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PATENTED JUNE 16, 1903.

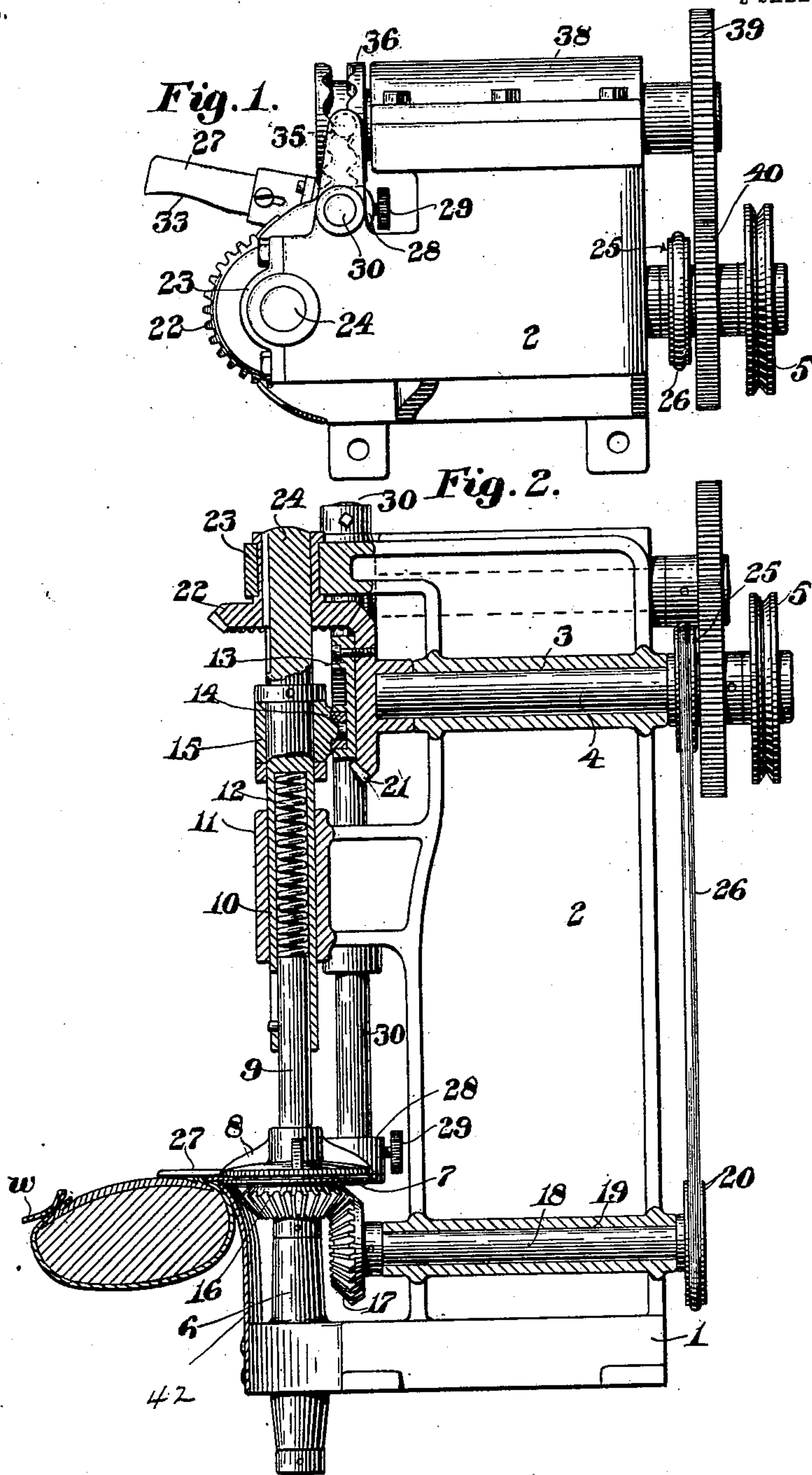
C. L. EATON.

WELT BEATING AND INSEAM TRIMMING MACHINE.

APPLICATION FILED AUG. 7, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
Walter E. Lombard.
J. M. Prudden.

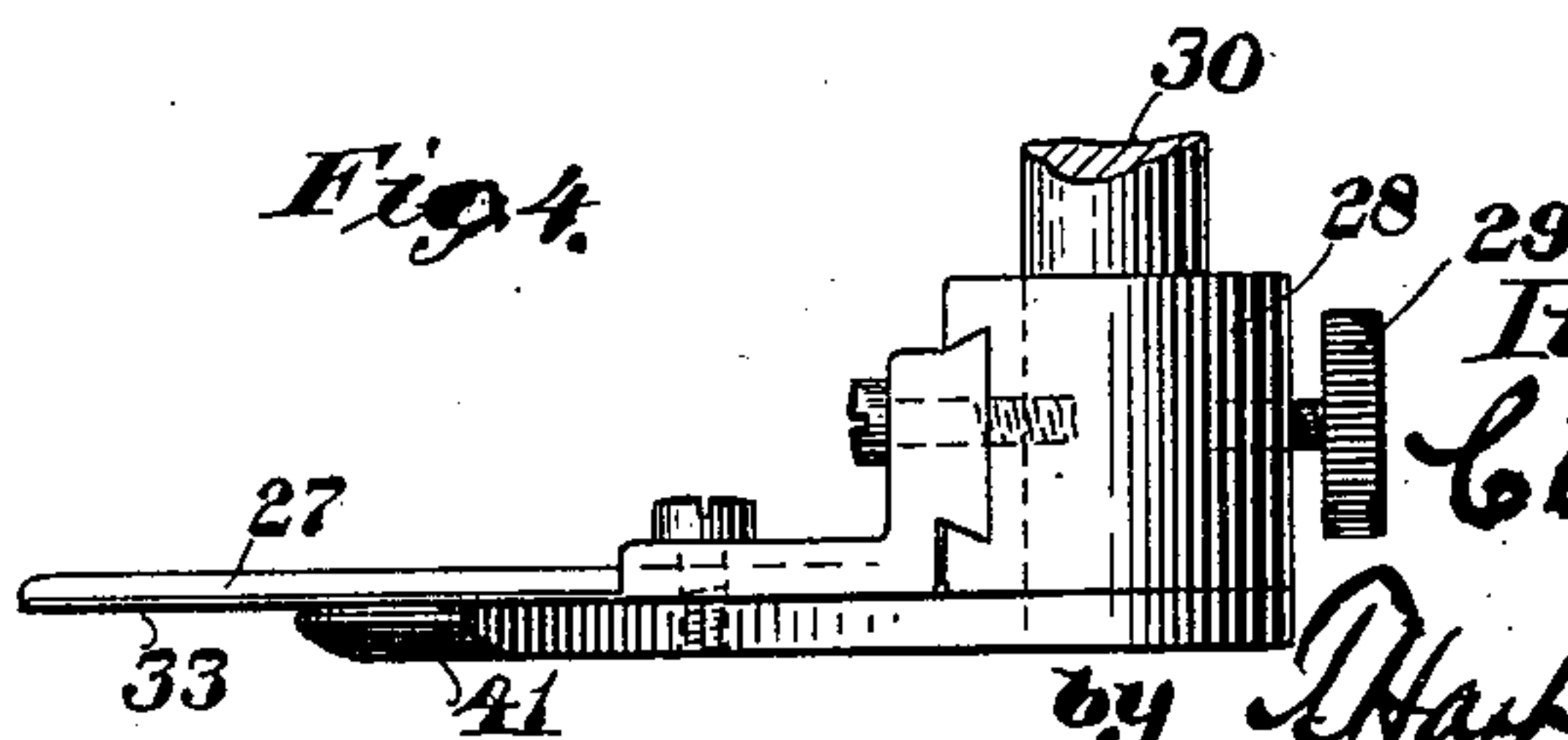
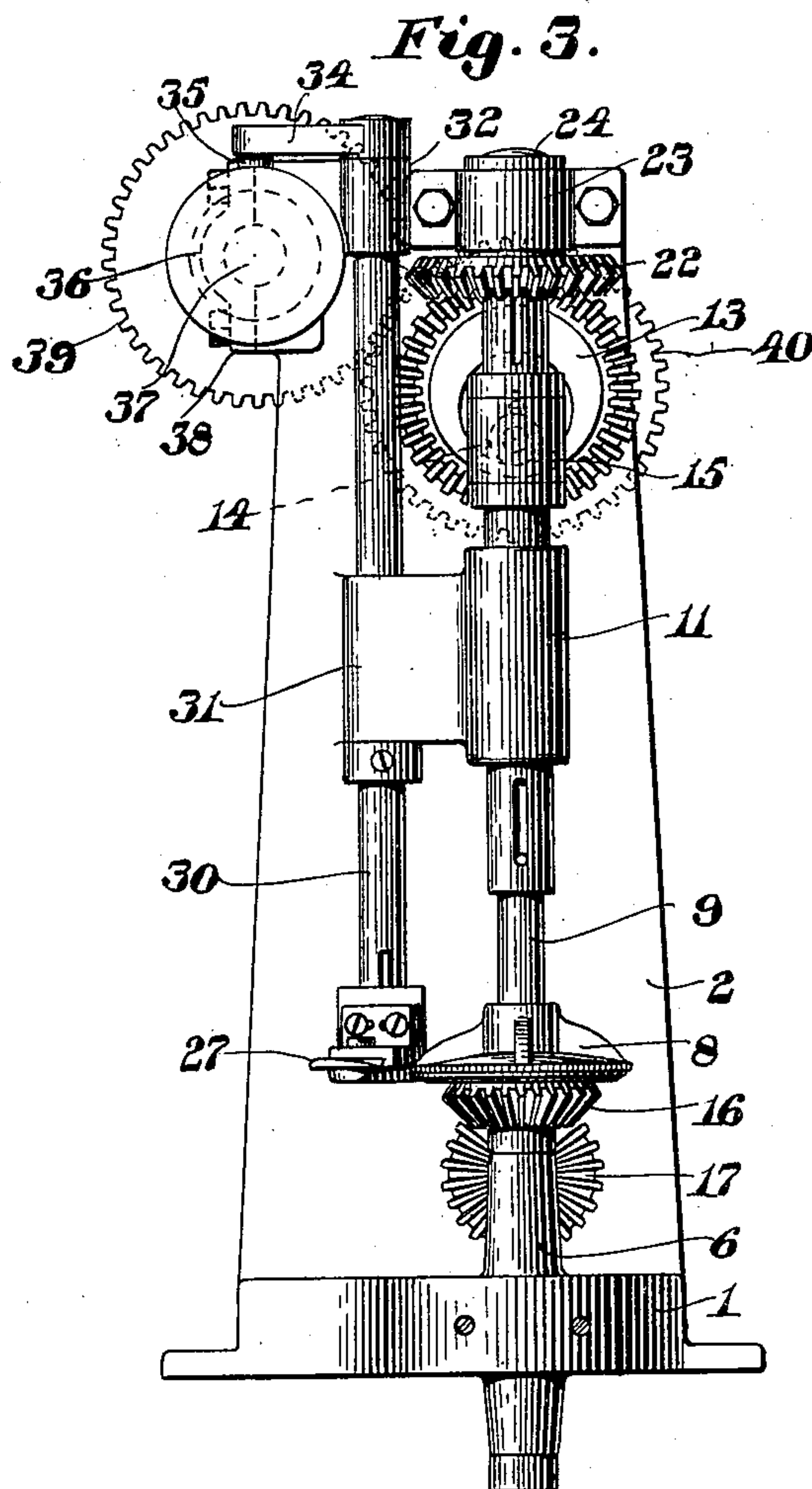
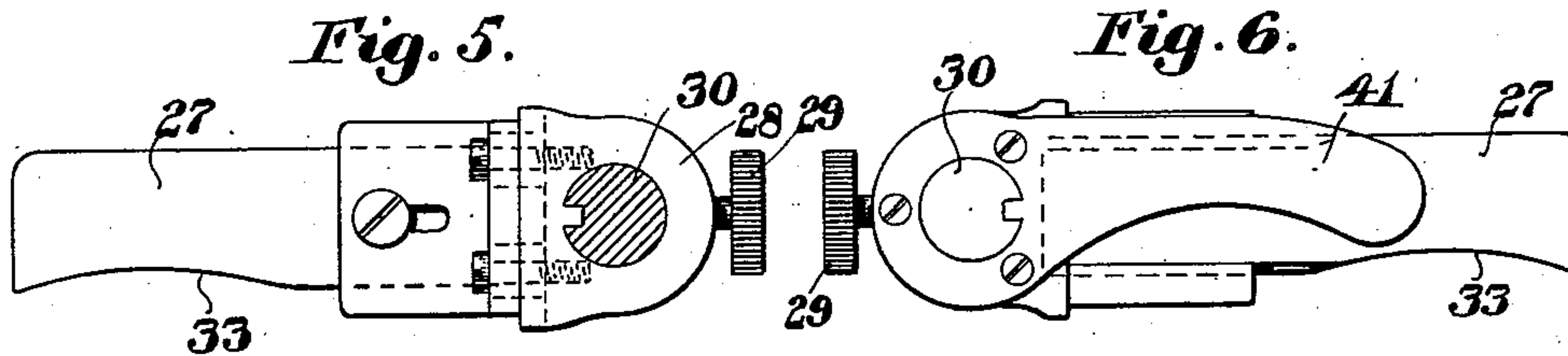
Inventor:
Clarence L. Eaton
by Walter Anderson Atty.

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WELT BEATING AND INSEAM TRIMMING MACHINE.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

CLARENCE L. EATON, OF BINGHAMTON, NEW YORK.

WELT-BEATING AND INSEAM-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 731,167, dated June 16, 1903.

Application filed August 7, 1902. Serial No. 118,772. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE L. EATON, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Welt-Beating and Inseam-Trimming Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to machines used in the manufacture of boots and shoes.

In the manufacture of welted boots and shoes the upper, welt, and insole are united by a line of stitches which passes through the lip or "between substance" of the insole, the edge of the upper, and the inner edge of the welt, which is turned up against the upper. The seam thus formed projects a considerable distance above the surface of the insole and the welt, which latter is a narrow strip of leather, and after attachment curls up about the upper, and before the outer sole can be attached it is necessary to trim the seam as close as possible to the line of stitches and also to beat or flatten out the welt to cause it to project substantially at right angles to the sides of the upper and in the plane of the inner sole.

It has been proposed prior to the present invention to provide what is known as "inseam-trimming" mechanism in the welt-sewing machine, which unites the upper, insole, and welt; but for various reasons the incorporation of the inseam-trimming mechanism in the welt-machine has been found to be objectionable, chiefly because of the added burden to the stitch-forming mechanism, and such machines have not been generally used. It is now the custom to subject the shoe, after the welt, upper, and insole have been united, to an inseam-trimming machine, which trims off the edges of the seam, and thereafter the shoe has been subjected to a separate and independent machine, known as a "welt-beater," for beating out the welt to cause it to project substantially at right angles from the upper.

The object of the present invention is to provide a single machine for trimming the inseam and beating out the welt.

Further objects of the invention will ap-

pear from the description and mode of operation of the machine.

To the above ends the present invention consists of the devices and combinations of devices which will be hereinafter described and claimed.

The present invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a top plan view of a machine embodying the same. Fig. 2 shows the machine in side elevation with the parts thereof in section. Fig. 3 shows the machine in front elevation. Fig. 4 is an enlarged detail of the inseam-trimming knife and its guard. Fig. 5 is an enlarged top plan view of the inseam-trimming knife. Fig. 6 is a similar view of the under side of said knife, showing the guard.

Similar reference characters will be employed throughout the specification and drawings to designate corresponding parts.

The machine comprises a suitable frame of a shape and size to support the operating instrumentalities, which in the illustrated embodiment of the present invention comprises a base 1, adapted to be secured to a work bench or table, and a vertical standard 2. Near its upper end the standard 2 is provided with a bearing 3, in which is mounted the main or driving shaft 4, provided with a pulley 5, which is driven from a belt from any suitable source of power.

At its front portion the machine is provided with a vertical bearing 6, in which is mounted a shaft (not shown) which supports at its upper end a circular table or work-support 7, upon which the welt *w* of the shoe rests, as clearly shown in Fig. 2. Coöperating with the table 7 is a welt-beating hammer 8, circular in form and of substantially the diameter of the table 7, and this hammer is carried at the lower end of a rod 9, fitted in the tubular shaft 10, mounted to reciprocate in a bearing 11. Within the shaft 10 is a spring 12, which bears against the rod 9 of the hammer 8, which rod has a sliding movement in the tubular shaft 10, thus providing for a yielding blow of the hammer. The shaft 10 is reciprocated in the bearing 11 by means of a cam 13, fixed to the outer end of the shaft 4, with which engages a cam-roll 14, carried by a collar 15, secured to the tubular shaft 10. It will be ob-

served that a rotary movement of the shaft 4 will cause vertical reciprocations of the tubular shaft 10, thus imparting vertically-reciprocating movements to the hammer 8 with reference to the supporting-table 7, upon which the welt *w* is projected and by means of which the said welt will be beaten and flattened and caused to assume a position with relation to the sides of the upper at substantially right angles thereto.

Combined with the welt-beating mechanism, which has been described, is an inseam-trimming mechanism, and it is designed that the welt-beating mechanism shall progressively advance the shoe toward the inseam-trimming mechanism, and for this purpose the table 7 and the welt-beating hammer 8 are rotated while in contact with the welt, thus step by step beating out portions of the welt and advancing the shoe toward, and for the purpose of subjecting it to the action of, the inseam-trimming mechanism. For this purpose suitable mechanism is provided for rotating the table 7 and the welt-beating hammer 8. As shown in the illustrated embodiment of the present invention, this is accomplished by providing the shaft of the table 7 with a beveled gear 16, which meshes with a beveled gear 17, carried by a shaft 18, rotating in a suitable bearing 19 of the standard 2 and carrying at its opposite end a pulley 20. The shaft 4 is provided with a beveled gear 21, which meshes with a beveled gear 22, fixed to turn in a bearing 23 at the upper end of the standard 2, and the tubular shaft 10 is provided with an upwardly-extending projection 24, splined to the beveled gear 22 and arranged to move freely through said gear and to turn therewith. The shaft 4 carries a pulley 25, over which passes a belt 26, leading to and around the pulley 20 of the shaft 18. It will thus be seen that a rotary movement of the shaft 4 will, while it reciprocates the tubular shaft 10 and the hammer 8, at the same time, through the beveled gears 21 and 22, rotate said tubular shaft and its hammer and by means of the pulley 25, belt 26, and pulley 20 rotate the shaft 18, which by means of the beveled gears 17 and 16 will cause a rotation of the table 7, thus causing an advancement of the shoe toward the inseam-trimming mechanism.

In the illustrated embodiment of the present invention the inseam-trimming mechanism consists of a knife 27, fixed to a head 28, adjustably secured by means of a set-screw 29 to the lower end of a vertically-disposed oscillating shaft 30, mounted in suitable bearings 31 and 32 at the front of the machine. The cutting edge of this knife 33 is arranged to engage and trim off the projecting edges of the lip of the insole, the upper, and welt as the knife is oscillated.

The oscillations of the shaft 30 and the inseam-trimming knife may be accomplished in any suitable manner; but in the illustrated

embodiment of the present invention it is accomplished as follows: The upper end of the shaft 30 is provided with an arm 34, carrying a cam-roll 35, engaging a cam 36, carried at the forward end of the shaft 37, arranged to rotate in the bearing 38. The rear end of the shaft 37 is provided with a gear 39, meshing with a mating gear 40, carried by the shaft 4. It will thus be seen that the rotation of the shaft 4 will impart a rotation to the shaft 37 and by means of the cam 36 and the arm 34 will cause a comparatively rapid oscillation of the vertical shaft 30, thus causing the inseam-trimming knife to be oscillated in a horizontal plane to make its cut in a direction contrary to the direction of the feed of the work as accomplished by the welt-beating hammer and table 7. For the purpose of preventing the knife from "creeping"—that is to say, making a cut too deep or so deep as to endanger the cutting of the stitches of the inseam—I have provided a gage or guard beneath said knife, which consists of a curved foot 41, fixed to the shaft 30 below the knife 27, which in operation rests upon the welt or the inseam, and thus controls and gages the depth of cut made by the inseam-trimming cutter.

In operation the shoe is presented to the machine and the projecting edge of the welt laid upon the surface of the table 7, and the machine being set in motion the welt-beating hammer 8 is rapidly reciprocated toward and from the table 7, beating out and flattening the welt, and while the hammer 8 is in contact with the welt the table 7 and hammer are rotated to cause the advance of the shoe toward the inseam-trimming knife, and as the knife is constantly oscillated it comes into contact with the projecting edges of the inseam and trims the same, so that after the shoe has been subjected to the operation of this machine it is ready for the attachment of the outer sole.

It will be noted that in operation the shoe is constantly pressed up against the under surface of the guard or foot 41, which provides a fixed upper guide or rest against which the shoe may be held and positioned with relation to the inseam-trimming cutter. Inasmuch as the guard or foot partakes of the oscillating movement of the cutter it acts to smooth the inseam and welt and effectually prevents the cutter from cutting too deep into the seam or to endanger the line of stitches. The foot 28 is vertically adjustable upon the shaft 30, so as to adjust the plane of movement of the cutter.

For the purpose of preventing the upper of the shoe from coming in contact with the bevel-gear 16 I have provided a thin metallic guard 42, fixed to the front of the base 1 and which extends upwardly and partially surrounds the periphery of the table 7, thereby covering the gear 16 and affording a rest against which the sides of the upper may be held.

It is to be noted that the welt-beating ham-

mer and work-support are positively rotated, thus providing for a positive feeding of the work toward the inseam-trimming cutter.

5 Having described my invention, I claim as new and desire to protect by Letters Patent of the United States—

1. A welt-beating and inseam-trimming machine, having in combination, a rotating work-support, a rotating and reciprocating hammer located above and cooperating with said work-support, means to reciprocate the hammer and means to rotate the hammer and work-support, an inseam-trimming cutter located adjacent to the work-support and hammer and means to operate said cutter, substantially as described.

2. A welt-beating and inseam-trimming machine, having in combination, a rotating work-support, a rotating and reciprocating hammer located above and cooperating with said work-support, connected mechanism to reciprocate said hammer and to rotate said

work-support and hammer positively in the same direction, and an oscillating inseam-trimming cutter located adjacent to said work-support and hammer, substantially as described.

3. A welt-beating and inseam-trimming machine, having in combination, the axially-aligned shafts, a welt-beating hammer supported by one of said shafts, a work-support carried by the other of said shafts, means to rotate and reciprocate the hammer-shaft, an oscillating shaft located adjacent to and parallel with said axially-aligned shafts, and an inseam-trimming knife mounted upon and projecting from said oscillating shaft, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE L. EATON.

Witnesses:

T. HART ANDERSON,
WM. F. FREDENREICH.