

(No Model.)

C. W. GLIDDEN.
HEEL TRIMMING MACHINE.

No. 410,086.

Patented Aug. 27 1889.

Fig:1.

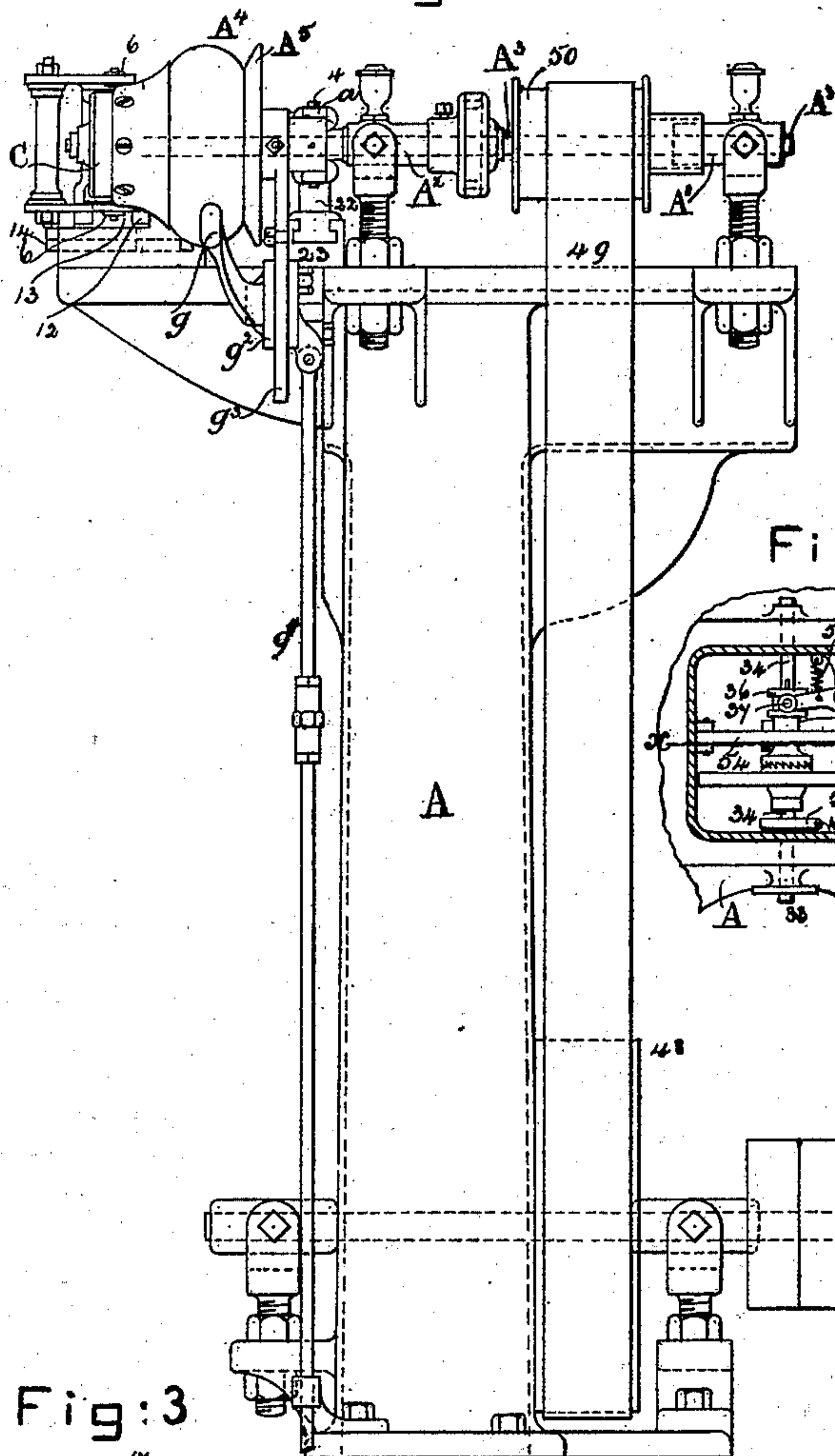


Fig:2.

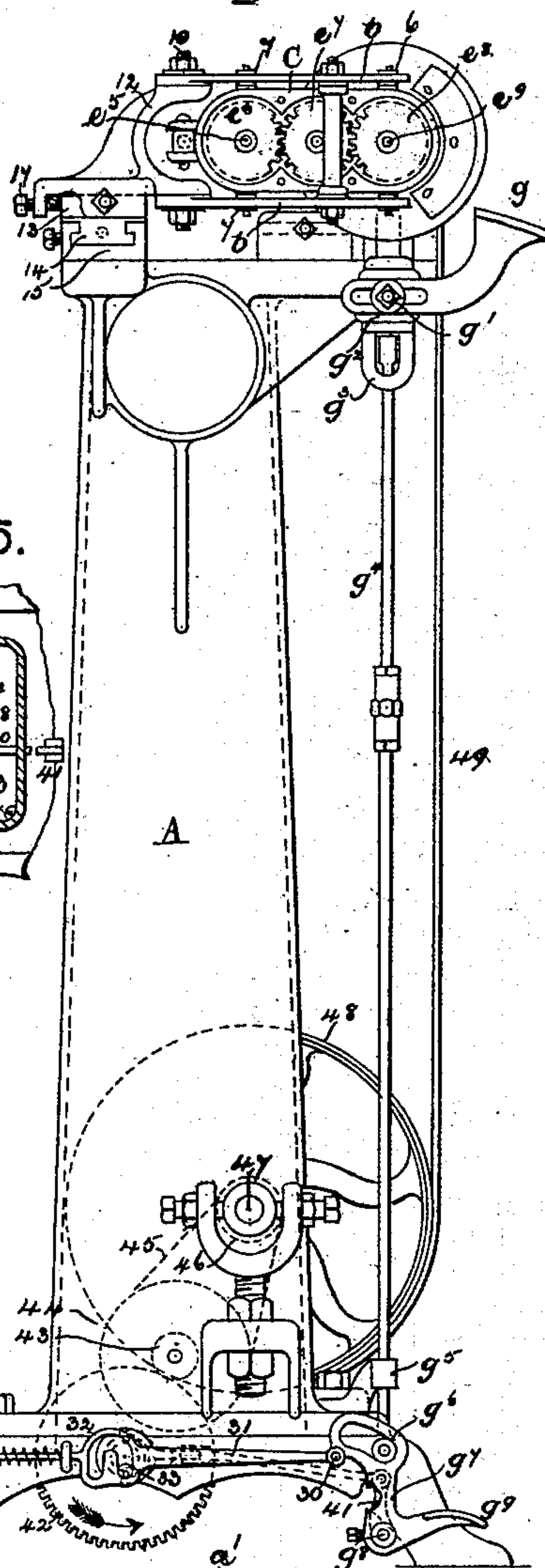


Fig:5.

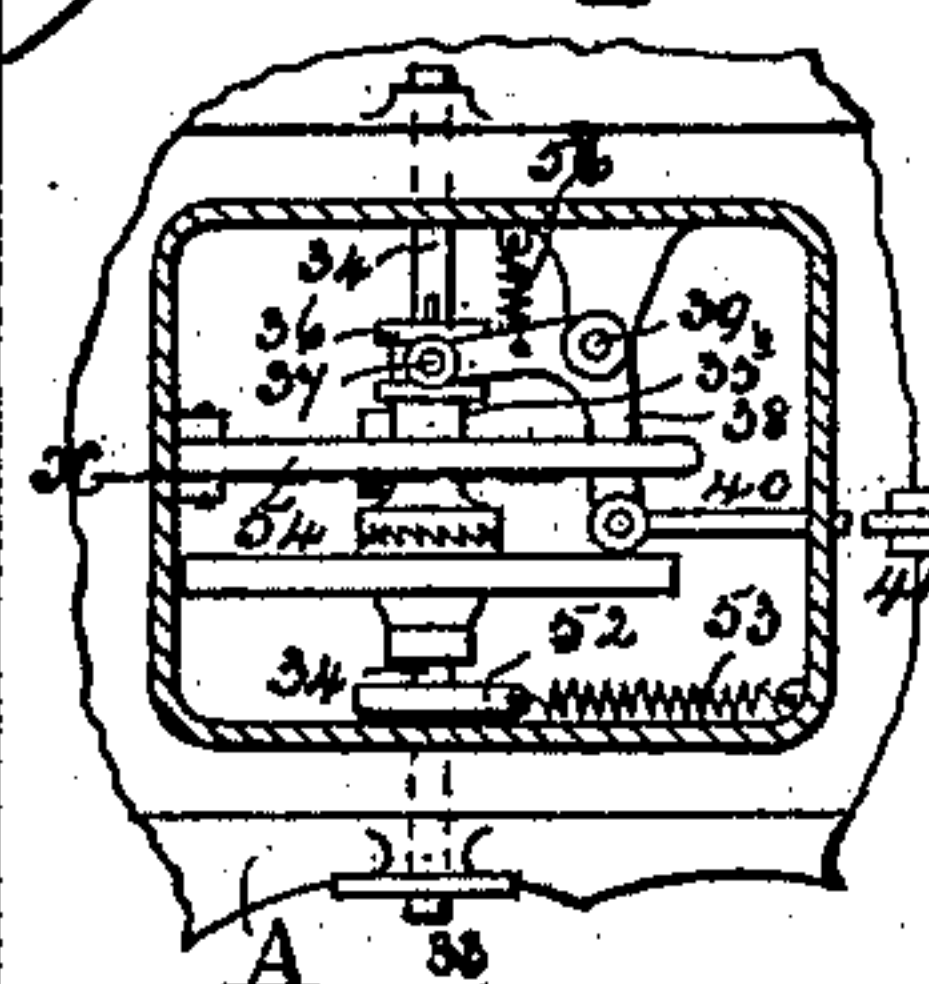


Fig:3.

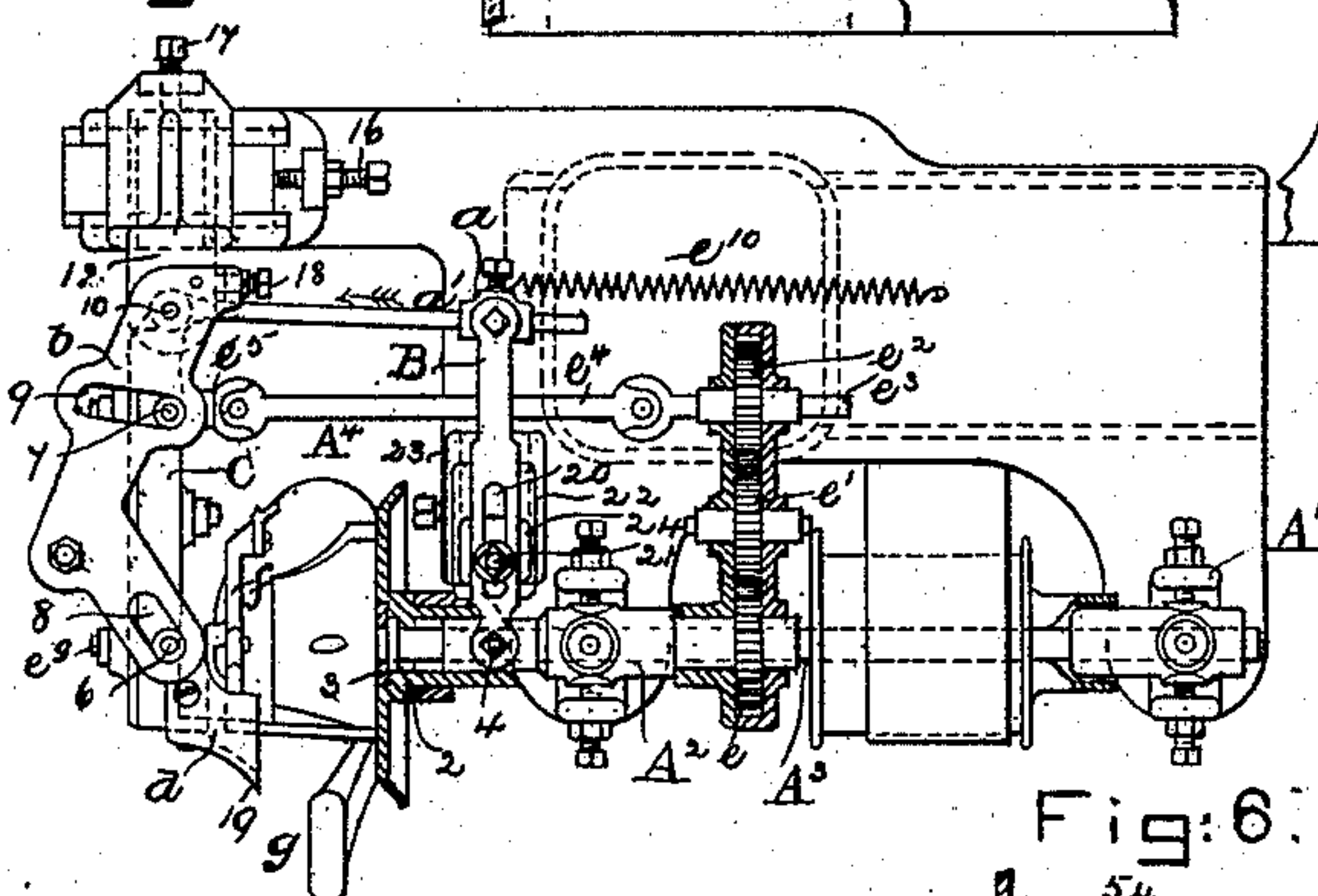


Fig:4.

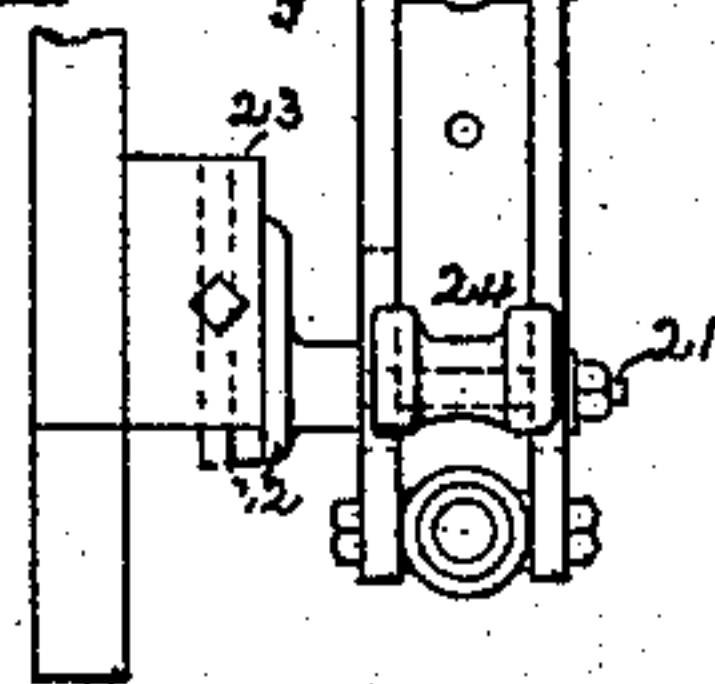
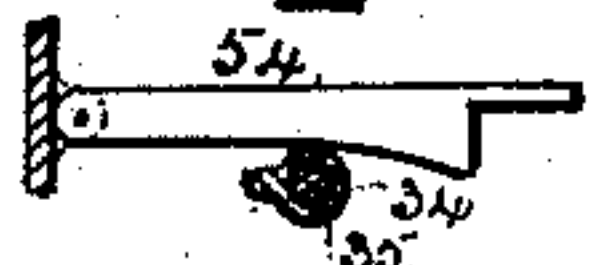


Fig:6.



Witnesses:

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HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,086, dated August 27, 1889.

Application filed June 2, 1888. Serial No. 275,879. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. GLIDDEN, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Heel-Trimming Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In other heel-trimming machines prior to the invention herein to be described, the rand or counter guard has had imparted to it a lateral and longitudinal movement with relation to a rotating molded cutter to thus uncover more or less of the cutting-edges of the same, the rotary cutter having only a movement of rotation. In this present invention the lip of the rand or counter guard which enters the usual rand-crease has a movement substantially at right angles to the axis of rotation of the molded cutter, the latter, in addition to its rotation, having also a horizontal movement, or a movement in the direction of the length of the shaft to which the cutter is attached, when the edges of the blades are being uncovered, as when the cutter is acting about the rear side of the heel.

My invention consists, in a heel-trimming machine, in the combination, with a carriage and its rand or counter guard to enter a rand-crease, of a rotating cutter and tread-guard, the latter with the rotating cutter having a motion toward and from the rand or counter guard in the direction of the length of the shaft of the rotating cutter, substantially as will be described; also, in a heel-trimming machine, a rotating cutter and a rand or counter guard, combined with a rest for the edge of a heel, the said rest being movable substantially at right angles to the axis of rotation of the cutter-shaft to enable the heel to be moved in a substantially straight line as the cutter acts to trim the sides of the heel, substantially as will be described; also, in a heel-trimming machine, a rotating cutter, a tread-guard, a carriage, its rand or counter guard, and a guide-plate for the said carriage, combined with intermediate connections whereby the pressure of the tread of the heel against the tread-guard moves the

latter in the direction of the length of the axis of a cutter-shaft, and through the said connections moves the said carriage to operate substantially as will be described.

Other features of my invention will be described, and pointed out in the claims at the end of this specification.

Figure 1 in front elevation represents a heel-trimming machine embodying my invention, the base or foot of the frame and its attached parts being omitted; Fig. 2, a left-hand end elevation of the machine shown in Fig. 1. Fig. 3 is a top or plan view of Fig. 1. Fig. 4 is a detail to be described. Fig. 5 is a partial section below the line xx , Fig. 2; and Fig. 6 is a detail in the line x' , Fig. 5.

The frame-work A, of suitable shape to sustain the working parts, has pivoted adjustable bearings A^1 A^2 , which receive the main rotating shaft A^3 , to the front end of which is attached, in usual manner, a rotary molded cutter (marked A^4) of usual construction, it having a series of adjustable attached blades.

At the rear side of the head of the cutter the shaft A^3 is surrounded by the tubular hub of a tread-guard A^5 , loosely mounted on the said shaft, the said hub being provided (see Fig. 3) with a recess, in which enters a collar 2, fast on the said shaft A^3 , the said collar at its side next the head of the cutter being acted upon by a plate or washer 3, attached to the hub of the tread-guard by suitable screws, whereby the tread-guard is moved bodily with the shaft A^3 in its longitudinal motions in its bearings. The hub of the tread-guard has projecting from it diametrically pins or projections 4, which are engaged by the front end of a lever B, (shown in detail, Fig. 4,) the rear end of the said lever (it having two arms) surrounding journals of a collar a , fast on a rod a' , the other end of the rod being jointed to a carrier or carriage C, herein shown as containing several gears, to be described. Screws 5 keep the lever B on the journals of the collar a .

The carriage has at its upper and lower sides two like rollers or other studs 6 and 7, which enter, respectively, the slots 8 and 9 of a rigid guide-frame b , the said frame being

pivoted at 10 to an adjustable head 12, made movable at right angles to the axis of the shaft A^3 on a shoe 13, dovetailed in cross-section, the said shoe having a dovetailed foot 14, which enters a correspondingly-shaped groove in the guideway 15, fixed to the frame-work. The frame-work has connected to it in an adjustable manner a stop 16, (see Fig. 3,) made as a screw, against which bears the inner end of the foot 14, the said stop being made adjustable into any desired position, so that when the head is removed to grind the cutters, as it may be by releasing the set-screw 17, the said shoe and head when again applied to the machine may readily find its true or the same position that it occupied when removed from the machine, this being a very essential feature and insuring a ready and correct positioning of the cutters.

The guide-frame is provided near its pivotal point 10 with an adjusting-screw 18, rotation of which in one or the other direction enables the position of the guide-frame to be adjusted. The guide-frame may be turned or swung aside on its pivots 10 when it is desired to expose the cutter-blades for grinding or otherwise. The slot 8 is somewhat inclined from the axis of the shaft A^3 , and the slot 9 is nearly at right angles thereto. When the carriage is pushed by a movement of the rod a' in the direction of the arrow thereon, Fig. 3, the rolls 6 and 7, acting in the slots 8 and 9, tip the carriage C and cause the lip 19 of the rand or counter guard d , attached to the said carriage, to travel in a substantially right line, or at right angles to the axis of rotation of the cutter A^4 , the said lip not, however, leaving the usual rand-crease. The lever B is slotted at 20 and has its fulcrum on a stud 21, projected from one side of a block 22, having a dovetailed foot, which is fitted adjustably in a corresponding groove of a guide-block 23, the said stud having on it a pivot-block 24, which is grooved at its opposite sides to leave flanges, between which are placed the two arms of the lever B.

In operation the tread of the heel rests against the beveled face of the tread-guard A^5 , and the lip 19 of the rand or counter guard d rests in the usual rand-crease. In this condition, as the rear part of the heel is brought against the cutter A^4 , the tread of the heel acts to force the tread-guard back away from the lip of the counter-guard, and in so doing rocks the lever B on its fulcrum 21, and causes the rod a' to move the carriage, as described. The shaft A^3 has fast on it a toothed gear e , which by an intermediate gear e' engages and rotates a gear e^2 , splined loosely on a short section of shafting e^3 , the said section having universally jointed to it a second section e^4 , which in turn is universally jointed to a third section e^5 , having its bearing in the carriage C, the said sections constituting one form of universal or flexible shaft; but instead of the particular shaft shown I may employ any other usual or well-known form of flexible

shaft—as, for instance, I may use a coiled-wire shaft. The inner end of the flexible shaft carries a gear e^6 , which by an intermediate gear e^7 engages and rotates a gear e^8 , fast on the rotating shaft e^9 , to which is attached the rand-cutter f , which in practice may be like the rand-cutter more fully shown and described in my application, Serial No. 275,880. The spring e^{10} normally acts to keep the tread-guard pressed toward the rand-guard. The edge of the heel being trimmed is supported upon a rest g , (best shown in Figs. 2 and 3,) the said rest having an inclined or curved face and made adjustable by a slot and screw g' horizontally in a guide g^2 , which is slotted or otherwise shaped to slide vertically on a second guide g^3 , herein shown as an arm depending from the hub of the tread-guard. (See Fig. 1.) The block g^2 has jointed to it an adjustable or two-part rod g^4 , extended at its lower end through a guide g^5 , and having, as herein shown, a roller or other stud g^6 , which enters a cam slot or groove of a lifting device g^7 , (shown as a lever fast on a rock-shaft g^8 ,) having fast on it a treadle g^9 , which may be actuated by the foot of the operator; but in practice I prefer to actuate the lever g^7 for moving the rod automatically. To do this I have pivoted to the lever g^7 at 30 a slide-bar 31, containing a pattern-cam 32, of substantially horseshoe shape, the cam receiving in it a stud 33 of a disk or arm at the end of a shaft 34, (see Fig. 5,) having splined upon it loosely a sleeve 35, provided at one end with a series of teeth and at its other end with a collar 36, grooved annularly to receive a pin or projection 37 at the end of an elbow-lever 38, pivoted at 39, the opposite end of the said elbow-lever having jointed to it a rod 40, which is in turn jointed to the upper end of an arm 41, connected to the rock-shaft g^8 , the movement of the lever 38 causing the sleeve 35 to slide upon the shaft 34 and place the teeth of the sleeve in engagement with the toothed hub of a toothed gear 42, normally loose on the shaft 34; but when a heel has been trimmed the slide-bar 31, through the rock-shaft g^8 , causes the sleeve 35 to be moved on the shaft 34 in a direction to disengage its teeth from the constantly-moving toothed gear 42. The toothed gear 42 is engaged and rotated by a toothed pinion 43 (shown by dotted lines, Fig. 2) at the hub of a pulley 44, over which is extended a belt 45, driven from a small pulley 46 on the main driving-shaft 47, provided with usual driving-pulleys and with a pulley 48, over which is a belt 49, which, on pulley 50, rotates shaft A' .

The shaft 34, at one side of the collar which forms a stop for the toothed gear 42, has attached to it a small drum, upon which is wound a strap 52, having attached to it a spring 53, the strap being wound upon said drum when the shaft 34 is being rotated and the heel is being trimmed; but as soon as the second side of the heel has been trimmed to the breast thereof and the sleeve has been

moved to free the toothed wheel 42 then the spring assumes control of the shaft 34 and rotates the latter back to place the crank-pin in its normal or starting position for the trimming of a heel, the normal position being that shown in Fig. 2. While the heel is being trimmed and the teeth of the sleeve 35 are in engagement with the teeth at the hub of the wheel 42, a locking-dog 54 engages the elbow-lever 38 (see Figs. 5 and 6) and aids in holding the teeth of the sleeve in engagement with the teeth of the toothed wheel; but as soon as the heel has been trimmed a rib or projection on the sleeve strikes the dog, lifts the same, and releases the elbow-lever, so that the spring 56, connected therewith and with a portion of the frame, (see Fig. 5,) quickly moves the sleeve to disconnect it from the toothed wheel. The shape of the cam-groove in the lever g^7 is such that when the sides of the heel are being trimmed the rod and rest will be raised, thus lifting the shoe in a substantially straight line to enable the cutter to trim the straight side of the heel. The rod will be lifted gradually while the cutter cuts from the breast of the heel to the commencement of the approximately-circular part thereof, when the rest will be held stationary, and after the approximately-circular part of the heel has been trimmed the rod will be fully lifted to complete the upward movement of the rest, the cutter then acting upon the second side of the heel to the breast. By disconnecting the bar 31 from the lever g^7 the operator may lift the rod and rest by his foot on the treadle g^9 .

I have herein shown a rotary heel-cutter, a carriage, a support therefor, a rand-guard attached to the said carriage and shaped to project over the heel-cutter, a rotary rand-cutter, and a tread-guard; but I do not herein claim any one of the said devices or their combination one or more with the other, broadly, as the same form the subject-matter of several claims in my application, Serial No. 275,880, filed June 2, 1888.

I claim—

1. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a rand or counter guard to enter the rand-crease, and a freely-movable carriage to which the rand-guard is attached, and a guide for the said carriage, the said rotary shaft, its cutter, and tread-guard being movable longitudinally in unison toward and from the rand or counter guard, the rand or counter guard being also free to move in a direction substantially at right angles to the axis of rotation of the said rotating shaft, for the purpose specified.

2. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a rand or counter guard to enter the rand-crease, a freely-movable carriage to which the rand or counter guard is attached, and a slot-

ted guide therefor to effect the tipping of the said carriage as it is moved in a direction substantially at right angles to the axis of rotation of the said rotating shaft, substantially as set forth.

3. In a heel-trimming machine, a movable carriage, as C, and its attached rand or counter guard to enter the rand-crease, the rotating shaft, its attached cutter, and the tread-guard, combined with connections between the tread-guard and carriage, whereby the longitudinal movement of the cutter and tread-guard in unison toward and from the rand or counter guard is accompanied by a movement of the said rand or counter guard in a direction substantially at right angles to the said shaft, substantially as described.

4. In a heel-trimming machine, a rotating cutter, an independent freely-movable carriage, as C, a rand or counter guard, combined with a movable rest, as g , and a guide therefor, whereby the said rest, while the cutter acts to trim the straight sides of the heel, may be moved substantially at right angles to the rotation of the cutter, substantially as described.

5. In a heel-trimming machine, a rotating cutter, a tread-guard, a tipping carriage, its rand or counter guard, and the guide-plate b for the said carriage, combined with connections intermediate the said blade and shaft, whereby the pressure of the tread of the heel against the tread-guard moves the latter, together with the rotating cutter and its shaft, longitudinally, and through the said connection moves the said carriage at right angles to the said shaft, substantially as described.

6. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a recessed rand-guard to enter the rand-crease, and a rotating rand-cutter having its blades engaged with a rotating cutter between its blades, a freely-movable carriage to support the said rand-guard and rand-cutter, and a guide for the carriage, the said shaft, its cutter, and tread-guard being movable longitudinally in unison toward and from the rand or counter guard, the rand or counter guard being also free to move in a direction substantially at right angles to the axis of rotation of the said rotating shaft, for the purpose specified.

7. In a heel-trimming machine, the rotating shaft, its attached cutter, its attached gear, the carriage, rand or counter guard, and rand-cutter, combined with the gear e^6 and with intermediate gearing and flexible shafting, to operate substantially as described.

8. In a heel-trimming machine, the rotating cutter, a tread-guard or guide A^5 , combined with the rest g , a cam, and means to automatically operate the said rest, as described, while the sides of the heel are being trimmed, the rest being substantially stationary while the rear part of the heel is being trimmed, substantially as described.

9. In a heel-trimming machine, the edge-rest *g* for the shoe the heel of which is to be trimmed, and the cam for moving the said rest vertically, combined with a treadle to operate the said cam, substantially as described.

10. In a heel-trimming machine, the rest for the shoe the heel of which is to be trimmed, the cam for moving the said rest vertically, and the bar 31, attached thereto and provided with the cam-groove, combined with a shaft 34, having a crank-pin or projection to actuate the said slide-bar, and with means to rotate the said shaft 34 or leave it at rest, substantially as described.

11. In a heel-trimming machine, the shaft 34, its attached crank-pin or projection 33, the slide-bar actuated thereby, the cam *g*⁷, connected to the slide-bar, the sleeve 35, splined loosely upon the shaft 34, and the gear 42, loose on the shaft 34 and provided with teeth at its hub to be engaged by the teeth of the sleeve, combined with means to rotate the gear 42, the latter rotating the shaft 34 when the teeth of the sleeve are in engagement with

the teeth at the hub of the said gear, substantially as described.

12. In a heel-trimming machine, the shaft 34, its attached crank-pin or projection 33, the slide-bar actuated thereby, the cam *g*⁷, connected to the slide-bar, the sleeve 35, splined loosely upon the shaft 34, and the gear 42, loose on the shaft 34 and provided with teeth at its hub to be engaged by the teeth of the sleeve, combined with means to rotate the gear 42, the latter rotating the shaft 34 when the teeth of the sleeve are in engagement with the teeth at the hub of the said gear, and with means to automatically reverse the direction of rotation of the shaft 34 when the sleeve is disengaged from the said toothed wheel 42, substantially as described.

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

CHARLES W. GLIDDEN.

Witnesses:

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