

No. 675,081.

F. E. BECKMAN.

Patented May 28, 1901.

INSEAM TRIMMING AND WELT BEATING MACHINE.

(Application filed Apr. 5, 1900.)

(No Model.)

2 Sheets—Sheet 1.

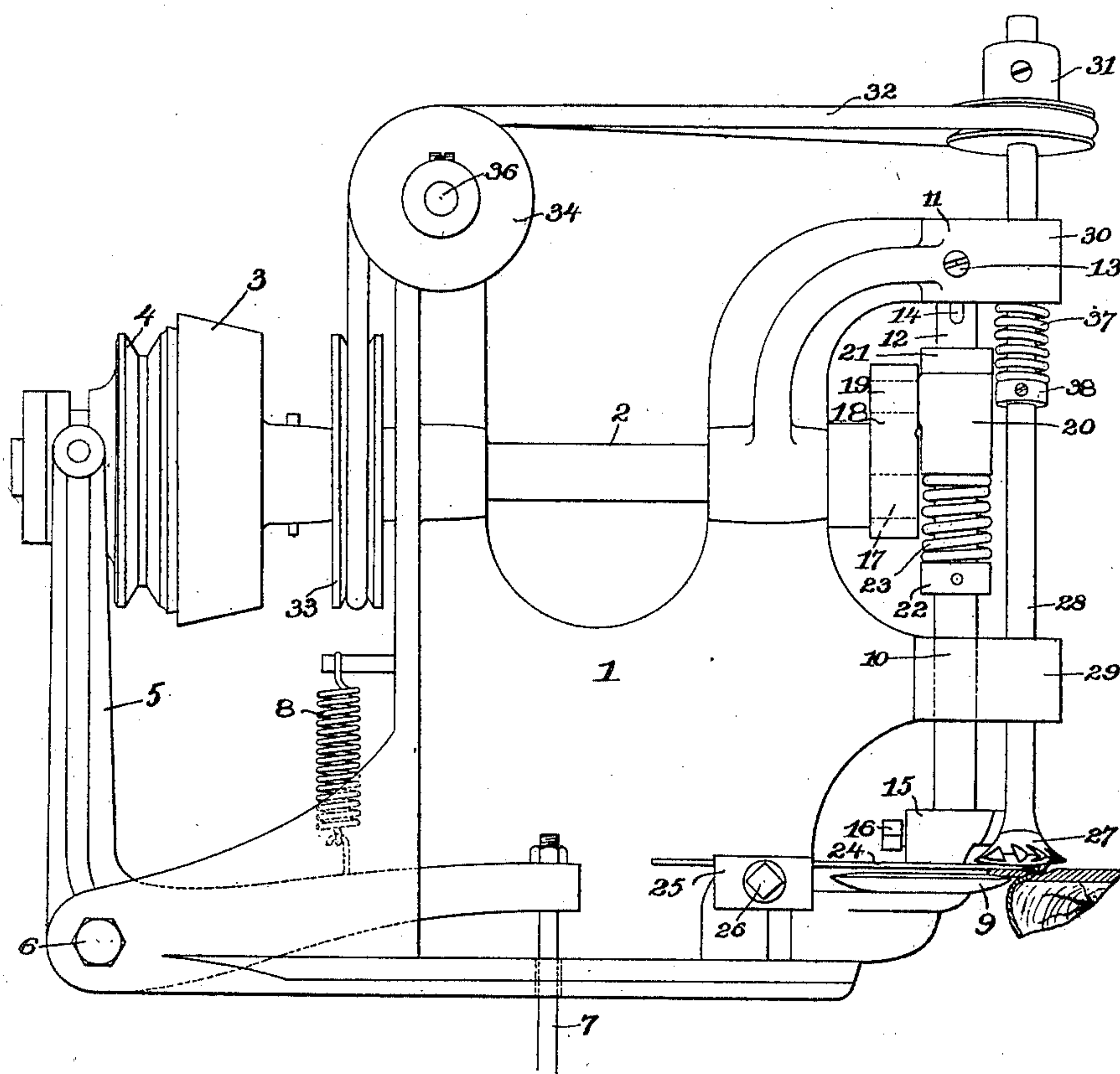


Fig. 1

Witnesses

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Horace Van Euren

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Frank E. Beckman

by his Attorney

Benjamin Phillips

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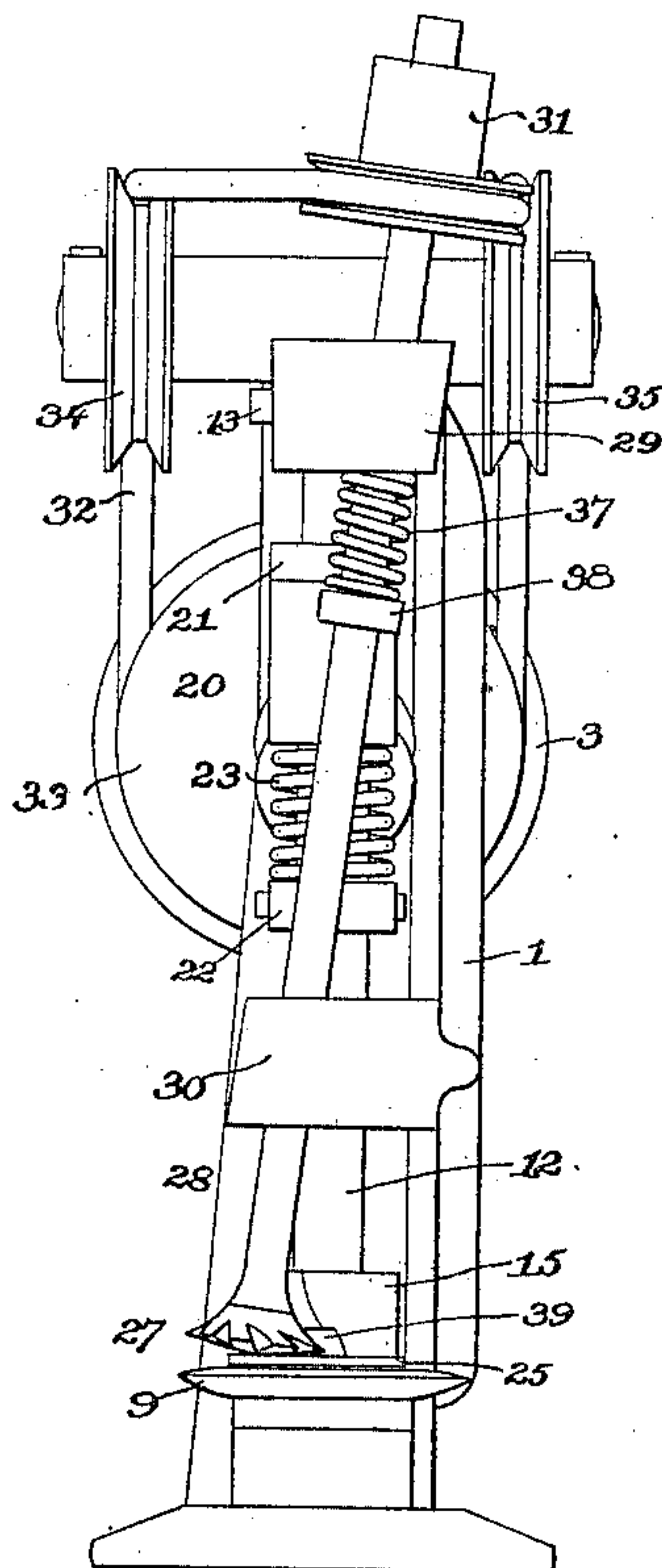


Fig. 2.

Witnesses

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# UNITED STATES PATENT OFFICE.

FRANK E. BECKMAN, OF HAVERHILL, MASSACHUSETTS.

## INSEAM-TRIMMING AND WELT-BEATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 675,081, dated May 28, 1901.

Application filed April 5, 1900. Serial No. 11,677. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. BECKMAN, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Inseam-Trimming and Welt-Beating 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 an improvement in inseam-trimming and welt-beating machines. In machines of this kind as heretofore constructed, so far as I am aware of the state of the art, difficulty has been found in making them operate satisfactorily in working on the shanks and toes of shoes and in keeping the trimming-knife sharp.

The object of the present invention is to remove those objections and to improve the machine in other directions hereinafter described.

To the above end the present invention consists in the inseam-trimming and welt-beating machine hereinafter described, and particularly defined in the claims.

In the accompanying drawings, illustrating the preferred form of my invention, Figure 1 is a side elevation, and Fig. 2 is a front elevation, thereof.

My invention consists generally of a hammer for beating welts combined with a cutter for trimming the inseam of a welted shoe after the welt, upper, and insole have been united by the inseam and in which the cutter is so located with relation to the welt-beating hammer that the point of cutting is directly in front of the middle of the hammer, whereby in guiding the shoe with relation to the hammer and knife a change in the position of the shoe with relation to the hammer will change the relation of the knife thereto in an exactly similar manner—that is to say, inasmuch as the point of cutting is directly opposite the center of the hammer the turning of the shoe to present it properly to the knife in going around the shank and around the toe will present the shoe correctly to the hammer at the same time. I have also provided the machine with a welt-guard or cutter-gage which prevents the cutter from

cutting into the seam. This welt-guard also constitutes a stationary knife against which the rotating knife cuts.

In the illustrated embodiment of my invention the frame 1 of the machine supports the driving-shaft 2, to which is secured the clutch member 3 and upon which is revolvably mounted the pulley 4, which is constantly driven from any source of power. The pulley 4 preferably has a clutch-face which engages the clutch member 3, fastened on the pulley, and means are provided for moving the pulley 4 longitudinally of the shaft to open and close the clutch, this means being illustrated as the bell-crank lever 5, pivoted at 6 to a portion of the frame of the machine, one arm of which bell-crank lever engages a groove in the hub of the pulley 4 and the other arm of which is connected by the rod 7 with a treadle (not shown) for operating the lever. A spring 8, attached at one end to one arm of the bell-crank lever and at the other end to a post on the machine, tends normally to open the clutch. The above-described arrangement is such that upon a depression of the treadle the clutch will be closed and the machine will be set in operation, and when the foot is lifted from the treadle the machine will be stopped.

The work-support 9 is mounted upon the front lower part of the frame of the machine and projects outwardly therefrom, so as to afford sufficient clearance for properly presenting the shoe to the machine. Above the work-support, mounted in suitable bearings, as 10 11, is a hammer-rod 12, which is adapted to reciprocate in its bearing and which is held from rotation by means of a screw 13, which enters a longitudinal groove 14 in the hammer-rod 12. To the lower end of the hammer-rod 12 is attached the usual hammer-head 15, which is modified as hereinafter described in order to bring the cutter close to the hammer. The hammer is secured to the hammer-rod by any suitable means, as by the set-screw 16. Motion is imparted to the hammer by any suitable means, and in the machine of the drawings such means consists of a crank-pin 17, mounted on the front end of the shaft 2 of the machine, which receives a pitman 18. The other end of the pitman receives a wrist-pin 19, which is projected rear-



wardly from the sleeve 20, mounted on the hammer-rod 12. The sleeve 20 may be rigidly secured to the hammer-head or it may be attached thereto by yielding means, so that the blow of the hammer will be a yielding blow. The latter means is shown in the drawings, and consists of the collar 21, secured to the hammer-rod above the sleeve 20, and the collar 22, secured to the hammer-rod below the sleeve 20, with the spring 23 interposed between the sleeve 20 and the collar 22, so that the hammer may yield, and thus be permitted to descend less than its normal stroke.

The welt-guard 24, of spring-steel, is secured to the frame of the machine by means of a clip 25 and bolts 26 on the one side and a groove in the frame on the other side, so that it is projected forwardly over the work-support under the hammer. The edge of the welt is inserted underneath the front edge of the welt-guard, and the blow of the hammer is transmitted to the welt through the yielding welt-guard. In this connection, however, it is to be understood that any form of guard which may yield under the blow of the welt-beating hammer and transmit said blow to the welt is within the scope and spirit of my invention, and so far as I am aware I am the first to make a welt-beater in which the blow of the hammer is transmitted to the welt through the medium of a yielding protecting-plate, so that the hammer does not strike the welt directly, but strikes the protecting-plate the blow, which is thereby transmitted to the welt. It is to be noted that the welt-guard guides the welt and protects it from the direct blows of the hammer, so that the inseam will not be struck by the hammer.

In front of the hammer is mounted the inseam-trimmer, which trims the edges of the welt, upper, lining, and insole-lip. This knife is so mounted in suitable bearings that its operative edge engages the work directly in front of the hammer and preferably at a point exactly opposite the center of the hammer. The inseam-trimmer is shown in the drawings as a rotating cutter 27, mounted upon the lower end of a cutter-shaft 28, which is preferably inclined, as shown in Fig. 2, so that the working edge of the knife is lower than the opposite edge. This arrangement conduces materially to ease of operation and facilitates presenting the work to the machine, inasmuch as it permits the tipping of the work with relation to the work-support, as in going around the shank, whereby the inoperative edge of the knife is removed from close proximity to the surface of the inseam. The cutter-shaft 28 is mounted in suitable bearings 29 and 30 and normally rotated by any suitable means, as by means of the pulley 31, secured to its upper end, which is driven by a belt 32, running from a pulley 33 on the main shaft of the machine over idlers 34 and 35, mounted to turn freely on a shaft 36, secured in the upper part of the

frame of the machine. If desired, a guard may be provided to cover the edge of the cutter to prevent accident to the operator. The lower face of the cutter 27 normally rests upon the upper face of the welt-guard 25 and in such operative position with relation thereto that the cutting-blades of the cutter cooperate with the edge of the welt-guard in trimming the inseam. So far as I am aware I am the first to make an inseam-trimmer in which the cutter cooperates with a yielding welt-guard which protects the welt and measures the distance above the surface of the welt at which the cut shall be made. I also believe I am the first to make an inseam-trimmer in which a rotating cutter is employed which cooperates with a yielding-mounted substantially stationary tool to perform its work.

It will be observed, of course, that the hammer reciprocates vertically and imparts vertical vibrations to the welt-guard. Suitable provision is therefore made to maintain the cutter in operative position with relation to the welt-guard during its movements, and to this end the cutter-shaft is made capable of slight longitudinal motion, so as to maintain the cutter in proper position with relation to the welt-guard. In the machine of the drawings these provisions consist of a spring 37, which engages the under side of the bearing 30 and presses against the collar 38, secured to the cutter-shaft 28. By this means it is seen that the cutter is normally pressed toward the welt-guard and is held in contact therewith irrespective of the variations in the position of the welt-guard due to the variations in the thickness of the welt and the vibrations imparted to it by the hammer. So far as I am aware I am the first to construct an inseam-trimming machine in which a rotary cutter is made capable of slight motion toward and from the work during the operation of the machine.

In order to bring the cutter in close proximity to the hammer, the shape of the hammer is modified so that it surrounds a part of the cutter and engages the welt-guard close to the periphery of the cutter. In the machine of the drawings the hammer is cut away at 39, so that it shall closely embrace the cutter. This cutting away of the hammer conduces materially to the concentration of these devices, whereby the points of application of the hammer and the trimmer to the work are brought into very close proximity to each other. This conduces to ease of operation in that it enables the operator to guide the shoe with proper relation to both the hammer and the trimmer at the same time.

The operation of my machine is as follows: The welt being united to the upper and insole in the usual manner, the shoe is presented to the machine with the work-support engaging the groove between the upper and the welt, and the welt is inserted between the work-support and the welt-guard, and the



clutch is closed and the machine set in operation. The operator then guides the shoe to the machine, and the hammer and trimmer at one and the same time beat and flatten the welt and trim the inseam.

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

1. An inseam-trimming and welt-beating machine, having in combination, a work-support to sustain the welt from its outer edge to the upper, a hammer to beat out the welt, a welt-guard between the hammer and the work-support, a rotary cutter to trim the inseam, and means for actuating the hammer and cutter, substantially as described.

2. An inseam-trimming and welt-beating machine, having, in combination, a work-support to sustain the welt from its outer edge to the upper, a hammer to beat out the welt, a welt-guard between the hammer and the work-support, a rotary cutter to trim the inseam, the working edge of the cutter being located in close proximity to the hammer and cooperating with the welt-guard to trim the inseam, and means for actuating the hammer and cutter, substantially as described.

3. An inseam-trimming and welt-beating machine, having, in combination, a work-support, a hammer, a welt-guard between the work-support and hammer, an inseam-trimming cutter cooperating with the welt-guard to trim the inseam, and means for actuating the hammer and cutter, substantially as described.

4. An inseam-trimming and welt-beating machine, having, in combination, a work-support, a hammer, a welt-guard, interposed between the hammer and work-support, the welt being adapted to be received between the welt-guard and work-support, a rotary inseam-trimming cutter to trim the edge of the inseam, and means for pressing the cutter yieldingly against the welt-guard, and means for actuating the hammer and cutter, substantially as described.

5. An inseam-trimming and welt-beating machine, having, in combination, a work-support, a hammer, a welt-guard between the work-support and hammer, an inseam-trim-

ming cutter, the front end of the welt-guard being projected under the cutter and operating to prevent the knife from cutting into the inseam, and means for actuating the hammer and knife, substantially as described.

6. An inseam-trimming and welt-beating machine, having, in combination, a work-support, a hammer, a welt-guard between the work-support and hammer, an inseam-cutter cooperating with the welt-guard to trim the inseam and means for pressing the cutter yieldingly against the welt-guard, and means for actuating the hammer and cutter, substantially as described.

7. The combination with a work-support to engage the crease between the welt and upper of a boot or shoe, of a welt-beating hammer, a welt-guard between the work-support and hammer, the arrangement being such that the welt is received between the work-support and the welt-guard, which latter extends over the welt to receive and transmit the blows of the hammer thereto, to guide the welt and to protect the inseam, substantially as described.

8. The combination with a work-support, of a yielding welt-guide, an inseam-trimming cutter cooperating therewith to trim the inseam, means for pressing the cutter yieldingly against the welt-guide to maintain it in operative relation therewith irrespective of the variations of thickness of the welt, and means for actuating the cutter, substantially as described.

9. The combination with a work-support, of a yielding welt-guide, a rotary inseam-trimming cutter cooperating therewith to trim the inseam, means for pressing the cutter yieldingly against the welt-guide to maintain it in operative relation irrespective of variations of the thickness of the welt, and means for actuating the cutter, substantially as described.

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

FRANK E. BECKMAN.

Witnesses:

ALFRED H. HILDRETH,  
HORACE VAN EVEREN.