(No Model.) 3 Sheets—Sheet 1.

J. L. PACKARD.

HEEL TRIMMING CUTTER.

No. 413,959. Patented Oct. 29, 1889.

Fig: 1.

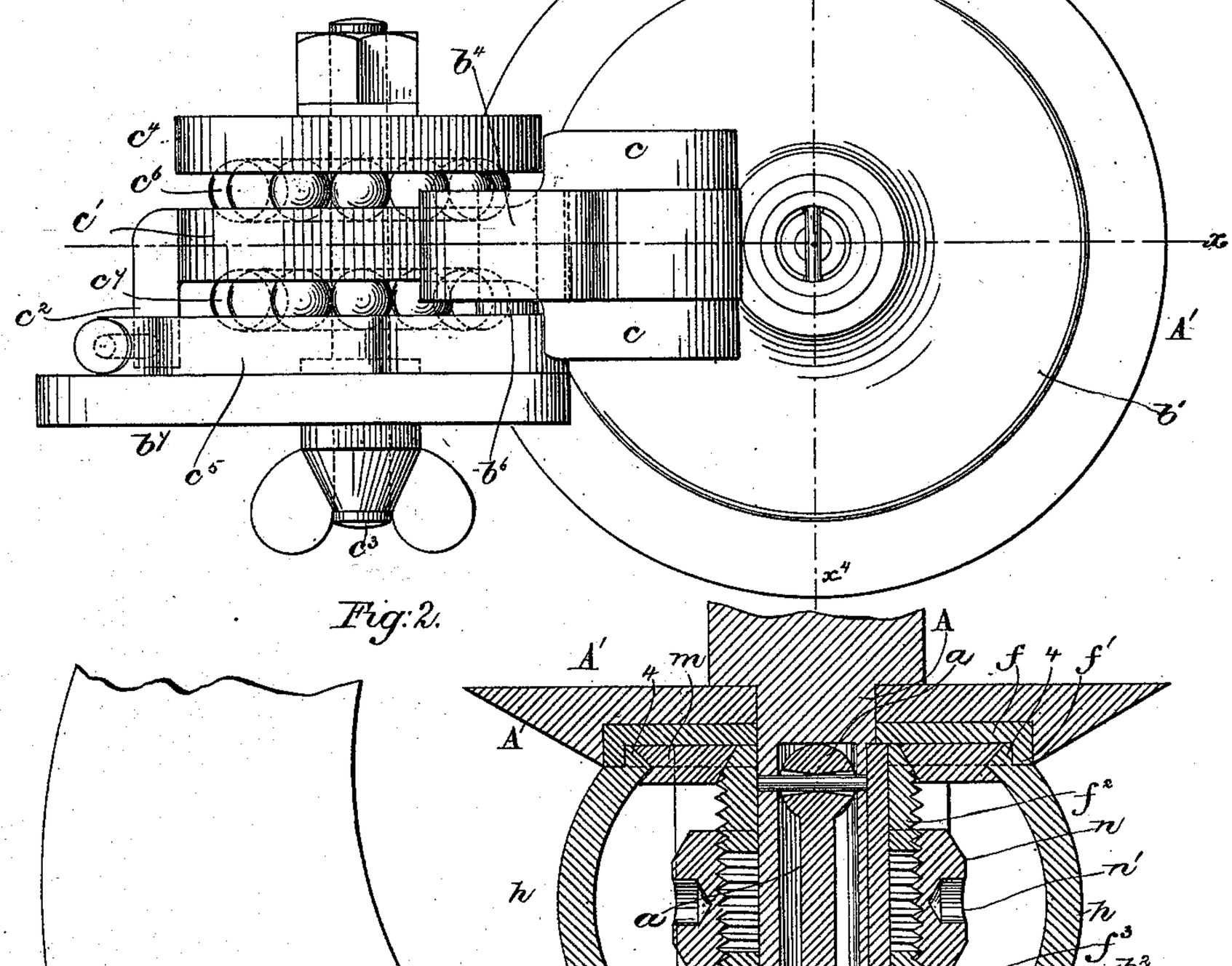
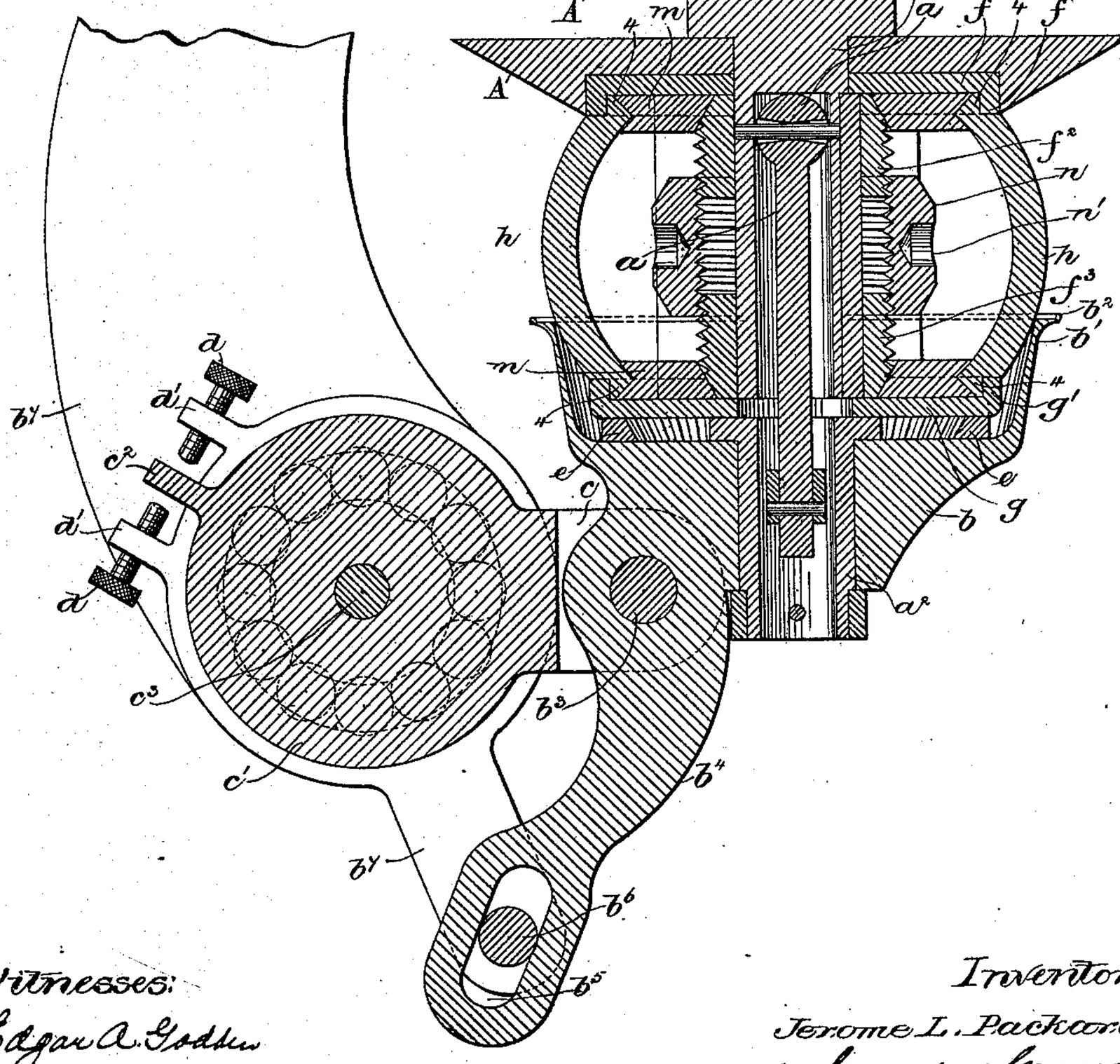


Fig: 2.



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by Crosby & Gregory Attys

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

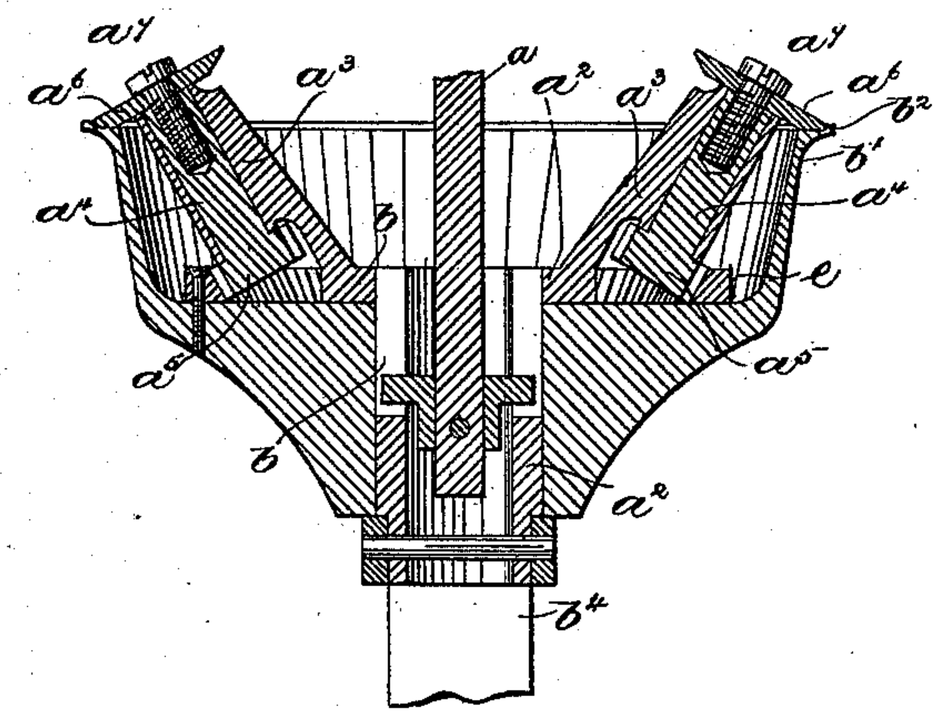

Fig. 4.

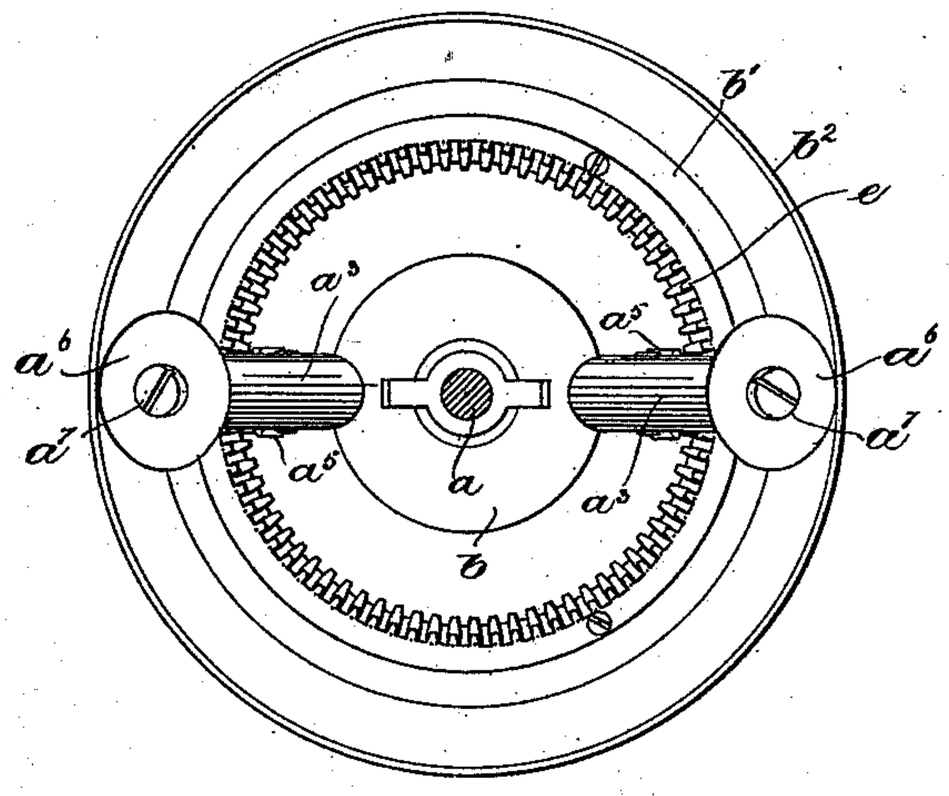

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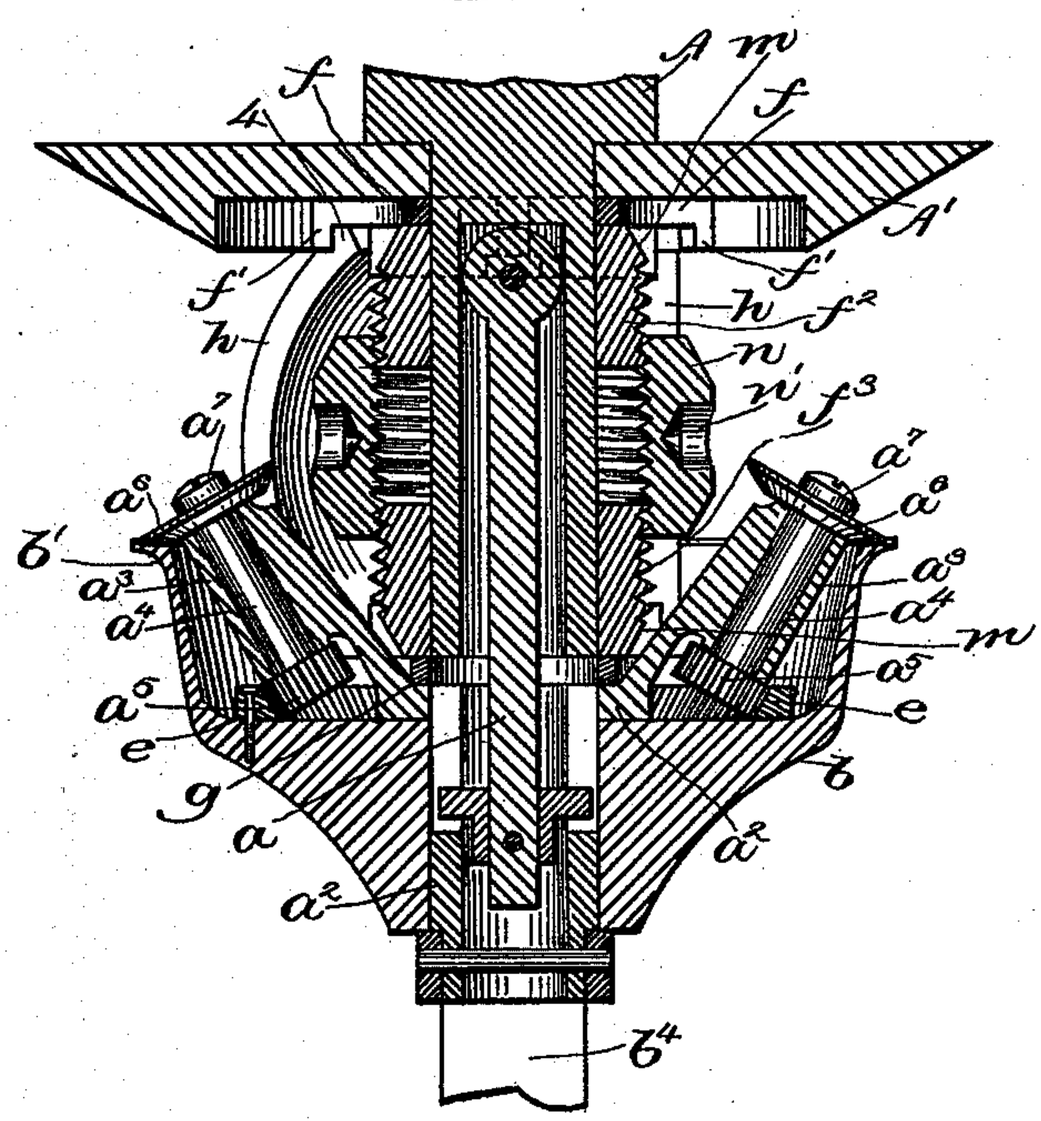
Fig. 5.



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UNITED STATES PATENT OFFICE.

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HEEL-TRIMMING CUTTER.

SPECIFICATION forming part of Letters Patent No. 413,959, dated October 29, 1889.

Application filed July 15, 1889. Serial No. 317,604. (No model.)

To all whom it may concern:

Be it known that I, JEROME L. PACKARD, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Heel-Trimming Cutters, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention is an improvement on the class of rotary cutters wherein the rand-cutter is mounted in a tipping carriage to which is attached the rand or counter guard. Herein I have suspended the said tipping carriage on an ear of a hub sustained between ball-bearings, the said hub, as herein shown, having combined with it adjustable stops to determine the extent of its motion. An arm extended from the said tipping carriage has a slot which embraces a pin on a fixed arm, the said slot and pin controlling the extent of the tipping of the said carriage as the rear of the heel is being trimmed.

Prior to my invention a rand-cutter composed of two small disks has been used; but prior to my invention I am not aware that a disk-like rand-cutter has ever had given to it a planetary motion.

Figure 1 is a front elevation of a heel-trimming cutter and attached parts embodying my invention; Fig. 2, a section in the line x of the parts shown in Fig. 1. Fig. 3 is a sectional detail, chiefly to show the rand-cutters in place in the tipping carriage and within the chambered rand or counter guard. Fig. 4 is a face view of Fig. 3; and Fig. 5 is a section in the line x^4, Fig. 1, the rand-cutters being shown in elevation.

Referring to the drawings, A is supposed to represent the rotating shaft of any usual heel-trimming machine, and A′ a tread-guard loose thereon. The reduced end of the shaft A is shown as recessed to receive one end of a link a, the other end of which is loosely connected to a hub a^2, having its bearings in a tipping carriage b, the said hub being provided with tubular arms a^3, which form bearings for shafts a^4, having at their inner ends gears a^5, the said shafts having at their outer ends disk-like rand-cutters a^6, held in place thereon by the set-screws a^7. The connection between the cutter-shaft A and the hub a^2 is such that the said shaft may rotate the hub in unison with it and yet permit the hub to tip with the carriage b, and therefore the said connection must be flexible or jointed.

The form of connection herein shown (it containing a collar with arms to enter slots in the hub, as in Fig. 2,) is not of my invention, but is in common use.

The tipping carriage b has an attached chambered rand or counter guard b', provided in usual manner with a lip b^2 to enter the rand-crease. The carriage b, pivoted at b^3, has an arm b^4, which is slotted, as at b^5, to embrace a stationary stud or pin b^6, fixed to a rigid arm b^7. The pivot b^3 is a pin extended through ears c of a hub c', having an ear c^2, and mounted loosely on a bolt c^3, held in the arm b^7. The said bolt has upon it, at each side the said hub, two annularly-grooved disks c^4 c^5, a series of ball-bearings c^6 c^7 being interposed between the said disk and hub to enable the same to rock or turn slightly with the minimum of friction. The stop or adjusting screws d d, extended through lugs d', forming part of the ring c^5, co-operate with the said ear c^2 to regulate the extent of rotation of the hub c', as the carriage b is tipped or moved while the lip of the rand or counter guard runs in the rand-crease at the seat end of the heel, the said carriage by the devices described being automatically tipped by the rand or counter guard running in the said rand-crease, and when it is so tipped the edge of the rand or counter guard remains parallel with the rand-crease and follows the contour of the blades, the acting edges of which are being uncovered. The carriage has a toothed rack e, which is engaged by the gears a^5 as the hub a^2 is rotated in unison with the shaft A. The reduced end of the shaft A is surrounded next the tread-guard by a ring f, having a lip or flange f', then by two threaded bushings f^2 f^3, having each a beveled end, and then by a second ring g, having a lip g'.

The blades h of the cutter—they being of suitable shape to trim a heel of the class desired—have lips, as 4, at their ends, to engage the inner sides of the lips f' g', the said lips

at their rear sides being beveled or of V shape to be engaged by one end of a block, as *m*, correspondingly grooved to engage the said lips 4, the said blocks being interposed between the said lips 4 and the beveled inner ends of the threaded bushings. These bushings are surrounded by a nut *n*, having spanner-holes *n'*, (see Fig. 2,) in which may be placed a suitable spanner by which to rotate the nut and move the bushings. By turning the nut in a direction to force the beveled ends of the bushings against the beveled ends of the blocks *m* the latter will be moved radially to clasp the ends of the cutter-blades and hold the cutters firmly in place.

I do not desire to limit my invention to the exact shape shown for the projections 4 or to the exact devices shown for moving the blocks *m* radially, as, instead, I may use any other well-known device equivalent to the bushing.

In practice the rand-cutters enter spaces between the adjacent cutters *h*, to thereby obviate leaving a fin.

I claim—

1. In a rotary heel-trimming cutter, the rotary shaft, the rings having lips, the cutter-blades having projections 4 to engage the said lips, and the movable blocks to engage the said projections, combined with means to slide the said blocks radially and to hold them, substantially as described.

2. In a rotary heel-trimming cutter, the rotary shaft, the rings having lips, the cutter-blades having projections 4 to engage the said lips, and the movable blocks to engage the said projections, combined with the bushings having beveled ends and with the nut to move the said bushings, substantially as described.

3. The combination, with a rotary heel-trimming cutter, of a rand-cutter and means to rotate the said cutter independently during its rotation with the heel-trimming cutter, whereby the said rand-cutter is given a planetary motion, substantially as described.

4. The rotary heel-trimming cutter, a tipping carriage having the teeth *e*, and the hub having bearings a^3, combined with the shafts a^4, their pinions, and the rand-cutters, substantially as described.

5. A rotary heel-trimming cutter, a tread-guard, and a carriage having an attached chambered rand or counter guard, combined with a rotating hub, a series of disk-like rand-cutters, and means to give to them a planetary motion, substantially as described.

6. The rotary heel-trimming cutter, the carriage having an attached chambered or recessed rand or counter guard, and an arm b^4, combined with a loosely-held hub, on which the said carriage is pivoted, and with ball-bearings acting against the said hub, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEROME L. PACKARD.

Witnesses:

GEO. W. GREGORY,

FREDERICK L. EMERY.