

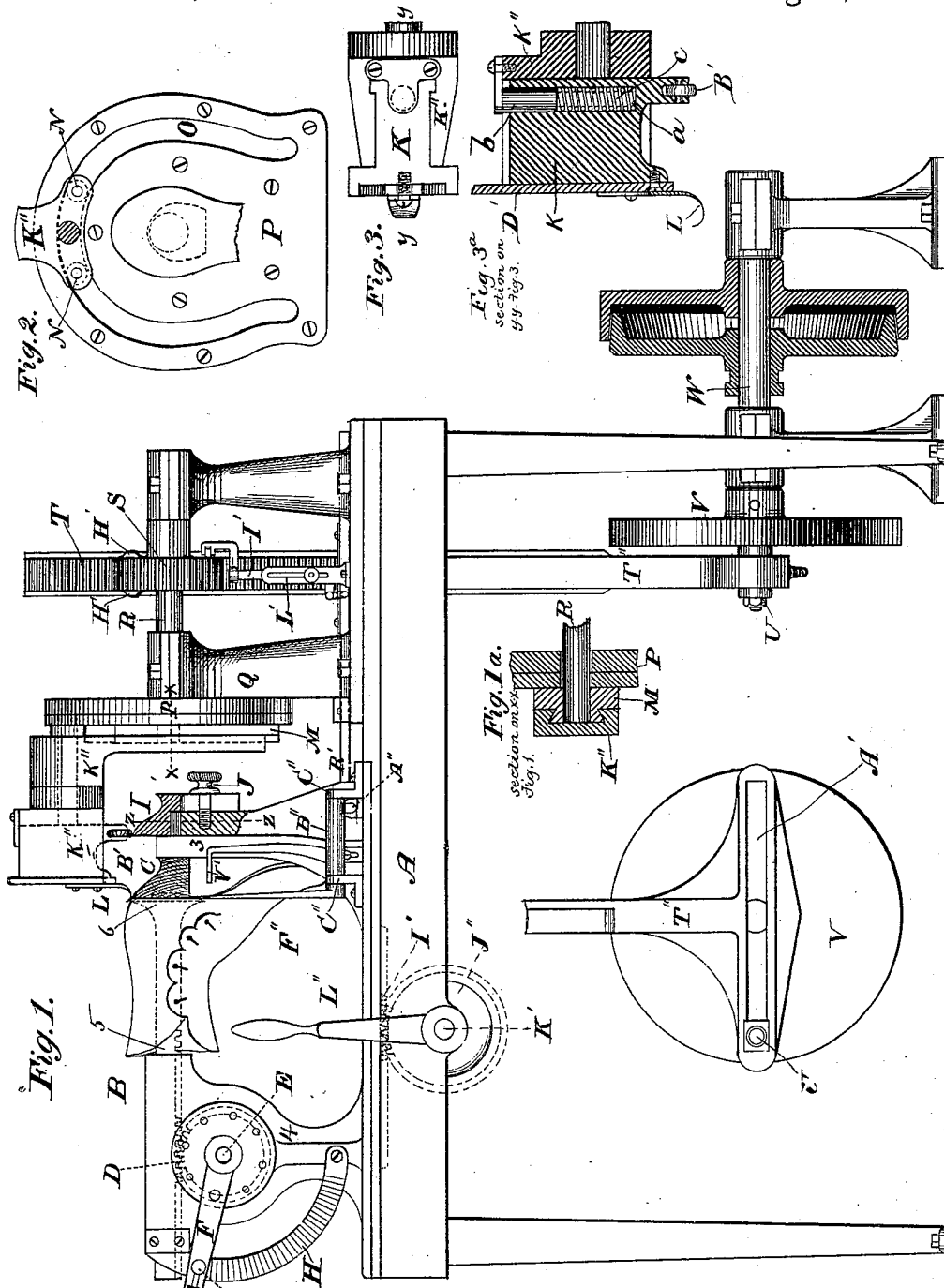
(No Model.)

2 Sheets—Sheet 1.

M. A. TYLER.
HEEL TRIMMING MACHINE.

No. 282,591.

Patented Aug. 7, 1883.



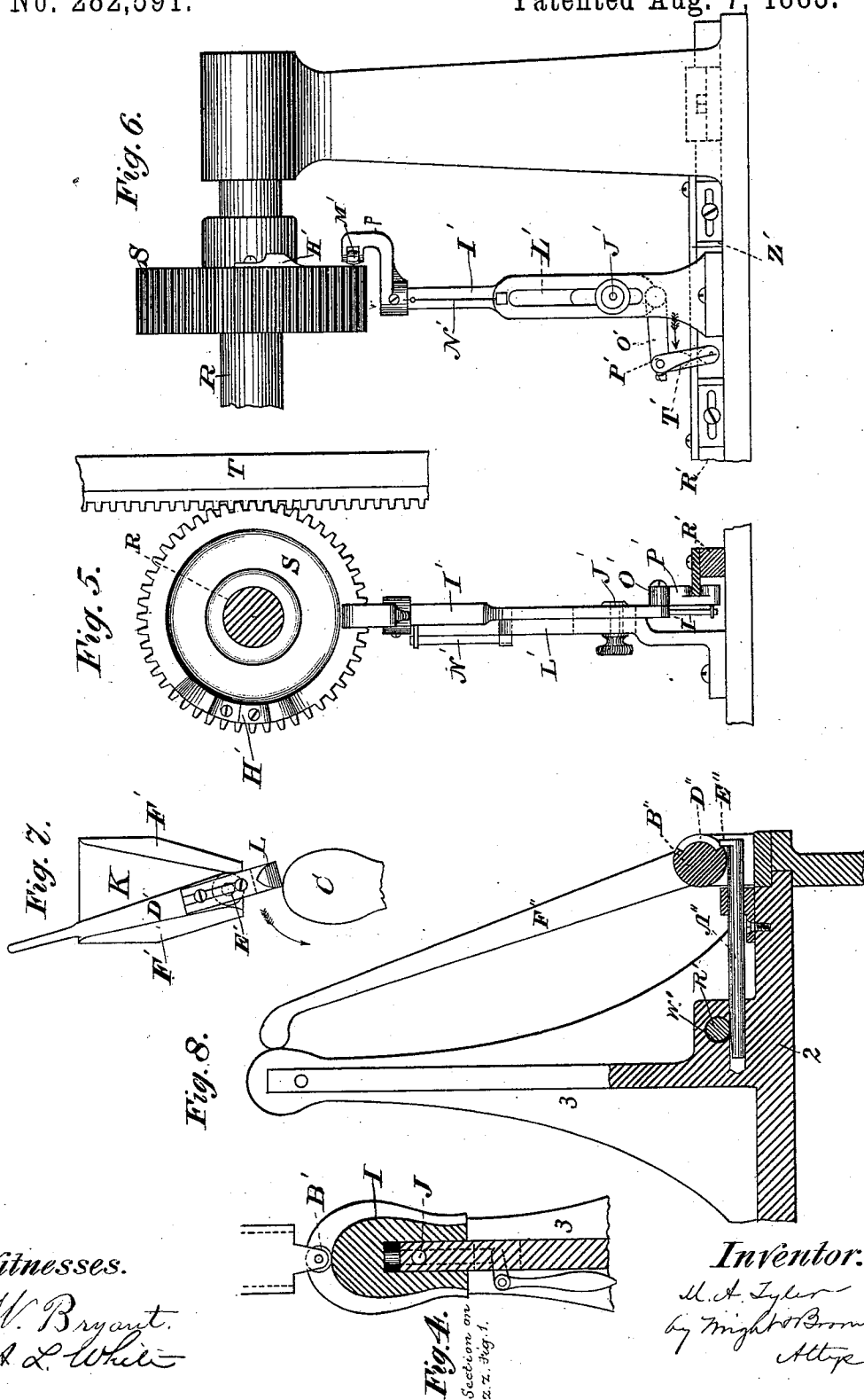
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UNITED STATES PATENT OFFICE.

MERRILL A. TYLER, OF ROCKLAND, MASSACHUSETTS.

HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 282,591, dated August 7, 1883.

Application filed September 16, 1882. Renewed July 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, MERRILL A. TYLER, of Rockland, in the county of Plymouth and State of Massachusetts, have invented certain Improvements in Heel-Trimming Machines, of which the following is a specification.

This invention has for its object to provide a heel-trimming machine adapted to automatically trim heels of any desired shape, including the so-called "French heel."

The invention consists, as a whole, in a machine composed of a suitable frame, a longitudinally-movable jack mounted thereon, a heel-pattern attached to the jack and having the exact form to be imparted to the boot or shoe heel, a knife-carrier adapted to be oscillated or reciprocated on the pattern, and provided with a trimming-knife, mechanism for oscillating or reciprocating the knife-carrier, and mechanism for feeding the jack and pattern forward step by step to present a new portion of the heel to the trimming-knife after each movement of the knife.

The invention also consists in certain details of construction and combinations of parts, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of a heel-trimming machine embodying my invention. Figs. 1^a, 2, 3, 3^a, 4, 5, 6, 7, and 8 represent views of details.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A represents the supporting-frame of the machine, which is provided with suitable ways, on which slides the jack B, said jack being adapted to move longitudinally. The jack is composed of a base, 2, which rests on the guides of the frame A, a post or heel-rest, 3, a post, 4, containing a slot or socket, a bar, 5, adapted to slide in the socketed post 4, and a foot, 6, on the end of the bar 5, adapted to clamp the boot or shoe heel C against the rest 3. The bar 5 is formed as a rack on its lower edge, and with said rack is engaged a pinion or segment, D, on an arbor, E, journaled in the post 4. The arbor E is provided with a lever, F, having a spring-dog, G, which engages with the teeth of a

ratchet-segment, H, affixed to the post 4, said lever, dog, and ratchet holding the bar 5 and foot 6 in any position to which it may be moved.

I represents the heel-pattern, which is attached by a screw, J, to the post 3 in the relation to the boot or shoe heel represented in Fig. 1. Said pattern is of the exact shape to be imparted to the boot or shoe heel, and has a vertical slot through which the screw J passes, said slot and screw enabling the pattern to be adjusted vertically.

K represents the knife-carrier, and L the trimming-knife mounted thereon. The carrier K is adapted to slide in guides formed in a block or holder, K', which in turn is adapted to slide on a rotary cross-head, M, and is provided at its upper end with two rollers, N N, projecting into a heel-shaped groove, O, in a plate, P, attached to a fixed post, Q, on the frame A. A cavity, a, is formed in the tool-carrier K, extending downwardly from the upper end of the carrier. Into this cavity projects a rod, b, which is rigidly attached to the holder K'. A spring, c, interposed between the inner end of the rod b and the bottom of the cavity a, presses the carrier against the pattern I, the carrier having a roller, B', which bears on the pattern.

R represents a shaft journaled in the post 80 Q, passing through the plate P, and rigidly attached to the cross-head M. To said shaft is rigidly attached a cog-wheel or pinion, S, with which meshes a vertical rack, T. The rack is reciprocated vertically by means of a crank-pin, U, on a disk, V, attached to the driving-shaft W, said crank-pin projecting into a horizontal slot, A', in the lower part of the bar T', of which the rack T forms a part. The shaft R is thus oscillated with the cross-head M, causing the rollers N N to reciprocate in the groove O, and thus move the holder K' in a path that is parallel with said groove, said path approximating to the shape of the pattern I. The described adaptation of the holder K' to slide on the cross-head M and of the tool-carrier K to slide in the tool-holder K' gives the knife L the necessary freedom of endwise movement required to compensate for any slight difference between the contours of the pattern I and

the guide-groove O, and enables the knife L to be accurately guided by the pattern.

The knife L is preferably formed with a curved blade having two cutting-edges, so that it will cut when moving in either direction. To enable the pitch or inclination of the knife to be changed after each movement over the heel, so that it will cut during the reverse movement, I attach the knife to a lever, D', which is pivoted at E' to the carrier K. On either side of the lever D' are oppositely-inclined flanges or stops F' F'. (See Fig. 7.) The lever D' bears against one of said stops when the carrier K is moving in one direction and against the other stop when the carrier is moved in the opposite direction. At the end of each reciprocating movement of the carrier K the lever D' strikes one of two fixed arms, V' V', located at opposite sides of the carrier, and is tilted thereby over against the opposite stop, F'.

The feeding mechanism for moving the jack and heel-pattern forward step by step during the trimming operation, to present all parts of the heel and pattern, respectively, to the knife L and roller B', may be variously modified in its construction. In the present instance said mechanism consists of a cam, H', on the oscillating wheel S, a lever, I', pivoted at J' to a fixed standard, L', and pressed at its upper end (which is provided with a roller, M) by a spring, N', against the side of the wheel S, a link, O', pivoted to the lower end of said lever, a gripping device, P', pivoted to said link, and a feed-bar, R', adapted to move longitudinally on the frame A, and detachably engaged, as hereinafter described, with the base of the jack.

The gripping device P' is composed of a piece of metal slotted on one side to receive a flange on the feed-bar R', the sides of the slot being V-shaped or pointed, as shown in dotted lines in Fig. 6. A spring, T', attached to the link O', bears against the gripping device and normally holds it in the inclined position shown in Fig. 6, so that when the link O' is moved in the direction indicated by the arrow in Fig. 6, by the contact of the cam H' with the lever I', the points of the gripping device will hug or grasp the flange of the feed-bar R' and move said bar, together with the jack and heel-pattern, in the same direction. The pivotal connection of the gripping device causes it, when moved in the opposite direction, to release its hold on the flange of the feed-bar. The cam H' is arranged to move the lever I', as described, just before each reversal of the rotation of the wheel S, and after the knife has passed entirely around the heel, so that the jack and heel-pattern are moved forward after the completion of each cut of the knife.

Z' represents a stop which strikes the lower end of the gripping device when the knife L has reached the bottom of the heel and forces said device into a vertical position, thereby causing it to release its hold on the feed-bar and stopping the feeding operation.

The feed-bar R' enters a socket or orifice, W', in the base of the post 3 of the jack, and is adapted to slide freely in said orifice.

A'' represents a wedge-bar, which is inserted in a transverse orifice in the base of the post 3, and is adapted, when pushed inwardly, to bind against the feed-bar R', and thus engage said bar firmly with the jack, and when drawn outwardly to release the feed-bar from the jack. These movements of the wedge-bar are effected by a rock-shaft, B'', journaled in fixed ears C'' C'' on the frame A, and provided with a groove, D'', into which projects a stud, E'', on the bar A''. The rock-shaft B'' is provided with an arm or lever, F'', which enables the operator to rotate the shaft. When the lever F'' is raised, as shown in Fig. 8, one edge of the groove D'', bearing against the stud E'', withdraws the wedge-bar A'' sufficiently to release the feed-bar R' from its engagement with the jack. When the lever F'' is turned downwardly the other edge of the groove D'' bears against the stud E'' and presses the wedge-bar A'' inwardly, so as to engage the feed-bar with the jack. The base of the jack is provided with a rack, I'', with which meshes a pinion, J'', on a shaft, K', journaled in the frame A. The shaft K' is provided with a lever, L'', by which the pinion J'' may be rotated in either direction to move the jack longitudinally on the frame A.

The general operation is as follows: A boot or shoe is confined at its heel by the jack, as above described, and the lever F'' is raised, as shown in Fig. 8, to disengage the jack from the feed-bar. The jack is then moved by the lever L'' until the upper end of the lever F'' coincides with the upper edge of the heel, as shown in Fig. 1, said lever being arranged to act as a guide in adjusting the jack. The heel and pattern are now so arranged that the knife will act on the upper edge of the heel, and the roller B' of the knife-carrier will bear on the corresponding edge of the pattern, as shown in Fig. 1. The lever F'' is then moved downwardly to engage the feed-bar with the jack, and the shaft R is set in motion by a suitable clutch connecting the shaft W with the prime motor. The knife L is thus caused to reciprocate in a path that is governed by the pattern I, and after each movement of the knife the jack and pattern are moved forward until the heel is completely trimmed, when the stop Z' arrests the feeding of the jack. The movement of the knife is then arrested, another boot or shoe is placed on the jack, the feed-bar is disengaged from the jack, and the jack is moved back to its starting-point, and again engaged with the feed-bar.

If it is desired to commence the trimming operation at the base or bottom of the heel, the direction of the movement imparted to the feed-bar may be reversed by turning the arm on the upper end of the lever I', bearing the roller M', so as to present said roller to the opposite side of the wheel S from that shown in Fig. 1, (said wheel having a cam, H', on each side,) and mov-

ing the gripping device P' to the opposite side of the lever I', and adjusting the spring T' so that it will give said gripping device an opposite inclination from that shown in Figs. 1 and 6.

It is obvious that by substituting a suitable burnishing-tool for the trimming-knife the machine may be adapted for burnishing heels.

I claim—

10 1. The combination of a jack, a heel-pattern, a tool-carrier adapted to oscillate on the pattern, and having a trimming-knife or equivalent tool, and mechanism for oscillating said carrier, the jack and pattern occupying a fixed relation to each other, and being movable, as described, with relation to the tool-carrier.

2. The combination of a longitudinally movable jack, a heel-pattern movable with the jack, a tool-carrier adapted to be oscillated or reciprocated on the pattern, and provided with a trimming-knife or equivalent tool, mechanism for oscillating or reciprocating the tool-carrier, and mechanism for feeding the jack and pattern forward step by step, as set forth.

3. As a means for reciprocating the tool-carrier on the heel-pattern, the combination of the tool-carrier K, the holder K'', the cross-head M, on which said holder is adapted to slide, the fixed plate having the heel-shaped groove O, receiving and guiding studs or rollers N N on the holder K'', the journaled shaft R, rigidly attached to said cross-head, and mechanism for oscillating said shaft, as set forth.

4. The oscillating shaft having the wheel S, provided on its side with a cam, H', combined with the longitudinally-movable jack, the feed-bar, moved step by step by the cam H' through suitable intermediate devices, and mechanism whereby the jack may be engaged with or released from the feed-bar, as set forth.

5. The frame A, having the journaled shaft K', provided with a pinion, J'', and lever I'', 45 combined with the longitudinally-movable jack, having a rack, I'', meshing with the pinion J'', as set forth.

6. The combination of the feed-bar and its operating mechanism, the jack having an orifice receiving the feed-bar, the lateral wedge-bar arranged crosswise of the feed-bar, and the grooved rock-shaft adapted to move the wedge in and out, and provided with the lever F'', adapted to serve as a guide by which to adjust the jack, as set forth.

7. The double-edged knife L, pivoted to its carrier, combined with the inclined flanges F' F' on said carrier, whereby the knife is supported in two positions and adapted to cut in two directions, and the fixed arms B', whereby the inclination of the knife is changed at each end of its movement, as set forth.

8. The combination of the flanged feed-bar R', the spring-impelled gripping device P', the lever I', supporting said gripping device and pivoted to a fixed standard, the oscillating wheel S, having a cam, H', and a spring, N', arranged to press the lever I' against the side of the wheel S, as set forth.

9. The combination of the flanged feed-bar R', the spring-impelled gripping device P', operated as described, and the stop or projection Z' on the feed-bar, whereby the gripping device is made inoperative when the trimming-knife reaches the bottom of the wheel, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of September, 1882.

MERRILL A. TYLER.

Witnesses:

H. W. STUDLEY,
C. F. BROWN.