(No Model.)

C. J. ADDY.

HEEL BURNISHING MACHINE.

No. 328,371. Patented Oct. 13, 1885.

Fig. 1.

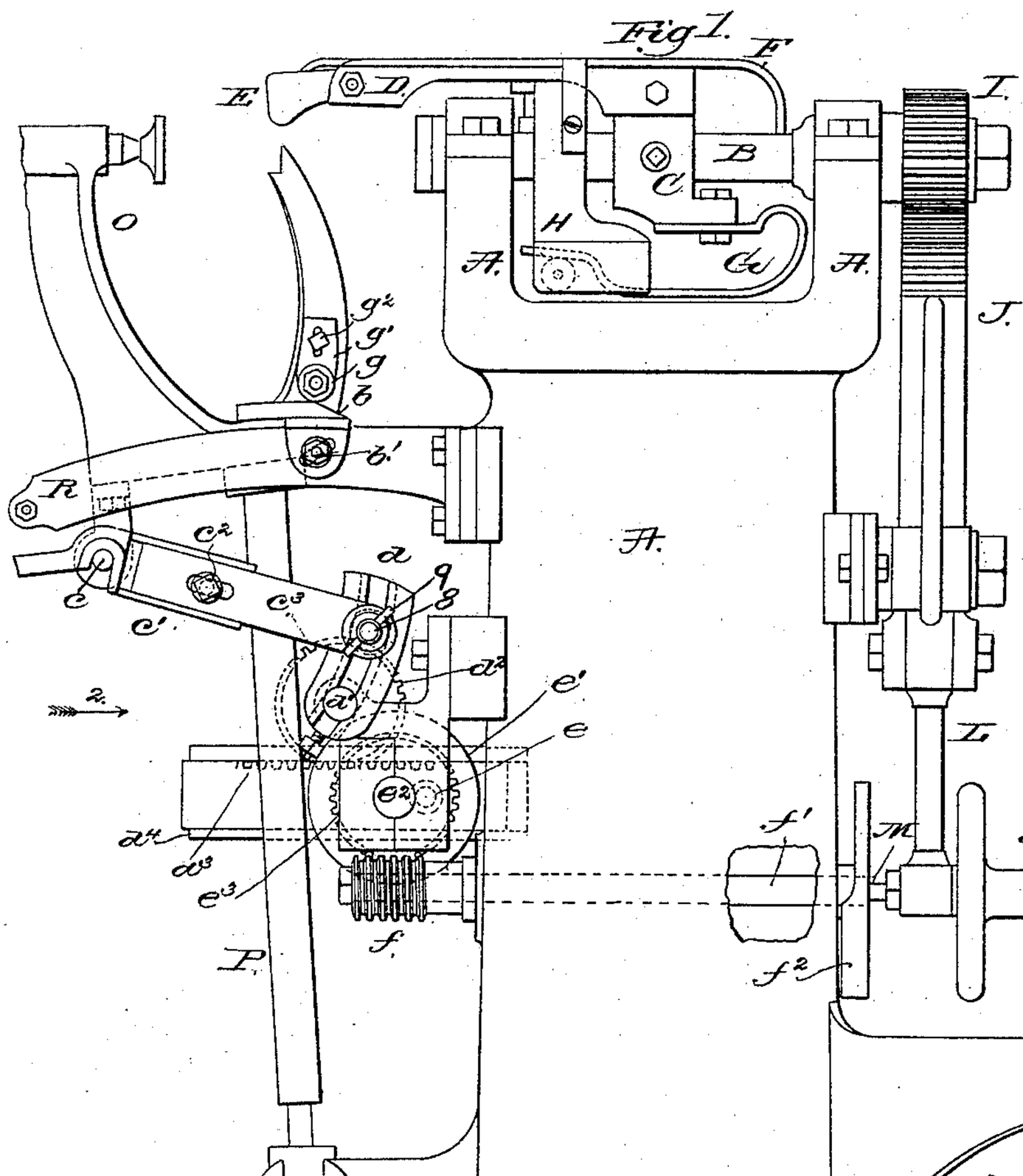
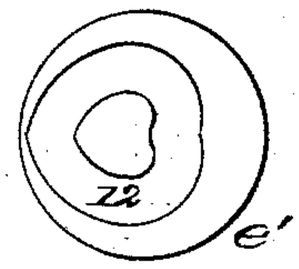


Fig. 3.



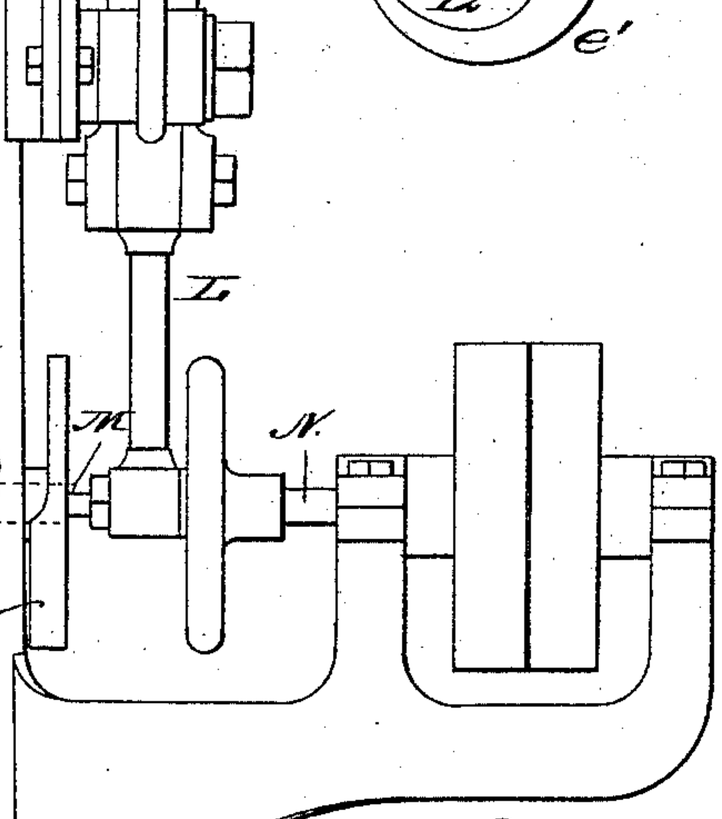


Fig. 5.

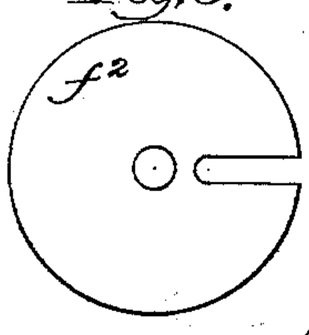


Fig. 2.

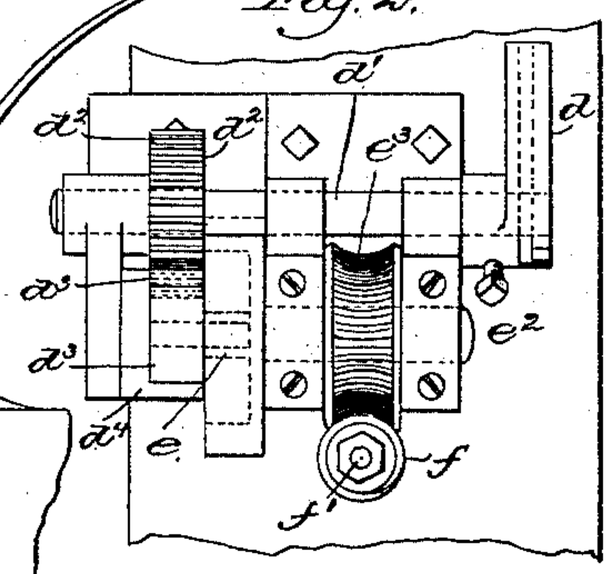
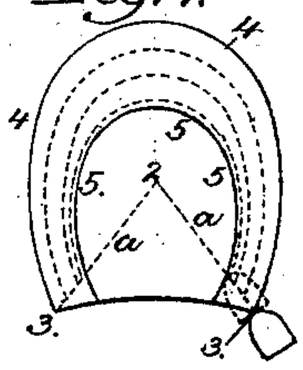


Fig. 4.



Witnesses.
John F. C. Printzlerh
W. H. Leggston

Inventor:
Charles J. Addy.
By Crosby & Gregory
Attys.

UNITED STATES PATENT OFFICE.

CHARLES J. ADDY, OF MALDEN, ASSIGNOR TO TAPLEY MACHINE COMPANY, OF BOSTON, MASSACHUSETTS.

HEEL-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 328,371, dated October 13, 1885.

Application filed January 23, 1885. Serial No. 153,696. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. ADDY, of Malden, county of Middlesex, State of Massachusetts, have invented an Improvement in Heel-Burnishing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is shown as embodied upon the class of heel-burnishing machines represented in United States Patent No. 151,819, granted to me June 9, 1884, to which reference may be had. In that patent a burnishing-tool is attached to a vibrating arm so that a line drawn through the longitudinal center of the tool will point directly to the axis of the shaft carrying the said arm, the said center line thus occupying a position always radial to the said shaft.

The shaft carrying the arm referred to is rocked in one and then in the opposite direction equal distances, while the tool rests upon the exterior of the heel, which is of varied curvature, and as the tool is always kept pressed against the heel by spring-pressure it follows that the arm carrying the tool is made to occupy positions at different distances from the rock-shaft carrying it according to the variations in the contour of the heel. The smaller the diameter of that part of the heel on which the tool rests the closer the arm to the shaft.

From the foregoing statement it follows that the tool attached to the arm is made to travel in axes of circles of different diameter as the tool travels about the heel from the heel seat to the top lift, or vice versa.

In practice the tool must have a stroke, when working about that part of the heel at the heel-seat, of sufficient length to travel from breast to breast; but it is found that as the diameter of the heel decreases the tool, which is kept against the heel by spring-pressure, fails to move fully to the breast, and consequently the smaller lifts of the heel are not polished to the breast. In my experiments to overcome this difficulty I have discovered that the entire heel, from the heel-seat to the top lift, may be polished uniformly to the breast provided the heel, as the tool approaches the parts thereof of smaller diameter, be raised; and I have provided means by which to do this automatically; and my invention consists, essentially, in a heel-burnishing machine having mechanism whereby the relative position of the heel, or a line drawn centrally or substantially so through the top lift of the heel to the heel-seat, may be changed in position relatively to the center of the shaft operating the arm which carries the burnishing-tool, such change in relative position of heel and tool being effected as the tool in its reciprocation about the heel from breast to breast is moved from heel-seat to top lift, or vice versa.

Figure 1 represents a heel-burnishing machine embodying my invention; Fig. 2, a partial end view thereof, taken opposite and looking in the direction of the arrow 2, Fig. 1. Fig. 3 is a detail of the cam, to be referred to. Fig. 4 is a diagram showing in full lines a heel, the dotted lines showing the paths of different radii in which the tool travels about the center line of the heel, the said diagram illustrating the position of the longitudinal center of the tool with relation to the center line of the heel, and thereby it will be seen that the tool does not come to the breast of the heel when the tool is on parts of the heel where the diameter of the latter is reduced, this said figure showing different positions of the tool with relation to the heel-seat and top-lift ends of the heel; and Fig. 5 a view of the balanced disk.

The frame A, the rocker-shaft B, the swinging block C, the tool-carrying arm D, burnishing-tool E, gas-tube F, spring G, balance-weight H, attached firmly to the arm D, the pinion I, segment J, link L, crank-pin M, shaft N, jack O, rod P, step Q, and yoke R are all as common in the so-called "Tapley burnishing-machine," so need not herein be further described more than to say that the longitudinal center line of the tool E (see the diagram Fig. 4) always coincides with the radial line *a* (see Fig. 4) drawn from the point 2 to the points 3, the point 2 representing what I call the "center of the heel," and the points 3 the line of the breast.

Viewing the diagram Fig. 4, it will be understood that the outer line, 4, represents the outline of the heel-seat, and the inner line, 5, the outline of the top lift, and between the

said two lines the diameter or contour of the heel will vary, and the tool E will therefore travel in curved paths of different shape as it passes from the line 4 to the line 5, and vice versa; but when the tool travels in the paths shorter than that designated by the line 4 it stops at the extreme of its stroke with its center line in the radial line *a* drawn from between points 2 3, and, as will be obvious from the diagram, the tool cannot come to the breast 3 when it travels over the surface of the heel where its diameter is less than in the line 4 designating the heel-seat.

In accordance with my invention I have provided the machine with a pattern cam or surface, *b*, which is shown as adjustably attached to the yoke R by the screw *b'*, the said pattern cam or surface acting to change the relative position of the center point, 2, of the heel with relation to the axis or center of the shaft B, while the burnishing-tool E follows the surface of the heel from end to end.

As herein shown, the jack O has a pin, *c*, which is engaged by a hook of a plate, *c'*, adjustably attached by a screw, c^2, with a link, c^3, in turn adjustably but loosely connected by headed bolt 8 and nut 9 with a slotted arm, *d*, attached to the rock-shaft *d'*, the latter having on it a pinion, d^2, which is engaged and partially rotated in one and then in the opposite direction by a reciprocating toothed rack, d^3, adapted to slide in the guide d^4. This rack has at one side a roller-stud, *e*, which latter enters a groove, 12, (see Fig. 3,) in a cam, *e'*, attached to the rotating shaft e^2, the said shaft having fast on it the worm-gear e^3, which is engaged and rotated by the worm *f* on shaft *f'*, provided at its other end with the balanced disk f^2, which is slotted radially (see Fig. 5) for the reception of the crank-pin M.

The jack O, through the crank *d*, is reciprocated toward and from and under the tool E, and as the jack is so moved the roll *g* on the plate *g'*, adjustably attached to the jack by a screw or bolt, g^2, is made to ride upon or move over the pattern plate or surface *b*, causing the center 2 of the heel to approach the center line of the shaft B, thus insuring the movement of the tool at the end of each stroke to the breast of the heel, polishing the same fully and evenly to the breast from end to end.

I claim—

1. In a heel-burnishing machine, the rock-shaft, its connected vibrating arm carrying a burnishing-tool and a shoe-carrying frame to move a shoe horizontally in the direction of the length of the heel under a burnishing-tool, combined with a pattern plate or surface to effect change of position of the central part of the heel vertically with relation to the center or axis of rotation of the shaft carrying the said vibrating arm and tool, whereby the burnishing-tool is enabled to travel at each stroke to the breast of the heel, substantially as described.

2. In a heel-burnishing machine, the rock-shaft, its connected vibrating arm carrying a burnishing-tool and a shoe-carrying frame to move a shoe horizontally in the direction of the length of the heel under a burnishing-tool, and means, substantially as described, to move the said frame toward and from and under the burnishing-tool, to thus enable the tool to follow along the heel from heel-seat to top lift, and vice versa, combined with a pattern plate or surface to effect change of position of the central part of the heel vertically with relation to the center or axis of rotation of the shaft carrying the said vibrating arm and tool, whereby the burnishing-tool is enabled to travel at each stroke to the breast of the heel, substantially as described.

3. In a heel-burnishing machine, the shoe-carrying jack and the rotating shaft *f'*, combined with the worm, worm-gear, pinions, rack, arm *d*, and connections between the said parts, to operate substantially as described.

4. In a heel-burnishing machine, the pivoted jack provided with the roll and the yoke, combined with the pattern plate or surface, substantially as described.

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

CHARLES J. ADDY.

Witnesses:

G. W. GREGORY,

B. J. NOYES.