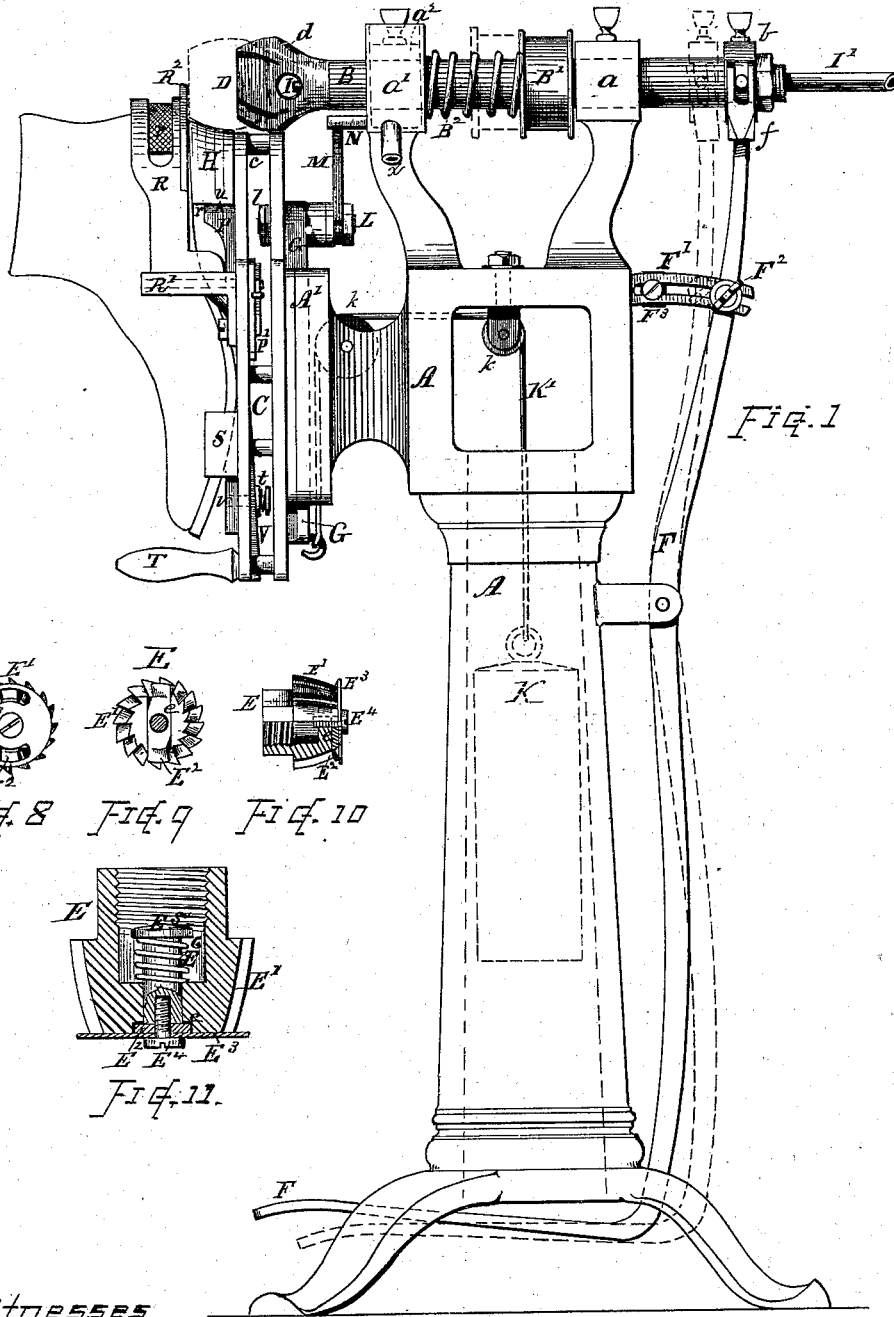


A. E. STIRCKLER.
MACHINERY FOR TRIMMING AND BURNISHING THE HEELS
OF BOOTS AND SHOES.

No. 194,115.

Patented Aug. 14, 1877.



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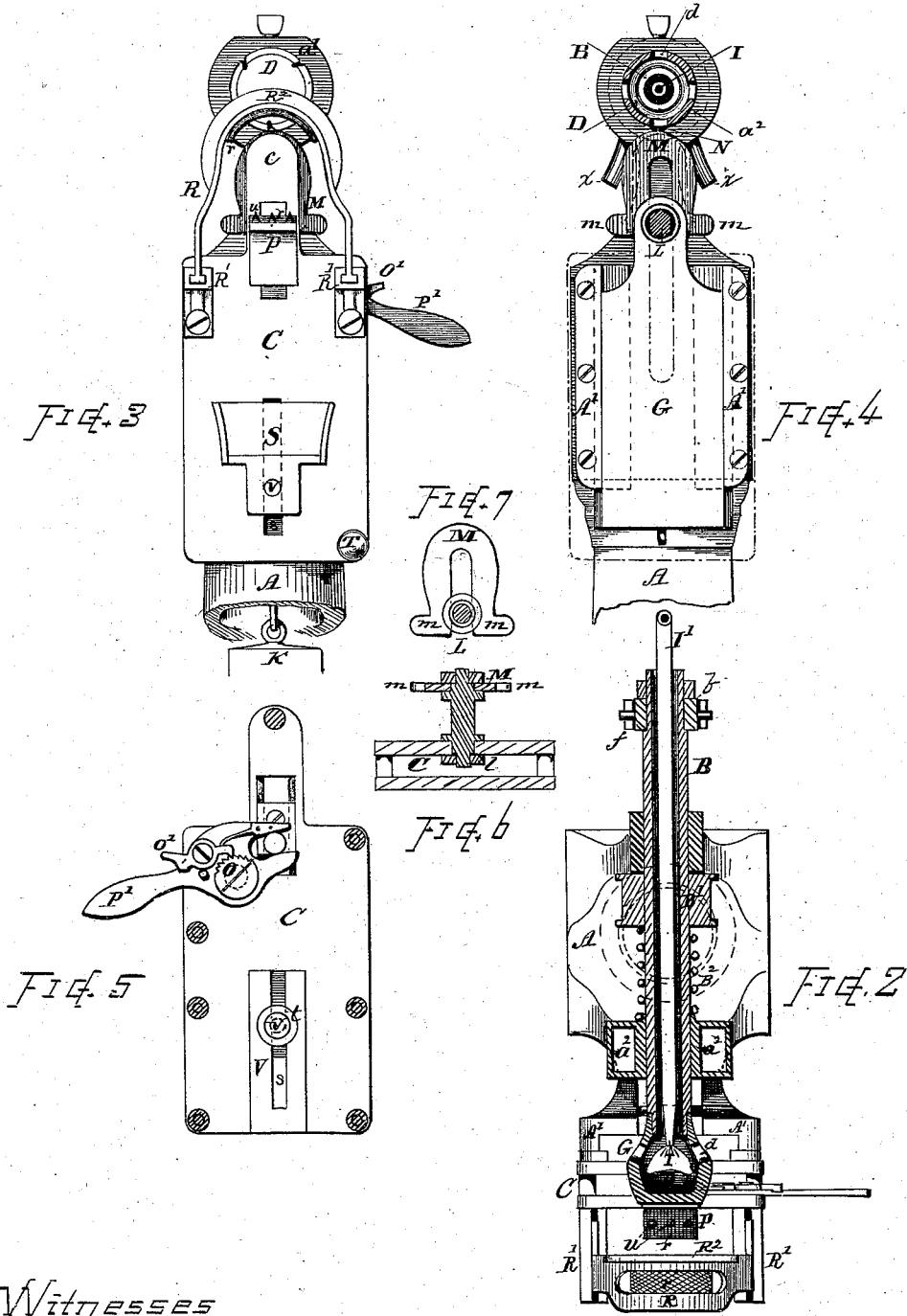
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UNITED STATES PATENT OFFICE.

ALBERT E. STIRCKLER, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MACHINERY FOR TRIMMING AND BURNISHING THE HEELS OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **194,115**, dated August 14, 1877; application filed May 7, 1877.

To all whom it may concern:

Be it known that I, ALBERT E. STIRCKLER, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Machines for Trimming and Burnishing the Heels of Boots and Shoes; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a side view of a heel trimming and burnishing machine embracing my invention. Fig. 2 is a plan view, showing a central section of the shaft and burnisher-head. Fig. 3 is a front view of the upper portions of the machine. Fig. 4 is a front view, with the boot supporting-plate removed, and showing a transverse section of the burnisher tool or head. Fig. 5 is a vertical section of the boot-support, showing a rear view of the jack devices. Figs. 6 and 7 show the details of construction of the pivot-stud and pattern-plate. Figs. 8, 9, and 10 show details of construction of the trimming cutter-head, and Fig. 11 shows a central section of a cutter-head of modified construction.

The nature of my invention consists in the employment and combination, in a boot and shoe trimming and burnishing machine, of mechanism organized and operating substantially as hereinafter fully described, the subject-matter claimed being hereinafter definitely specified.

In the drawings, A denotes the main frame, of suitable form and material, for supporting the working mechanism. B indicates the shaft for carrying the trimming or burnishing tools, and C the plate or jack whereon the boot or shoe is held while being operated upon.

The shaft B, which I form hollow, is supported to turn in a horizontal position in bearings a a^1 at the upper portion of the frame A, and is provided centrally with a driving-pulley, B^1 , and at its front end with suitable screw-threads, onto which the burnisher D or trimming-tool E can be interchangeably secured, either tool being used accordingly as the operation of trimming or of burnishing is to be

done. The drawings show the burnishing-tool in position on the shaft B; but it will be understood that the cutter-head or trimming-tool occupies a like position, and that the mechanism operates in like manner, whether trimming or burnishing, the change of head being all that is necessary to convert the machine from one operation to the other.

The shaft B is arranged to reciprocate longitudinally through the bearings a a^1 , to move the tool up to and away from its working position over the boot-heel, (see dotted lines, Fig. 1,) and to its rear end is connected, by a suitable fork, f , and collar b , a treadle device or foot-lever, F, for imparting thereto a forward reciprocative movement, while a spring, B^2 , is arranged (in the present instance between the pulley end and bearing a^1) for forcing back the shaft B when the treadle-pressure is relieved.

A forked or slotted arm, F^1 , from the frame A, is arranged in connection with lever F, which is provided with a thumb-screw, F^2 , whereby it can be clamped to said arm F^1 for retaining the parts at any fixed position. An adjustable stop or guard, F^3 , is also provided, which can be placed to prevent movement of the parts beyond a given position, if desired.

The trimming cutter-head is made as shown in Figs. 8, 9, 10, and 11, which illustrate an improved form of cutter-head, with welt-trimmer and guard-plate combined therewith.

The edge-trimmer is made with cutting-blades or burr-surface E^1 around the periphery, and with a depression or groove, e , across its outer end, within which I arrange a double welt-trimming blade, E^2 , which fits into the groove e in the manner shown, while outside thereof, and covering the end of the head, is a disk or guard-plate, E^3 , the blade and disk being both centrally secured by the screw or bolt E^4 .

The blade E^2 and plate E^3 may be screwed to the head direct, or to a sliding stud, E^5 , fitted centrally in the end of the head E, as in Fig. 11, said stud E^5 being pressed back by a spring, E^6 , so that while the welt-cutter and guard-plate are held centrally with the head E, and caused to revolve about the same axis therewith, they are allowed slight independent movement in a direction parallel with the

axis by the longitudinal movement of the stud against the spring, the blade E^2 rising from the bottom of the groove e , but being confined by the sides thereof, so as to revolve with the head E .

Openings are formed in the disk E^3 to permit the escape of shavings from the blades E^2 .

The edge-cutters E^1 may be formed by setting suitable blades into the head, in lieu of making it as a burr.

The cutting edges or ends of the welt-trimming blades are canted to give the proper bevel at the upper line of the heels, and, being secured to work around the same axis as the edging-blades, produce an even bevel or bead-line, corresponding with the cut of the edge-surface.

The cutters E^1 E^2 can, if desired, be used without the guard-plate E^3 ; but I prefer the construction shown.

The burnisher-tool D , I make hollow, as shown, with a series of perforations or openings, d , through its shell. The working-face may be formed smooth, or with grooves or corrugations, or with small slightly-rounded knobs or protuberances on its surface. The general contour of the working-face or developed surface of rotation may be a curve corresponding to the curve worked by the trimming-cutters E^1 , so that the burnisher will act upon the full width of the heel-edge H at once.

Within the hollow interior of the head D , I arrange a gas-burner, I , the flame from which keeps the burnisher-tool heated to the proper temperature. Gas is supplied to the burner I through the pipe I' , arranged through the hollow revolving shaft B , as shown, the outer end of said pipe I' being properly supported, and connected with the supply-main by a flexible tube or otherwise. The gas is lighted and the smoke discharged through the openings d , and the flame is supplied with oxygen by the air passing through the hollow of shaft B . When trimming, the pipe I' may be drawn back in the shaft and the gas shut off.

The front shaft-bearing a^1 is made with an outer and inner shell, forming a reservoir, a^2 , for containing water to cool the bearing from the effect of the heated head D and gas-flame I . Pipes x are connected at either side to permit a constant flow of cold water through the bearing-box, if desired.

The boot-supporting plate C is formed double, or with front and back parts, as shown, one part serving as a bearing-surface, while the other or front part serves to support the jacking devices. The two parts are permanently connected by stud-bolts or otherwise, and act together as a single piece. Said plate C is slotted at the back, and is adjustably pivoted to a sliding carrier, G , which works on or between suitable guideways A' at the front of the main frame A , preferably below, and at right angles to the shaft B , toward and from

which the carrier G reciprocates, the pivot-center moving in a line radial with the axis of the shaft B .

The carrier G and parts connected therewith are counterbalanced by a suitable weight, K , arranged in the present instance within the hollow standard of frame A , and connected to the carrier-slide by cord or chain k' passing over pulleys k , as indicated.

The pivot or pintle bolt L , which I arrange eccentrically with the heel-seat e , or below the center of the position occupied by the boot-heel H against the plate C , passes through the upper part of the carrier G in a direction parallel with the axis of the tool-shaft B , and its front end is secured in the slot of plate C by a nut, l , which may be loosened, and the adjustment of the parts effected. The bolt L is squared into the slot, so as to move with the plate C , which latter is arranged to partially revolve or oscillate around the pivot-axis L in a plane perpendicular to the axis of shaft B for bringing all parts of the heel-edge into contact with the tool.

To the rear end of the pivot-stud L is secured an adjustable pattern-plate, M , the outline of which corresponds to the desired form for the finished heel. The pattern-plate M , which moves with the boot-supporting plate C , works against a stud or bearing-piece, N , that projects from the front of the supporting-frame below the shaft B , with its contact-surface in line, or nearly so, with the working-face of the trimming-tool. The cam-surface of the pattern-plate M bears against the stud N as the boot-supporting mechanism is swung around, and the carrier G moves up and down as the grade of the cam-surface of plate M changes, thus directing or governing the action of the trimming mechanism on the heel.

The stud N may be made as a small pin and screwed into the face of the frame or bearing a^1 , or be formed on a suitable hanger or lug, and be bolted to the frame. Its bearing surface should be cylindrical, or as a small roll, so as to offer the least resistance to the free action of the cam-plate M . Separate holes or slots may be formed for the screw or bolt, so that stud N can be adjusted to accommodate different sizes of patterns or trimming-tools.

Projections m are formed at the ends of the pattern-cam, which prevent the sides of plate C from coming in contact with the revolving tool.

The boot or shoe, when to be operated upon, is placed against the face of plate C , in the position indicated in Fig. 1, the heel and sole resting against said plate, with the heel-edge projecting beyond the upper extremity of heel-seat e , in which position it is firmly clamped by the dog P and yoke R . A guide-clamp, S , is also provided, for embracing the toe of the boot and retaining it in the proper relative position laterally.

The yoke R , which embraces and centers the boot-heel in the manner indicated, has its lower ends attached to plate C by bars or brack-

ets R^1 , in such manner that while the yoke R is held down it can be readily moved in or out to adjust its inner edge to the upper line of heel, the yoke being free to be moved at will before the dog P is jacked up. Said yoke R is provided with a rim or flange, R^2 , along its inner edge, which serves as a guard for the uppers, and as a stop or guide against which to run the finishing-tool.

In the present instance the ends of the yoke R are held in grooves in the brackets R^1 ; but, if preferred, the brackets may be made to pass through the ends of the yoke, or, again, the ends of yoke R may be fixed to the plate C , and the rim-flange R^2 be made to adjust, in which latter case the rim R^2 would require to be made separate from the body of the yoke R , and connected therewith by a slide-rod or slotted eye-pieces and set-screws, so as to be movable inward and outward on the yoke, in lieu of sliding the entire yoke on its brackets R^1 , as in the present instance. Said yoke may also be hinged across its top, and arranged to contract and expand to accommodate all sizes of boots.

The dog P works in a longitudinal slot in plate C , and is moved up and down by the jack-lever P' , arranged as shown in Fig. 5, and provided with ratchet O and spring-pawl O' for locking it in position. The dog P presses up against the square part of the heel H in opposition to the yoke R , thus clamping the boot between them.

The upper surface of the dog P and under side of the yoke R are preferably lined with elastic pads $r r$, as indicated, and small points or projections u are provided on the face of dog P , which enter the leather of the heel, and prevent the boot from being forced away from the heel-seat c by the strain of the tool.

The toe-guide S is made with inclined side flanges for embracing the sides of the boot-tee, as shown. It is arranged to slide up and down on the plate C , to which it is held by a stud, v , that passes through the slot s , and is provided with a friction-spring, t , and washer, which bears on the wedge-shaped or inclined projection V on the back of the plate C , and thus retains said guide at any adjusted position, while permitting of its being readily moved up or down by the hand.

T indicates a crank or handle, to facilitate oscillation of the plate C and parts connected therewith.

When placing the boot or shoe in position the heel is set against the seat C and up to the yoke R . The guide S is then moved up until it binds on the sides of the toe. This centers the boot, whether a right or left, and brings the heel into proper position for trimming. The jack-lever P' is then set down, pressing up the dog, which locks the heel H in place. By thus centering and holding the boots all the heels are trimmed uniformly, and to stand square and straight as regards a line drawn through the center of the heel and toe.

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

1. The combination, in a boot and shoe trimming and burnishing machine, of the revolving tool-shaft or spindle B , having a longitudinal reciprocative movement through its bearings $a a'$, the boot-supporting plate C , arranged to oscillate in a fixed plane perpendicular to the axis of said shaft B , and adjustably pivoted, by stud L , to the carrier G , working in guides A' on the frame A , substantially as and for the purposes set forth.
2. In combination, substantially as described, the revolving tool-shaft B , edge-finishing tool E or D , oscillating boot-supporting plate C , provided with jacking mechanism, pivot-stud L , arranged below the heel-seat c , and fitted to turn with plate C , sliding pivot-carrier G , adjustable pattern-plate M , and guide stud or bearing N , for the purposes set forth.
3. The pattern-plate M , formed with projections $m m$ at its ends, adjustably attached to the pivot-stud L , and arranged to work against a stud or bearing-piece, N , in line with the working-face of the trimming-tool, substantially as and for the purposes described.
4. The combination, in a heel trimming and burnishing machine, of the reciprocating tool-shaft B , rotating in bearings $a a'$, collar b , treadle-lever F , return-spring B^2 , arm F^1 , check-piece F^3 , and thumb-screw F^2 , as and for the purposes set forth.
5. The burnishing-tool D for edge-finishing machines, formed with a hollow shank, and provided with perforations d , as and for the purpose set forth.
6. In combination, substantially as set forth, the hollow revolving shaft B , hollow perforated burnishing-tool D , gas-pipe I' , and burner I at the interior of the revolving head, for the purposes stated.
7. The cutter-tool for boot and shoe trimming machines, when constructed, as herein shown and described, with edge-trimming blades E^1 , welt-trimming blades E^2 , perforated guard-plate E^3 , longitudinally-movable stud E^5 , and spring E^6 , all centrally secured, to revolve about the same axis, as set forth.
8. The combination, with supporting-plate C , of the yoke R , brackets R^1 , sliding dog P , and jacking-lever P' , arranged and operating substantially as and for the purposes set forth.
9. The combination, with the boot-supporting plate C and edge-finishing tool E or D , of the adjustable yoke R , provided with guard-flange R^2 , for protecting the upper and guiding the tool, substantially as set forth.
10. In combination with the boot-supporting plate C and adjustable yoke R , for embracing and centering the boot-heel, the toe-guide s , for embracing the boot-toe, substantially as and for the purpose set forth.
11. The combination, substantially as shown and described, of the plate C , having slot s ,

the toe-guide S, stud *v*, friction-spring and washer *t*, and inclined projections V, for the purpose stated.

12. The combination, substantially as set forth, of the boot-supporting plate C *c*, heel-centering yoke R, sliding dog P, provided with points or projections *u*, and elastic pad *r*, jacking-lever P', and ratchet device *o o'*, for the purposes described.

13. In a machine for finishing heel-edges, the combination, with the revolving shaft B, heated burnisher D, and heating-burner I, of the supporting-bearing *a*¹, with water-reservoir *a*², substantially as shown and described.

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Witnesses:

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