E. E. ORR.

SOLE ROUNDING MACHINE.

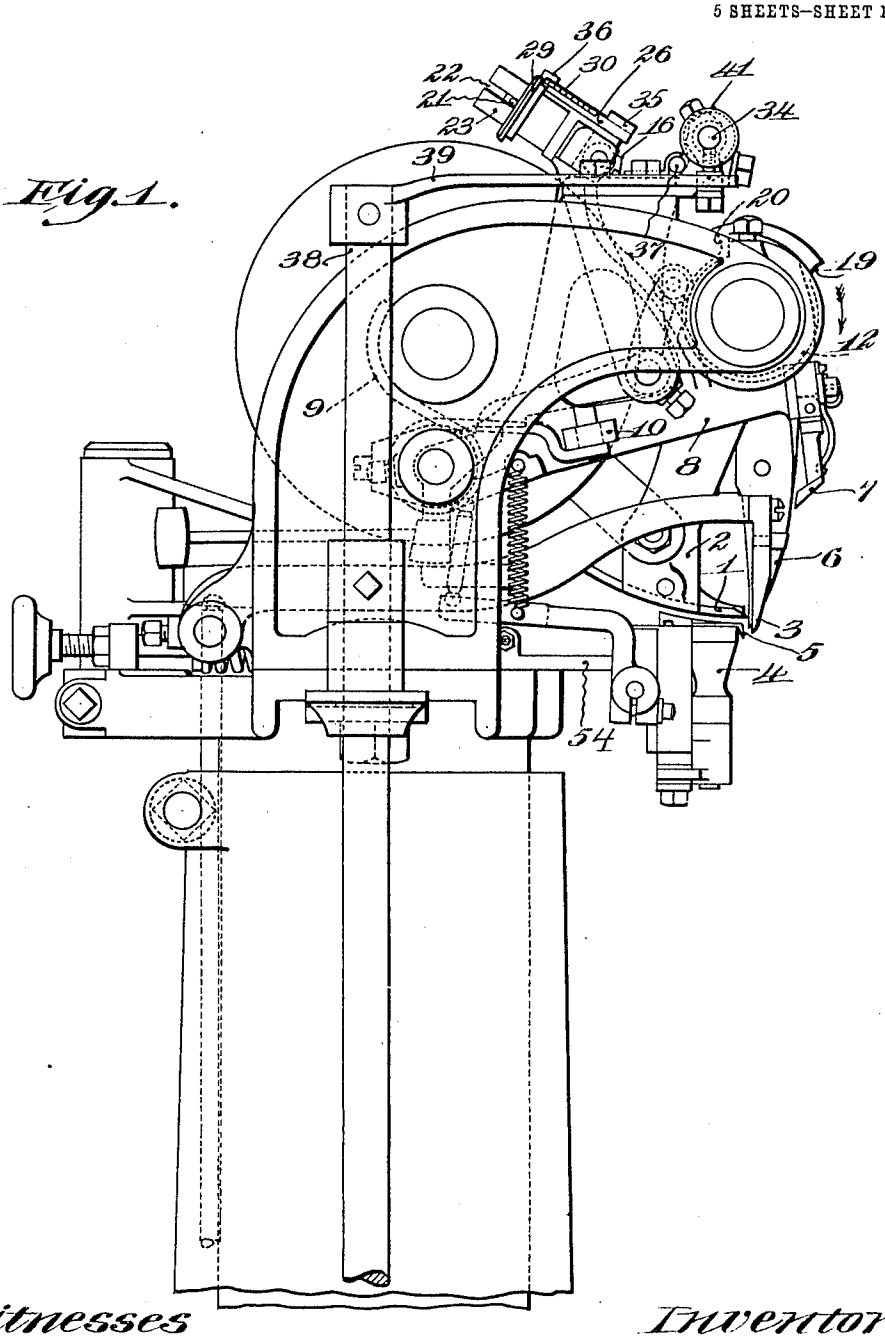
APPLICATION FILED NOV. 4, 1910.

1,066,940.

Patented July 8, 1913.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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5 SHEETS—SHEET 2.

Fig. 2.

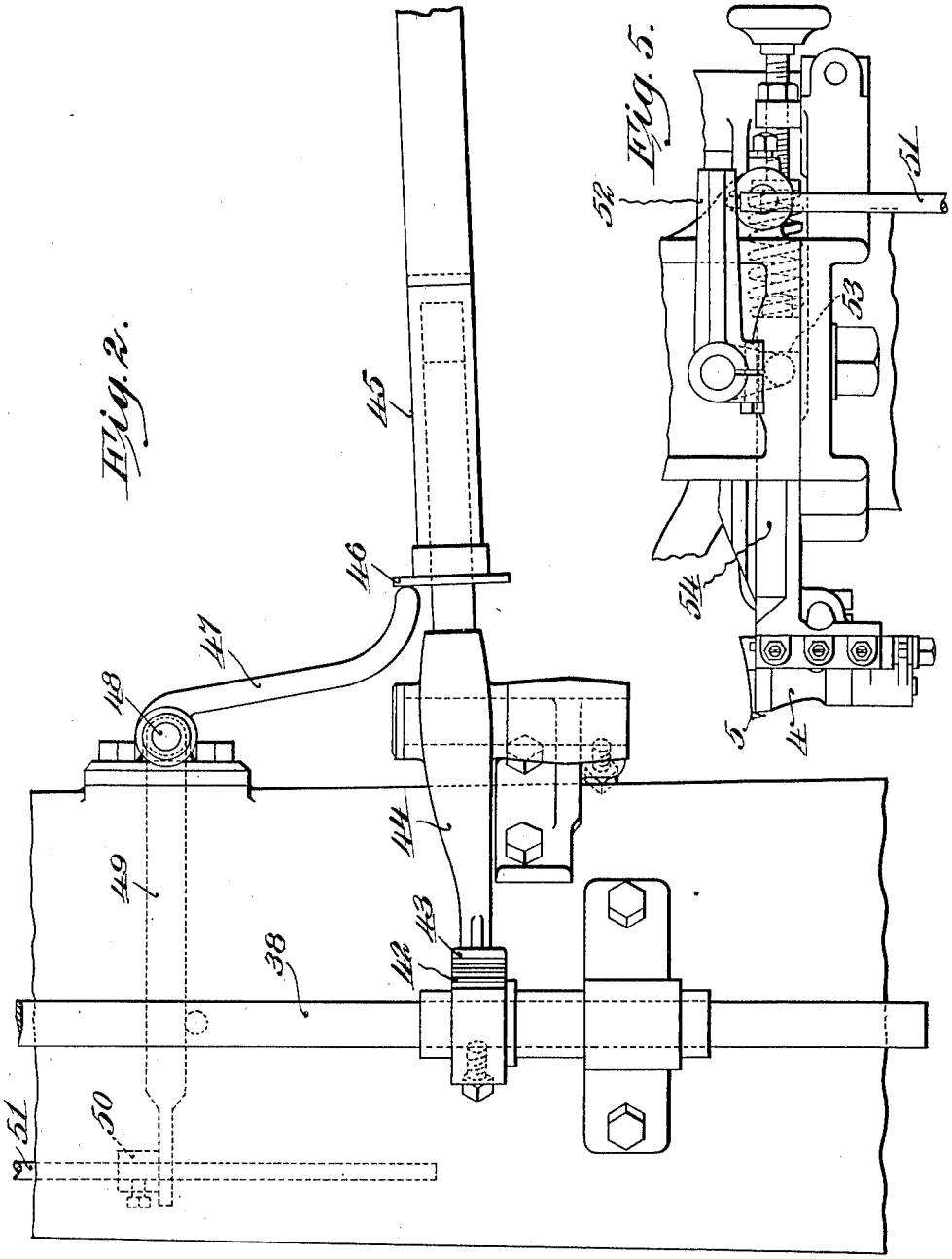


Fig. 5.

Witnesses

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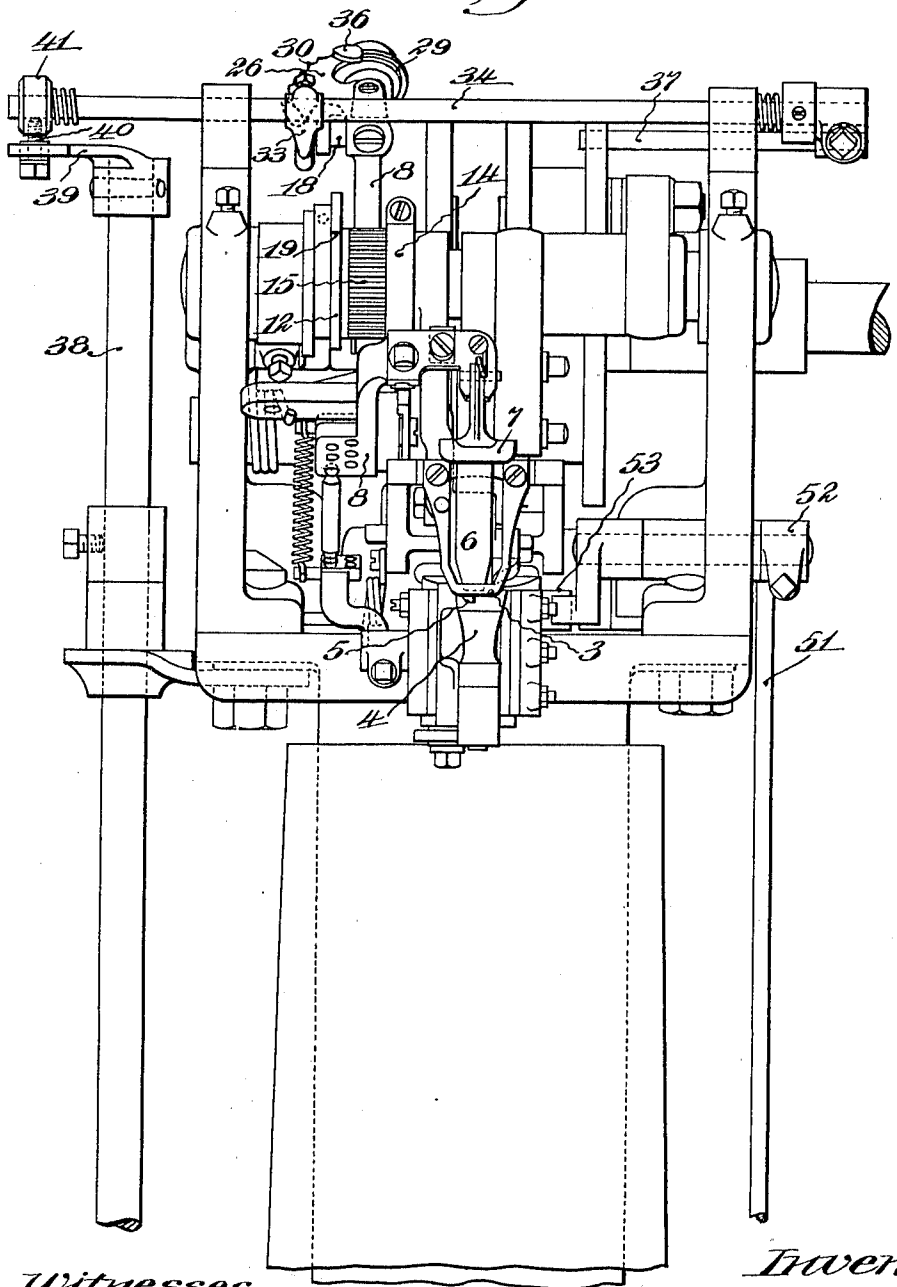
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5 SHEETS—SHEET 3.

Fig. 3.



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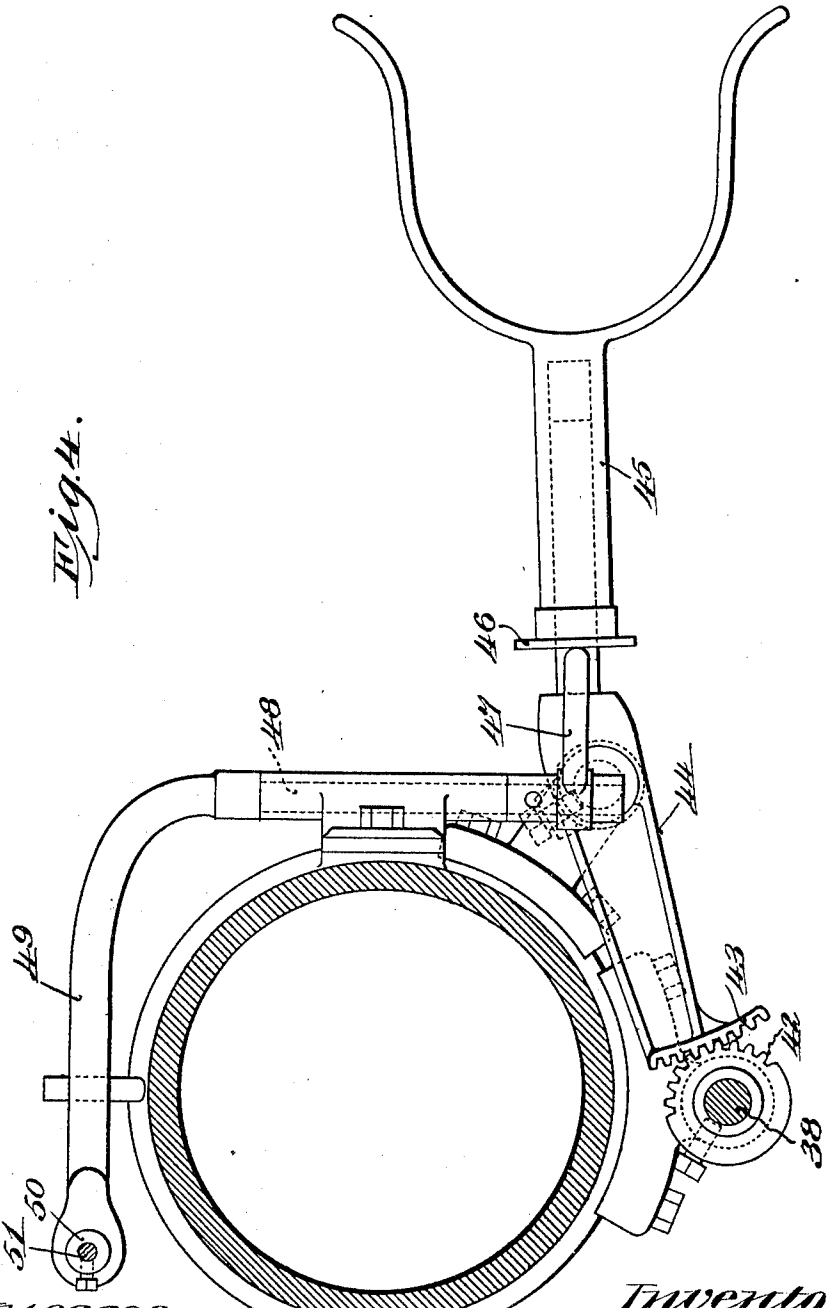
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5 SHEETS—SHEET 4.

Fig. 4.



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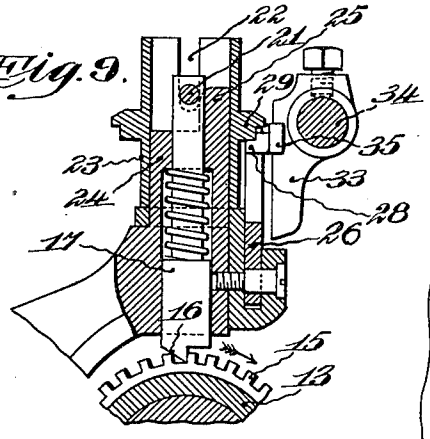
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5 SHEETS—SHEET 5.

Fig. 9.



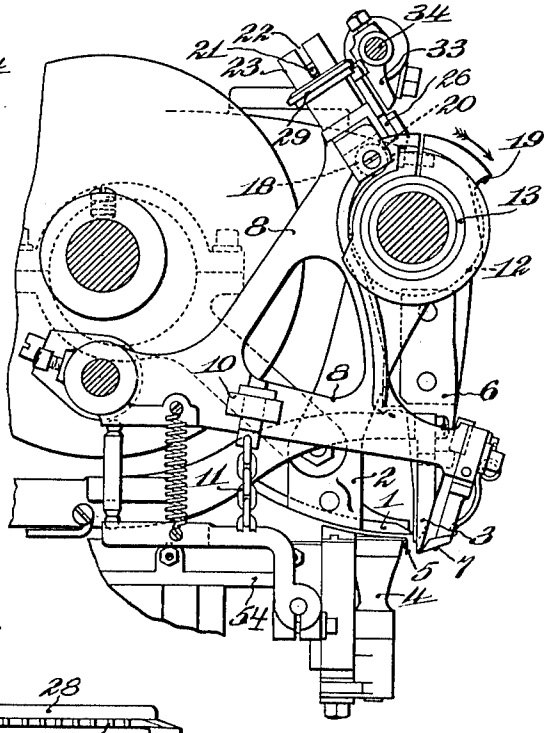


Fig. 6.

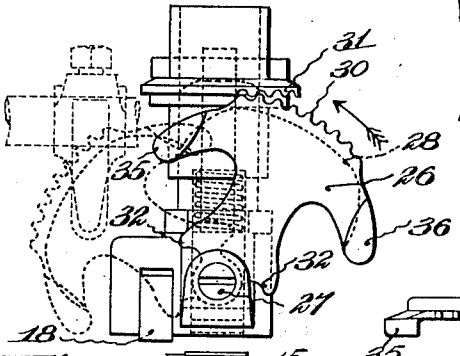


Fig. 10.

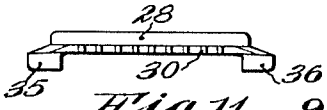


Fig. 11.

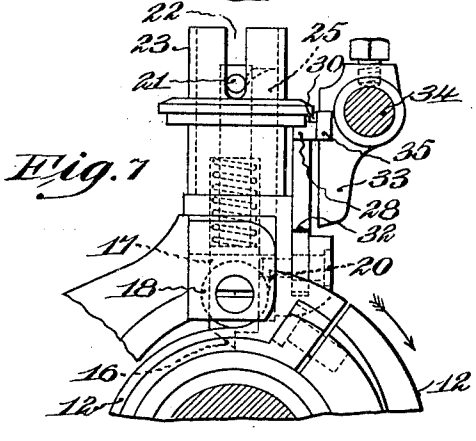


Fig. 7.

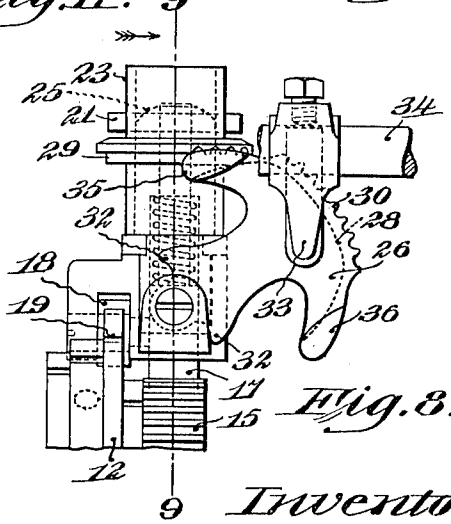


Fig. 8.

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UNITED STATES PATENT OFFICE.

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SOLE-ROUNDING MACHINE.

1,066,940. Specification of Letters Patent. Patented July 8, 1913.

Application filed November 4, 1910. Serial No. 590,639.

To all whom it may concern:

Be it known that I, EDWARD E. ORR, a citizen of the United States, residing at Weymouth, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Sole-Rounding 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 invention relates to machines for operating upon the soles of shoes and more particularly to that class of machines which is utilized for rounding or rounding and channeling the sole of a shoe after the outer sole has been temporarily secured in position preparatory to permanently sewing or otherwise securing it to the shoe. In machines of this character as heretofore constructed it has been found desirable to guide the shoe during the operation upon the shank by a crease guide and to guide the shoe during the operation upon the forepart by a guide which engages and guides the last close to the inseam or welt, the forepart guide being brought into engagement with the shoe by the operator in passing from the shank to the forepart and being disengaged from the shoe when passing from the forepart to the shank. Machines of this character have also been provided with a pattern cam or other form of pattern mechanism for moving the forepart guide with relation to the rounding and channeling knives to vary the projection of the sole along certain parts of the shoe.

It is the object of the invention to provide novel and improved mechanism for varying the position of the forepart guide whereby the projection of the sole may be increased or diminished along any desired portion of the forepart.

To this end the invention consists of the features and combinations hereinafter described and referred to in the claims, the advantages of which will be obvious to those skilled in the art.

The invention is intended primarily as an improvement in the Goodyear rounding and channeling machine which is illustrated in the patent to French and Meyer, No. 599,602, dated Feb. 22, 1898, although the broader features of invention are not confined in their application to this machine but may be embodied in other forms of machines the specific construction and arrangement of the parts being varied or modified to suit the construction of the machine in which the invention is embodied.

The various features of the invention will be readily understood from an inspection of the accompanying drawings and the following detailed description of the machine illustrated therein.

In the drawings Figure 1 is a left-hand side elevation of a rounding and channeling machine embodying the invention in its preferred form; Fig. 2 is a side elevation of a part of the standard of the machine showing the knee lever through which certain parts are operated; Fig. 3 is a front elevation of the machine; Fig. 4 is a plan view, partly in section, of the parts shown in Fig. 2; Fig. 5 is a detail side elevation showing the devices for retracting the sole support; Fig. 6 is a side elevation partly in section showing the forepart guide in position to engage the shoe; Fig. 7 is a detail elevation of the devices for operating the pattern cam; Fig. 8 is a front elevation of these devices; Fig. 9 is a sectional view on line 9—9, Fig. 8; Fig. 10 is a view similar to Fig. 8 showing the parts in a different position and Fig. 11 is a detail plan view of the reversing segment to be described.

The machine illustrated in the drawings is provided with a trimming knife 1 carried by a vibrating lever 2, a work-support 3, which also acts as a crease guide for guiding the shoe during the operation along the shank, a sole-support in the form of a roll 4, a channel knife 5, a feed plate 6, which also acts as a cutting block, and a forepart guide 7 carried on the front end of a lever 8. These parts are all constructed, arranged and operated in substantially the same manner as the corresponding parts shown and described in the French and Meyer patent above referred to, to which reference may be had for a detailed description of their construction and mode of operation.

The lever carrying the forepart guide is held normally in raised position by a spring 9 and is connected through a laterally projecting lug 10 and chain 11 with a treadle (not shown) by which the operator may throw the guide into and out of operation at the proper times during the rounding and channeling of the sole of the shoe being

operated upon. While operating upon the shank the shoe is guided by the crease guide 3 and as the ball line is reached the operator brings the forepart guide 7 down into position to engage the upper of the shoe, retains it in engagement with the shoe during the operation upon the forepart and throws it out of operation as the ball line on the opposite side of the shoe is reached. When the forepart guide is engaged with the shoe the relative position of the guide and trimming or rounding knife is controlled to give the desired outline to the sole by a cam 12. The cam is secured to a sleeve 13 surrounding the hub of the oscillating knife carrying lever 2 and frictionally connected therewith by a clamping ring 14 in a manner fully described in the French and Meyer patent above referred to. The sleeve 13 is provided with teeth 15 which are adapted to be engaged by a pawl 16 carried by the lever 8 which carries the forepart guide. The pawl is formed on the lower end of a spring-pressed pin 17 and is provided with an inclined rear side adapted to ride over the teeth 15. When the pawl is in engagement with the teeth it prevents movement of the sleeve 13 and cam 12 in one direction but allows these parts to be moved in the opposite direction by the frictional connection with the hub of the oscillating knife lever. The direction of the feeding movement imparted to the cam may be reversed by turning the pawl pin 17 through a half revolution and thus reversing the position of the pawl. The cam 12 is arranged to be engaged by a roll 18 on the forepart lever 8 when the forepart guide is brought into engagement with the shoe and the cam is shaped to gradually raise the forepart guide and thus decrease the projection of the sole when the cam is fed in one direction and to gradually lower the forepart guide and thus increase the projection of the sole when the cam is fed in the opposite direction. The feed of the cam in either direction is arrested by stops 19 and 20 formed at the ends of the cam.

In order that the projection of the sole may be increased or diminished along any desired part of the forepart of the shoe, means are provided for starting or reversing the feed of the pattern cam while the forepart guide remains in engagement with the shoe and this means is preferably so constructed that the cam may be started or reversed at the will of the operator. In the preferred embodiment of the invention shown, the pawl pin 17 is provided near its upper end with laterally projecting pins 21 which engage slots 22 formed in a sleeve 23. The sleeve is loosely mounted upon a boss 24 formed on the upper end of the forepart lever 8 so that it may be raised to disengage the pawl from the teeth 15 and may be rotated to give the pawl a half revolution and thus reverse its position with relation to the teeth. The boss 24 is provided with an upwardly extending projection 25 on its front side which is arranged to underlie one of the pins 21 during the turning of the pawl and prevent engagement of the pawl with the teeth 15 until it has been turned a half revolution. The sleeve 23 is actuated to reverse the position of the pawl and thus reverse the feeding movement of the pattern cam by means of a reversing segment 26 which is pivoted at 27 to the end of the forepart lever 8 and is provided at its upper end with a cam segment 28 adapted to engage the under side of the flange 29 on the sleeve 23. The cam 28 operates to raise and lower the sleeve 23 to disengage and reengage the pawl with the teeth 15 and the sleeve is rotated to reverse the position of the pawl by a gear segment 30 formed on the segment 26 and arranged to engage gear teeth 31 formed on the flange 29. The reversing segment 26 is provided at its lower end with stops 32 for limiting its movement in either direction. The reversing segment is shifted at the will of the operator to start or reverse the feed of the pattern cam by means of an arm 33 secured to a shifter rod 34 and arranged to engage lugs 35 and 36, which project from the front face of the reversing segment 26. The shifter rod 34 is mounted to slide in bearings formed in the frame of the machine and is held from rotation by a guide pin 37 connected with one end of the rod and passing through a guideway formed in the frame of the machine. A friction device may be arranged to engage the guide pin 37 of the shifter rod to retain it in the position into which it is shifted by the operator. The shifter rod is actuated through a vertical rock shaft 38, the upper end of which is provided with an arm 39 connected by a pivot pin 40 with a collar 41 on the end of the shifter rod. A gear segment 42 is secured to the lower end of the rock shaft 38 and is engaged by a gear segment 43 formed on the rear end of a lever 44. A yoke 45 is mounted to slide upon the front end of the lever 44 and is shaped to receive the knee of the operator. By shifting the knee lever toward the right or left the operator may actuate the shifter bar 44 to start or reverse the pattern cam at any time while the forepart guide is in engagement with the shoe.

Assuming that the machine is being operated to round and channel a shoe having a Baltimore edge and having a gradual increase in the projection of the sole about the toe, the mode of operation is as follows:— The parts are shown in Figs. 1 and 3 in position for operating upon a left shoe. During the operation upon the shank at the outside of the shoe, the shoe is guided by

the crease guide 3. When the ball portion of the shoe is reached the operator brings down the forepart guide 7 thus bringing the roll 18 into engagement with the pattern cam 12 and bringing the pawl 16 into engagement with the teeth 15 on the sleeve carrying cam. This movement of the lever carrying the forepart guide also brings the reversing segment 26 into position with the lugs 35 and 36 on opposite sides of the arm 33. Immediately after the forepart guide is brought into engagement with the shoe, the operator shifts the shifter rod 34 toward the right in Fig. 3 thus shifting the pawl 16 into the position indicated in Figs. 6 to 9. This starts the feed of the pattern cam in a direction indicated by the arrows. The cam is now intermittently advanced until the stop 19 engages the roll 18 when the feeding movement of the cam is arrested. During the feed of the cam the forepart guide is gradually raised to decrease the projection of the sole around the outside ball portion of the shoe forming a Baltimore edge. When the cap line of the toe is reached the operator starts the pattern cam in the opposite direction by shifting the shifter bar toward the left in Fig. 3. During this movement of the shifter bar the arm 33 acts against the lug 35 to rock the reversing segment in the direction indicated by the arrow in Fig. 10. During the first part of this movement the cam 28 raises the sleeve 33 and lifts the pawl 16 out of engagement with the teeth 15. This position of the parts is indicated in Fig. 10. The gear segment 30 then engages the segment 31 and rotates the sleeve 23 and pawl 16 through a half revolution after which the cam 28 passes from under the flange 29 on the sleeve and allows the sleeve to drop thus engaging the pawl 16 on the teeth 15. The final position of the reversing segment and the arm 33 is indicated in dotted lines in Fig. 10. The cam 12 will now be rotated in the direction opposite to that indicated by the arrows and will operate to gradually lower the forepart guide and thus gradually increase the projection of the sole along the side of the toe. When the point of the toe is reached the feed of the pattern cam is reversed by shifting the bar 37 to its right-hand position in Fig. 3. The pattern cam is now fed in the direction of the arrow to gradually decrease the projection of the sole along the other side of the toe, the movement of the cam being arrested when the stop 19 reëngages the roll 18. When the ball line on the inside of the shoe is reached the forepart guide is thrown out of operation. This leaves the parts in position for operating upon a right shoe. In operating upon the right shoe the forepart guide is engaged with the shoe when the ball line on the inside of the shoe is reached. The pawl 16 is engaged with the teeth 15 but at this time the pawl is in the position indicated in Fig. 9 so that no feed of the pattern cam takes place. When the cap line of the toe is reached the operator starts the feed of the pattern cam by shifting the shifter bar 37 toward the left in Fig. 3. The pattern cam is now fed in the direction opposite to the arrows and gradually increases the projection of the sole. When the point of the toe is reached the feed of the pattern cam is reversed by shifting the shifter bar toward the right in Fig. 3 and the pattern cam is fed in the direction of the arrow to gradually decrease the projection of the sole on the opposite side of the toe. The feed of the cam is arrested by the engagement of the stop 19 with the roll 18. The pattern cam is again started by shifting the shifter rod 34 toward the left in Fig. 3 to gradually increase the projection of the sole along the outside ball portion and thus form the Baltimore edge at this part of the shoe. The forepart guide is thrown out of operation as the ball line on the outside of the shoe is reached leaving the pattern mechanism and forepart guide in the position indicated in Figs. 1 and 3, *i. e.* in position for operating upon a left shoe. By shifting the shifter bar 37 at the proper times during the rounding of the forepart, the operator may start and reverse the pattern mechanism to gradually increase or decrease the projection of the sole along any desired portion of the forepart. By arresting the shifting movement of the bar 34 when the pin 21 is over the cam projection 25 or when the sleeve 23 is supported on the cam 28, the feed of the pattern cam in either direction may be arrested by the operator and the cam may be started in the same direction in which it was moving when arrested or in the opposite direction by proper shifting of bar 37. The operator is therefore enabled to control the movements of the pattern cam to increase or diminish the projection of the sole as he may desire.

The knee yoke 45 may be utilized to withdraw the sole support 4 for the insertion and removal of the shoe soles as well as being utilized to control the starting, stopping or reversing of the pattern mechanism. For this purpose in the construction shown, the knee yoke is provided at its rear end with a flange 46 which engages the lower end of an arm 47 secured to a rock shaft 48. The rock shaft carries a second arm 49, the rear end of which underlies a collar 50 secured to a rod 51. The upper end of the rod 51 engages one arm of a bell crank lever 52, the other arm of which is arranged to engage a shoulder 53 on the slide 54 which carries the sole support. By pressing forward on the knee yoke the operator may, through the connections described, withdraw the sole

support for the insertion or removal of a shoe and may release the sole support so that it will be forced against the shoe by removing the forward pressure on the knee yoke.

While it is preferred to employ the specific construction and arrangement of parts shown and described in embodying the invention in the Goodyear rounding and channeling machine, it will be understood that this construction and arrangement is not essential and may be varied and modified without departing from the invention.

Having described the nature and object of the invention and specifically described one mechanism in which it may be embodied, what I claim is—

1. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism for moving the guide to vary the distance of the point of operation of the tool from the last, and means for reversing said mechanism while the guide is in action, substantially as described.

2. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting and reversing said mechanism while the guide is in action, substantially as described.

3. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting and reversing said mechanism at the will of the operator while the guide is in action, substantially as described.

4. A machine for operating on the soles of shoes, having in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting, stopping or reversing said mechanism while the guide is in action, substantially as described.

5. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting, stopping or reversing said mechanism at the will of the operator while the guide is in action, substantially as described.

6. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, a pattern mechanism for controlling the guide, means for feeding the pattern mechanism in one direction to increase the distance of the point of operation from the last, and for feeding the pattern mechanism in the opposite direction to decrease the distance of the point of operation from the last, and means for starting and reversing the pattern mechanism while the guide is in action, substantially as described.

7. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism for feeding the cam in opposite directions, and means for reversing the cam while the guide is in action, substantially as described.

8. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism for feeding the cam in opposite directions, and means for reversing the cam at the will of the operator while the guide is in action, substantially as described.

9. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism for feeding the cam in opposite directions, means for starting and reversing the cam while the guide is in action, and stops for limiting the movements of the cam in each direction, substantially as described.

10. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, pattern mechanism for moving the guide to vary the projection of the sole, and means for reversing the pattern mechanism while the forepart guide is in operation, substantially as described.

11. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, pattern mechanism for moving the guide to vary the projection of the sole, and means for reversing the pattern mechanism

at the will of the operator while the forepart guide is in operation, substantially as described.

12. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, a reversible cam for moving the guide to increase or decrease the projection of the sole, means for starting and reversing the cam while the guide is in operation, and stops for limiting the movement of the cam in either direction, substantially as described.

13. A sole rounding machine, having, in combination, a trimming knife, a forepart guide, movable into and out of operation, a support carrying the guide, a pattern cam engaged by the support when the guide is thrown into operation, a ratchet wheel connected with the cam, a pawl carried by the support for engaging the ratchet-wheel, and means for reversing the pawl while the support remains in engagement with the cam, substantially as described.

14. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, a support for the guide, a cam engaged by the support when the guide is in operation, means for feeding the cam in either direction, a pawl carried by the support for controlling the movements of the cam, devices for reversing the pawl at the will of the operator while the support remains in engagement with the cam, substantially as described.

15. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, a support for the guide, a cam engaged by the support when the guide is in operation, frictional means for intermittently moving the cam in either direction, a ratchet wheel connected with the cam, a pawl carried by the support and arranged to engage the ratchet wheel, and means under the control of the operator for reversing the pawl at will while the support remains in engagement with the cam, substantially as described.

16. A sole rounding machine, having, in combination, a trimming knife, a guide, a reversible cam for moving the guide to increase or decrease the projection of the sole, means including a laterally movable knee yoke for reversing the movement of the cam while the forepart guide is in operation, a sole support, a slide on which said support is mounted, and devices between yoke and slide for retracting the slide when the yoke is pressed forward, substantially as described.

17. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the distance of the point of operation of the tool from the last, and means for reversing said mechanism while the guide is in action, substantially as described.

18. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting and reversing said mechanism while the guide is in action, substantially as described.

19. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting and reversing said mechanism at the will of the operator while the guide is in action, substantially as described.

20. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting, stopping and reversing said mechanism while the guide is in action, substantially as described.

21. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into action during the relative travel of the tool about the shoe, mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the distance of the point of operation of the tool from the last, and means for starting, stopping or reversing said mechanism at the will of the operator while the guide is in action, substantially as described.

22. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism rendered operative by the throwing of the guide into action for feeding the cam in one of two opposite directions, and means for reversing the feed while the guide is in action, substantially as described.

23. A machine for operating on the soles

of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism rendered operative by the throwing of the guide into action for feeding the cam in one of two opposite directions, and means for reversing the feed at the will of the operator while the guide is in action, substantially as described.

24. A machine for operating on the soles of shoes, having, in combination, a tool, a guide, means for throwing the guide into and out of action during the relative travel of the tool about the shoe, a cam for moving the guide to vary the distance of the point of operation from the last, mechanism rendered operative by the throwing of the guide into action for feeding the cam in one of two opposite directions, means for starting and reversing the feed while the guide is in action, and stops for limiting the movements of the cam in each direction, substantially as described.

25. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, pattern mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the projection of the sole, and means for reversing the pattern mechanism while the forepart guide is in operation, substantially as described.

26. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, pattern mechanism rendered operative by the throwing of the guide into action for moving the guide to vary the projection of the sole, and means for reversing the pattern mechanism at the will of the operator while the forepart guide is in operation, substantially as described.

27. A sole rounding machine, having, in combination, a trimming knife, a forepart guide movable into and out of operation, a reversible cam rendered operative by the throwing of the guide into action for moving the guide to increase or decrease the projection of the sole, means for starting and reversing the cam while the guide is in operation, and stops for limiting the movement of the cam in either direction, substantially as described.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."