A. EPPLER.

MACHINE FOR REINFORCING INSOLES.

APPLICATION FILED FEB. 24, 1905.

979,836. Patented Dec. 27, 1910.

5 SHEETS—SHEET 1.

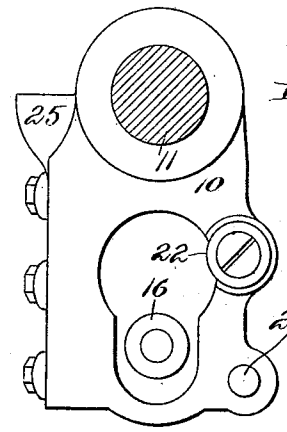

Fig. 6.

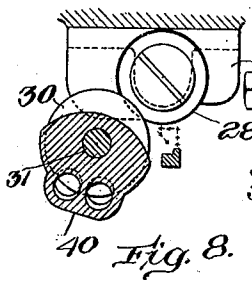

Fig. 8.

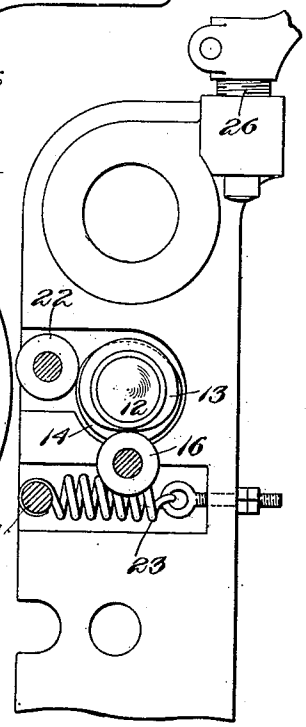

Fig. 5.

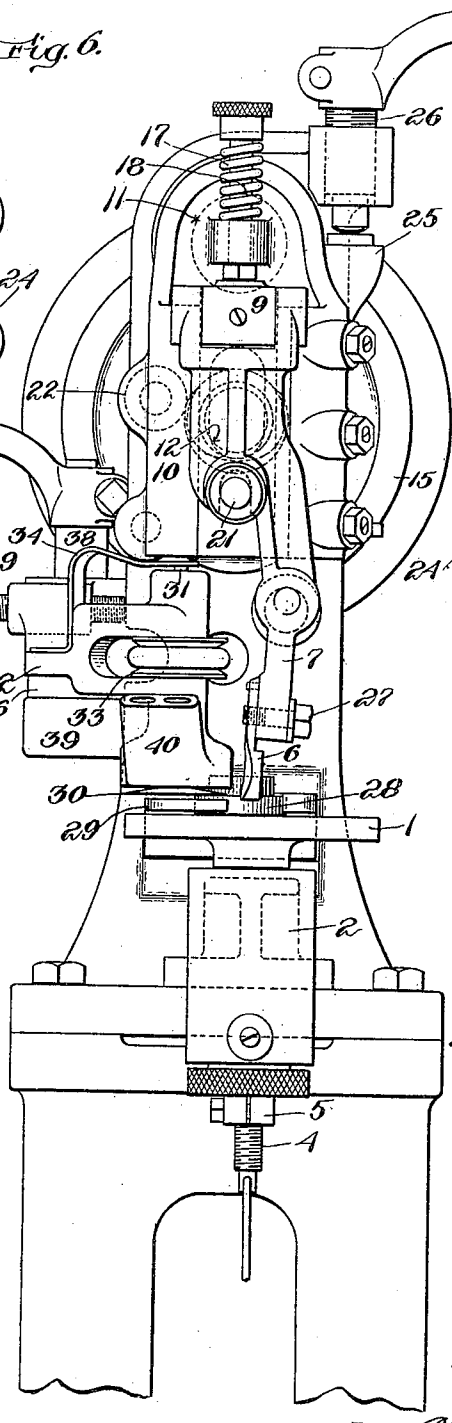

Fig. 1.

Witnesses:
Farnum F. Dorsey
Alfred N. Hildreth

Inventor:
Andrew Eppler
by Philip P. Van Emmon Fink
Attorneys.

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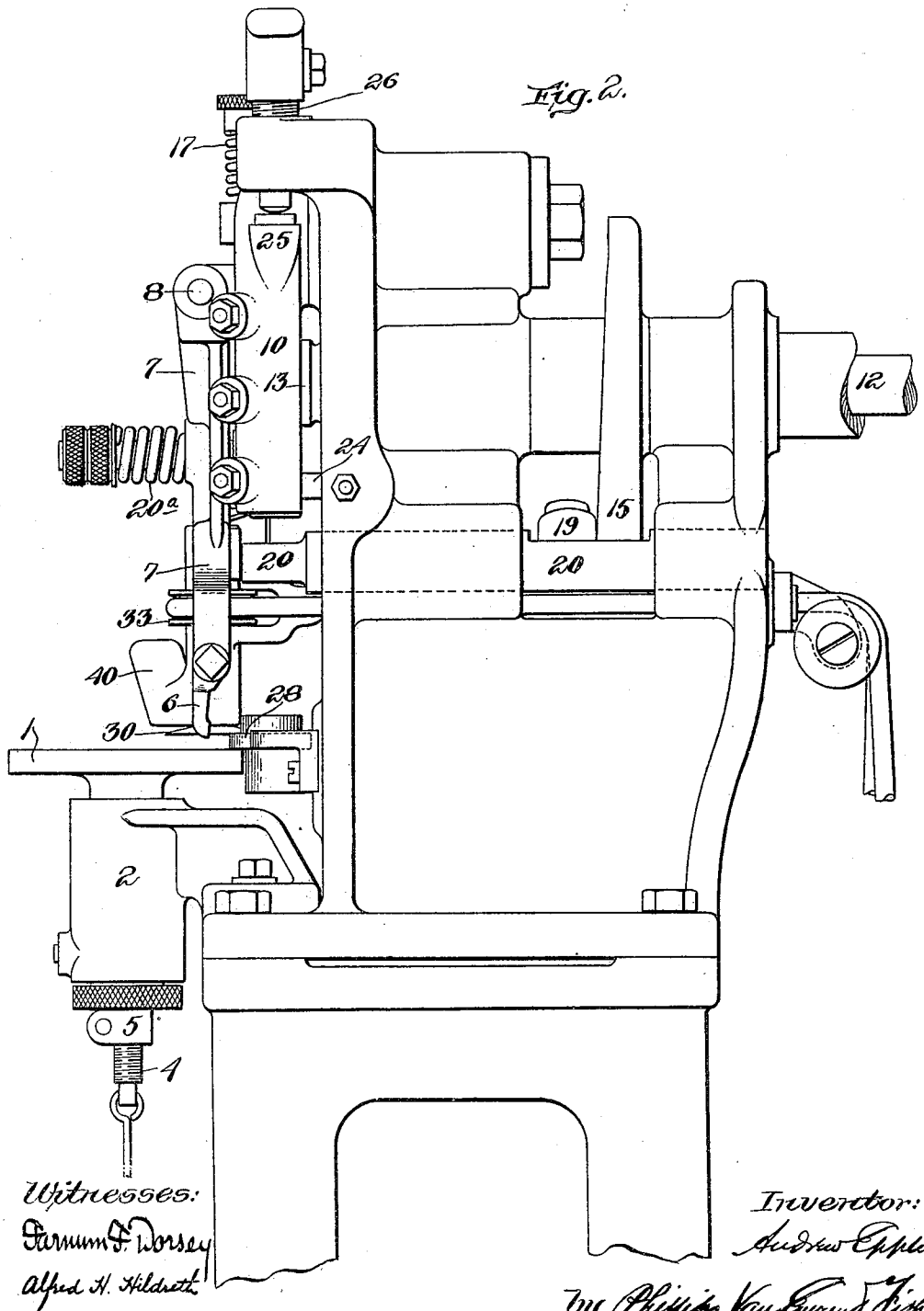
5 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Farnum F. Worsey
Alfred H. Hildreth

Inventor:
Andrew Eppler
by Phillips Van Orman & Fish
Attorneys.

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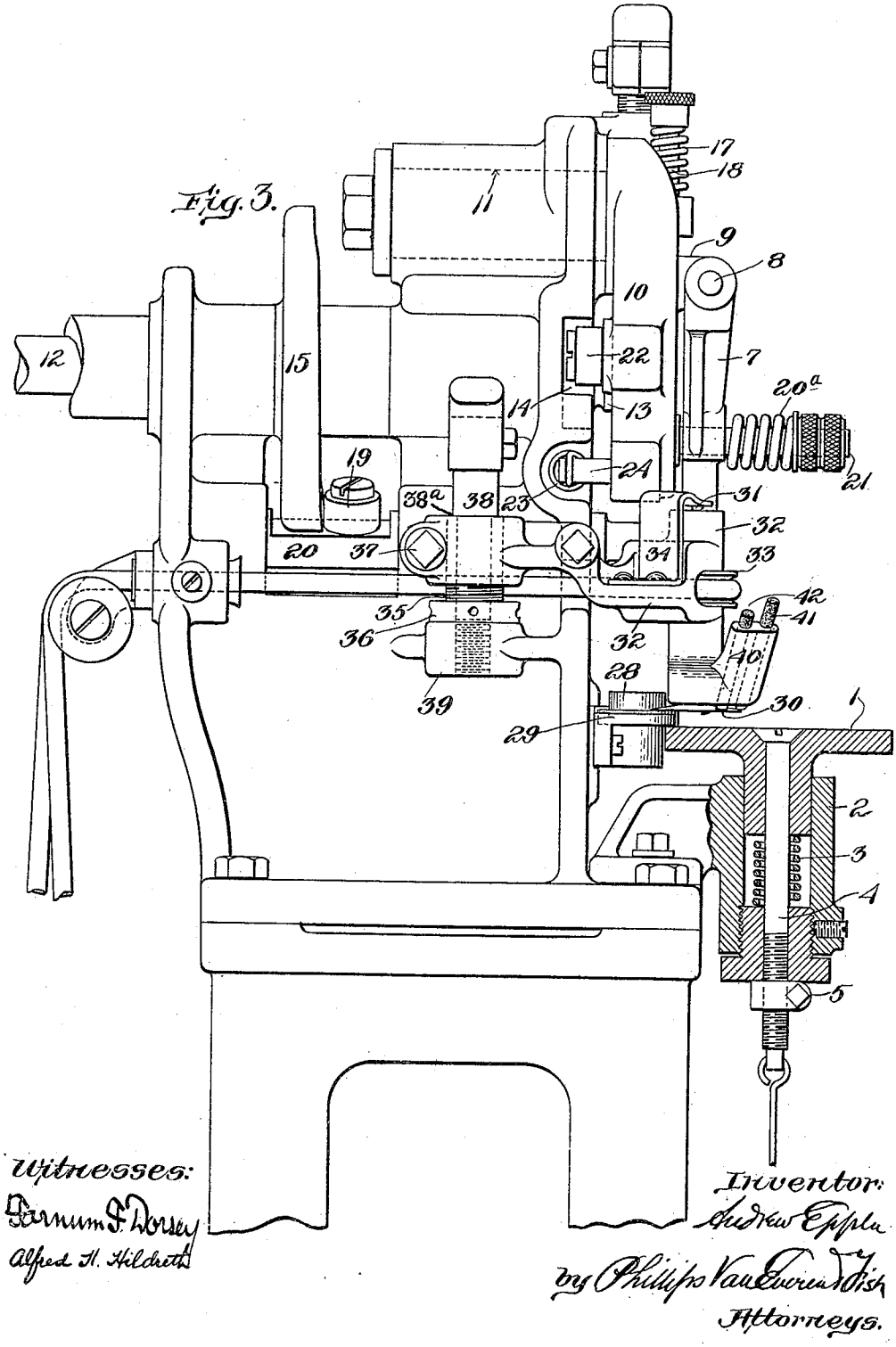
5 SHEETS—SHEET 3.

Fig. 3.



Witnesses:

Barnum F. Dorsey

Alfred H. Hildreth

Inventor:

Andrew Eppler

by Phillips Van Everen & Fish

Attorneys.

A. EPPLER.

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5 SHEETS—SHEET 4.

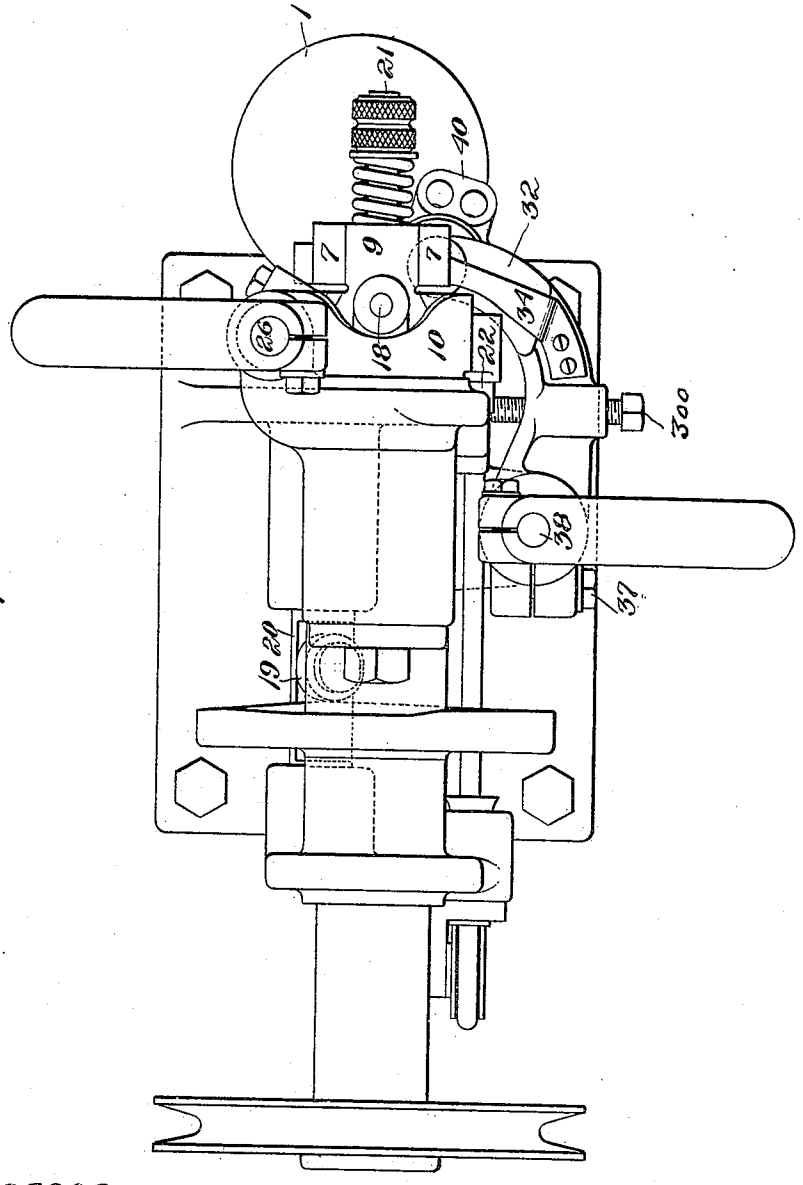

Fig. 4.

Witnesses:

Farnum F. Dorsey

Alfred H. Hildreth

Inventor:

Andrew Eppler

by Phillips Van Everen Fisk

Attorneys.

A. EPPLER.

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5 SHEETS—SHEET 5.

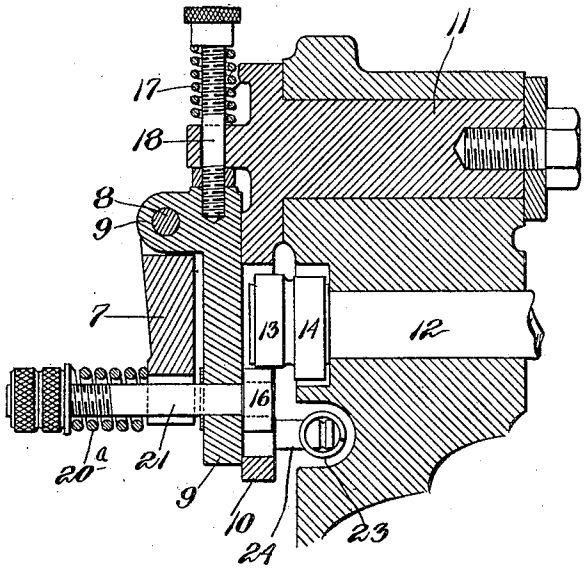

Fig. 7.

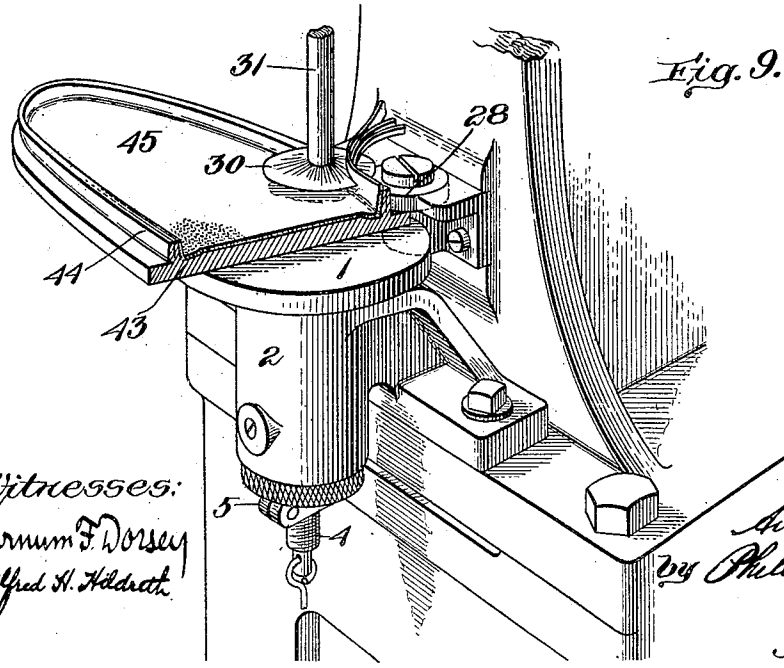

Fig. 9.

Witnesses:
Farnum F. Dorsey
Alfred H. Hildreth

Inventor:
Andrew Eppler
by Phillips, Van Buren & Fish
Attorneys.

UNITED STATES PATENT OFFICE.

ANDREW EPPLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR REINFORCING INSOLES.

979,836. Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed February 24, 1905. Serial No. 247,116.

To all whom it may concern:

Be it known that I, ANDREW EPPLER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Reinforcing Insoles; 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.

This invention relates to improvements in machines for reinforcing insoles.

The object of the invention is generally to improve the construction and operation of machines for use in applying canvas or other reinforcing material to insoles, and particularly to produce a machine for applying reinforcing material to insoles of the type in which two flaps are severed from the upper surface of the insole by oppositely disposed cuts and are bent upward against each other to form a compound lip.

To the above end the invention consists in the improved insole reinforcing machine hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of the machine; Fig. 2 is a side elevation looking from right to left in Fig. 1; Fig. 3 is a side elevation looking from left to right in Fig. 1; Fig. 4 is a plan view; Fig. 5 is a detail view in front elevation of a part of the mechanism for actuating the pressing device; Fig. 6 is a detailed rear elevation and Fig. 7 a vertical sectional view of another portion of the same mechanism; Fig. 8 is a plan view of the trimming knife and coöperating parts, and Fig. 9 is a perspective showing the operation of the trimming knife on an insole.

The instrumentalities of the illustrated embodiment of the invention comprise a rotary work support, a vertically and horizontally moving device for pressing the reinforcing material into place and for feeding the work, a coöperating supporting and guiding roll, and a trimming knife for trimming the edge of the compound lip of the insole.

The work support 1 is journaled in a bracket 2 on the frame of the machine so that it may rotate and freely permit the feeding of the work. The work support is normally sustained in its raised position by a spring 3, and its upward movement is limited by a stem 4 and an adjustable clamp nut 5 threaded thereon. By means of a suitable treadle (not shown) connected with the stem 4 the work support may be drawn down to insert an insole.

The presser 6 is arranged to move vertically to engage and disengage the reinforcing material lying upon the upper surface of the insole, to move in and out to press the reinforcing material against the inside of the compound lip on the insole and to move horizontally at right angles to the previously described movements in order to feed the work against the trimming knife. In order to facilitate the feeding of the work the inner face of the presser is provided with a feed point as shown in Figs. 2 and 8.

The mechanism for actuating the presser is constructed as follows:—The presser is fixed to the lower end of an arm 7 pivoted at 8 upon a slide 9 which moves vertically in guides on an arm or carrier 10 integral with a horizontal rock shaft 11 journaled in the frame of the machine. The power shaft 12, which is actuated by suitable connections with a source of power, is journaled in the frame of the machine and carries cams 13, 14 and 15 by which the several movements are imparted to the presser mechanism above described. The cam 13 engages a roll 16 journaled on the slide 9, and imparts to the slide and to the arm 7 and the presser the necessary downward movement while the said parts are raised by means of a spring 17 bearing at its lower end against a lug on the arm 10, and connected with the slide 9 by a stem 18 with an adjustable nut thereon. The cam 14 imparts the horizontal feeding movement to the presser. It engages the cam roll 22 journaled on the arm 10 and oscillates the arm and the shaft 11 in the direction of feed. The return movement is caused by a spring 23 secured at one end to the frame of the machine and at the other end to a pin 24 on the arm 10 (see Fig. 5). The in and out movement of the presser by which it presses the reinforcing material against the lip, is imparted to it by the cam 15 which engages a roll 19 on a horizontal slide 20, engaging at its forward end a bearing surface on the back of the arm 7. The slide 20 imparts outward movements to the arm and presser and these parts are moved inward by a spring 20ª bearing at one end

against the arm 7 and connected with the slide 9 by a stem 21 and adjustable nuts threaded thereon.

Means are provided for adjusting the length of the feeding movement of the presser. The arm 10 is provided with a lug 25 arranged to engage a stop screw 26 threaded in a lug on the frame and provided with a handle by which it may be adjusted. This arrangement limits the return movement of the arm 10 under the influence of the spring 23 and thus the feeding movement of the presser may be reduced by screwing the stop 26 downward. The presser is adjustably connected to the arm 7 by a screw 27 engaging a slot in the arm so that the presser may be adjusted vertically upon the arm to adjust the pressure with which it engages the upper surface of the work.

The lip of the insole is supported against the pressing and feeding movement of the presser by a supporting and guiding roll 28 against which the outer surface of the lip rests. This roll serves also to support the lip against the action of the lip-trimming knife, as will be presently described. The roll 28 is partly surrounded by a fixed guide 29 which aids in guiding the work through the machine.

The trimming knife 30 comprises a rotating circular blade carried by a shaft 31 journaled in a carrier 32 and provided with a pulley 33 which is actuated by belt connections with a suitable source of power so as to rotate the knife continuously during the operation of the machine. The upper end of the shaft 31 is pressed downward by a spring 34 which acts to hold the knife 30 against the upper surface of the roll 28 so that the knife and the roll form shears between which the projecting margin of the lip is trimmed, as shown in Figs. 8 and 9.

In order that the trimming knife may be quickly removed from working position or returned thereto, when it is desired to sharpen or replace the knife, the knife carrier 32 is pivotally mounted on the frame of the machine by means of a stem 38. The rear end of the carrier 32 is split and provided with a clamping screw 37 by which it is clamped upon a sleeve 35 screwed therein. The stem 38 is provided at its upper end with a handle by which it may be turned, and passes loosely through the sleeve 35 and is threaded into a lug 39 on the frame of the machine. By turning the stem 38 the sleeve 35 and the knife carrier 32 may be clamped securely in position, between a shoulder 38ª on the stem and the lug 39 of the machine frame, but when the stem 38 is unscrewed the carrier may be swung back about the stem 38 as a pivot. The sleeve 35 is provided with a perforated flange 36 by which it may be turned in the carrier 32 when the screw 37 has been loosened and by this means the carrier may be raised or lowered so as to adjust the pressure of the spring 34 against the shaft 31. An adjustable stop screw 300 mounted in the carrier 32 and arranged to engage the frame of the machine as best shown in Fig. 4, serves as an adjustable stop to determine the working position of the rotary lip trimming knife.

The rubber cement with which the parts of the insole are secured together tends to adhere to the knife and to clog it. Means are therefore provided for oiling the knife to prevent the adhesion of the cement. The knife carrier 32 has an extension 40 in which are two sockets (shown particularly in Fig. 8), and in one of these sockets a felt wick 41 saturated with oil is inserted and the lower end of the wick bears against the upper surface of the knife and keeps the knife moist with oil. A stick of abrasive material 42 may be inserted in the other socket and by pressing upon the abrasive material and turning it slightly while the knife is rotating, the knife will be sharpened without removal from the machine.

The operation of the machine is as follows:—The insole 43 (as shown in Fig. 9) comprises a piece of leather on which a compound lip 44 has been formed by turning up and securing together two flaps cut from the upper surface of the leather by means of oppositely disposed cuts. This is prepared for the operation of the present machine by spreading cement upon its upper surface and upon the inner surface of the lip and laying thereon a sheet of canvas or other reinforcing material which is roughly cut to the proper outline. The work is then inserted in the machine by drawing down the work support by means of the treadle and inserting the inner margin of the insole between the roll 28 and the work support. Upon setting the machine in operation the presser first descends and engages the reinforcing material a short distance from the lip. It then moves inward and slightly downward thereby drawing the reinforcing material down into the channel and pressing it against the inner side of the lip. The last portion of this movement is performed rapidly so that the presser strikes a blow against the reinforcing material upon the lip and thereby secures the parts firmly in position. The presser then moves in the direction of feed so as to feed the work against the trimming knife. The trimming knife rotates continuously and trims off the projecting margins of the lip and the reinforcing material, as shown in Fig. 9, leaving the lip of uniform height.

Owing to the arrangement of the cam 15 and the spring 20ª for imparting the in

and out movements to the presser, the presser moves outward positively and inward yieldingly so as to accommodate itself to varying thicknesses of lip. The adjustable connection between the presser and the arm 7 permits adjustment of the presser to accommodate it to operate upon insoles of varying thickness, the presser being adjusted so as to engage the reinforcing material firmly but without causing unnecessary depression of the work and of the work support. The yielding work support accommodates itself to transient variations in the thickness of the work.

Although the present invention has been described in connection with a machine for operating upon insoles of a particular kind, many features of the invention are applicable to machines for operating upon insoles of other kinds, and the invention is not limited to the precise details of construction and operation above described, but may be embodied in other forms broadly defined in the claims.

What is claimed as new is:—

1. An insole reinforcing machine, having, in combination, a pressing device, an arm carrying said device pivotally mounted to move in and out toward and from the lip of an insole, a carrier for the arm mounted to move back and forth in the direction of feed, means for actuating the carrier, a cam operated plunger for moving said arm outwardly and a spring for moving said arm inwardly, substantially as described.

2. An insole-reinforcing machine, having, in combination, a work support, a pressing device, and means for moving the pressing device downward to engage the reinforcing material on the insole and then move inward and farther downward so as to draw the material into the channel and press it against the lip, substantially as described.

3. An insole-reinforcing machine, having, in combination, a work support, a pressing device, and means for moving the latter downward to engage the reinforcing material on the insole and move inward and farther downward so as to draw the material into the channel, the last part of such movement being comparatively quick so as to cause the pressing device to strike a blow against the reinforcing material on the inside of the lip, substantially as described.

4. An insole-reinforcing machine, having, in combination, a work support, a pressing device, and means for moving the pressing device first downward to engage the reinforcing material on the insole and then inward and farther downward to draw it into the channel, and then substantially perpendicular to the direction of the latter movement so as to feed the work, substantially as described.

5. An insole-reinforcing machine, having, in combination, a work support, a pressing device provided with a feeding point on its inner surface to engage the lip of the insole, and means for moving the pressing device to first engage the reinforcing material, and then inward and farther downward to press the reinforcing material against the lip and into the angle of the channel and then in a direction to feed the work, substantially as described.

6. An insole-reinforcing machine, having, in combination, a pressing device and means for actuating it comprising an oscillating carrier, a slide to which the pressing device is fixed arranged to slide longitudinally on the carrier, a power shaft, two cams thereon, and cam rolls carried by the carrier and the slide and arranged to engage the said cams to actuate the slide and the carrier and impart horizontal and vertical movements to the pressing device, substantially as described.

7. An insole-reinforcing machine, having, in combination, provision for supporting an insole and for feeding it through the machine, a guide roll bearing at its periphery against the outer side of the lip of the insole and a rotating flat knife for trimming the edge of the lip, substantially as described.

8. An insole-reinforcing machine, having, in combination, a guide roll for supporting one side of the lip, a rotating flat knife for trimming the lip, means for actuating the knife, and yielding means for constantly pressing the knife laterally against the end of the guide roll, substantially as described.

9. An insole-reinforcing machine, having, in combination with the frame of the machine, a carrier pivoted thereto, a work support arranged to support an insole in a horizontal plane, means for applying reinforcing material to the insole and a rotary lip-trimming knife journaled in the carrier, the carrier being arranged to swing horizontally to carry the knife out of working position, substantially as described.

10. An insole-reinforcing machine, having, in combination, with the frame of the machine, a carrier mounted to move horizontally thereon, a work support arranged to support an insole in a horizontal plane, means for applying reinforcing material to the insole, a rotary lip-trimming knife journaled in the carrier, and an adjustable stop to determine the working position of the knife, substantially as described.

11. An insole reinforcing machine, having, in combination, means for applying cemented reinforcing material to the insole, a rotary lip trimming knife, means for actuating the knife, and a carrier having substantially vertical openings above the knife adapted to receive and hold against the knife respectively a block of abrasive material and an oil saturated wick to concur-

rently sharpen the knife and clean it of the cement adhering thereto, substantially as described.

12. An insole-reinforcing machine having, in combination, a work support, a pressing device and mechanism for actuating the pressing device comprising a pivoted arm and a cam for swinging the arm, a slide mounted on the arm, a cam for reciprocating the slide and springs for imparting return movements to the arm and the slide, substantially as described.

13. An insole reinforcing machine, having, in combination, a vibrating carrier arranged to oscillate in the direction of feed, a vertically movable slide mounted on the carrier, a presser carrying arm pivoted on the slide to move inwardly and outwardly toward and from the lip of an insole, and means for actuating the carrier, slide and arm, substantially as described.

14. An insole reinforcing machine, having, in combination, a work support, a support movable in the direction of feed for the outer surface of the lip of an insole, a presser, and means for actuating the presser to force the reinforcing material against the inner surface of the lip and then coöperate with the support for the outer surface of the lip to feed the work, substantially as described.

15. An insole-reinforcing machine, having, in combination, a guide for supporting one side of the lip, a lip trimming knife movable horizontally toward and from the guide, means for actuating the knife to cut the lip, and a spring arranged to operate on said knife and maintain it against said guide to form shears with the guide by which the lip is trimmed, substantially as described.

16. An insole reinforcing machine, having, in combination, a work support, a trimming knife, means for sharpening the knife, a guide roll bearing against the lip on the insole, and means for pressing the knife against the roll laterally, substantially as described.

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

ANDREW EPPLER.

Witnesses:

FARNUM F. DORSEY,

HORACE VAN EVEREN.