

C. C. BALLOU.

Heel-Trimming Machines.

No. 158,456.

Patented Jan. 5, 1875.

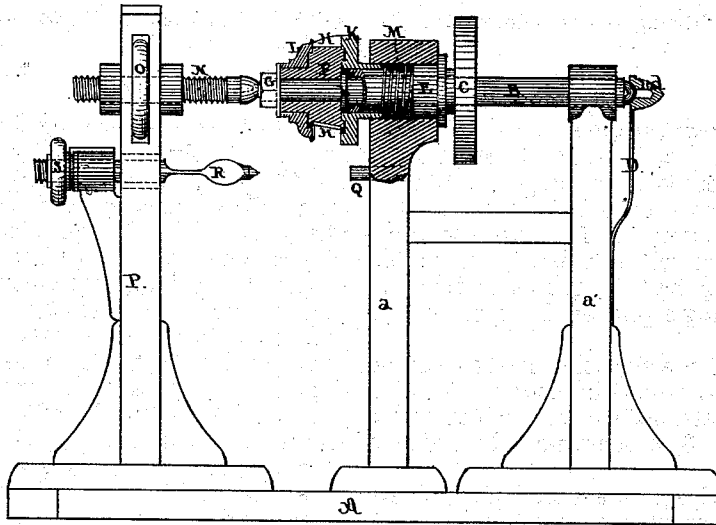


FIG. 1.

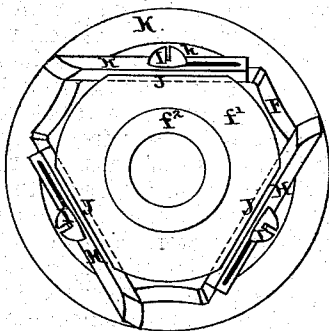


FIG. 2.

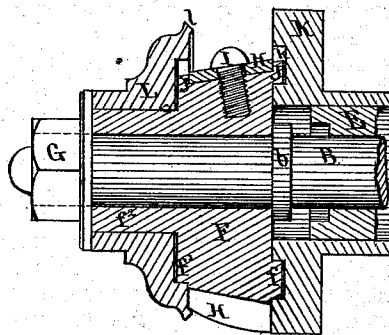


FIG. 3.

Witnesses.

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CYRUS C. BALLOU, OF ALBANY, ASSIGNOR TO EAST NEW YORK BOOT, SHOE,
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IMPROVEMENT IN HEEL-TRIMMING MACHINES.

Specification forming part of Letters Patent No. **158,456**, dated January 5, 1875; application filed
August 30, 1872.

To all whom it may concern:

Be it known that I, CYRUS C. BALLOU, of the city and county of Albany and State of New York, have invented certain Improvements in Heel-Trimming Machines, of which the following is a full and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the machine, showing the cutter-head in section; Fig. 2, an enlarged and detached end view of the cutter-head; and Fig. 3, a longitudinal section of the same.

The nature of my invention relates to that class of machines wherein the trimming and shaping the heels of boots or shoes are effected by means of knives arranged upon a revolving head; and consists of an improved cutter-head, fixed upon a shaft having an endwise movement, adjusted and governed by means of a screw and spring to adapt it to the trimming of heels of different heights. It also consists in the use of the devices hereinafter described, whereby the range and character of the work done are greatly increased and improved.

The machine, as shown in the drawings, consists of the following parts: A is the bed-plate, having two vertical standards, *a a'*, erected upon its surface, in which the bearings for receiving the shaft are placed. B is the shaft, which is revolved by means of pulleys attached to it between the balance-wheel C and standard *a'*. It has a free endwise movement, for the purpose hereinafter described, and is forced forward by the spring D, in whose oil-cup *d* a bearing is formed, in which the back end of the shaft revolves. E is a bushing, of bronze or gun metal, inserted in the standard *a* as a bearing for the shaft. It has a recess formed in its forward end, into which the collar *b* of the shaft passes at the termination of its endwise movement. F is the cutter-head, secured to the shaft B between the collar *b* and nut G, (preferably I make them for three knives, as shown in the drawings, but a greater or less number may be used, if desired,) to the cutter-head. The knives H H are secured by means of the

screws I I, which, passing through the slotted holes in the knives, permit them to be adjusted to their work as they become worn away by use. They are made to fit between the side flanges J J of the cutter-head, by which they are retained in a perfectly true position side-wise, from which they cannot be thrown while setting down or tightening the screws I I, thereby remedying a very serious defect in the common form of cutter-head, wherein the knives are liable to be thrown against either the outside or inside roller, thereby greatly impeding their free action. Another advantage derived from placing the knives between the flanges is, that they can be set true to their work in much less time than in the old form of cutter-head, in which much time is lost in setting the knives, for the reason that, when they are adjusted to the proper lengths at their cutting-edges, they are liable to be thrown out of truth sidewise by turning down the screws to secure them. Behind the cutter-head I place the inside roller K, against which the heel-pattern bears, and by giving it its bearing upon the outside of the bushing E, I remove it from any direct contact with the shaft B, and free it from any liability of becoming worn out of truth by the rapid motion of the shaft, and insure its free action independent of the motion of the cutter-head when the heel-pattern is brought against it. In its face a circular groove, *k*, is formed, into which a projection, *f*, of the cutter-head engages; and by thus interlocking these two parts the roller K is prevented from becoming depressed beyond the cutting-edges of the knives, and the heels are thus protected from being trimmed away more than they are intended to be. L is the outside roller, placed at the front end of the cutter-head, and having its bearing upon the sleeve or hub *f*², upon which it is free to turn. In its face a circular groove is formed, into which the projection *f*¹ of the cutter-head engages. Its outer surface is made in the form of an ogee, so as to adapt it to the requirements of the work; and at its periphery a standing rim, *l*, is formed to enter into the crease formed by the junction of the heel and upper leather of the shoe. This rim is carried back to form a cover to

the corners of the knives, so as to protect the counters of the shoes from injury by being brought into contact with them, thereby remedying another well-known defect in the machines in general use. The nut G, while it securely binds the cutter-head F to the shaft B, leaves the outside roller L free enough to turn easily independent of the cutter-head, but does not leave it so loose as to create a "chattering" motion, or to cause any irregularity in the trimming. The spiral spring M, interposed between the shoulder of the bushing E and the hub of the inside roller K, forces the latter into proper contact with the cutter-head F. N is an adjusting-screw, the point of which abuts against and forms a bearing for the front end of the shaft B. It passes through the hand-wheel O, which has a thread cut in its center to fit it, and is used for the purpose of adjusting the cutter-head to its work. The wheel O is placed in an opening formed in the standard P. Q is a pin or stud in the face of the standard a. It moves freely to adapt itself to the form of the heel-pattern, which is centered upon it, a hole being left in it for that purpose. R is a "centering-spring," the point of which enters the cone of the last, and holds the shoe in its proper position for trimming the heel. It is flattened, so as to yield in contrary directions, at right angles to each other, forming in effect a universal joint, instead of yielding in one direction only, as in the old form of centering-spring. It passes through an opening in the standard P, and is adjusted by means of the nut S, or any equivalent device.

The shoe is placed in the machine by centering the heel-pattern plate upon the stud Q, its edge resting against the periphery of the inside roller K, and by inserting the point of the centering-spring R in the cone of the last within the shoe. The shaft B is then adjusted endwise by means of the adjusting-screw N until the standing rim l enters into the crease formed by the junction of the heel and upper leather. By turning the shoe on the stud Q, the revolving knives H H cut away all the surplus leather of the heel, leaving it smoothly trimmed to the form and size required. The inside roller, K, by being arranged as herein described, permits the shoe to be turned upon the stud Q with but little friction. The free motion of the outside roller, L, protects the counter of the shoe from abrasion, which would ensue if the roller revolved with the cutter-head, and the universal flexibility of

the centering-spring R, by yielding in every direction to the requirements of the work, aids in securing the completion of the work with greater accuracy and economy of time.

I am aware that heel-trimming machines have heretofore been constructed in which the heels have been adjusted to the cutter-head by means of a yielding stud, instead of adjusting the cutter-head to the heels, as in my improvement. Such an adjustment is very objectionable, for the reason that when used for trimming very high heels the yielding stud requires forcing back so far that the elasticity of its spring is overcome, and the shoe is held so rigidly that it can only be turned with an unsteady jumping motion, whereby the quality of the work is greatly impaired. It will be seen that my improvement remedies this defect by dispensing with such a vise-like attachment for holding the shoe, and by allowing to turn freely upon its centering-stud, irrespective of the height of the heels to be trimmed, while the endwise adjustment of the cutter-head and shaft adapts the machine to all the various kinds of work required of it. It creates no perceptible increase of friction upon the shaft, and by means of it and the flexible centering-spring I am enabled to trim all kinds of heels used on women's, misses', and children's shoes with one cutter-head, instead of the three commonly used for this purpose.

What I claim as my invention is—

1. The combination of the cutter-head F, having the side flanges J J, with the knives H H, as and for the purpose herein set forth.
2. The cutter-head F, having projections f¹ interlocking into the circular grooves of the rollers K and L, as and for the purpose specified.
3. The inside roller, K, when arranged in relation to the shaft B, bushing E, and spring M, substantially as and for the purposes set forth.
4. The shaft B and cutter-head F, in combination with the spring D and adjusting-screw N, substantially as and for the purpose herein described.
5. The centering-spring R, when flattened in reverse directions, as and for the purposes specified.

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Witnesses:

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