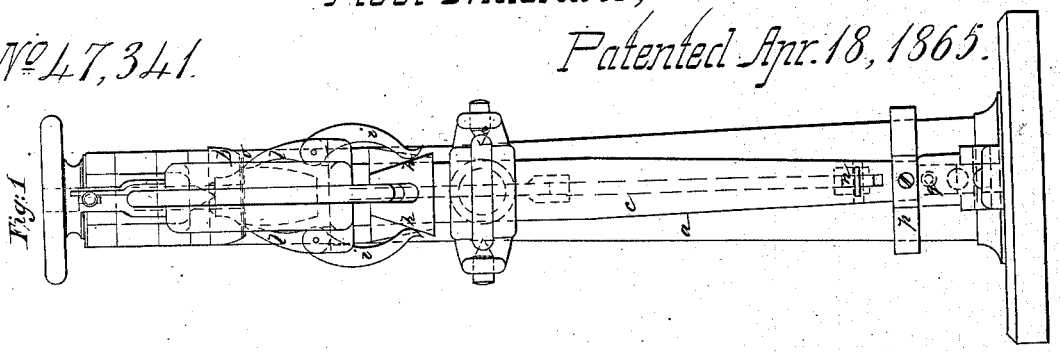
J. F. Sargent,

Heel Machine,

No. 47,341. Patented Apr. 18, 1865.

Fig. 1.



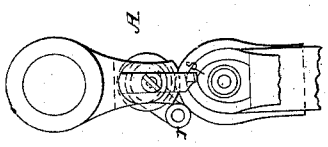


Fig. 3.

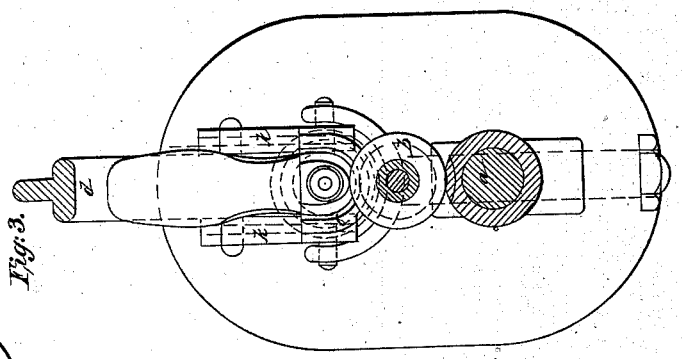
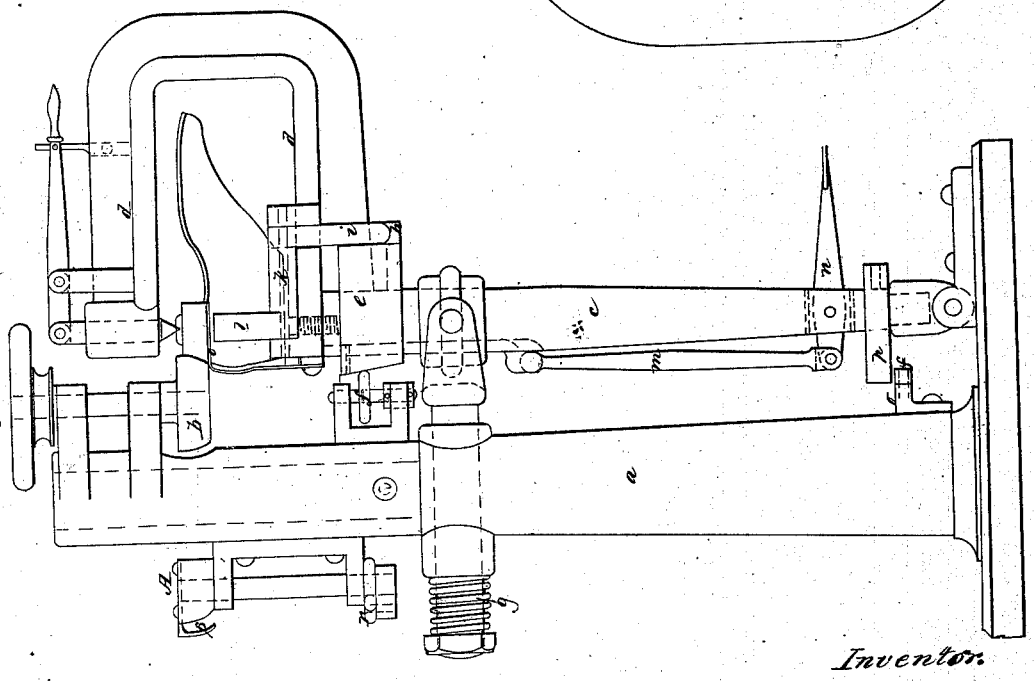


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH F. SARGENT, OF BOSTON, MASSACHUSETTS.

IMPROVED HEEL-TRIMMING MACHINE.

Specification forming part of Letters Patent No. **47,341**, dated April 18, 1865.

To all whom it may concern:

Be it known that I, JOSEPH F. SARGENT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a Machine for Trimming Heels of Boots and Shoes; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to the construction and arrangement of mechanism for cutting or trimming the edges of heels upon boots and shoes.

In carrying out the invention the shoe is clamped in a yoke or frame, the heel being centered with relation to a pattern-block which abuts against a roll or guide applied to a post or frame which carries the cutter, the cutter and shoe-heel being in such relative position that by rotation of the shoe-frame with respect to the cutter in such manner as to bring the entire length of the heel-edge under the action of the cutter the contact of the pattern and guide or guide-roll shall determine the form of heel cut in the direction of its length. This result, however, may be obtained by carrying the knife around the heel, instead of rotating the heel, and in either case an axially-rotating knife or knife-stock may be employed, or a knife which is stationary during its action with respect to the frame which carries it.

My invention consists primarily in the employment of an irregularly-shaped pattern-block, the outline of which in different horizontal planes corresponds to the outline of the various sizes and forms of heels to be cut, so that the contact of the guide or guide-roll with the pattern-block during the cutting operation causes a heel to be cut which bears a fixed relation in form or contour to that part of the block with which the guide is in contact, and so that this form may be changed for different shoes by varying the line or plane of contact between the block and the guide; and also in the combination, with this pattern-block, of jaws which clasp the shoe and by their contact therewith determine the size and form of heel to be cut, or, in other words, the line of contact between the pattern-block and guide-roll.

The invention further consists in a provision for vertical movement of the shoe or the cutter for trimming such heels as are united to vamps upon a curved or irregular joint; also, in some other peculiar features which will be hereinafter fully set forth.

The drawings show my invention as embodied in a heel-cutting machines in which the cutter and the guide-roll are mounted upon a stationary post or standard, while the shoe is clamped in a yoke mounted upon a movable post which carries the pattern-block, said post being capable of an axial rotary movement to bring the whole length of the heel-edge under the action of the cutter. (This relation of parts may, however, be reversed, the shoe being clamped in a stationary post and the cutter mounted in a frame, so as to be swung around the heel, the pattern-block and guide having the same relative relation to each other in either case.)

Figure 1 shows the machine in front elevation; Fig. 2, a side elevation of the same; and Fig. 3, a horizontal section taken just above the cutter-stock. The detailed view, marked A, shows a stationary cutter mechanism in plan, the same being also shown in elevation in Fig. 1.

a is the stationary standard; *b* a rotary cutter-stock fixed upon a vertical shaft, which turns in bearings in the upper end of the standard, rotary motion being communicated to this shaft in any convenient manner. The cutting-edges of the knives of the cutter-stock are to correspond in form with the profile or edge to be cut upon the heel.

c is the shoe-yoke and pattern-block post journaled in a socket-piece at its lower end in such manner as to be capable of axial rotation therein and also of a swing movement toward and from the standard.

d is the yoke in which the shoe is clamped by means of a last pin or rest in the top of the post *c*, and a sliding pin attached to one end of a hand-lever and sliding through the upper arm of the yoke. The last-pin is supported on a spring, so as to yield to the pressure exerted upon the shoe by the sliding pin, the hand-lever being provided with a tooth or pawl, which catches into a ratchet fixed upon the yoke. By this means the last and its shoe are depressed until the heel is brought

into proper position to be operated upon by the cutters. This result may also be attained by having a screw-thread upon the lower end of the pin, so that it may be screwed into the post *c*, and thereby adjusted in height to the requirements of the shoe.

It will be observed that the shoe is confined in the yoke in such manner that the heel shall be centered with reference to the post *c*. Under the yoke is a pattern-block, *e*, which slides vertically upon the post *c*. An outline of a sectional plan of this block corresponds to the form to be given to a heel, and the surface of the block is inclined so that different sectional plans of the block or the contour thereof in different horizontal planes shall correspond to the successive sizes and forms to be given to heels of different sizes of shoes. As there is not always a uniform change between the contours of the heels of large and small shoes, the width, for instance, of heels of small shoes near their front ends being greater in proportion to the length than in heels of large shoes, provision can be made therefor in the shape of the block, making it of such form that its outline in any horizontal plane shall correspond to the particular form or outline to be given to the particular heel being trimmed. This pattern-block is held in contact with the friction-roll *f*, attached to the standard *a* by a spring, *g*, which acts upon a rod jointed at one end to the post *c* and passing through the standard *a*, as will be readily understood from Fig. 1, this action of the spring simultaneously drawing the shoe-heel up into contact with the cutter-stock.

The position of the pattern-block with reference to the friction-roll and heel to be trimmed may be determined by a scale of shoe sizes affixed to the block and moving with it, or by the eye of the operator. Thus, if a 7 shoe is in the yoke, the pattern is moved up or down until that part thereof in the plane of the form corresponding to the size and form of a heel upon such shoe is in contact with the roll. The yoke being then turned by hand, the heel is rotated to such extent as to bring the entire length of edge to be trimmed under the action of the cutters.

That the pattern-block may be self adjusting to bring it into corresponding position with reference to the guide-roll to any size of shoe which may be placed in the yoke, I employ a mechanism as follows:

On the outer end of the pattern-block I make or affix two inclines, *h*, one on each side of the block, each of which acts upon one arm, *i*, of a rocker-shaft, *k*, from which projects another arm or jaw, *l*. The upper ends of these jaws *l* stand adjacent to the opposite sides of the upper surface of the heel-part of the shoe-vamp, or just under the sides of the heel, in position to grasp the shoe when brought toward each other. The thickness of the shoe corresponding to the size of the last which fills it, it follows that when the gripping-faces of the jaws are brought in contact with the surface of the shoe such contact will determine the distance apart of the inner faces of the arms *i*, and these arms being actuated by the inclines *h*, (as the pattern block is elevated,) it will be obvious that when a shoe is placed in the yoke and the pattern-block is elevated the block can rise no higher than the distance apart of the arms *i* will permit, and this distance being determined by the size of the shoe that said size determines the position of the pattern-block with reference to the roll, and consequently the size and contour of the heel.

To elevate the pattern-block a connecting-rod, *m*, is jointed at one end to an extension from the block, and at the other end to a lever, *n*, operated by foot, as will be readily understood.

A guard, *o*, may be employed to prevent contact of the cutters with the vamp, this guard being attached to and rotating with the yoke.

Where the joint between the heel and vamp is irregular, as in some styles of shoes, instead of being straight, a cam, *p*, may be used, this being fixed to the post *c*, and resting, (with the post,) when in use, upon a roller, *q*, in front of the standard *a*. The bottom face of this cam corresponds in form to the irregular line between the heel and vamp, and gives to the post *c* and the shoe a vertical movement during the rotation of the shoe under the action of the cutters, thus effecting the required trimming of the heel-edge to the irregular or curved line. The guard *o*, if employed, would of course have a similarly-curved upper surface.

With the modification shown at A, the knife *s*, which trims the heel, does not rotate. To keep the cutting-edge of the knife at the proper angle of presentation to the heel and prevent its cutting into the surface of the heel beyond the finishing-line as the heel is rotated, an auxiliary guide-roll, *r*, is employed with the main roller, against which the pattern abuts. This roll *r* also bears against the pattern, keeping the knife from turning while the two rolls bear upon the circular part of the pattern, and turning the edge outward slightly as the straight part comes against the knife, so as to preserve the same relative angle between the cutting edge and the surface to be cut. This modification is shown in Fig. 1 as attached to a sleeve upon the upper end of the standard *a*, the rotary knife being upon one side and the stationary knife upon the other, and the sleeve being capable of movement upon the post to bring either mechanism into position to operate upon the shoe clamped in the yoke. The modification may, however, be preferably mounted upon a separate machine.

The jaws *l* may be arranged to clasp the shoe in some other part than that shown, or an index-point may be substituted for them; but the construction shown is considered preferable.

The pattern-block *e* is so applied that it can be changed for others to suit the various styles of shoes or shoe-lasts.

To remove a shoe from or to place a shoe in the machine, the yoke *d* is drawn away from the standard *a*, the spring *g* yielding sufficiently to allow free access to be obtained to the last-pin.

I claim—

1. The combination of a pattern-block with a heel cutting or trimming mechanism when the block is so arranged and is of such form as to serve as a pattern for trimming heels of different sizes and contours, substantially as set forth.

2. A mechanism so organized that the size and form of the heel are determined by the size of the shoe and patterns or a pattern block, substantially as set forth.

3. The combination of the jaws *l*, arms *i*, inclines *h*, and pattern-block, arranged to operate together, substantially as specified.

4. The employment of an adjustable or spring last-pin, in connection with a clamping mechanism, substantially as described.

5. The auxiliary roll *r*, in combination with the pattern-roll for giving the proper angle of presentation to the stationary knife *s*.

6. The arrangement of the shoe in a yoke with the heel centered with respect to the post which carries the pattern, and so as to be held toward and rotated with respect to the cutting mechanism, substantially as set forth.

7. The arrangement of the mechanism by which, when the joint between the heel and vamp is irregular, the shoe shall have a corresponding vertical movement given to it, as set forth.

In witness whereof I have hereunto set my hand this eleventh day of March, A. D. 1865.

JOS. F. SARGENT.

In presence of—

J. B. CROSBY,

F. GOULD.