

(Model.)

C. K. BRADFORD.

Edge Setting Machine for Boots and Shoes.

No. 229,517.

Patented July 6, 1880.

Fig. 3.

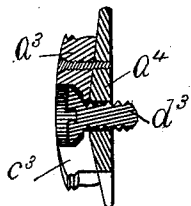


Fig. 4.

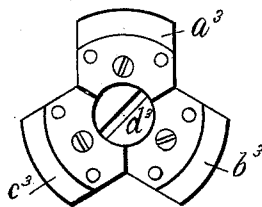


Fig. 1.

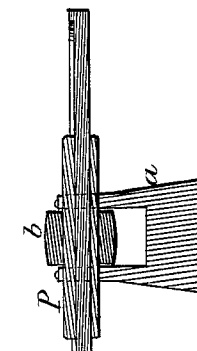


Fig. 5.

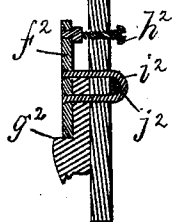
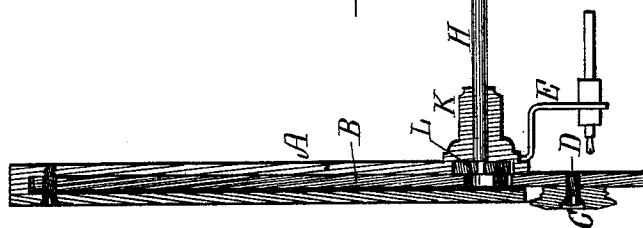
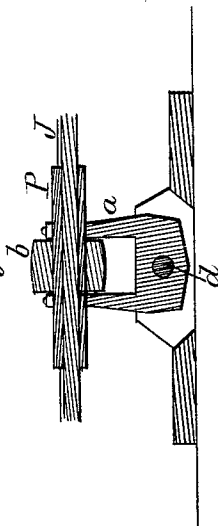


Fig. 2.



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CHARLES K. BRADFORD, OF LYNNFIELD, ASSIGNOR TO HIMSELF AND
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EDGE-SETTING MACHINE FOR BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 229,517, dated July 6, 1880.

Application filed March 3, 1880. (Model.)

To all whom it may concern :

Be it known that I, CHARLES K. BRADFORD, of Lynnfield, county of Essex, State of Massachusetts, have invented certain Improvements in Edge-Setting Machines for Boots and Shoes, of which the following is a specification.

This invention relates to improvements in machinery for polishing or setting the edges of boot and shoe soles; and it consists, mainly of the improvements, hereinafter specified, in the structure and organization of the flexible power-transmitting mechanism connecting the power-driven tool with the prime mover.

It also has reference to means for holding the tool to its stock.

The drawings accompanying this specification represent, in Figure 1, a longitudinal section of a machine embodying my improvements, while Fig. 2 shows the head-stock pivoted to its support, as hereinafter explained; Figs. 3 and 4, cross-section and plan of bur- nishing-tool. Fig. 5 shows manner of fasten- ing the same to shaft.

In these drawings, A represents the holder or handle by which the operator is enabled with one hand to direct the movements of the polishing-tool in the proper direction, such handle being of a proper shape and hollow, and containing within it a bar or tool-carrier, B, which is swiveled at its upper end to the upper part of the handle, and so as to be susceptible of reciprocating vibratory movements upon such pivot within the handle, the lower end of the carrier B projecting below the handle and carrying upon its front face a flat circular polishing-tool, C, secured to it by a bolt or screw, D, or otherwise, in order that its position may be changed as its edge becomes worn, and thus present a perfect polishing-surface to the sole edge.

The edge of the tool C is reduced to the form which it is desired to impart to the sole edge; and to impart a degree of heat to the tool, such as shall enhance its polishing qualities, I add to the rear side of the handle and extending below the tool a bracket, E, and I extend through this bracket and support by it a gas-pipe, F, to which gas from a suitable source

is admitted and ignited when the machine is in use, the flame impinging against the rear side of the tool-carrier and, through the latter, imparting the desired heat to the tool.

The flexible shaft for putting the polishing-tool in motion is shown, in the present instance, at G, as in three sections or lengths, the first being shown at H, the second at I, and the third at J. The first rotates in and is supported mainly by a tubular hub, K, projecting horizontally rearward from the handle A, and has affixed to its front end a crank or crank-wheel, L, the wrist-pin of which enters a vertical slot in the lower part of the tool-carrier, the rotations of the shaft and crank tending to impart vibratory movements to the lower part of the tool-carrier and to the tool.

The intermediate length, I, of the shaft is connected at its ends with the adjacent ends of the other two lengths by universal joints N O, and the third section, J, of shaft is inserted and slides in a horizontal tubular shaft, P, which is mounted and rotates in a head-stock, a, erected upon any suitable object in proximity to the support of the boot or shoe, the shaft J being prevented from rotating within the tubular shaft, but being permitted to slide freely longitudinally therein in order, as before stated, to permit the position of the tool-handle and tool to be raised bodily with respect to the position of the boot or shoe to be operated upon.

A pulley, b, is affixed to the tubular shaft to put it and the flexible shaft in rotation and impart the vibratory movements to the tool-holder and tool. The employment of the flexible shaft, and the manner of enabling it to slide within the tubular shaft, permits of universal freedom of motion of the tool handle and carrier, and enables the operator to readily present the tool to any portion of the edge of a boot or shoe sole.

In place of the flexible shaft described, a coiled spring or a twisted wire cord may be employed; but for several reasons I prefer that herein shown.

It may be found desirable to pivot the head-stock a centrally to its support, as shown at d in Fig. 2 of the drawings, in order to avoid any tendency to binding of the shaft J in the tubular shaft K.

A machine constructed as above described is simple, durable, and efficient, and can be manufactured at small cost.

In manufacturing the burnishing-tools in number, I first turn out a cylindrical disk of steel having the desired form of edge. I then divide this disk into three or more segments, $a^3 b^3 c^3$, of a circle, and secure them to one common stock or plate, a^4 , as shown in Fig. 3 of the drawings, which is a section of such construction. The whole is then confined by a central bolt, d^3 , to the lower end of the vibratory arm. As fast as one segment becomes worn or otherwise unfit for use the bolt d^3 may be loosened, the plate a^4 turned upon its axis to bring a new segment into use, and so on until the entire number are used, when they may be all removed and new ones substituted. By this turret principle, as it is a method of mounting the tools upon a rotary carrier in order to bring them successively into use, I am enabled to economize the time which otherwise would be consumed in changing the tools as fast as they became worn, or replacing them by other sizes or styles, as each of the three segments may be tools of different gage and form.

I prefer, however, to employ but one segment of a tool at a time with the vibratory bar B, and to enable this single tool to be readily removed and replaced by another I employ a clamp to confine it to the bar, such clamp, in the present instance, being a flat bridge-plate, f^2 , adapted to fit at its lower end into a rabbet, g^2 , in the upper part of the tool, and at its upper end bearing upon the front face of the bar B, two or more screws, $h^2 h^2$, being extended through the bar and abutting against the clamp-plate, and serving as a bearing for the upper end of such plate. To draw the clamp-plate tightly down upon the tool, and to enable such clamp to be loosened and the tool removed very expeditiously and easily, I extend rearward from the clamp-plate an eye, i^2 , which extends through the bar B, a wedge, j^2 , being driven through the eye and wedging against

the rear face of the bar, and serving to tightly draw the clamp-plate down upon the tool.

Should the parts become worn so that the wedge does not properly perform its functions, it is removed and the screws $h^2 h^2$ advanced to a slight degree, which lessens the distance between the outer boundary of the eye and the bar and causes the wedge to crowd tightly between them. In place of the eye and wedge, as stated, an eccentric mounted upon a short shaft supported in bearings upon each side of the eye may be employed to operate with the eye.

I claim—

1. The combination, with the hollow tool stock or handle and the pivoted vibratory tool-carrier arranged within said handle and carrying at its lower end a polishing-tool, of the rotating flexible shaft connected with and imparting vibratory movement to said tool-carrier, and the rotary tubular driving shaft or hub receiving the rear end of the flexible shaft and connected therewith by a spline-and-groove or equivalent connection, whereby the said flexible shaft, while receiving rotary movement from is free to slide endwise in or through the said tubular driving-shaft, substantially as hereinbefore set forth.

2. The combination, substantially as hereinbefore set forth, of the handle, the pivoted vibratory tool-carrier, the flexible shaft, the tubular driving shaft or hub connected with the flexible shaft by spline-and-groove or equivalent connection, and the pivoted head-stock or bearing supporting the tubular driving-shaft.

3. The clamping device hereinbefore explained, consisting of the plate bearing at one end upon the burnishing-tool and at the other upon screws passed through the arm and provided with an eye extending through the arm, adapted to be locked with a wedge or its equivalent.

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Witnesses:

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