No. 898,016. PATENTED SEPT. 8, 1908.

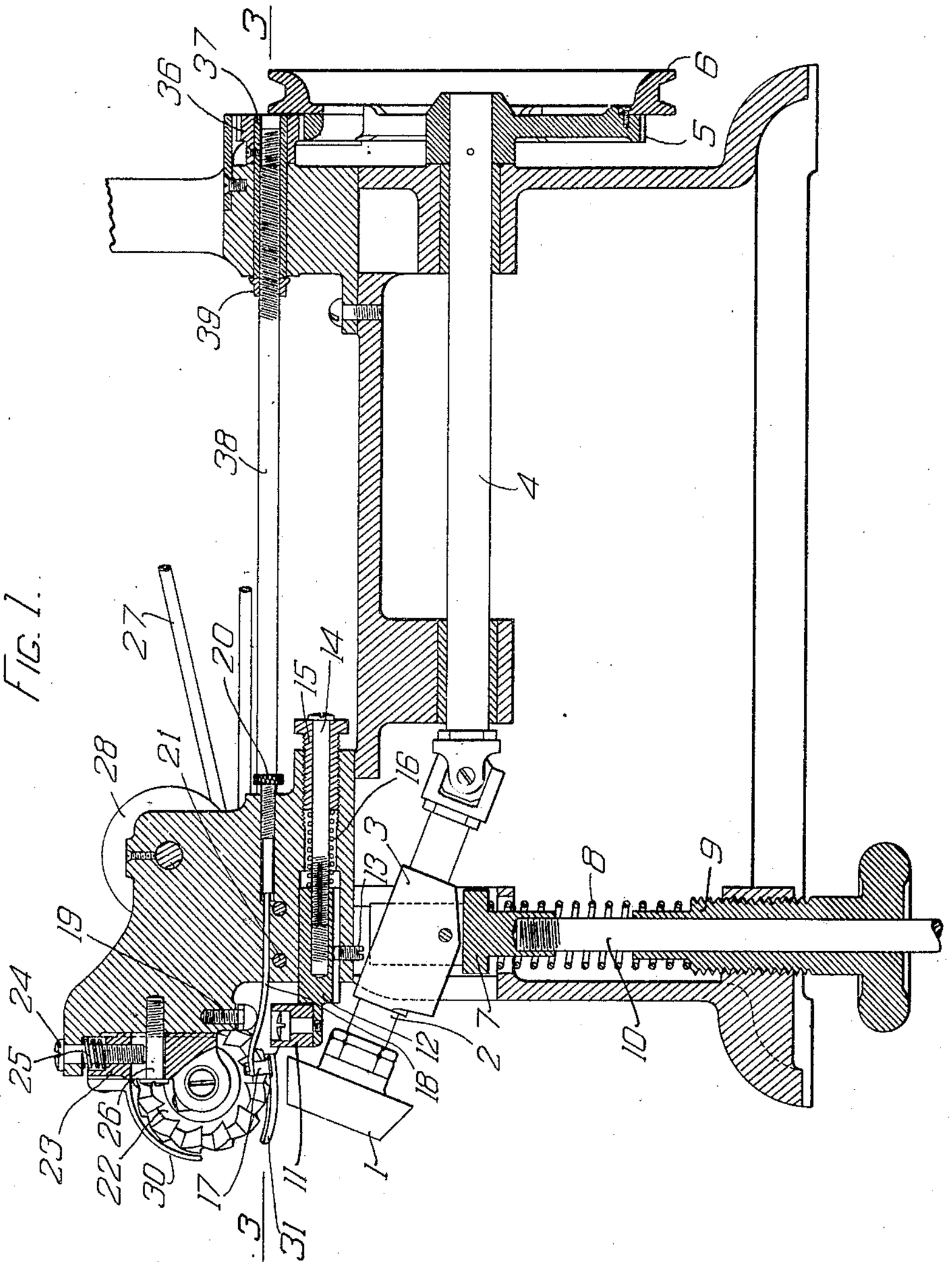
C. P. STANBON.

CHANNEL FLAP TURNING MACHINE.

APPLICATION FILED OCT. 3, 1904.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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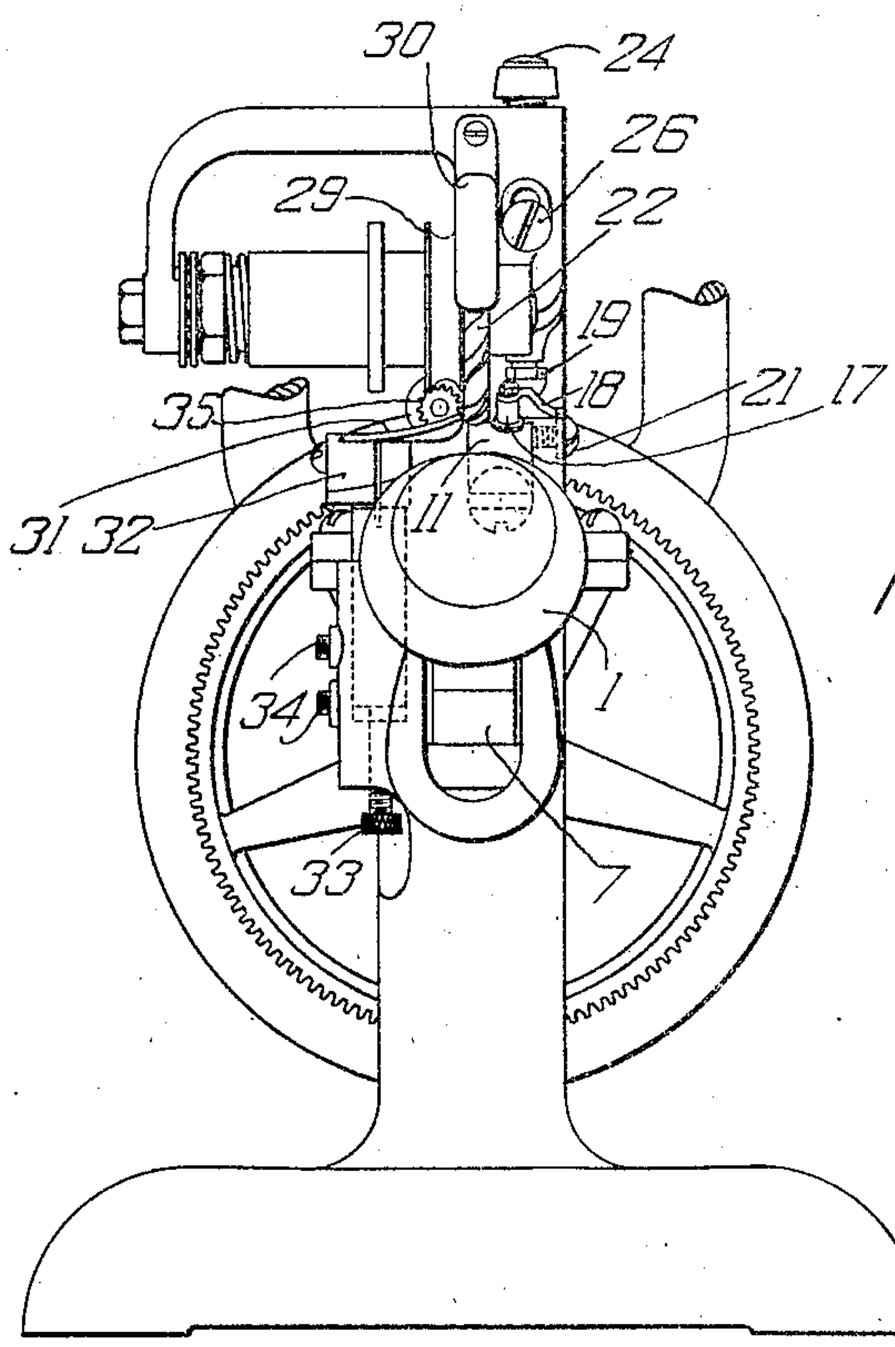

FIG. 2.

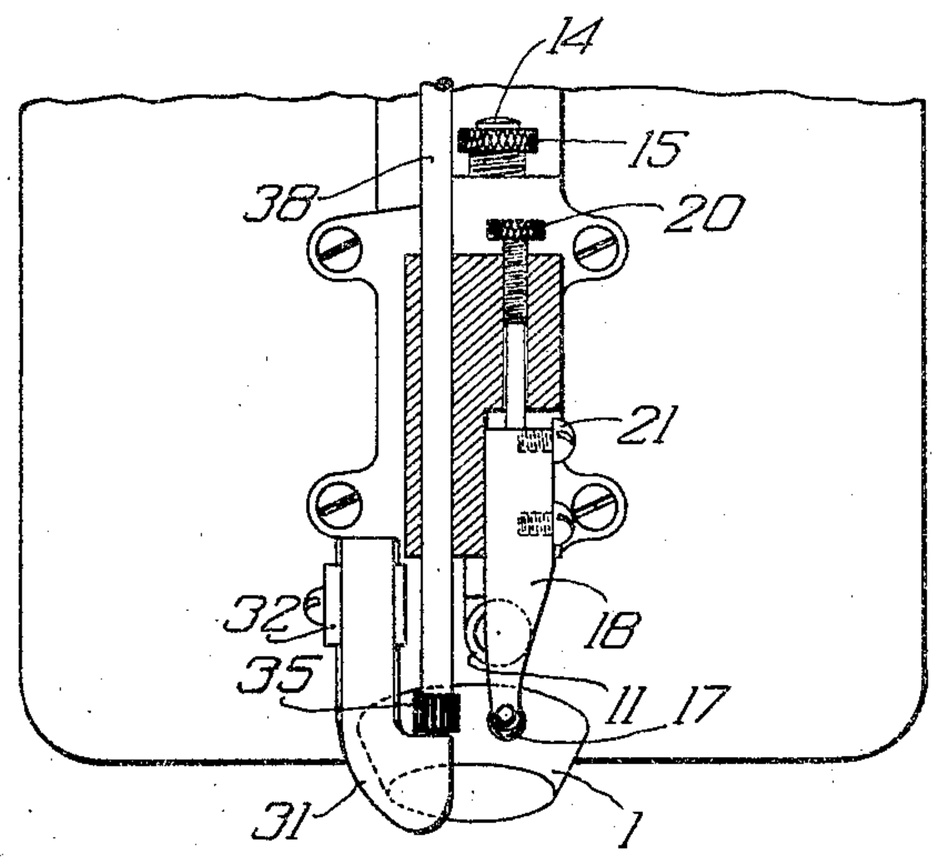

FIG. 3.

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CHANNEL-FLAP-TURNING MACHINE.

No. 898,016. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed October 3, 1904. Serial No. 226,899.

To all whom it may concern:

Be it known that I, CHARLES P. STANBON, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Channel-Flap-Turning 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 channel flap turning machines which are used in the manufacture of boots and shoes to turn over the channel flap against the sole and thereby open up the channel and prepare it for the reception of the stitches or other fastening devices by which the sole is secured to the shoe.

The object of the invention is to improve the construction and mode of operation of machines of the class referred to and to increase their efficiency.

In channel flap turning machines as heretofore constructed the feeding of the sole through the machine has been accomplished by means of a rotating work support upon which the sole rests. In order to cause the work support to feed the work it has been necessary to provide it with a roughened or grooved surface. The work support acts upon that surface of the sole which is uppermost in the completed shoe, and on account of its corrugated or roughened surface often mars and injures that portion of the sole which forms the projecting edge in the completed shoe.

A feature of the present invention contemplates providing a feed wheel for feeding the work which acts upon the channeled surface of the sole outside of the lip. This feeding wheel acts upon that surface of the sole which is lowermost in the completed shoe, and upon a portion which is covered by the channel flap when the flap is laid after the sole has been secured to the shoe. The wheel can thus be provided with a corrugated or grooved surface so as to positively engage and feed the work and thereby partly or wholly relieve the work support from performing the feeding function. The use of this feed wheel tends to prevent the work support from marring the upper surface of the edge of the sole, even when the surface of the work support is roughened or corrugated. It also allows the use of a work support provided with a smooth surface, and such a work support is preferably employed.

Other features of the present invention relate to certain improvements in the channel flap turning tool or wiper, and in the means for mounting the same, to an improved channel opening tool, and its means of support and adjustment, and to an improved edge gage.

These features of invention consist in certain devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

The various features of the present invention will be clearly understood from an inspection of the accompanying drawings, in which is illustrated a channel flap turning machine embodying the same in their preferred form.

Referring to the drawings—Figure 1 is a longitudinal sectional view of this machine, the driving shaft and a portion of the frame at the rear of the machine supporting the same being omitted. Fig. 2 is a view in front elevation of so much of the machine as is illustrated in Fig. 1, and Fig. 3 is a sectional plan view of the front portion of the machine taken on a plane indicated by the line 3—3 on Fig. 1.

The machine illustrated in the drawings comprises a work support upon which that surface of the sole which is uppermost in the completed shoe rests, an edge gage against which the edge of the sole bears as it is fed through the machine, a channel opening tool by which the channel flap is raised into a position substantially perpendicular to the sole, a flap turning wheel or wiper mounted to rotate on an axis substantially parallel to the surface of the sole, and which acts to turn the flap over against the surface of the sole, a feeding wheel which bears upon the channeled surface of the sole outside of the channel flap, and a presser foot which bears upon the channel flap after it has been turned over against the surface of the sole by the flap turning wheel.

The work support is indicated at 1, and as illustrated is frusto conical in shape and provided with a smooth work-engaging surface. The work support is secured upon the outer end of a shaft 2 journaled in a block 3 and free to slide longitudinally in its bearings. The rear end of the shaft 2 is connected by a universal joint to a shaft 4 journaled in bearings in the frame of the machine

and this shaft is provided at its rear end with a gear wheel 5 to which is secured a belt pulley 6. The pulley 6 is driven by means of a belt from the driving shaft of the machine, and through the shafts 4 and 2 imparts a constant rotation to the work support 1 in a direction to feed the work through the machine.

The block 3 is pivotally supported in a slide 7 mounted in a vertical guideway in the front portion of the machine frame. This slide is pressed upwardly by a coiled spring 8 interposed between the slide and a sleeve 9 having a screw-threaded engagement with a projection at the base portion of the frame of the machine. The spring 8 forces the slide 7 upwardly and holds the work support yieldingly in position during the channel opening and flap turning operations. In order to to allow the work support to be depressed when work is to be inserted in the machine, the slide 7 is connected to a rod 10 which extends through the spring 8 and sleeve 9, and which is connected in any suitable manner to a foot treadle.

The edge guide against which the edge of the sole bears as it is fed through the machine is indicated at 11, and as shown consists of a roller mounted to rotate freely upon a stud secured to the front end of a horizontal slide 12. The slide 12 is cylindrical and is mounted in a cylindrical guideway in the frame of the machine, being prevented from turning by means of a screw 13 which engages a groove cut in the slide. The slide 12 is provided at its rear end with a screw-threaded opening which is engaged by the split end of a rod 14. This rod extends through a sleeve 15 having a screw-threaded engagement with the frame of the machine, and at its rear end is provided with a head which bears against the rear end of the sleeve. A spring 16 is coiled around the rod 14 and interposed between the adjacent ends of the slide 12 and sleeve 15. The edge gage 11 is thus yieldingly mounted so that it is capable of moving in the plane of the sole transversely to the line of feed. The initial position of the edge gage can be adjusted by adjusting the sleeve 15, and it will be seen that this adjustment does not alter the tension of the spring 16.

As the sole passes through the machine it is first acted upon by a channel opening tool which is indicated at 17. As shown, this tool consists of a roller provided with a flange at its lower end and mounted to rotate freely upon a stud secured in the forward end of a resilient arm or spring plate 18. The channel opening tool is thus yieldingly mounted so as to be capable of moving in a direction substantially perpendicular to the surface of the sole, and can accommodate itself to any variations in the thickness of the stock or in the depth of the channel. The channel opening tool can be adjusted vertically or in a direction perpendicular to the surface of the sole, by means of a set screw 19 which screws into the frame of the machine, and the head of which is arranged to bear upon the upper surface of the arm 18. In order to provide for an adjustment of the channel opening tool in the plane of the sole transversely to the direction of feed, the arm 18 is mounted in a horizontal guideway in the frame of the machine and is arranged to bear at its rear end against an adjusting screw 20. The arm is securely clamped in its adjusted position by clamping screws 21, best shown in Fig. 3.

After the channel flap has been turned into a substantially vertical position by the channel opening tool, it is engaged by a flap turning wheel or wiper indicated at 22. This flap turning wheel is mounted to rotate upon an axis substantially parallel with the surface of the sole and its periphery is grooved to form a series of projections, which during the rotation of the wheel wipe transversely across the channel flap and turn it over against the surface of the sole. The grooves in the periphery of the flap turning wheel are preferably inclined, as indicated in Fig. 2, so that the periphery of the wheel has an appearance somewhat similar to that of a worm gear, and the projections on the periphery of the wheel act to impel the work in the direction of the feed. The stud upon which the flap turning wheel is mounted is secured in a frame 23 mounted upon the upper portion of the main frame of the machine so as to be capable of vertical adjustment, or in a direction substantially perpendicular to the surface of the sole. The vertical adjustment of the frame 23 is accomplished by means of an adjusting screw 24 which passes through a lug on the upper portion of the main frame of the machine and screws into the frame 23, a coiled spring 25 being interposed between the lug and the frame 23. The set screw 26 passing through a slot in the frame 23 and screwing into the main frame serves to lock the frame 23 in its adjusted position. The vertical adjustment of the frame 23 moves the flap turning wheel towards or from the surface of the sole, and thus the wheel can be adjusted to suit the style of work or the quality of stock being operated upon. The flap turning wheel is rotated constantly in a direction to turn the channel flap over against the surface of the sole by means of a belt 27 which is driven from a pulley on the main driving shaft and which passes beneath an idle pulley 28 and around a pulley 29 rigid with the flap turning wheel. A guard 30 is secured to the frame 23 and projects over a portion of the periphery of the flap turning wheel so as to protect the operator from injury.

After the flap has been turned over against the sole by the flap turning wheel it passes beneath a presser foot indicated at 31 which

irons down the flap and sets it in the position to which it has been turned by the wheel. This presser foot, as shown, consists of a plate secured by a clamp on the upper end of a vertical slide 32, the construction of the clamp being such that the presser foot can be adjusted transversely to the direction of feed, as is clearly shown in Fig. 3. The slide 32 rests upon a set screw 33, by means of which the slide and the presser foot carried thereby can be adjusted vertically to cause the presser foot to exert the required amount of pressure on the channel flap. The slide is held in its adjusted position by clamping screws 34.

The feed wheel which engages the channeled surface of the sole outside of the channel flap is indicated at 35. As shown, this wheel is provided with a roughened or grooved surface so as to positively engage the work and feed it with certainty through the machine. The wheel is arranged at one side of the flap turning wheel so that it acts upon the sole after the channel flap has been turned over. The wheel can be arranged to act in the channel so that the surface acted upon by the wheel is covered by the channel flap in the completed shoe.

A constant rotation in a direction to cause the work to be fed through the machine is imparted to the wheel from the gear 5 on the shaft 4 which meshes with a pinion 36 fast upon a sleeve 37 rigidly secured to the shaft 38, upon the forward end of which the feeding wheel is mounted. The sleeve 37 is mounted to rotate in a bearing in the rear portion of the machine frame. The forward end of the shaft 38 is journaled to rotate in a bearing in the front portion of the machine frame, and can slide longitudinally in its bearing. The rear end of the shaft 38 has a screw-threaded engagement with the sleeve 37 and is locked to the sleeve by means of a locking nut 39. Provision is thus made for adjusting the feeding wheel in the plane of the sole transversely to the direction of feed so that the wheel can be brought into a position to act to the best advantage on different styles of work.

The operation of the machine illustrated in the drawings has been indicated in connection with the description given above of the construction and arrangement of the various parts, and will be readily understood by those skilled in the art, without a separate description thereof.

The invention having been thus described, what is claimed is:—

1. A channel flap turning machine, having in combination, a flap turning tool, a work support, and a feed wheel acting upon the channeled surface of the sole outside of the channel flap, a shaft carrying said feed wheel, and means for adjusting said shaft and feed wheel in the plane of the sole transversely to the direction of feed, substantially as described.

2. A channel flap turning machine, having in combination, a flap turning tool, a work support, a feed wheel acting upon the channeled surface of the sole outside of the channel flap, and means for adjusting the feed wheel in the plane of the sole transversely to the direction of feed, substantially as described.

3. A channel flap turning machine, having in combination, a flap turning tool, a feed wheel acting upon the channeled surface of the sole outside of the channel flap, a rotary work support coöperating with the feed wheel to feed the work, means for actuating the feed wheel and work support, and means for relatively adjusting the feed wheel and work support transversely to the direction of feed, substantially as described.

4. A channel flap turning machine, having in combination, a feed wheel arranged to engage the channel surface, a flap turning wheel mounted to rotate on an axis substantially parallel with the surface of the sole, the acting face of the said wheel moving in a direction transverse of the channel flap, and means for adjusting said wheel in a direction substantially perpendicular to the surface of the sole, substantially as described.

5. In a channel flap turning machine, a flap turning wheel adjustably mounted to rotate on an axis substantially parallel with the surface of the sole, and provided with projections upon its periphery shaped to impel the work in the direction of the feed, and a feed wheel acting upon the channeled surface of the sole outside the channel flap, substantially as described.

6. A channel flap turning machine, having in combination, a flap turning tool, and a channel opening tool yieldingly mounted to move in a direction substantially perpendicular to the surface of the sole, substantially as described.

7. A channel flap turning machine having, in combination, a flap turning tool, a presser-foot, a yieldingly mounted channel opening tool, an edge gage yieldingly mounted to move in the plane of the sole transversely to the direction of feed, independent adjusting means for positively adjusting the position of the edge gage to any predetermined point within the limits of its adjustability.

8. A channel flap turning machine having, in combination, a flap turning tool, a feed wheel acting upon the lower surface of the sole outside of the channel flap, a yieldingly mounted rotary work support coöperating with the feed wheel to feed the work, means for actuating the feed wheel and work support and means for relatively adjusting the feed wheel and work support transversely to the direction of feed, and positive means for vertically adjusting the work support.

9. A channel flap turning machine having, in combination, a horizontally adjustable feed wheel arranged to engage the channel, a flap turning tool, a channel opening tool, and means for adjusting the channel opening tool in the plane of the sole transversely to the direction of feed, substantially as described.

10. A channel flap turning machine, having in combination, a flap turning tool, a channel opening tool, means for adjusting the channel opening tool in a direction substantially perpendicular to the surface of the sole, and means for adjusting said channel opening tool in the plane of the sole transversely to the direction of feed, substantially as described.

11. A channel flap turning machine, having in combination, a flap turning tool, a channel opening tool, and a resilient arm by which the channel opening tool is yieldingly mounted to move in a direction substantially perpendicular to the surface of the sole, substantially as described.

12. In a channel flap turning machine, the combination of a flap turning tool, a channel opening tool, and an edge gage comprising a roller, a slide carrying said roller, a spring normally tending to move the said roller transversely to the line of feed, and means for positively positioning the edge gage at any predetermined point within the limits of its adjustability and a feed wheel adapted to engage the surface of the sole to be channeled.

13. A channel flap turning machine having, in combination, a flap turning tool, a channel opening tool, a work support, and a feed wheel acting upon the channel surface, a shaft carrying said feed wheel, and means for adjusting said shaft and feed wheel in the plane of the sole transversely to the direction of feed.

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

CHARLES P. STANBON.

Witnesses:
FRED O. FISH,
FARNUM F. DORSEY.