H. A. HENDERSON.

Heel-Trimming Machine.

No. 224,533. Patented Feb. 17, 1880.

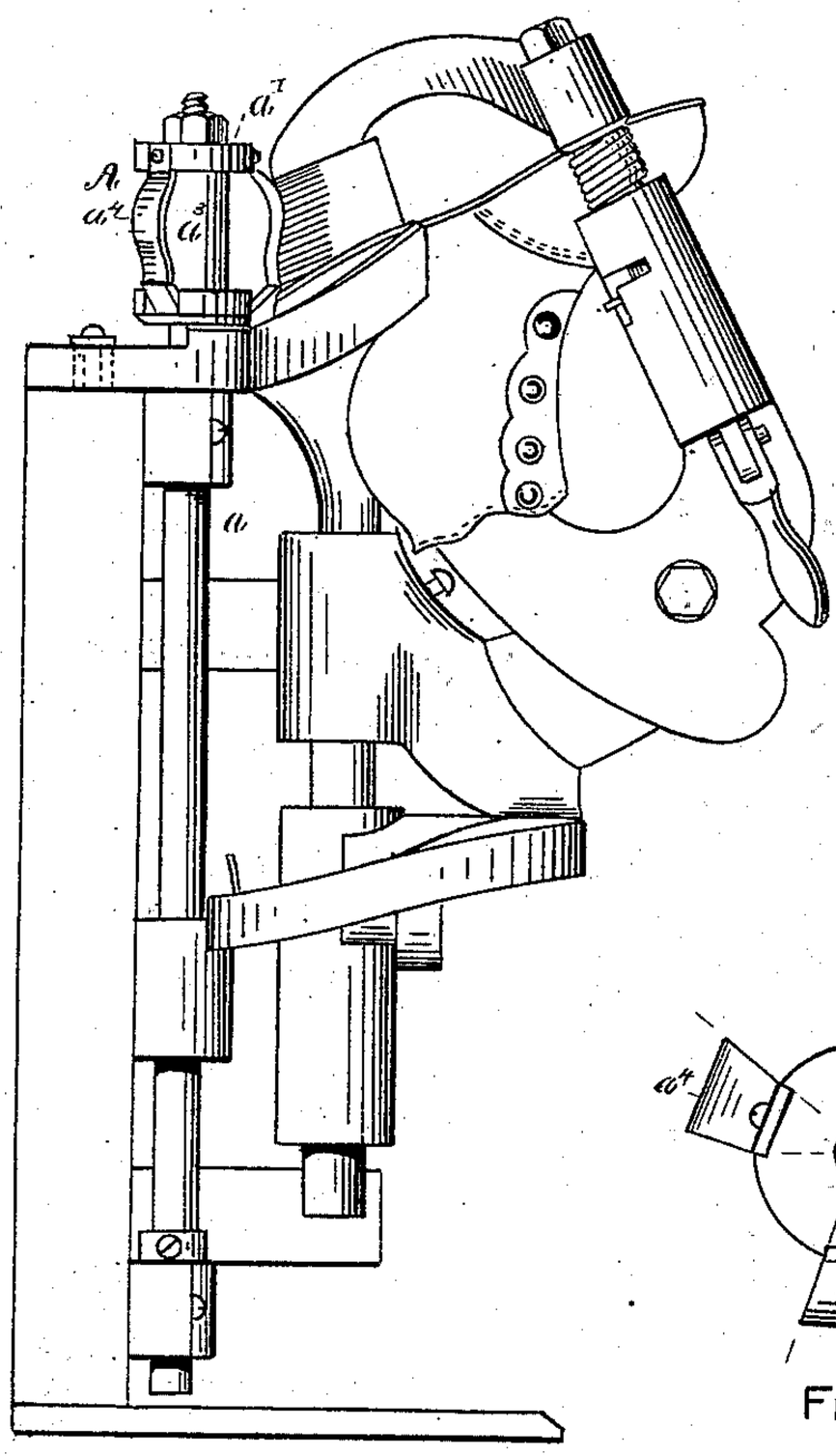

Fig. 1.

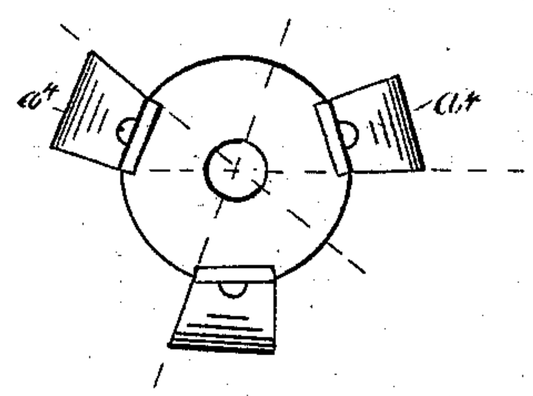

Fig. 2.

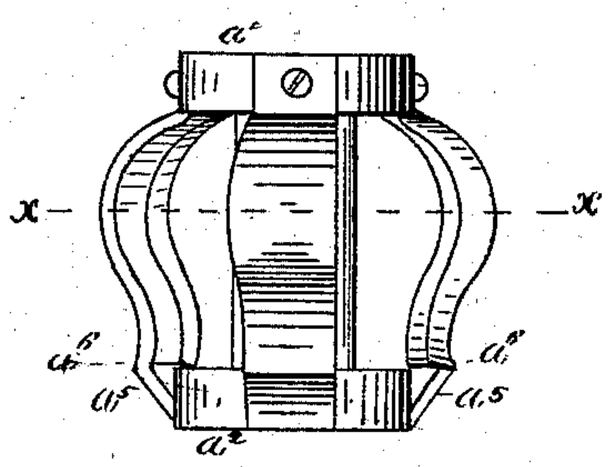

Fig. 3.

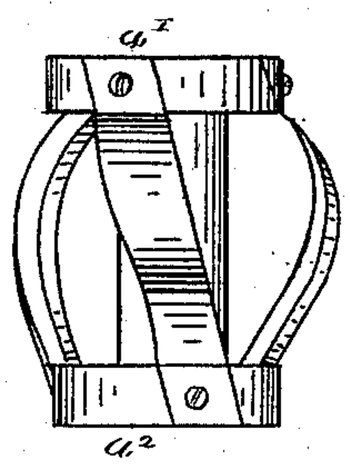

Fig 5.

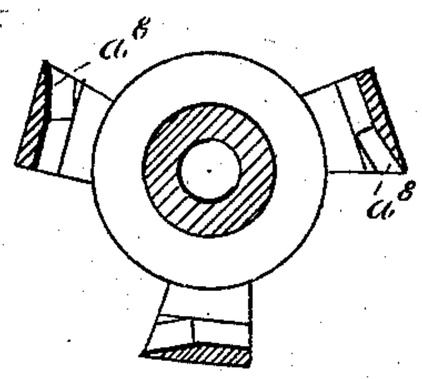

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY A. HENDERSON, OF LYNN, ASSIGNOR TO F. F. RAYMOND, 2D, TRUSTEE, OF NEWTON, MASSACHUSETTS.

HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 224,533, dated February 17, 1880.

Application filed December 8, 1879.

To all whom it may concern:

Be it known that I, HENRY A. HENDERSON, of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented an Improvement in Heel-Trimming Machines, of which the following is a specification.

This invention has for its object the following-described improvement in heel-trimming machines, and reference is made, in explaining its nature, to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an end elevation of the machine. Fig. 2 is a plan of the cutter-head; Fig. 3, an enlarged elevation of the cutter-head; Fig. 4, a cross-section upon the dotted line *x x* of Fig. 3, and Fig. 5 a modification in construction of the cutter-head.

The invention relates particularly to the trimming device and its combination with a jack for holding the heel and for presenting it to the trimming mechanism, having either a rotatory or a spiral movement in relation thereto.

In heel-trimming machines provided with a revolving cutter-head the knives of the cutter-head have been arranged to project radially from its axis. Such a cutter-head is shown and described in the patent granted Hollis C. Paine and myself October 28, 1879, No. 220,920. This construction of cutter-head answers very well in molding wooden heels; but in operation upon leather heels, owing to the scraping action of the knives, it does not make as smooth a finish as is desirable, and it is necessary to sandpaper or scour them before they can be burnished.

I have ascertained that a cutter-head having one or more strap-knives, each knife having its cutting-edge substantially parallel with the axis of the cutter and its bead curved to a shape which shall approximate to the vertical conformation which it is deemed that the edge of the finished heel shall have, will act upon the heel with a shaving cut, as distinguished from a scraping cut, and will produce a much smoother and fairer result; and while it may not do away entirely with the after scouring of the heel, it will so prepare it for that operation that less scouring will be necessary than is now employed.

A represents the cutter-head. It is provided with a bearing upon the shaft *a*, and is revolved with the shaft by any suitable means. The cutter-head consists of two disks or blocks, a' a^2, connected by the sleeve a^3, which surrounds the shaft *a*.

The strap-knives a^4 are fastened at their ends in any desirable way to the blocks a' a^2, and in conformation their cutting-edges should be substantially parallel with the axis of revolution of the cutter-head, and the blades should approximate an ogee curve, or such a curve, taken in connection with the manner of presenting the heel, as shall substantially correspond to the vertical conformation which it is desired to give the edge of the finished heel.

In some cases it may be necessary that the cutting-edge of each knife be somewhat longer than the height of the heel, as the heel, in some instances, is provided with a vertical movement in relation to the cutter-head.

It is essential that the knife at its lower edge be shaped as represented in Figs. 1 and 3—that is, its lower portion should be held out or away from the block a^2 either by the part a^5 of the blade or by a construction of block which shall so support the lower end of the knife as to allow its cutting-edge at the point a^6 to be unobstructed in its operation upon the upper portion of the heel or sole edge above the heel.

As the cutting-edge of the knife must be that portion of the blade which is farthest from the axial center of the cutter-head, it is necessary that the blade be beveled from the inner surface of the knife outwardly.

I do not confine myself to the number of blades or strap-knives, but may use one or more, as may be desired or necessary. Neither do I confine myself to the exact shape of the strap-knives shown, nor to the especial method of supporting the same represented, but may use any desirable means for suitably fastening them to the head, and may arrange the knives diagonally upon their supports, so that the cutting-edge, instead of being vertical and parallel to the axis of revolution of the cutter-head, shall have a spiral relation thereto, and, in addition to the shaving cut, a slight drawing cut of the knives upon the heel will be ob-

tained. This shape of the knives is represented in Fig. 5.

In using a cutter-head of this construction, the heel presented thereto may be provided with either of the following-named movements or combinations of movements:

First, it may have a simple rotatory movement, commencing at the front corner of one edge of the heel and extending entirely around the heel to the corner upon the other side; or the rotatory movement may cease at the back of the heel, and the other side may be finished by commencing at the front edge upon the opposite side, reversing the movement of the jack in relation to the cutter-head, in which case the cutter-head would be revolved in an opposite direction, and the cutting-edge of the knives would be changed to correspond.

Second, it may have a rotatory movement combined with a vertical movement, which shall be in one direction in relation to the cutter-head for one side and half of the back of the heel and in the opposite direction in relation thereto for the other portion of the back of the heel the other side. This movement is particularly important in shaping the so-called "French heel," as the relative change in position of the heel and the cutter-head while the heel is revolving enables a greater or less offset to be obtained upon its edge near the bottom, for it will be observed that as the vertical movement of the heel is on a line parallel with the axis of the cutter, and that as the cutting-edge of that part of the knives which it is intended shall operate upon the lower portion of the heel describes a convex curve, which is arranged to project outwardly beyond the other or concave portion of the cutting-edge, or that which operates upon the upper portion of the heel and upon the sole-edge, it follows that by the spiral movement of the heel in relation to the cutter-head the offset is increased or decreased according to the direction of the movement. The heel should be supported in an inclined position in relation to the cutter-head during the trimming operation, the back being lowest. A jack for holding the heel in an inclined position and adapted to present the heel to the cutter-head, having the spiral movements in relation thereto described, is set forth and claimed by me in a pending application for Letters Patent of even date herewith, and I need not further describe its construction herein, it being sufficient to state that I intend to use my improved cutter-head in combination with such a jack for holding and presenting the heel to it, having the movements which are herein specified that it is desirable the heel shall have.

Third, the heel may be provided, in addition to the spiral movement or the rotatory movement, with a movement which shall vary its inclination in relation to the cutter-head during the trimming operation; and I refer to the patent granted Hollis C. Paine and myself, above referred to, for further information concerning the construction and operation of a jack for providing the heel with such movements, it being sufficient to state that I intend to use the improved cutter-head herein described in combination with a jack having these movements in relation to it.

Having thus fully described my invention, I claim, and desire to secure by Letters Patent of the United States—

1. A cutter-head for a heel-trimming machine consisting of the blocks or supports a' a^2, suitably connected, and the independent strap knife or knives a^4, curved as indicated, and fastened to the supports a' a^2, substantially as described.

2. In a heel-trimming machine, a revolving cutter-head, having a strap-knife, a^4, curved to conform substantially to the curve which it is desired that the vertical edge of the finished heel shall have, substantially as and for the purposes set forth.

3. The combination, in a revolving cutter-head for heel-trimming machines, of the supports a' a^2, with one or more independent strap-knives, each of which is curved to approximate the vertical conformation of the finished heel, substantially as described.

4. The combination, in a heel-trimming machine, of a revolving strap knife or knives, a^4, each of which is curved to approximate the vertical conformation of a finished heel, with devices for holding the heel and for presenting it to the trimming device, substantially as and for the purposes set forth.

5. In a heel-trimming machine, the combination of the revolving strap knife or knives a^4, each of which is curved to approximate the vertical conformation of the finished heel, devices for holding the heel and for presenting it to the action of the knives, having a spiral movement, and means for varying the degree of inclination of the heel-holding mechanism in relation to the trimming-knives during the continuance of the spiral movement, substantially as and for the purposes described.

HENRY A. HENDERSON.

Witnesses:
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F. F. MCCLINTOCK.