A. K. WASHBURN.
Heel-Trimming Machine.

No. 202,494. Patented April 16, 1878.

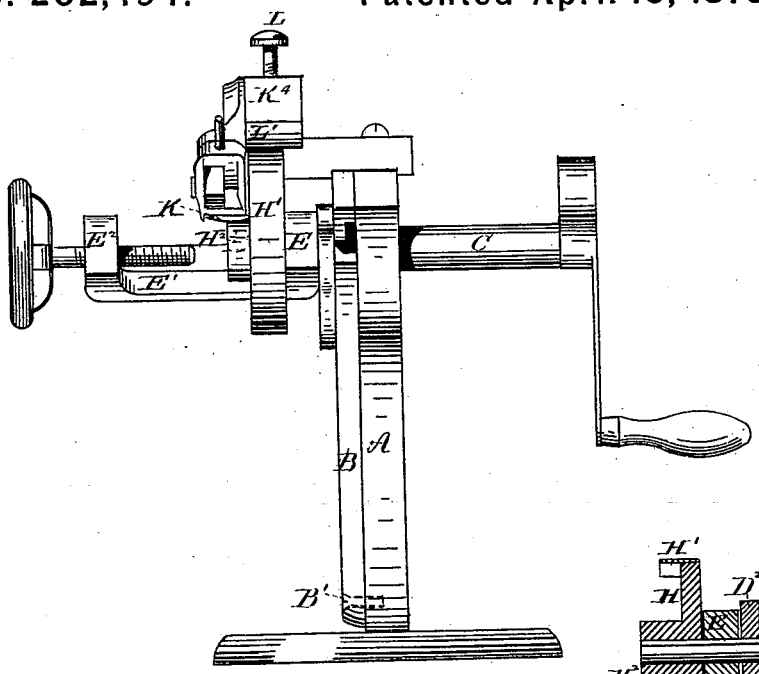

Fig. 1.

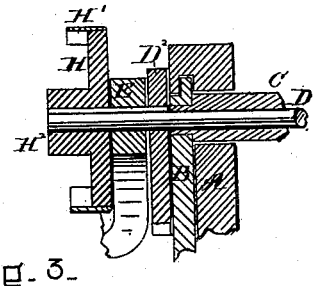

Fig. 3.

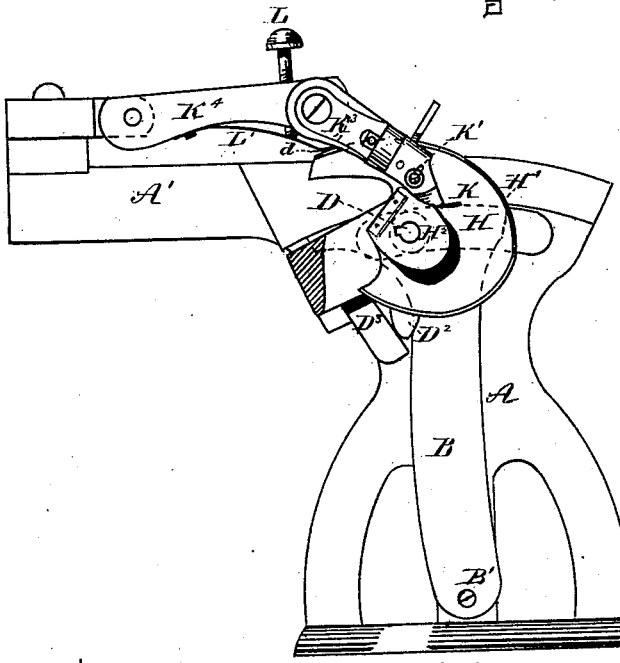

Fig. 2

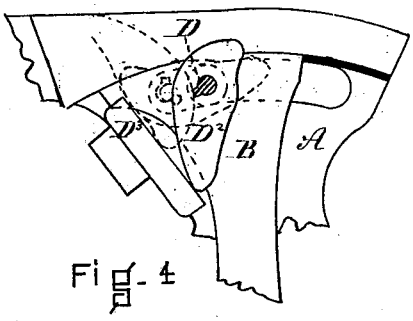

Fig. 4

WITNESSES
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Per Frank G. Parker Atty.

UNITED STATES PATENT OFFICE.

ALBION K. WASHBURN, OF BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN HEEL-TRIMMING MACHINES.

Specification forming part of Letters Patent No. **202,494**, dated April 16, 1878; application filed December 15, 1877.

To all whom it may concern:

Be it known that I, ALBION K. WASHBURN, of Bridgewater, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Heel-Trimming Machines, of which the following is a specification:

My invention relates to that class of heel-trimming machines in which the shoe or boot to be operated upon is "jacked" on a revolving arbor, the action being to revolve the heel against the edge of a knife that is comparatively stationary, and thus cause the heel to be trimmed.

I am aware that heels of boots and shoes have been trimmed by machines in which the trimming-knife has been guided by patterns and cams.

The new features of my machine consist in mounting the jack-arbor upon a swinging frame, the motion of which is governed by a cam on the arbor that works against a fixed buttress, and thus gives the arbor, and the shoe upon it, a back-and-forth movement at the same time that it is revolving. I also combine with the swinging arbor a heel-plate, having affixed upon it the heel-pattern and a snail-cam, all of which operate, in combination with a jointed knife-holder, in such a manner that, in the motion of the machine, the blade of the knife is always held in a plane tangent to the line of the heel at the cutting-point.

The exact nature of my invention may be best understood by reference to the specification and drawings, it being particularly pointed out in the claims.

Referring to the drawings, Figure 1 is an elevation of my device. Fig. 2 is a side elevation of the same. Figs. 3 and 4 show parts in detail.

A and A^1 represent the frame, to which the other parts are attached. At the lower part of this frame A I attach a swinging frame, B, by a pivot, B^1. At the upper part of B I attach a quill, C, which serves as a housing for the arbor D. This arbor has affixed to it a cam, D^2. (See Fig. 4.) This cam D^2, revolving with the arbor and working against the fixed buttress D^3, causes the frame, the arbor, and the jack E, E^1, E^2, which is attached to it, to swing back and forth as the said arbor is made to revolve.

H^2, Figs. 1, 2, and 3, is the heel-pattern, which, with the heel-plate H, is attached to the arbor D. On the heel-plate H I form a snail-cam, H^1, the object of which will be explained hereinafter.

The knife K is affixed to a swiveling head, K^1, which is attached by a link, K^3, to the adjusting-lever K^4, Fig. 2. Upon the under side of the lever K^4 I attach the adjusting-plate L^1, this adjusting-plate being governed by the screw L.

By making the snail-cam H^1 hollow, as shown at Fig. 3, I am enabled to have the draft of the knife nearly in a direct line with the strain upon it.

From the above description it will be seen that while the cutting action is taking place the heel of the boot or shoe is subject to a compound motion—that is, it is revolving upon the axis D at the same time it is moving back and forth toward or from the knife K, while the knife K, in its turn, receives an angular motion from the action of the snail H^1 on the lever K^4, this angular motion of the knife being caused by the rising and falling of the lever K^4. (See Fig. 2.)

The parts above described are so laid out and adjusted that the knife K will always cut on a line tangent to the heel at the point of cutting, so that the knife works smoothly, accurately, and easily.

The cam H^1 is generated as follows: The generatrix is a line the length of which is equal to the distance from the cutting-edge of the knife K to the point *d d*, Fig. 2, at which the adjusting-plate L′ touches the cam. With a line of the above-described length I draw a curve, keeping one end of the line on the heel-pattern H^2, and keeping the line itself tangent to the pattern. Then the outer end of the line will generate the contour desired for the shape of the cam.

The link K^3, to which the knife K is attached by a swiveling joint, (said swivel being longitudinal with the lever K^3—that is, in the line of strain, so that the swivel will not interfere with its action,) governs the tangential cut of the knife. In action, the link K^3 becomes a tangential lever, the end away from the knife

being guided by the adjusting-plate L′, Fig. 2, which slides on the snail-cam H^1. Thus the knife is directed and governed in its motion by two distinct guides, one being the heel-pattern H^2, and the other at the extremity of the knife-holding lever K^3, which is governed by the snail-cam H^1. By this combination of two governing points to secure the longitudinal motion of the knife I am enabled to fully control the angle of the plane of the knife so that it shall always maintain the proper cutting-angle for shaving a heel to the best advantage.

I do not claim, in a heel-trimming machine, the use of a knife or knife-frame moved and guided by the use of cams; but

I do claim as follows:

1. The arbor D, hung on a laterally-swinging frame, B C, in combination with the cam D^2 and the jack E E^1 E^2, all operating together, substantially as described, and for the purpose set forth.

2. In a heel-trimming machine, the combination of the cam D^2, the swinging shaft D, the pattern H^2, and the snail-cam H^1 with the knife K, tangentially-directing lever K^3, and lever K^4, all operating together, substantially as described, and for the purpose set forth.

ALBION K. WASHBURN.

Witnesses:
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C. N. STURDEVANT.