A. McDOWELL.

HEEL-TRIMMING MACHINERY FOR BOOTS AND SHOES.

No. 172,886. Patented Feb. 1, 1876.

Fig. 4.

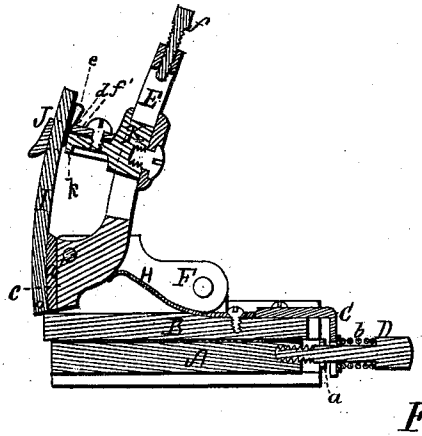


Fig. 1.

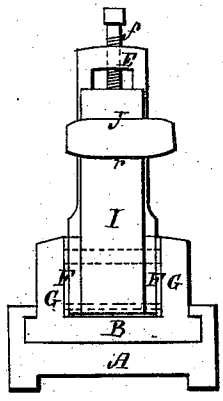


Fig. 5.

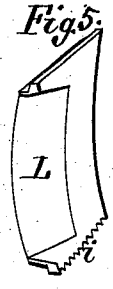


Fig. 3.

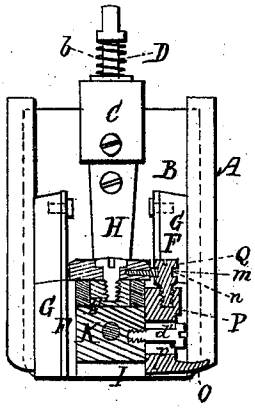


Fig. 2.

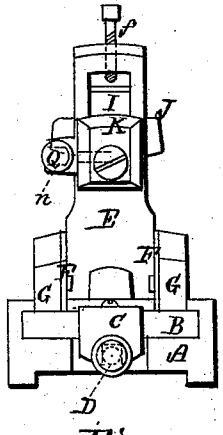


Fig. 6.

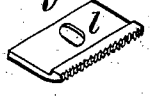


Fig. 7.

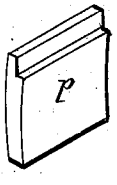


Fig. 10.

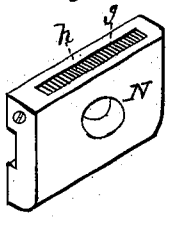


Fig. 11.

Fig. 8.

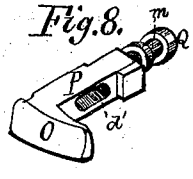
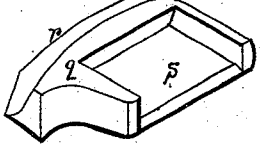


Fig. 9.



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UNITED STATES PATENT OFFICE.

ALEXANDER McDOWELL, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN HEEL-TRIMMING MACHINERY FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **172,886**, dated February 1, 1876; application filed December 27, 1875.

To all whom it may concern:

Be it known that I, ALEXANDER McDOWELL, of Lawrence, Essex county, Massachusetts, have invented certain Improvements in Heel-Trimming Machinery, of which the following is a specification:

These improvements relate to machinery for trimming or paring the heels of boots and shoes; and consists, mainly, in the employment, in combination with the paring-knife and its stock, of a self-adjusting gage or guard for protecting the upper from injury, which guard automatically accommodates itself to the varying width of the heel-edge, my said invention being prompted by the style of heels now in extensive use, in which the rear portion of the edge is much more sloping, and consequently deeper, than the sides.

My improvements further relate to the peculiar method of mounting the knife-stock, whereby its position with respect to the heel to be trimmed, or to the pattern-plate which determines the form of the tread of such heel, is varied and adjusted.

Details of my present invention will be found to consist in minor attachments, whereby the knife-stock is adapted to receive a series of interchangeable knife-blades.

The drawings accompanying this specification represent, in Figure 1, a front elevation, in Fig. 2 a rear elevation, in Fig. 3 a horizontal section, and in Fig. 4 a vertical and central section, of a portion of a heel-trimming machine embodying my improvements. Fig. 5 is a view of a different form of knife from that shown in previous figures. Fig. 6 is a view of a movable holding or clamp plate, to be explained. Fig. 7 is a view of an adjustable bearing-plate, to be explained. Figs. 8 and 9 are views of two of the guards or gages, to be hereinafter referred to. Fig. 10 is a view of a clamp-plate, also to be described. Fig. 11 is a form of knife-blade employed under some conditions.

In these drawings, A represents a base-plate, channeled upon its upper surface to receive a sliding carriage, B, which plays within said channel, this base-plate A being, in use, bolted adjustably to the top of a table, which constitutes part of a heel-trimming machine which I am now designing, and which will be the subject of future patents.

The lower front part of the knife bears against the perimeter of the pattern-plate, to the contour of which the tread of the heel is to be trimmed by the trimming-knife; consequently the carriage B, which carries the knife, must have a yielding motion within or upon the base-plate A, and to effect this result I affix to the rear edge of such carriage a forked plate, C, which straddles a rod, D, which screws into the rear end of the said base-plate A, the plate C being forced up to a collar, *a*, formed upon such rod by a spring, *b*, interposed between said plate and the head of the screw.

The spring *b* permits of the necessary end play of the knife-stock with respect to the heel to be trimmed, to enable the boot or shoe to be introduced to the machine, and the knife adapted to it, while, to adapt the knife-stock to heels of different sizes, the rod D is advanced or retracted, and the carriage B, as a consequence, forced toward or away from the boot-supporting jack or mechanism.

The knife-stock, to which allusion has been made, is shown at E as an upright curved slotted standard or bar, pivoted at its lower end to and between cheeks F F, which in turn are pivoted at their rear ends to housings G G, making part of the carriage B, this method of mounting the knife-stock securing its requisite vertical adjustment, while to force the said stock and its knife up to the heel-edge or its pattern-plate, I employ a spring, H, secured to the bottom of the carriage B, and with its free end bearing against the rear side of the stock.

The trimming-knife is shown at I as fashioned from a plate of steel, and whose longitudinal curvature is to assimilate to the concave outline of the edge of the heel which it is to trim, this knife being pivoted at its lower end to a block, *a'*, secured to the front of the stock E, as shown at *c*, the knife being disposed in front of, and parallel to, the stock, and at its upper end passing through a slot, *d*, created in a plate, J, which is secured to a carrier-block, K, which slides upon such stock

or standard E, the front edge of the said plate J constituting a guard to enter the joint between the sole and upper, and protect the latter from injury by the knife, and also serving as a depth-gage.

The slope or angle of the edges of the class of heels which my improvement is designed to trim varies very much, and the surface of the rear portion of such edge is much longer than the sides; and as the knife, in describing a sweep about such heel-edge, passes over this varying surface, the carrier K, through the agency of the guard J, slides upon the standard E, while the base of the knife, which bears against the pattern-plate of the heel, maintains a uniform position with respect to the latter.

It will thus be seen that I obtain a knife whose cutting-edge adapts itself automatically to the increasing or diminishing width of the heel-edge.

To insure the necessary friction between the guard-plate J and the knife I, I interpose a spring, *e*, of any suitable character.

In Letters Patent of the United States issued to me on the 24th day of August, 1875, I show and describe a method of employing a series of interchangeable knives or knife-blades, which are secured to the knife-stock in such manner as to produce a yielding joint and motion between the two, one of these knife-blades being shown at L in Fig. 5 of the drawings.

Under some circumstances it will be desirable to employ knives of this character with my present stock, and I have consequently provided for such a transposition by the following means: First, I remove the knife I and the intermediate block *a'* entirely from the stock E, and the guard J from the carrier K. Next, I screw to the lower front part of the stock E a device for receiving the lower edge of the knife-blade L, this device being shown in the present instance, in Fig. 10 of the drawings, as a plate, N, in the upper edge of which I create a recess or pocket, *g*, in the lower part of which recess I place a screw, *h*, the threads of which engage a sectional screw-thread, *i*, cut upon the lower edge of the knife-blade L, and by means of which screw the lateral position of the knife-blade with respect to the stock E may be varied. To secure the upper edge of the blade L I create upon the front lower corner of the carrier K, a ledge, *k*, and furthermore secure to the under side of such carrier and in rear of such ledge a thin block, *l*, whose outer edge is serrated or roughened, as shown in Fig. 6, in order to retain firm hold upon the knife.

The carrier K and abutment or plate N thus constitute a clamp to gripe the knife between them, and the power or extent of this gripe is governed by a screw, *f*, which is screwed through the upper part of the stock E and down upon the said carrier.

A knife-blade of the form shown in Fig. 11 may be employed by dispensing with the roughened clamp or block *l*, the lip *c'*, which is formed upon the upper edge of such knife, being embraced or engaged by the ledge *k*.

In lieu of removing the intermediate block *a'* with the knife I, it may be allowed to remain, and a support provided for the lower edge of the knife L in the form of a plate, *p*, (see Fig. 7 of the drawings,) which is to be secured to the outer face of the said block *a'*.

I do not confine myself to the form or method of applying the lower support of the knife, as it may be effected in a variety of ways.

It is desirable, in some classes of work, to employ a longer guard with the interchangeable knife-blades than the guard J, before described. To provide such a guard I employ a block, *q*, (see Fig. 9 of the drawings,) whose outer edge *r* constitutes the guard, and in whose upper surface I create a recess, *s*, to receive the outer end of the carrier K, to which it is securely bolted.

The block *q* thus constitutes a clamp-plate to hold the upper end of the knife in position, and as a guard to prevent injury by such knife to the upper; and the block may be part and parcel of the carrier, and of steel, or itself an independent piece of steel, and bolted to the carrier, which, for cheapness of construction, may be of malleable cast-iron.

The depth gage or guard which I employ with the last above-described method of adapting the interchangeable knives is shown at O as making part of a rectangular bar, P, (shown in Fig. 8,) which is secured adjustably to the side of such carrier by a pin-and-slot connection, *d'*, as shown in Fig. 3 of the drawings, the position of the guard upon the carrier being determined by a bolt, Q, which screws into the rear end of the bar P, and whose head is formed with a peripheral channel, *m*, into which a forked stud, *n*, extends, this stud being attached to the rear side of the stock E, and pivoted or swiveled to the latter, in such manner as to rock upon its pivot and accommodate itself to changes in the slope of the bar P.

I do not confine myself to this means of combining a guard with the movable carrier, as my object in representing this means of accomplishing it is to illustrate one practical method by which a guard may be adapted, in order that it may accommodate itself to the sliding movements of the carrier upon the knife-stock.

It will be apparent that the general longitudinal shape of the stock or standard E and of the knife I, whether curved or straight, should be alike, and the two be disposed in parallelism, for, although I do not restrict myself to such a condition, it will undoubtedly secure the best results.

I claim—

1. In heel-trimming machinery, the combination, with the trimming-knife, of a gage or

guard, which supports the upper end of the knife, and is arranged to automatically adapt itself to the varying width of the heel, substantially as and for the purposes set forth.

2. In heel-trimming machinery, the combination, with a pivoted trimming-knife, of a gage or guard, which supports the free end of the knife, and is arranged to automatically adapt itself to the varying width of the heel, and to adapt the knife to the varying slope thereof, substantially as set forth.

3. The pivoted knife I and stock or support E, in combination with the adjustable carrier K, movable on said stock, and embracing the upper end of the knife, substantially as and for the purposes set forth.

4. In combination with the carriage B and the pivoted cheeks F, the stock E, pivoted to said cheeks, and the spring H between the stock and the carriage, for operation substantially as set forth.

5. The combination, with the base-plate A, of the knife-carriage B, spring *b*, and adjusting-screw D, substantially as set forth.

6. The combination of the stock E, carrier K, and set-screw *f*, whereby interchangeable knives of various forms may be employed, substantially as and for purposes stated.

7. The combination, with the stock E and carrier K, of a series of interchangeable guards, substantially as and for purposes stated.

8. In heel-trimming machinery, a guard or depth-gage, adapted to serve as a guard or gage, and as a clamp-plate to hold the trimming-knife, in combination with a support for the lower end of the knife, substantially as and for purposes stated.

9. In combination with the guard O, carrier K, and stock E, the bar P, attached to the carrier by a pin-and-slot connection, *d'*, and having its head swiveled to said carrier by the forked stud *n*, substantially as and for the purposes set forth.

10. The combination of the stock E, carriage B, and base-plate A, substantially as herein described, whereby a vertical and horizontal play or adjustability of the knife with respect to the heel-plate is obtained, essentially as and for purposes stated.

ALEXANDER McDOWELL.

Witnesses:
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W. E. BOARDMAN.