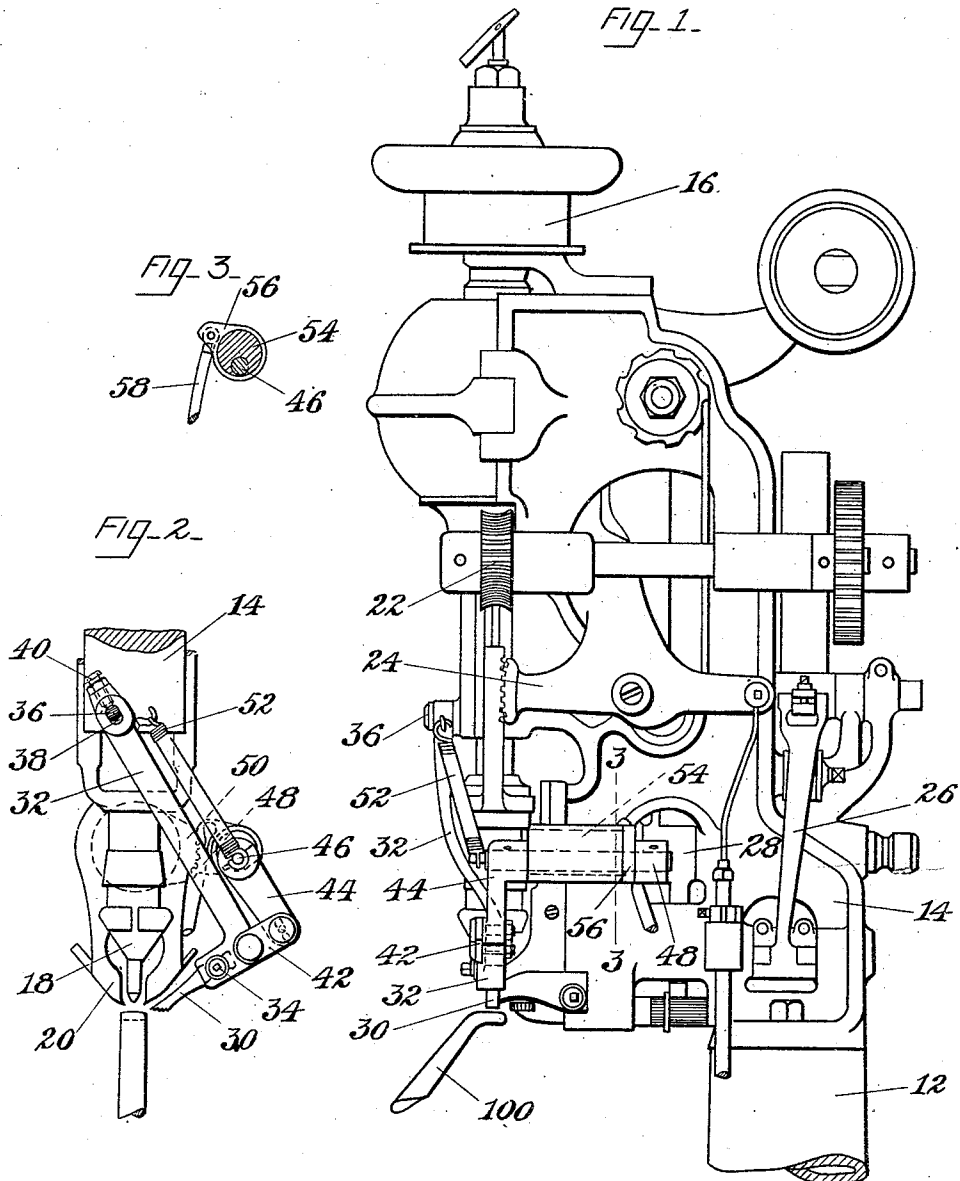


A. A. WADSWORTH & F. SHORTLAND.
 WORK FEEDING AND WORK GUIDING MECHANISM FOR SHOE MACHINES.
 APPLICATION FILED JAN. 16, 1907.

945,064.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



WITNESSES.

Elizabeth C. Coupe
 Bertha M. Hutchinson.

INVENTORS.

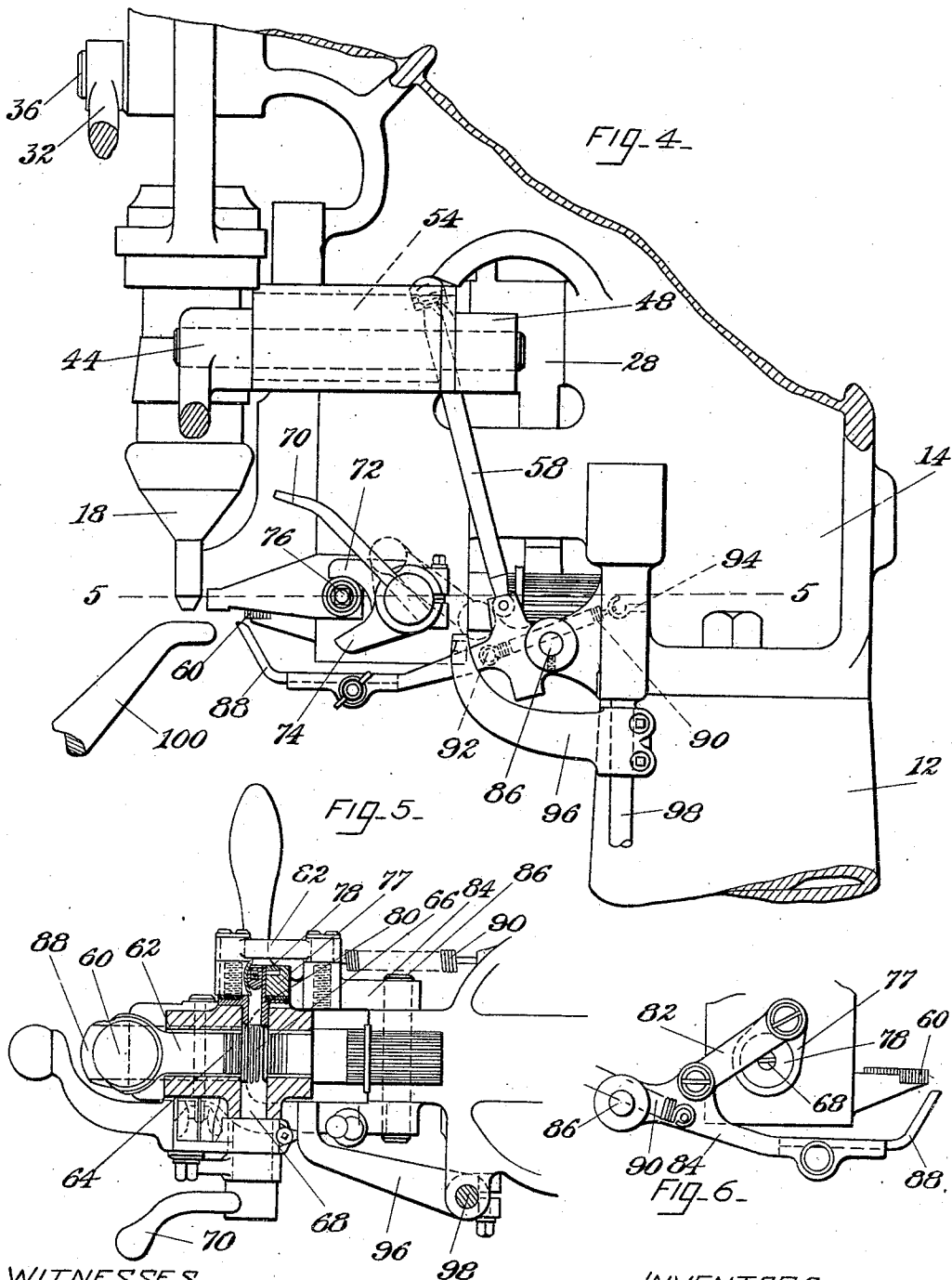
Albert A. Wadsworth
 Frederick Shortland
 By Their Attorney,
 Nelson W. Howard

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UNITED STATES PATENT OFFICE.

ALBERT A. WADSWORTH AND FREDERICK SHORTLAND, OF RUSHDEN, ENGLAND, ASSIGNORS TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

WORK-FEEDING AND WORK-GUIDING MECHANISM FOR SHOE-MACHINES.

945,064.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed January 16, 1907. Serial No. 352,598.

To all whom it may concern:

Be it known that we, ALBERT A. WADSWORTH and FREDERICK SHORTLAND, subjects of the King of England, residing at Rushden, Northamptonshire, England, have invented certain Improvements in Work-Feeding and Work-Guiding Mechanisms for Shoe-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to work-feeding and work-guiding mechanism for machines which operate upon the soles of boots and shoes, and especially to such mechanism for machines which operate upon portions of the sole that are not at uniform distances from the edge of the sole.

An object of the invention is to combine, in a single mechanism for use in machines for operating upon soles, both the feeding and the guiding functions whereby a movement of the work into proper position to be operated upon is assured.

A particular object of the invention is to provide a work-feeding, or combined work-feeding and work-guiding mechanism, which is designed especially to operate in the channel of a sole and which guides the work preferably by engagement with the channel lip.

Another object of the invention is the provision of a reciprocating feeding mechanism, or combined feeding and guiding mechanism, which is so constructed and arranged that it contacts, preferably yieldingly, with the work throughout both its feeding and its return strokes, but with a greater pressure upon the work during the feeding than during the return stroke.

Mechanism is preferably provided which positively actuates the feeding mechanism to apply the pressure to the work and also to remove the pressure from the work without disturbing the contact between the feeding mechanism and the work.

The invention comprehends also a novel guide adapted to engage the upper adjacent to the sole being operated upon. This guide, which is preferably yieldingly supported to follow the movements of the work-support, is especially useful when employed in connection with the feeding mechanism above

specified upon certain kinds of work in which no channel has been cut, as, for example, when operating upon boots or shoes which have tap or slip soles. Such soles are usually prepared from material that is so soft and flabby that the best results are not obtained if an ordinary edge feed is used.

It is a further object of the invention to combine in a single machine the above mentioned novel guide with any ordinary edge feed, the guide being so constructed and arranged that it is adapted to be brought into position to shield the edge feed and to engage the upper or feather, or both upper and feather, of the boot or shoe when certain classes of work are being operated upon. The guide is thus rendered usable with a minimum displacement of the edge feed.

Mechanism is preferably provided for simultaneously moving the edge feed out of, or into, operative position and moving the guide into or out of operative and shielding position. Mechanism is also preferably provided for moving the novel work-feeding, or feeding and guiding, mechanism of this application into or out of operative position simultaneously with the movement of the edge feed out of or into operative position. These mechanisms for moving the various feeding and guiding mechanisms are preferably so connected that a movement of one of said feeding or guiding mechanisms into either of its positions effects automatically the desired movement of the other mechanisms.

For purposes of illustration the invention is shown as applied to a machine for inserting screw-threaded fastenings of the kind shown in U. S. Letters Patent, No. 691,354, granted January 21, 1902, to Louis A. Casgrain, although it is obvious that the invention is not limited in its application to this kind or type of fastening-inserting machines or even to fastening-inserting machines at all.

As hereinbefore stated, the invention relates primarily to work-feeding and work-guiding mechanism which may be attached to or incorporated in any machine for operating upon the soles of boots or shoes.

In the accompanying drawings;—Figure 1 is a partial side elevation of the machine of said Letters Patent, No. 691,354, with the

invention applied thereto, certain parts of the invention being omitted from this figure; Fig. 2 is a view from the front of a portion of the construction shown in Fig. 1; Fig. 3 is a detail section on the line 3—3 of Fig. 1; Fig. 4 is a view similar to that of Fig. 1, but on a larger scale showing parts omitted from that figure; Fig. 5 is a horizontal section on the line 5—5 of Fig. 4; and Fig. 6 shows a part in side elevation, viewed from the opposite side of the machine, as shown in Fig. 4.

The standard 12, head 14, driving pulley 16, spindle 18, cutters 20, worm wheel 22, driven from the spindle, lever 24 of the wire feed mechanism, cutter-actuating link 26 and work feed actuating lever 28 are all substantially as shown and described in said Letters Patent, No. 691,354, above cited. For more detailed description and illustration of these parts and other parts shown herein which constitute no part of this invention, reference may be had to said patent.

The novel work feed mechanism illustrated comprises the feeding foot 30, adjustably secured to an arm or bar 32 by a bolt 34. The arm 32 is suspended from a stud 36 projecting from a stationary part of the frame 14, the arm 32 having a slot 38 through which the stud 36 passes, this slot permitting the arm to have a rising and falling as well as an oscillating movement. A screw 40 may be provided in the end of the arm 32 which, by bearing upon the stud 36, will afford means for the adjustment of said arm. The feeding foot 30 is caused to travel backward and forward by a link 42 which connects it with one end of an arm 44 mounted upon a shaft 46 to which oscillating movement is imparted by a toothed segment 48 in gear with another toothed segment 50, the toothed segment 50 being oscillated during the operation of the machine by connections with a moving part thereof. A spring 52 connects the arm 32 and the shaft 46 and tends to hold the arm in its lowermost position. The shaft 46 is eccentrically mounted in a bush 54, held in bearings on the frame 14, so that by rotation of the bush 54 the arm 32 may be swung outwardly and upwardly and the foot 30 raised out of operative contact with the work. The rotation of the bush 54 may be effected by an arm 56, see Fig. 3, secured to the bush 54, and connected by a rod 58 with another part of the mechanism hereinafter to be described. The feeding foot 30 is preferably provided at its end face with teeth of a ratchet form, as shown in Fig. 2, adapted to engage firmly with the sole of a boot or shoe on the feeding stroke. It will thus be seen that through the oscillation of the arm 44, the arm 32 which carries the feeding foot 60 will receive a to-and-fro motion to effect the

feeding of the work upon the work-support. Moreover, it will be observed that owing to the oblique disposition of the feeding foot 30 and to the fact that in its forward movement it is operated by a thrust downward in an oblique direction by the arm 44 and link 42, the pressure of the feeding foot upon the work during the feeding stroke will be greater than during the return stroke, when the link 42 by its movement is tending to raise the foot from the work and when the foot is kept in contact with the work only through the influence of the spring 52.

As the slot 38 in the arm 32 will permit the said arm to move upwardly to compensate for its angular movement, the feeding foot will be maintained upon the work and will, therefore, travel backward and forward practically at a constant level. This will enable the said feeding foot when operating upon a boot or shoe, for example, in which fasteners are to be inserted in a channel cut in the sole thereof, to remain engaged with the channel during both its feeding and return strokes, and thus by its engagement with the lip of the channel to act as a work guide. This construction will obviate an objection which is found in fastening-inserting machines provided with edge feeds when such machines are employed to insert fastenings in the channel of a sole. Owing to the fact that the channel is not always cut at a uniform distance from the edge of the sole with which the edge feed engages, the fasteners are not always inserted in the correct position in the channel. This defect, it will be evident, is obviated by the hereinbefore described feeding device. This feeding device is, however, not limited to operations within a channel of a sole, but may also be used in operations upon a sole in which no channel has been cut. When thus used a guide is preferably provided which engages the upper near the sole being operated upon, or engages the feather of the shoe. This guide will be hereinafter designated as a feather guide. In the illustrated embodiment of the invention this feather guide is shown attached to the machine in such relation to an ordinary edge feed that when in operative position it serves to shield the edge feed. When the guide is moved out of operative position, the edge feed may be brought into contact with the edge of the sole, and the shoe may be fed in the ordinary manner. This arrangement permits the guide to be brought into operative position with a minimum displacement of the edge feed.

The edge feed shown is the same as that shown in the Letters Patent hereinbefore cited, with such modifications as are necessary to adapt it for use in connection with the present invention. It consists of a feed wheel 60, see especially Figs. 4 and 5, which

is rotated by gearing from a shaft mounted within a sleeve 62. To move the feed wheel into or out of operative position, the sleeve 62 is provided with rack teeth 64 with which
 5 gears a pinion 66 arranged upon a shaft 68, held in bearings at right angles to the sleeve. By turning the handle 70, which is secured upon the shaft 68, the pinion 66 will cause the sleeve 62 and with it the feed wheel 60
 10 to be moved inwardly or outwardly. The movement of the sleeve in either direction may be limited by the provision of stops 72, 74, adjustably secured upon the shaft 68, one of these stops being adapted to engage a
 15 fixed stop 76 when the handle is turned in one direction, and the other stop being adapted to similarly engage the stop 76 when the handle is turned in the other direction. At the end of the shaft 68,
 20 remote from the end to which the handle 70 is secured, is a crank arm 77 which is mounted between friction washers 78 and the collar 80, so as to frictionally partake of the movement of the shaft 68. The crank arm
 25 77, see Figs. 5 and 6, is connected by a link 82 with a swinging frame 84 pivoted at 86 upon the machine frame, to which frame 84 the feather guide 88 is adjustably secured. The swinging frame is held in its upper position
 30 by a spring 90 engaging a pin 92 on the swinging frame at one end, and a hook 94 upon the frame of the machine at its other end.

In the operation of this part of the machine, when the handle 70 is raised from the position shown in Fig. 4 it will advance the feed wheel 60 to bring it into position to be employed as a guide or feeding device to act on the edge of the sole in the ordinary
 40 manner, and at the same time the feather guide will be moved out of the way through the connections 77, 82 and 84. Conversely, when the feed wheel 80 is moved backwardly out of operative position by the actuation
 45 of the handle 70, the feather guide will be simultaneously raised into operative position. It will be noted that the spring 90 is so located at one side of the center 86 upon which the swinging frame 84 turns, that
 50 when the latter is turned to carry the feather guide out of operative position, the spring will move to the other side of the center 86 and retain the frame and feather guide in inoperative position. Obviously, other
 55 mechanism could be employed to hold the frame in its two positions, such for example, as a spring-actuated plunger abutting against a projection on the swinging frame or against a projection on the main frame, according as it is itself mounted upon the main frame or upon the swinging frame.

Owing to the frictional mounting of the crank arm 77 upon the shaft 68, the sleeve 62 can be moved outwardly or inwardly
 65 when desired without affecting the feather

guide, whereby the position of the feed wheel 60, when this is being used, can be adjusted to suit the requirements of the work. The rod 58, hereinbefore referred to as being connected with the arm 56 secured to the
 70 bush 54 is coupled to the swinging frame 84 and, to provide for the necessary freedom of movement, the rod 58 is connected with the arm 56 and the frame 84 by ball and socket joints. By the provision of the con-
 75 nection 58 between the feather guide 88 and the feeding foot 30, the latter will be put out of operation at the same time as the feather guide, thus leaving the work to be fed by the edge feed as in the ordinary ar-
 80 rangement. When it is desired to use the feeding foot 30 for feeding and guiding the work without the coöperation of the feather guide 88, the latter can be either withdrawn from the swinging frame 84 in which it is
 85 mounted, or it can be adjusted so far back in the said frame as to be out of the way of the work.

To enable the feather guide to be readily located in position to engage the feather of
 90 the boot or shoe, an arm 96 secured to a rod 98 is provided, the rod 98 moving up and down in unison with the work-support 100, so that when the work-support is depressed to its full extent to allow the work to be
 95 placed upon it, the arm 96, by engaging the swinging arm 84, will slightly depress the feather guide. It will be noted that the pivot 36 is positioned upon the opposite side of the axis of the sole-operating mechanism,
 100 or spindle 18, from the starting position or position of rest of the feed foot 30, and that the point of greatest depression of the feed foot 30 in its normal, unresisted movement lies vertically beneath the pivot 36. It will
 105 be seen, therefore, that the normal movement of the feed foot 30 is obliquely downward and into the work. This oblique downward movement is emphasized by the position of the link 42 with reference to the arms 44
 110 and 32. When work is interposed in the path of downward movement of the engaging end of the foot 30, the movement of the foot 30 is changed into a reciprocating movement, the arm 32 having provision in the
 115 slot 38 for an oblique upward movement. This oblique movement, it will be noted, is governed by the work.

Having described our invention, what we claim as new and desire to secure by Letters
 120 Patent of the United States is:

1. The combination with mechanism for operating upon soles, of an engaging member positioned to engage the sole in the line of operation of the operating mechanism,
 125 and a single means to positively reciprocate the engaging end of said member in substantial parallelism with the surface traversed and to give to said member a varying
 130 pressure of engagement.

2. In a machine for operating upon soles, a combined feeding and guiding mechanism comprising an engaging member constructed and arranged to engage the sole in a channel
5 therein and to guide the work by engagement with the lip of said channel, and means to positively reciprocate said member in substantial parallelism with the surface traversed, but with a varying pressure of engagement.
10 ment.

3. In a machine for operating upon soles, a feeding mechanism comprising an engaging member, means to keep said member in yielding engagement with the sole to be
15 operated upon, and means constructed and arranged to positively-reciprocate said member and to cause to be imparted thereto a greater pressure of engagement on the feeding than on the return movement.

4. The combination with mechanism for operating upon soles, of feeding means comprising a reciprocating engaging member carried by the frame of said operating mechanism and positioned to engage the sole constantly in the line of operation of said mechanism, and a single means for imparting to
25 said member simultaneously a positive reciprocating movement and a tendency to engage the sole with increased pressure during the feeding stroke.
30

5. In a machine for operating upon soles, a frame, work-feeding mechanism comprising a work-engaging member movably mounted upon said frame, means for actuating said member, said means acting upon
35 said member obliquely to the path of feed movement of the same, and means for yieldingly maintaining said member in engagement with the work.

6. Work feeding mechanism comprising in combination a frame, a work-engaging member pivotally mounted upon said frame, means for actuating said member to feed the work comprising an arm oscillating about
45 another center, and connections between said arm and member for transmitting to said member, obliquely to its path of movement, the motion of said arm.

7. The combination with mechanism for operating upon soles the main axis of which lies substantially perpendicular to the surface of the work upon which it operates, of work-feeding means comprising a work-engaging member mounted to swing through
55 an arc of a circle the center of which lies upon the opposite side of the axis of the operating mechanism from the position of rest of the engaging end of said member, with provision for movement of said engaging member out of said arc, means to apply
60 a moving force to said member at an inclination to the direction of feed movement of the work and yielding means tending to hold said engaging member in its normal arc of movement.
65

8. The combination with mechanism for operating upon soles, of work feeding means comprising a work engaging member movably mounted upon the frame of said operating mechanism, and means also mounted
70 upon said frame and operating upon said member at a point remote from its mounting upon said frame for positively reciprocating said member and for imparting thereto a greater pressure of engagement on the feeding than on the return movement.
75

9. The combination with mechanism for operating upon soles, of work feeding mechanism comprising an engaging member positioned to engage the sole in the line of operation of the operating mechanism, means to reciprocate said member in substantial parallelism with the surface traversed and to give to said member a varying pressure of engagement, and means
85 operating through said last-named means for moving said member into inoperative position.

10. In a machine of the class described, the combination with a frame and a work engaging member pivotally mounted upon said frame, of means for actuating said member pivotally to feed the work comprising an arm oscillating about another center, connections between said arm and member
95 for transmitting to said member, obliquely to its path of movement, the motion of said arm and means operating through said arm to move said member into inoperative position.
100

11. In a machine for operating upon soles, the combination with an edge-feeding mechanism, of a guiding mechanism having an operative and an inoperative position, said guiding mechanism being constructed
105 and arranged to shield the edge-feeding mechanism when the said guiding mechanism is in its operative position.

12. In a machine for operating upon soles, the combination with an edge-feeding mechanism and a guiding mechanism, each having an operative and an inoperative position, of means for automatically moving one of said mechanisms into inoperative position as the other is moved into operative position.
115

13. In a machine for operating upon soles, the combination with surface feeding mechanism and edge-feeding mechanism, each having an operative and an inoperative position, of means for automatically moving
120 one of said mechanisms into inoperative position as the other is moved into operative position.

14. In a machine for operating upon soles, the combination with an edge-feeding mechanism, a surface feeding mechanism and a guiding mechanism adapted to cooperate with said surface feeding mechanism, each of said mechanisms having an operative and
125 an inoperative position, of means for auto-
130

5 matically moving said edge feeding mechanism out of or into operative position as said surface feeding mechanism and said guiding mechanism are moved into or out of operative position.

10 15. In a machine for operating upon soles, the combination with an edge feeding mechanism, a surface feeding mechanism and a guiding mechanism adapted to coöperate with said surface feeding mechanism and to shield said edge feeding mechanism, when said feeding mechanism is in its inoperative position and said guiding mechanism is in its operative position, each of said mechan-

isms having an operative and an inoperative position, of means for automatically moving said edge feeding mechanism out of or into operative position as said surface feeding mechanism and said guiding mechanism are moved into or out of operative position.

20 In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALBERT A. WADSWORTH.

FREDERICK SHORTLAND.

Witnesses:

ARTHUR ERNEST JERRAM,

ISAAC ATKINS.

It is hereby certified that in Letters Patent No. 945,064, granted January 4, 1910, upon the application of Albert A. Wadsworth and Frederick Shortland, of Rushden, England, for an improvement in "Work-Feeding and Work-Guiding Mechanisms for Shoe-Machines," an error appears in the printed specification requiring correction as follows: Page 4, line 93, the word "pivotally" should be stricken out; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of February, A. D., 1910.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.