

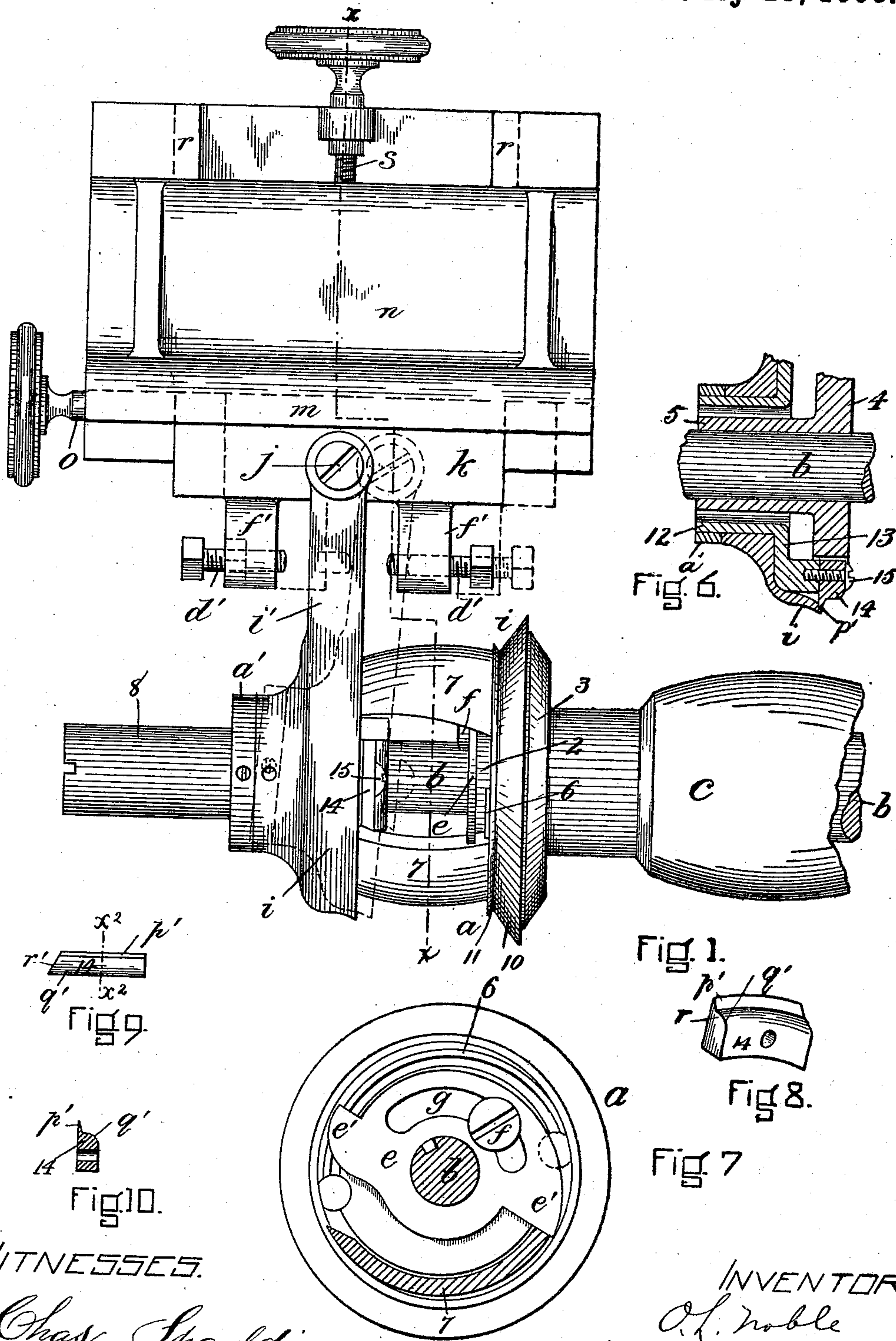
(No Model.)

2 Sheets—Sheet 1.

O. L. NOBLE.
HEEL TRIMMING MACHINE.

No. 543,349.

Patented July 23, 1895.



WITNESSES.

Chas. Spaulding.
Charles E. Moss.

INVENTOR

O. L. Noble
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Attys.

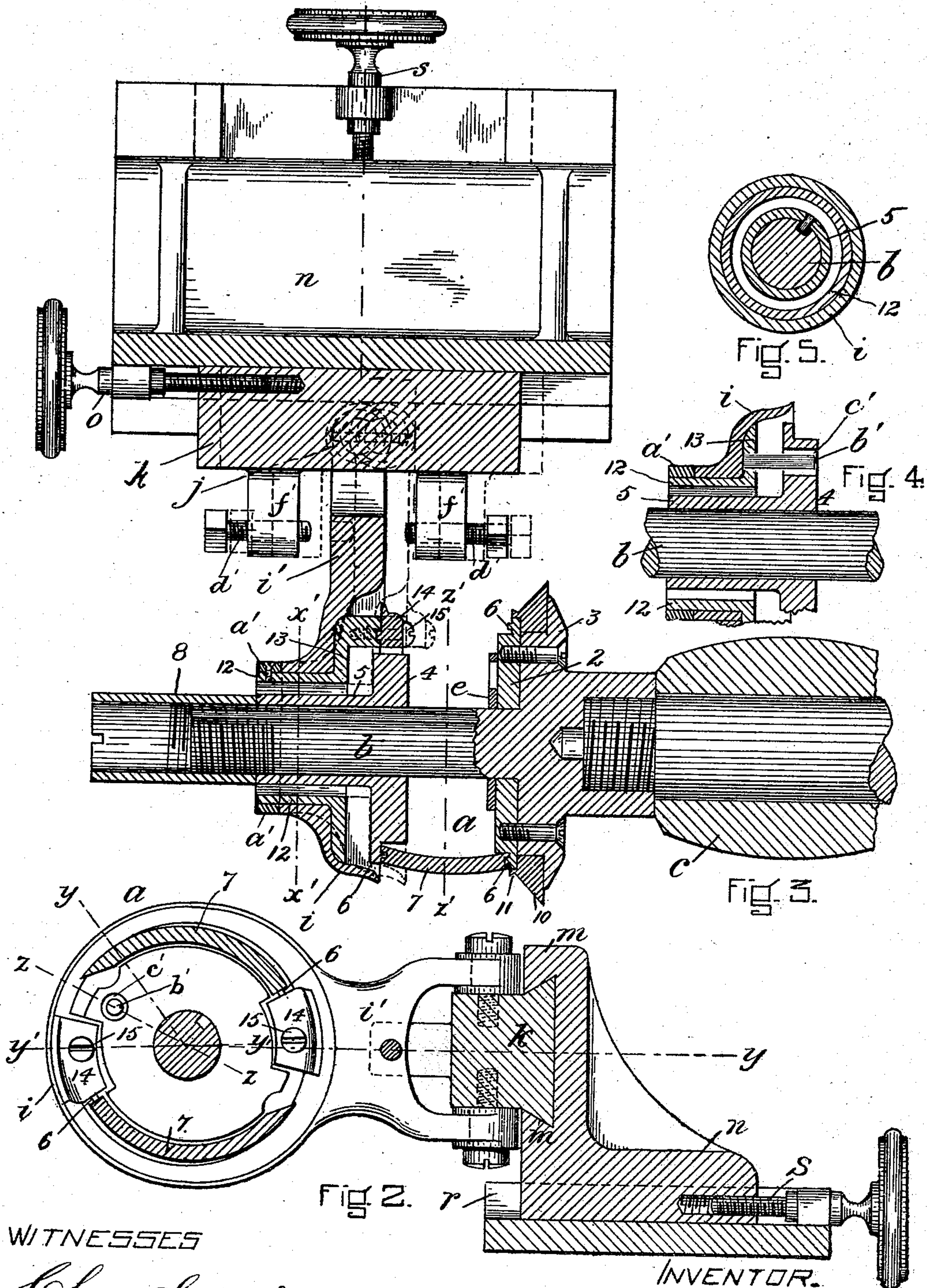
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UNITED STATES PATENT OFFICE.

OSCAR L. NOBLE, OF BOSTON, MASSACHUSETTS.

HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,349, dated July 23, 1895.

Application filed February 23, 1888. Serial No. 264,911. (No model.)

To all whom it may concern:

Be it known that I, OSCAR L. NOBLE, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Heel-Trimming Machines, of which the following is a specification.

This invention relates to heel-trimming machines employing a rotary cutter having at one end a rest for the top lift of a heel and at the opposite end a guard for the counter or upper of the boot or shoe to which the heel is affixed, said guard being adapted to move so as (toward and from the top-lift rest) to conform to the variations which exist between the width of the heel at the breast or forward corners and at the rear portion, where the width, particularly in most shoes for women's wear, is greatest.

The invention has for its object, first, to provide improved means whereby said guard is caused in its movements toward and from the top lift to follow the curvature of the cutting-edges of the cutter, and may be adjusted so as to follow in like manner the curvatures of cutters of different sizes and styles.

The invention also has for its object to provide a guard which is adapted to yield or move, as above indicated, with a rand-trimmer, which, although rotating with the cutter, partakes of the movements of the guard, toward and from the top-lift rest.

The invention also has for its object to provide improved means for holding the knives in the cutter-head, giving said knives the necessary clearance and adjusting them to compensate for the wear of their cutting-edges.

To these ends my invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of a portion of a heel-trimming machine embodying my improvements. Fig. 2 represents a section on line xx , Fig. 1. Fig. 3 represents a section on line yy , Fig. 2. Fig. 4 represents a section on line zz , Fig. 2. Fig. 5 represents a section on line $x'x'$, Fig. 3. Fig. 6 represents a section on line $y'y'$, Fig. 2. Fig. 7 represents a section on line $z'z'$,

Fig. 3, looking toward the right. Fig. 8 represents a perspective view of one of the rand-knives. Fig. 9 represents a top view of the same. Fig. 10 represents a section on line x^2x^2 , Fig. 9.

In the drawings, a represents a cutter-head which is mounted on a shaft b , journaled in suitable bearings on a supporting-frame or pedestal. One of said bearings is shown at c , but I have not deemed it necessary to show the entire supporting-frame or pedestal, as the same may be of any of the forms well known in machines of this class. The cutter-head here shown is composed of a collar or plate 2, attached by screws to a shoulder or enlargement 3 on the shaft b , and a collar 4 formed on a sleeve 5, which is adapted to slide on the shaft b toward and from the fixed collar 2, and is connected to said shaft by a spline and groove, so that it necessarily rotates with the shaft. The collars 2 4 are provided on their inner faces with segmental ribs 6 6, which enter grooves in the side edges of the cutters 7 7, said cutters being clamped between the collars 2 4 by a nut 8, which is adjustable on the threaded outer end of the shaft b and holds the collar 4 at any desired distance from the fixed collar 2, thus holding cutters of any desired width.

The ribs 6 6 are eccentric to the axis of rotation of the shaft b , their eccentricity being such as to give the forward or cutting edges of the cutters a greater radial distance from said axis than the heels of the cutters, thus giving their backs or outer surfaces the necessary clearance, as shown in Figs. 2 and 7.

e represents a stop-plate which is held against the fixed cutter-holding plate 2 by a screw f passing through a segmental slot g in said plate. When said screw is tightened it holds the plate e rigidly, so that lugs $e' e'$ on said plate serve as rigid supports for the heels of the cutters 7 7, and aid in preventing said cutters from moving backwardly. As the cutters become worn they are moved forward to compensate for wear by the lugs $e' e'$, which are correspondingly moved after loosening the screw f . The cutters may be adjusted by said lugs until they are worn out. The top-lift rest is in this case a ring set in a rabbet in the shoulder 3, and having its pe-

riphery grooved to form a wider face 10, which serves as a rest for the tread-surface of the top lift, and a narrower face 11, which is about flush with the cutting-edges of the cutters and serves as a rest for the edge of the top lift.

i represents the counter-guard, which is formed to surround the shaft *b* and the end of the cutter next the heel-seat. The guard *i* is preferably formed at its outer edge to enter the rand-crease between the rand-edge and counter of a boot or shoe. Said guard has an extension or arm *i'*, which is loosely pivoted at *j* to a support *k*, located on the frame or pedestal of the machine, the loose pivotal connection enabling the guard to oscillate freely at all times. The arm *i'* and the guard thereon are adapted to move on said support, the forward or work-supporting edge of the guard being thus enabled to move in a curve conforming approximately to the curvature of the cutting-edges of the cutters, so that the guard, while moving toward and from the top-lift rest in conforming to the varying width of the heel, retains in all positions substantially the same relation to the cutter, so far as its forward projection therefrom is concerned. The guard is internally of considerably-greater diameter than the shaft *b* which it surrounds, so that there is sufficient space between the guard and shaft for the described movements of the guard. The support *k*, to which the arm *i'* is pivoted, is a slide which is adjustable in a direction parallel with the shaft *b*, so that the curve in which the guard travels may be caused to conform to different sizes or widths of cutters and to differently-curved cutting-edges. Said slide is also adjustable toward and from the shaft *b* to adapt the guard to cutters of different diameters. To these ends the slide *k* is adapted to slide between dovetail-guides *m m* on a second slide *n* and is moved in either direction, and held wherever moved by an adjusting-screw *o*. The slide *n* is movable between guides *r r* on the supporting-frame or pedestal, and is operated by an adjusting-screw *s*.

An important feature of my invention is a rotary rand-cutter, which not only rotates with the cutter-head, but moves with the guard *i* toward and from the top-lift rest. Said cutter is composed of a sleeve 12, fitted to rotate in the guard *i*, a flange or disk 13, formed on said sleeve, and rand-cutting knives 14, attached by screws 15 to said flange or disk.

The knives 14 are best shown in Figs. 8, 9, and 10, each having a reduced outer portion *p'* and a shoulder *q'* at one side and a beveled front end *r'*, which forms a cutting-edge on the reduced portion *p'* and the shoulder *q'*. That portion of the cutting-edge which is formed on the reduced portion *p'* is flush at its outer portion with the edge of the guard *i* (see Fig. 6) and enters the rand-crease with the guard, thus trimming the rand, the shoul-

der *q'* assisting in the trimming and preventing the formation of a burr or ragged edge on the rand. The knives 14 are located between the cutters 7 7, as shown in Figs. 1 and 2.

The rand-trimmer is secured to the guard and caused to move laterally therewith by a ring *a'* attached to the outer end of the sleeve 12 of the rand-cutter, said ring bearing against the smaller end of the guard, as shown in Figs. 1, 3, and 4.

The rand-cutter is caused to rotate with the cutter-head by a pin *b'* on the disk 13 of the cutter-head entering a slot *c'* in the knife-holding collar 4. (See Fig. 4.) Said slot is sufficiently larger than the pin *b'* to permit the described movements of the rand-cutter with the guard.

It will be seen that by the conjoint use of the laterally-movable guard and the rand-cutter rotating with the cutter-head, yet movable laterally with the guard, entire uniformity in the trimming of all parts of the rand is secured.

The arm *i'* should be controlled by adjustable stop-screws *d' d'* in lugs *f' f'* on the slide *k*, set to limit its motion as desired.

I claim—

1. In a heel trimming machine, the combination with the rotary cutter head, of a counter guard, a single center or pivot behind the cutter on which said guard is free to oscillate, adjustable supports whereby said center or pivot may be adjusted at right angles with the axis of the cutter and in a direction parallel therewith, and a rand trimmer secured to said guard so as to oscillate therewith and rotatively engaged with the cutter head, as set forth.

2. The combination herein described, of a rotary cutter head, a support or slide *k* which is adjustable in a direction parallel with the axis of the cutter head, a slide *n* which supports the slide *k* and is adjustable at right angles with the axis of the cutter head, a counter guard mounted on an arm which is loosely pivoted to the slide *k* at a single point behind the cutter so that the guard is at all times free to oscillate on said single pivotal point, and means for holding the slides *k n* in any positions to which they may be adjusted, whereby the work supporting portion of the guard is enabled to move in a curve which can be made by adjustment of the support to correspond to the curve of the cutting edges of different sizes, as set forth.

3. The combination herein described, of a rotary cutter head, a support or slide *k* which is adjustable in a direction parallel with the axis of the cutter head, a slide *n* which supports the slide *k* and is adjustable at right angles with the axis of the cutter head, means for holding said slides in any position to which they may be adjusted, a counter guard supported by an arm which is loosely pivoted to said slide at a single point behind the cutter, whereby said guard may be adjusted to cut-

ter heads of different lengths and diameters, the guard being free at all times to oscillate, and a rand cutter secured to the guard so as to oscillate therewith and rotatively engaged
5 with the cutter head, as set forth.

4. The combination of a rotary cutter head, the cutters of which are longitudinally curved, a guard-support or carriage outside of the periphery of the cutter head, means for adjusting
10 said guard support in two directions, viz., parallel with the shaft of the cutter head and at right angles with said shaft, a guard mounted to move in the arc of a circle on said support, and a rand cutter rotatively engaged
15 with the cutter head and secured to the guard, the rand cutter moving in the arc of a circle with the guard, so that both the guard and rand cutter conform to the longitudinal curvature of the cutting edges when moving toward
20 and from the top-lift end thereof, as set forth.

5. The combination of the cutter head, the guard formed to encircle one end of the cutter head, the support for the guard, and the rand cutter composed of the sleeve 12 engaged
25 as described with the guard, the disk 13 on

said sleeve and the knives 14, 14 on said disk between the cutters of the cutter head, and means substantially as described whereby the rand cutter and cutter and cutter head are
rotatively engaged, as set forth.

6. The combination of the collars 2, 4 having the eccentric ribs, the grooved cutters engaged with said ribs, and the adjustable plate
e having lugs or stops to bear against the heels of the cutters, as set forth.

7. In a cutter head, the combination of the collars 2, 4 secured to a shaft and provided with the ribs on their inner sides, the cutters having grooves in their side edges formed to receive said ribs, and means for clamping the
40 collars against the cutters, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 21st day of February, A. D. 1888.

OSCAR L. NOBLE.

Witnesses:

C. F. BROWN,
A. D. HARRISON.