M. V. B. ETHRIDGE.

HEEL BURNISHING-MACHINE.

No. 185,509. Patented Dec. 19, 1876.

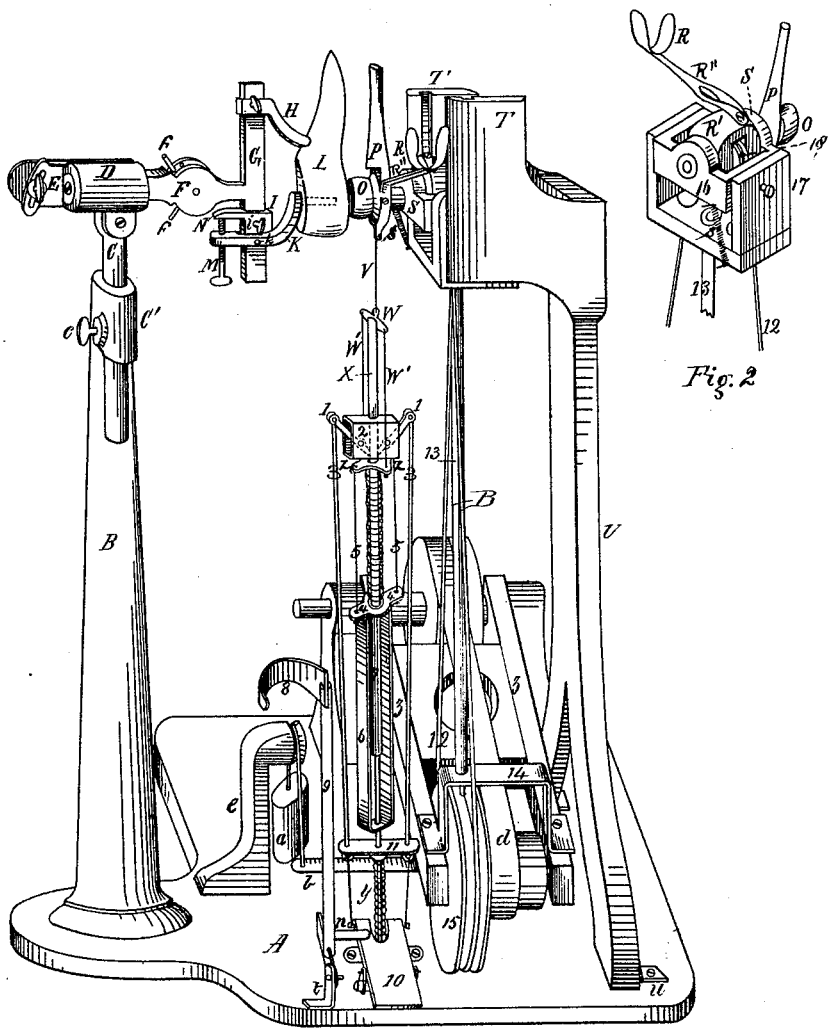

Fig. 1

Fig. 2

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UNITED STATES PATENT OFFICE.

MARTIN V. B. ETHRIDGE, OF LYNN, MASSACHUSETTS, ASSIGNOR TO HIMSELF, B. F. LARRABEE, AND P. P. SHERRY, OF SAME PLACE.

IMPROVEMENT IN HEEL-BURNISHING MACHINE.

Specification forming part of Letters Patent No. **185,509**, dated December 19, 1876; application filed October 23, 1876.

To all whom it may concern:

Be it known that I, MARTIN V. B. ETHRIDGE, of Lynn, in the county of Essex and State of Massachusetts, have invented a Heel-Burnishing and Edge-Setting Machine, of which the following is a specification:

The object of my invention is to provide a means for bringing a greater power to bear upon the work in a burnishing-machine, and at the same time to relieve the hand and wrist, as well as the body, of the operator, in holding and guiding the burnishing-tool, from the great strain and exertion incident to machines of this character now in use, and which has rendered them so objectionable as to greatly interfere with their utility and practical operation; and to this end my invention consists in an adjustable connection of the tool and its handle with a treadle, in such a manner that when the tool is set for work upon the edge of the heel or sole it can be made to bear with any desirable pressure upon the said heel or sole edge, the carriage which supports the tool-carrier being counterbalanced by a weight, in such a manner as to relieve the hand of the labor of raising the weight in putting on and taking off the tool-carrier in adjusting the same to the work, and also in removing it.

The invention further consists in the employment of a lever so arranged as to admit of its being operated by the leg or body of the operator, to actuate the treadle in bringing down the tool to its work, instead of using the foot, thereby allowing the operator a firmer support in manipulating the machine.

The invention further consists in a novel method of adjusting the jack-holder, so as to allow the heel to turn on a circle when operated upon by the burnisher, and also to adjust the sole to any inclination and relative position for the complete action of the burnisher.

The invention further consists in the combination, with the handle that guides the burnisher, of a rest for the arm, so arranged in relation to the tool-carrier as to enable the tool to be easily guided and operated, and relieve the hand from the great exertion of a constant gripe and side cramp, so exhausting to the operator in the common method of handling the tool.

Referring to the drawings, Figure 1 represents a perspective view of a machine embodying my invention. Fig. 2 is a view of the tool-carrier and its connections.

A is a bed or stand, on which is supported the standard B, having on its upper end an adjustable rod or bar, C, moving in a socket, C′, and held in place by a set-screw, *c*. To the upper end of bar C is pivoted a socket, D, which is capable of adjustment in a vertical plane by means of a set-screw in slot E, as shown. Projecting from the socket D is a jointed arm, F, the inner joint being provided with adjustable pins *f*, so as to limit the movement of the joint and set the same at any desired angle. To the jointed bar F is attached the cross-bar G. On one end of the bar G is a sliding block, I, which is secured in position on the said arm by a set-screw, *i*, as shown. To the block I is pivoted a curved arm, K, one end of which is provided with a pin that enters and supports the last L, as shown. By means of a set-screw, M, passing through the rear end of the curved arm K, and bearing against the projection N on the block I, the last L can be readily adjusted to any desired inclination, and be held in position by means of an adjustable brace, H. The last can be so adjusted as to allow the heel to turn upon a center in relation to the tool, and the adjustment can readily be changed, so as to bring the central portion of the sole in such a position as to admit of its being acted upon more readily by the tool. O is the burnishing-tool, attached to a shaft that has its bearings in a frame, 16, that swivels in an outer frame, 17, as shown in Fig. 2. The said shaft bears a pulley, 18, over which passes the band 12, that extends from the pulley 15, to which latter motion is imparted by the band *d*, running on a pulley supported in the hinged frame 3. P is the handle which guides the tool O. It is secured to a sleeve, that surrounds the shaft that carries the burnishing-tool O. Projecting at right angles from the handle P is a bar, R″, provided at its end with a rest, R, for the arm of the operator when the hand is

grasping the handle P. The rest-bar R″ has a brace or arm attached to the shell R′, that covers the pulley 18. The two forks of the rest-bar, in connection with the handle, serve to control the motion of the burnishing-tool, and relieve the hand of the operator from the necessity of exerting the powerful and exhausting gripe which the handle requires when a rest is not used. U is a standard, which is attached to the base A by hinges *u*, so as to admit of a motion forward and back, but without any lateral motion.

To the top of the standard U is attached the frame T T, having a groove on each inner side, so as to guide the frame 17 up and down by means of projections on said frame, which fit in the said grooves. This movable and adjustable guide T T U is designed to be used only when the burnisher is acting upon the heel, as the latter turns on a circle and the burnishing-tool requires no lateral motion. When the burnisher is acting upon the edge of the sole the frame T T U is removed, so as to allow the burnisher to change its position in any direction.

The frame 17 is supported upon a rod, 13, attached to the cross-piece 14 on frame 3, at its lower end, by a universal joint. The frame 3, which carries the rod 13, the pulley 15, and the driving-pulleys, is hinged at its rear end, and the forward part is counterbalanced by means of a weight, *a*, suspended on the standard *e*. By this means the tool-carrier and its connections may be easily raised to set the burnisher upon the work. To the under part of the sleeve to which the handle P is attached is suspended a cord or wire, Y, which supports a cross-bar, W, to which latter is connected the bar or rod X. The rod X extends downward, and is joined to or made part of a tubular guide, 7, that fits loosely over a bar, *y*, attached, by means of a universal joint, to the base or bed A. From the ends of the cross-piece W depend two elastic cords, W′ W′, attached at their lower ends to a head, *z z*, upon which latter rests the casing 2, which is open at both ends, so as to admit of the attachment inside of the levers 1 1, which are fulcrumed to the same, as shown. The inner ends of the levers 1 1 are caused to bear forcibly upon the rod X, so as to firmly hold the same by means of rods 3 3, attached to their outer ends, and extending down to a cross-bar, 1 1, which latter is again connected to a treadle, 10, by short rods. The cross-bar 1 1 is maintained in an elevated position by means of a coiled spring on the lower part of the rod *y*. The casing 2, which supports the levers 1 1, is held upward by means of a coiled spring on the rod X, below the cross-head *z z*, and resting upon the cross-piece 4 4. A guide, 6, attached to the under side of cross-piece 4 4, and secured at its lower end to the rod *y*, so as to slide freely on the same, serves to steady the tube 7 on the rod *y*. 9 represents an upright bar, which is attached at its lower end to a lever, *t*. The forward end of this lever is provided with a bar, *n*, that rests upon the forward end of the treadle 10, so as to operate the treadle by simply pressing against the upright bar 9. On the upper part of this bar is a curved piece, 8, adapted to receive the leg of the operator, by which means the bar is actuated. By this means the operator is firmly braced on both feet, and can use his arms and upper portion of his body with greater effect and steadiness than when he is obliged to operate the treadle with one foot, while he is only supported by the other foot.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The jointed connection F, provided with the adjustable pins *f f*, in combination with the supporting-bar G, substantially as and for the purpose set forth.

2. The combination, with the supporting-bar G, of the adjustable bearing K I M and the brace H, substantially as set forth.

3. The combination, with the tool-supporting shaft and its handle, of the rest R, all arranged substantially as and for the purpose set forth.

4. The removable and adjustable bearing-guide T U with the shaft-carrier of the head-stock, as and for the purpose specified.

5. The clamp or levers 1 1, operating on the rod X by means of the connecting-rods 3 3 and the treadle 10, for the purpose of drawing down and holding the burnishing-tool, substantially as specified.

6. The upright bar or lever 9, for operating the treadle 10 by the pressure of the leg or body of the operator, substantially as set forth.

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

M. V. B. ETHRIDGE.

Witnesses:
J. H. ADAMS,
E. A. STOCK.