

No. 883,684.

PATENTED APR. 7, 1908.

A. E. AYER.

MACHINE FOR TRIMMING THE EDGES OF BOOTS AND SHOES.

APPLICATION FILED MAY 6, 1907,

2 SHEETS—SHEET 1.

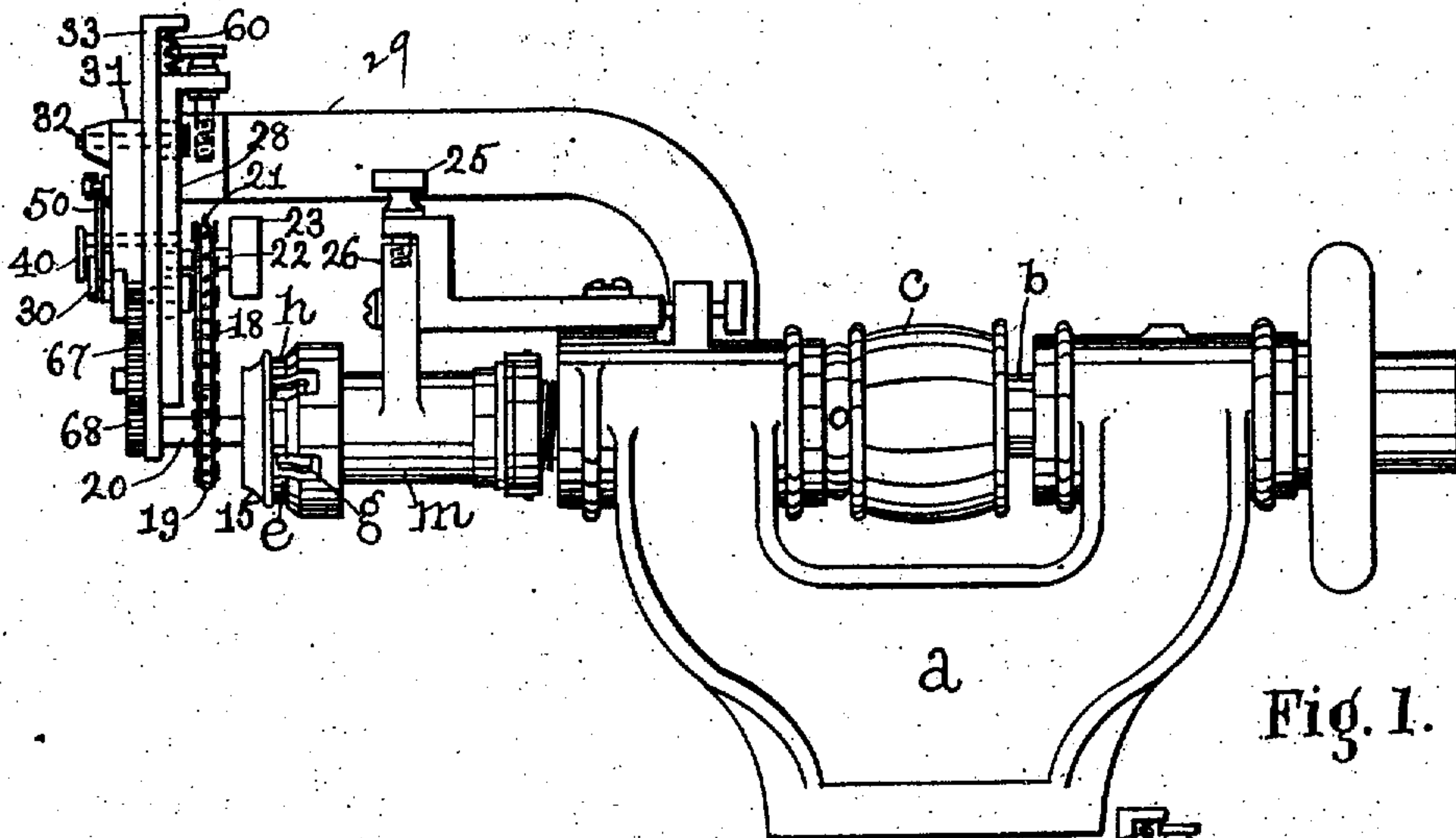


Fig. 1.

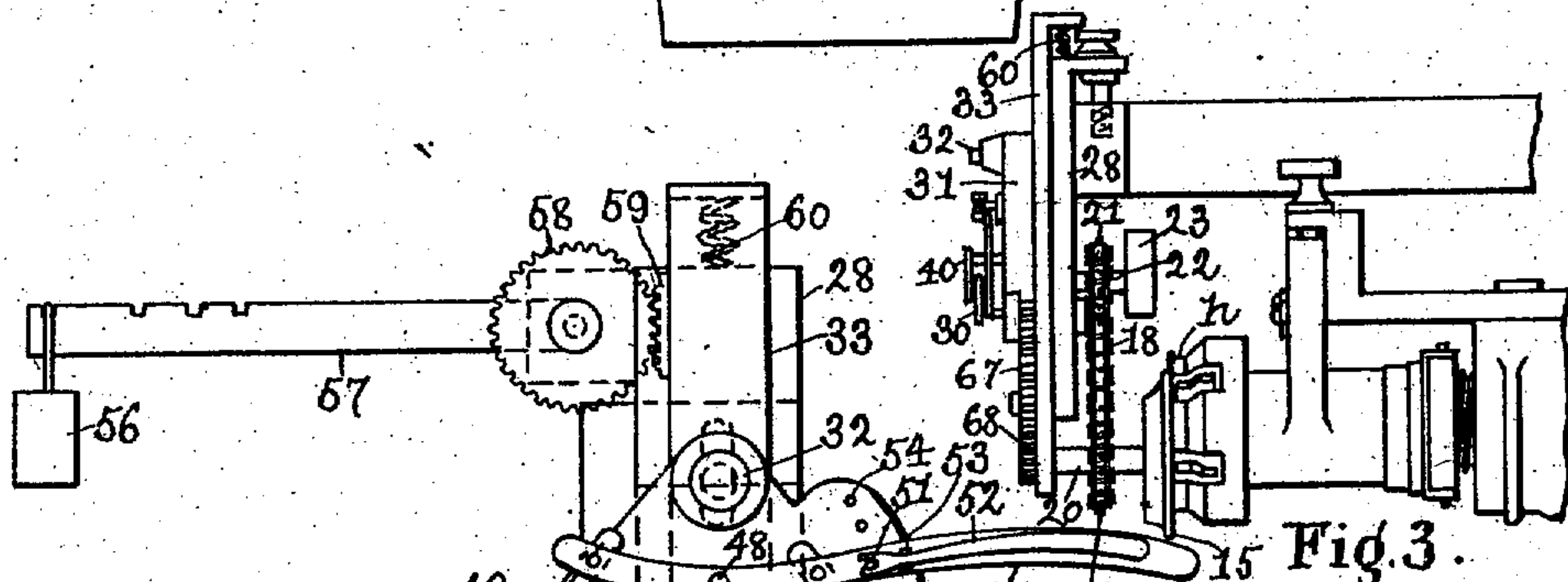


Fig. 2.

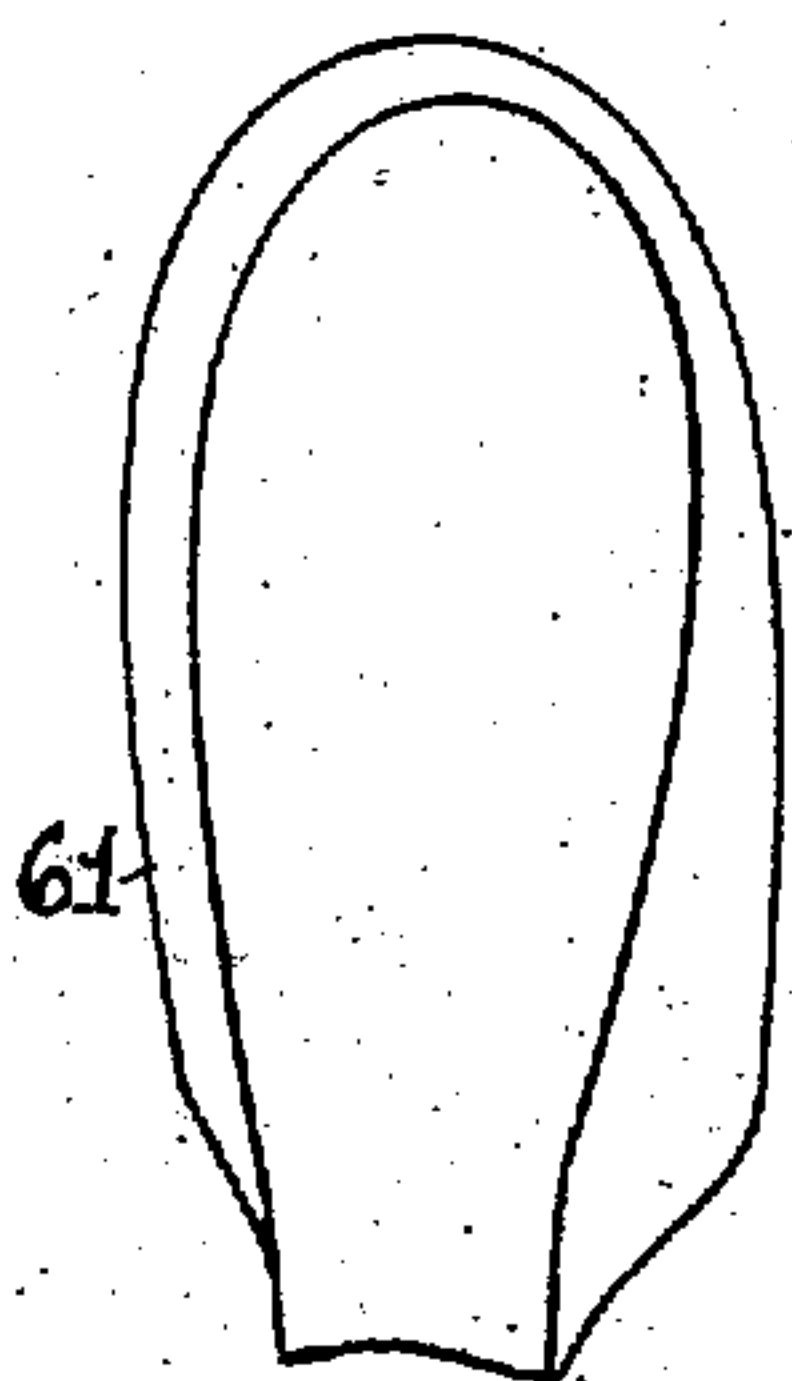


Fig. 3.

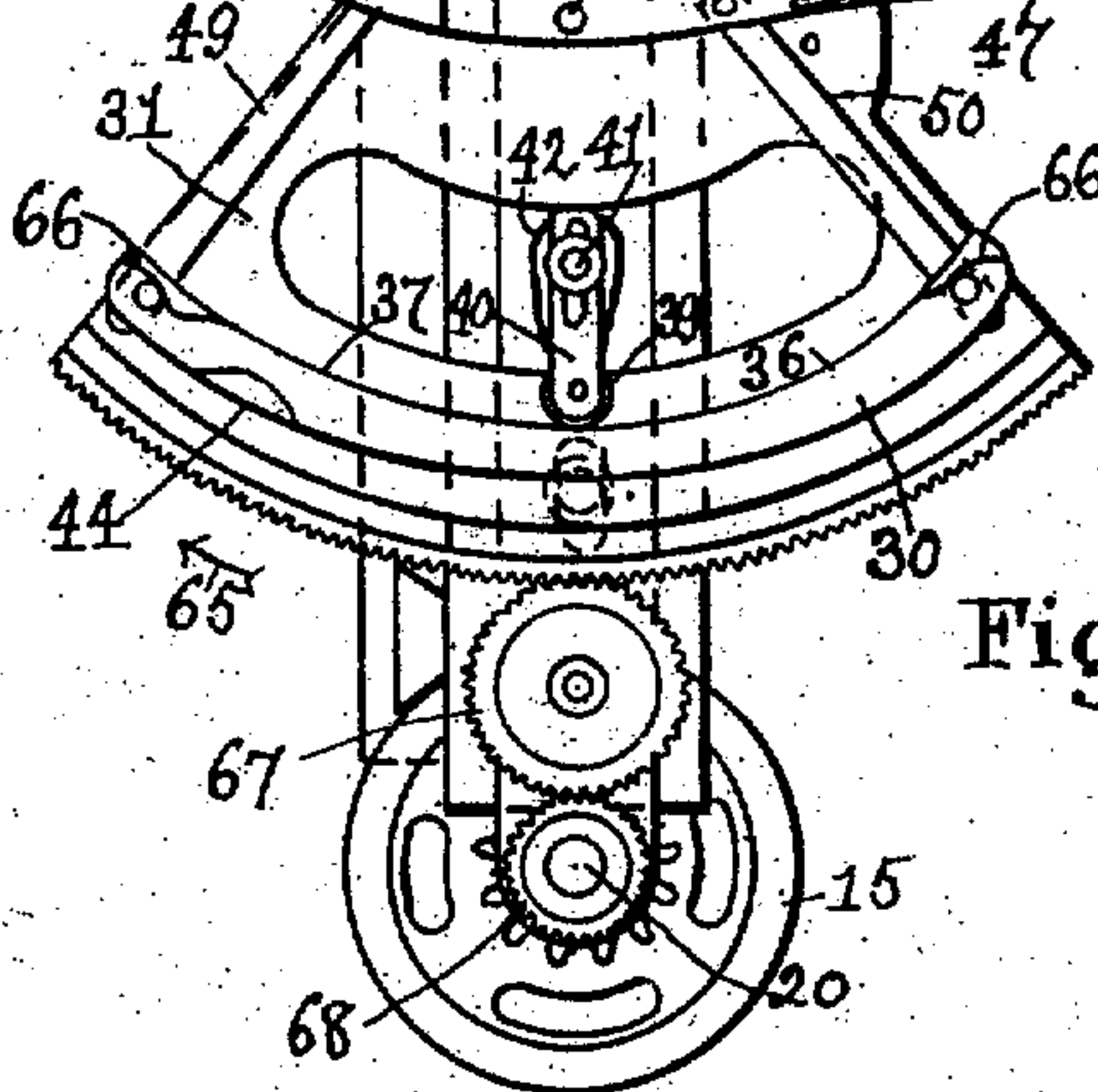


Fig. 4.

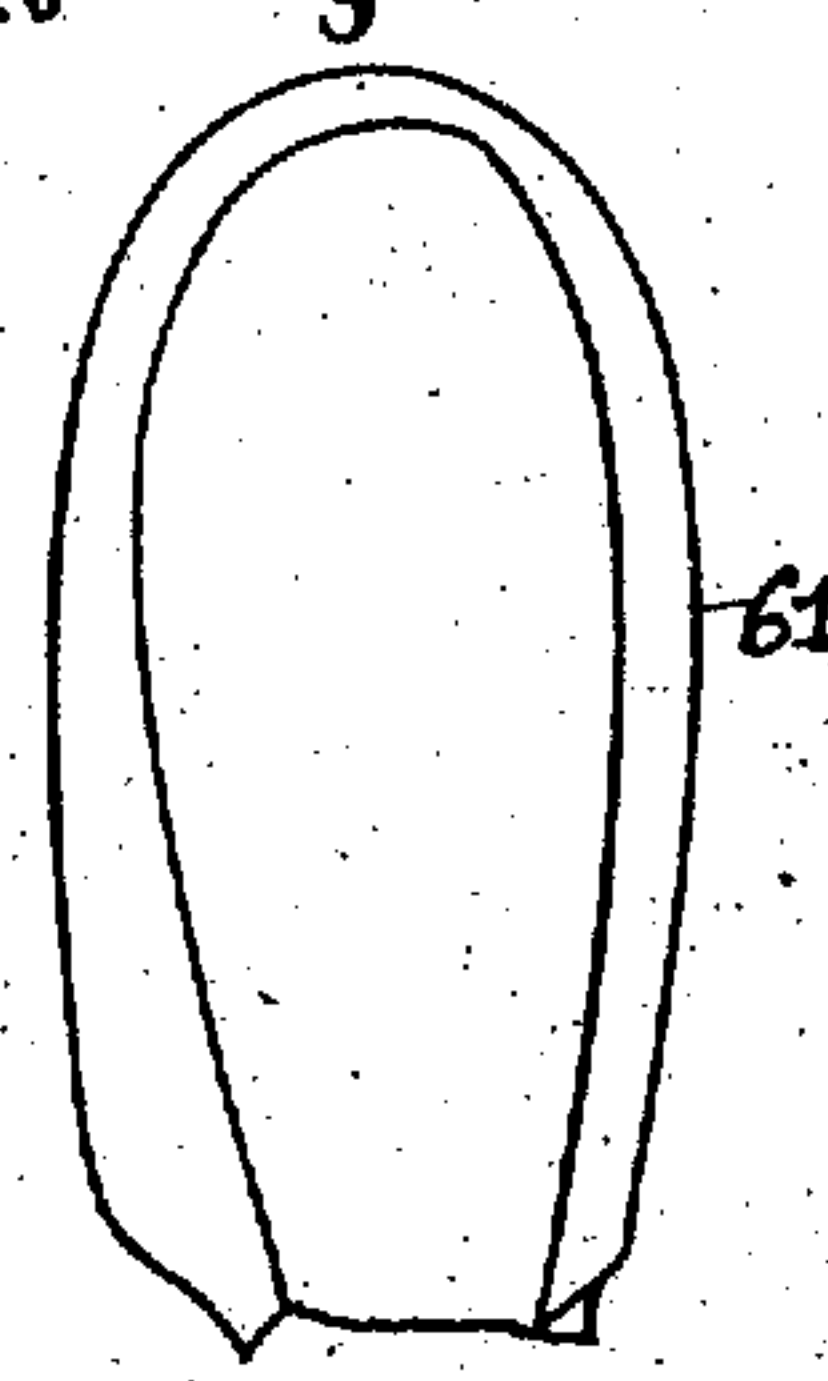


Fig. 5.

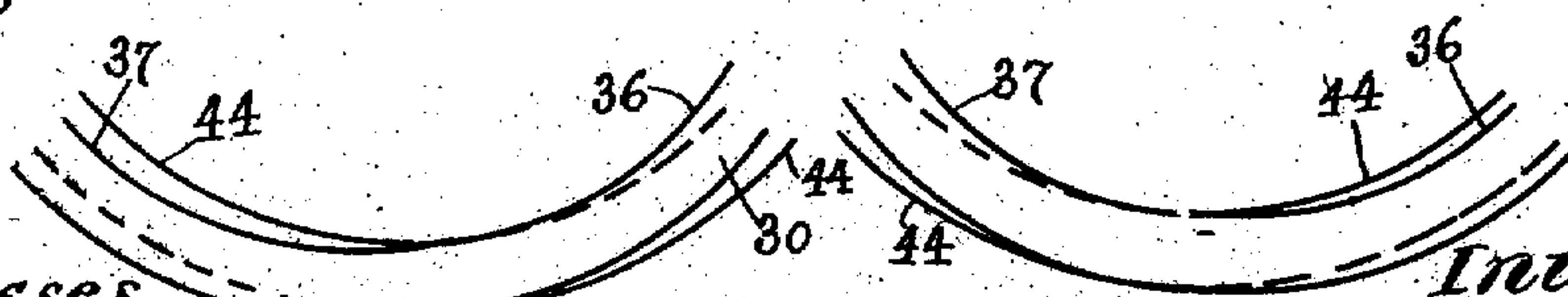


Fig. 6.

Witnesses.

G. B. Gannett  
J. Murphy

Inventor.

Fig. 7. Albert E. Ayer  
Jas. H. Lumschill  
att.

No. 883,684.

PATENTED APR. 7, 1908.

A. E. AYER.

MACHINE FOR TRIMMING THE EDGES OF BOOTS AND SHOES.

APPLICATION FILED MAY 6, 1907.

2 SHEETS—SHEET 2.

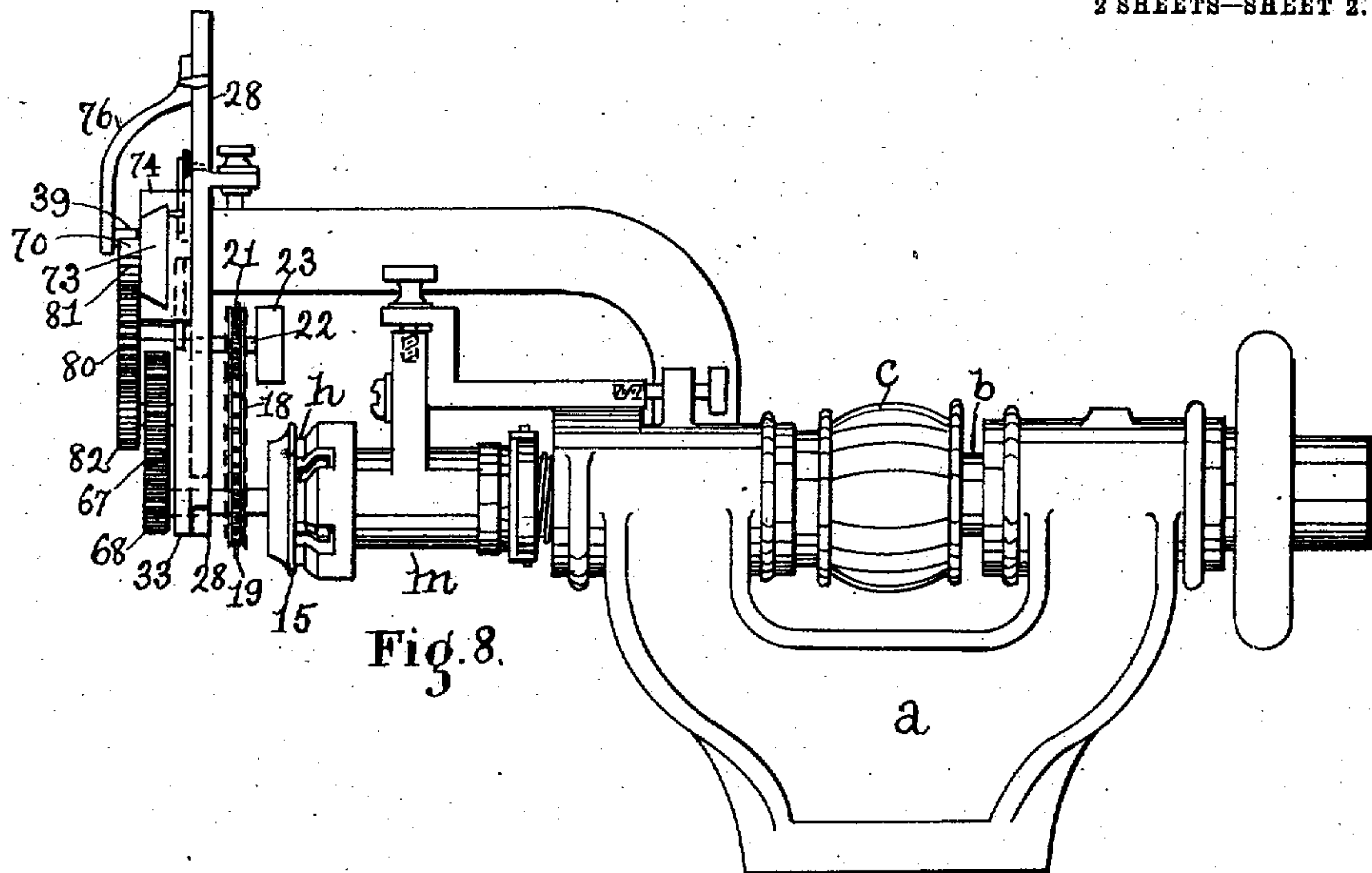


Fig. 8.

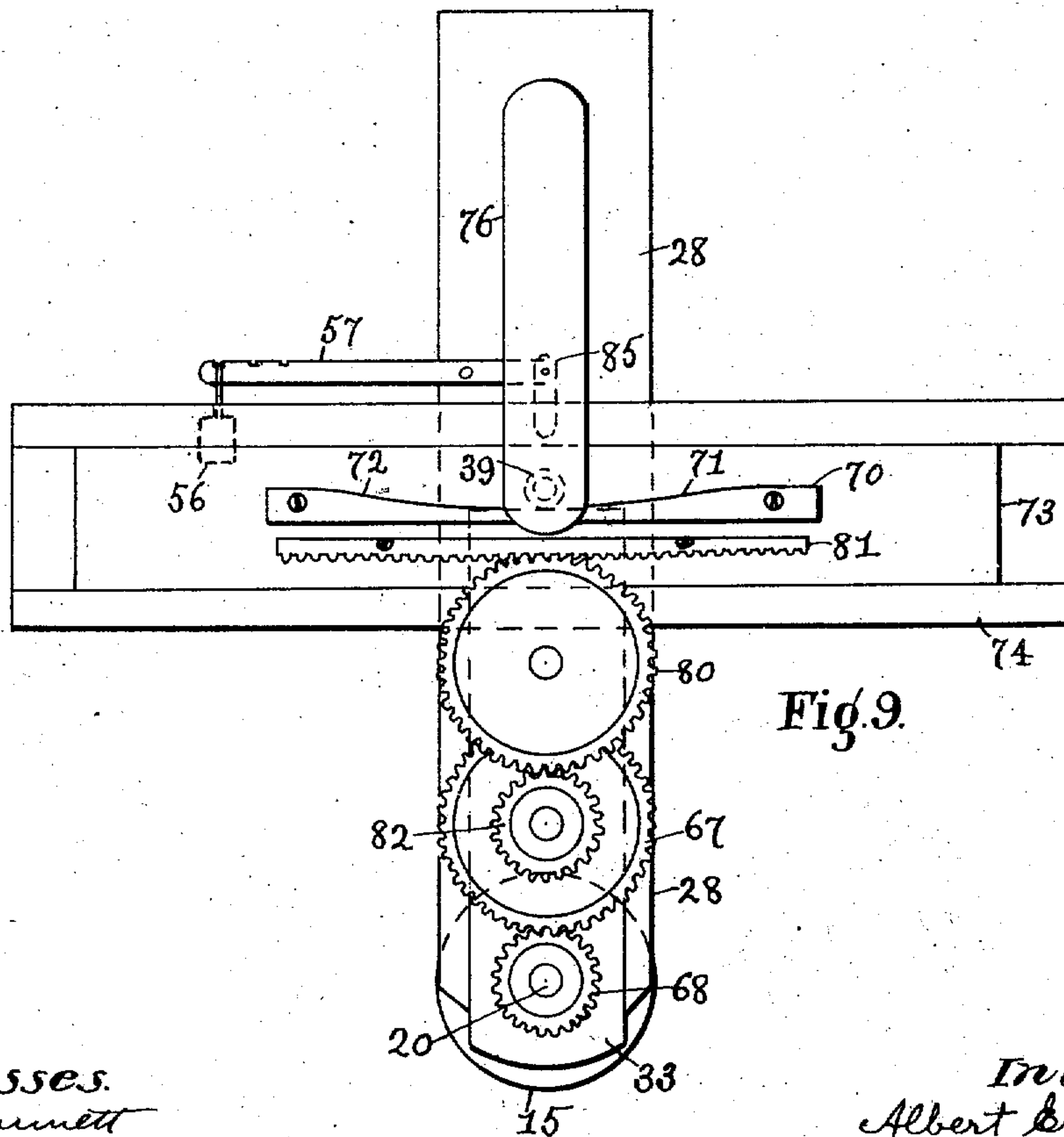


Fig. 9.

Witnesses.  
C. H. Garnett  
J. Murphy

Inventor.  
Albert E. Ayer  
by Jas. H. Churchill  
att'y.



# UNITED STATES PATENT OFFICE.

ALBERT E. AYER, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO RUTH L. VOSE, OF BROOKLINE, MASSACHUSETTS.

## MACHINE FOR TRIMMING THE EDGES OF BOOTS AND SHOES.

No. 883,684.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed May 6, 1907. Serial No. 372,001.

*To all whom it may concern:*

Be it known that I, ALBERT E. AYER, a citizen of the United States, residing in Chelsea, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Machines for Trimming the Edges of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a machine for trimming the soles and heels of boots and shoes and is especially designed and adapted for trimming the soles so as to leave the same of different widths at different parts of the boot or shoe according to the style or shape of sole desired. For this purpose, the machine is provided with a rotary cutter, with which coöperates a guard or rest for the boot or shoe, to position the same with relation to the rotary cutter so as to cause the latter to effect a cut in the work and especially the sole of the shoe, according to the position of the guard or rest, which position is automatically governed by a pattern of the shape required to impart to the sole the shape desired. The guard or rest may and preferably will be rotated and positively driven as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is an elevation of an edge trimming machine embodying this invention. Fig. 2, an end elevation of the machine shown in Fig. 1, looking toward the right. Fig. 3, a detail in elevation with the guard or rest in a different position from that shown in Fig. 1. Figs. 4 and 5, plan views of a shoe to show the nature of the work performed by the machine. Figs. 6 and 7, details to be referred to. Figs. 8 and 9, modifications to be referred to.

Referring to the drawings, the main portion of the machine may be of any suitable or desired construction, and in the present instance, I have shown the invention as embodied in the machine shown and described in U. S. Patent No. 828,013 granted to me August 7, 1906, and which consists essentially of the frame *a*, rotatable shaft *b* provided with the driving pulley *c*, and the rotary cutter *e* having the knives or cutters *g*, with which coöperates the bed *h* attached to a sleeve rotatable in the bearing-hub *m*,

which is capable of radial movement with relation to the shaft *b* by means of the thumb-screw 25, which engages the arm 26 on said hub.

In accordance with this invention, the rotary cutter *e* has coöperating with it a guard or rest for the work, which is movable bodily with relation to the rotary cutter, so as to properly position the work with relation to the rotary cutter according to the shape it is desired to impart to the work and especially to the sole of the boot or shoe.

The guard or rest referred to, may and preferably will be made as a disk or wheel 15, and the position of said disk or wheel with relation to the rotary cutter is automatically governed by a suitable pattern or patterns as will be described.

In the embodiment of the invention shown in Figs. 1 to 3 inclusive, the disk or wheel 15 is positively rotated, which may be effected by the mechanism herein shown and comprising a link chain 18 passed about a sprocket wheel 19 on the shaft 20 on which the disk 15 is fastened, and about a sprocket wheel 21 on a shaft 22 provided with a pulley 23, which is driven by a belt (not shown) from a suitable source of power. The shaft 22 is journaled in a depending arm 28 adjustably secured to a bracket 29 attached to the frame of the machine.

Provision is also made for automatically moving the guard or rest 15 bodily with relation to the rotary cutter, and for this purpose I employ a pattern, which is represented in Fig. 2 as a lever or bar 30 pivoted at its center to a segmental gear 31, which is mounted to turn on the pivot pin or shaft 32, projecting from a slide bar or support 33. The pivot pin or shaft 32 may be provided with an eccentric, upon which the gear 31 is mounted to turn and which serves a purpose as will be described.

The pattern bar or lever 30 has its upper surface provided on opposite sides of its center with two curves 36, 37, with which coöperates a roller 39 on an arm 40 adjustably secured to a stud 41 extended from the bar or arm 28 through a slot 42 in the slide bar or support 33.

The bar or lever 30 may be designated the movable pattern, which coöperates with a fixed pattern 44 attached to the segmental gear 31, and the upper surface of which is



made in the arc of a circle with the pivot 32 as a center. The movable pattern 30 may be turned on its pivot, so as to cause one curved surface as 36 to engage the roller 39, while the other half of the lever is turned down so as to uncover substantially one-half of the fixed pattern and enable the latter to engage the roller 39.

The movable pattern 30 may be turned on its pivot by a hand lever 47, which is pivoted at 48 to the segmental gear 31 and is connected on opposite sides of its pivot by the links 49, 50 to the opposite ends of the movable pattern.

Provision is made for retaining the movable pattern in the position into which it is moved or adjusted, which may be accomplished by a pin 51 attached to the end of a finger lever 52, which is pivoted to lugs 53 on the lever 47, the said pin passing through a hole in the lever 47 and being adapted to enter one of a series of holes 54 in the segmental gear (see Fig. 2).

The movable slide bar 33 is normally held in what may be termed its elevated position by a weight 56 on a lever 57 carrying a gear 58, which meshes with a rack bar 59 on the slide bar 33. The weight 56 may be assisted by a spring 60, or either alone may be used.

As represented in Figs. 1 and 2, the guard or rest 15 is in its central position with relation to the rotary cutter, and the movable pattern is in what may be considered its central position with its curved surfaces 36, 37 occupying the same relation to the fixed pattern 44. In this case, the guard or rest 15 is revolved on an axis concentric or substantially so with the cutter shaft *b*, and if the shoe should be turned in the act of trimming the edge of the sole 61, the width of the sole beyond the upper would be the same on both sides of the shoe. It will be understood, that the shoe is presented to the rotary cutter, so as to trim the edge of the sole, and that the upper of the shoe is held up against the guard 15, and as the latter is rotated, the shoe is fed away from the machine, but is guided and turned by the operator.

If it is desired that the sole on one side of the shoe should project beyond the upper a greater distance than on the other side of the shoe, as represented in Fig. 4, the movable pattern 30 is adjusted or turned on its pivot, so that one curve as 36 is projected above or beyond the curve of the fixed pattern, and the other curve 37 of the movable pattern is projected below the fixed pattern 44, so as to uncover the latter, as represented in Fig. 6, and allow the same to make contact with the roller 39. The guard 15 is held in its concentric position while the sole is being trimmed on one side of the shoe, after which the guard is moved into an eccentric position with relation to the rotary cutter by the curved surface 36 being brought into engage-

ment with the roller, with the result that as the curved surface 36 of the pattern 30 is carried under the roller 39 by the movement of the segmental gear in the direction indicated by the arrow 65, Fig. 2, the slide bar is forced downward and the guard 15 is moved into the position represented in Fig. 3, thereby forcing the shoe away from the rotary cutter, which removes or trims a less amount off of the sole on the opposite side of the shoe, as represented in Fig. 4, consequently leaving the sole on the left side of the shoe materially wider than on the right side, which width increases from at or near the toe to at or near the shank portion. If the sole is to be left wider on the right side of the shoe, the pattern 30 is adjusted in the opposite direction, so that the curved surface 37 projects above the fixed pattern 44 and the curved surface 36 lies below said fixed pattern, as represented in Fig. 7, so that, when the segmental gear is moved in the direction indicated by the arrow 65, the curved surface 37 will engage the roller 39 and force the guard 15 into the position shown in Fig. 3 and thus form the wider portion of the sole on the right side of the shoe, as represented in Fig. 5.

The movable pattern 30 may be shaped at its ends as at 66, so as to cause the rotary cutter to make a deeper cut and narrow the sole toward the shank, or the movable pattern may be moved by the operator for accomplishing the same result.

The segmental gear 31 is moved in the direction indicated by arrow 65 by a gear 67 and pinion 68, the latter being on the shaft 20.

In the present instance, the segmental gear 31 is returned to its stationary position by hand, and to facilitate this, the pivot 32 may be provided with an eccentric on which the gear 31 is mounted, so that by turning the said pivot, the gear 31 may be raised out of engagement with the gear 67, and after the gear 31 has been moved back into its starting position, the pivot pin is turned to lower the gear 31 into engagement with the gear 67.

In Figs. 1 and 2, I have shown one construction of movable pattern for automatically positioning the guard 15 with relation to the rotary cutter, but I do not desire to limit the invention in this respect, as other constructions of movable pattern may be used.

In Figs. 8 and 9, I have represented a movable pattern in the form of a bar 70 having curved surfaces 71, 72, and affixed to a slide bar 73, which is dove-tailed to slide in a cross bar 74 attached to the upper end of the slide bar 33, which slides on the arm 28 attached to the frame of the machine and provided with an arm 76 carrying the roller 39, which engages the movable pattern. The slide bar 73 carrying the pattern 70 is moved with relation to the roller 39 by a gear 80 engaging a rack bar 81 attached to the said slide bar, said gear being rotated from the shaft 20



carrying the guard 15 by the pinion 68, gear 67, and pinion 82, all of which are carried by the vertical slide bar 33. The pattern 70 is held in engagement with the roller 39 by the weight 56 on the lever 57, which is connected to a projection 85 on the bar 74.

#### Claims.

1. In a machine of the class described, in combination, a rotary cutter, a rotatable guard or rest cooperating therewith, a shaft on which said guard is mounted, means to rotate said shaft, a pattern, a movable support for said pattern, mechanism connecting said support with said guard shaft, and means cooperating with said pattern for moving said guard with relation to said rotary cutter, substantially as described.

2. In a machine of the class described, in combination, a rotary cutter, a rotatable guard or rest cooperating therewith, a support for said guard or rest, a pattern, a movable support for said pattern, and means cooperating with said pattern for effecting movement of said guard-support and said guard, substantially as described.

3. In a machine of the class described, in combination, a rotary cutter, a guard or rest for the work cooperating with said cutter to position the work with relation thereto, a pattern, a movable support therefor, and means cooperating with said pattern to effect bodily movement of said guard or rest with relation to said rotary cutter, substantially as described.

4. In a machine of the class described, in combination, a rotary cutter, a guard or rest for the work cooperating with said cutter to position the work with relation thereto, a pattern, and mechanism cooperating with said pattern to automatically vary the position of said guard or rest with relation to said rotary cutter according to said pattern, substantially as described.

5. In a machine of the class described, in combination, a rotary cutter, a guard or rest cooperating with said cutter to position the work with relation to said cutter, a movable pattern, and means cooperating with said pattern to automatically position said guard

or rest with relation to said rotary cutter, substantially as described.

6. In a machine of the class described, in combination, a rotary cutter, a rotatable guard or rest cooperating therewith, a shaft on which said guard is mounted, means to rotate said shaft, a pattern, a rotatable support for said pattern, gearing connecting said support with said shaft, and means cooperating with said pattern to effect bodily movement of said guard with relation to said cutter, substantially as described.

7. In a machine of the class described, in combination, a rotary cutter, a guard or rest for the work cooperating with said cutter, a shaft on which said guard or rest is mounted, a movable support for said shaft, a pattern, a segmental gear to which said pattern is secured, gearing connecting said segmental gear with said shaft, and means cooperating with said pattern to effect movement of said guard-support and guard, substantially as described.

8. In a machine of the class described, a rotary cutter, a shaft on which it is mounted, a guard or rest, a shaft on which it is mounted substantially in line with said cutter shaft, a pattern, a movable support for said pattern, and means cooperating with said pattern for moving said guard in a direction substantially at right angles to the direction in which said pattern is moved to vary the position of said guard or rest with relation to said rotary cutter, substantially as described.

9. In a machine of the class described, a guard or rest, a shaft on which it is mounted, a fixed pattern, and a movable pattern cooperating therewith, and means cooperating with said patterns to effect bodily movement of said guard or rest, substantially as described.

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

ALBERT E. AYER.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.