *b*, of the wedges *e e* and screws *e' e'*, constructed to adjust the jack with reference to the die, as described.

FREDERICK RICHARDSON.

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