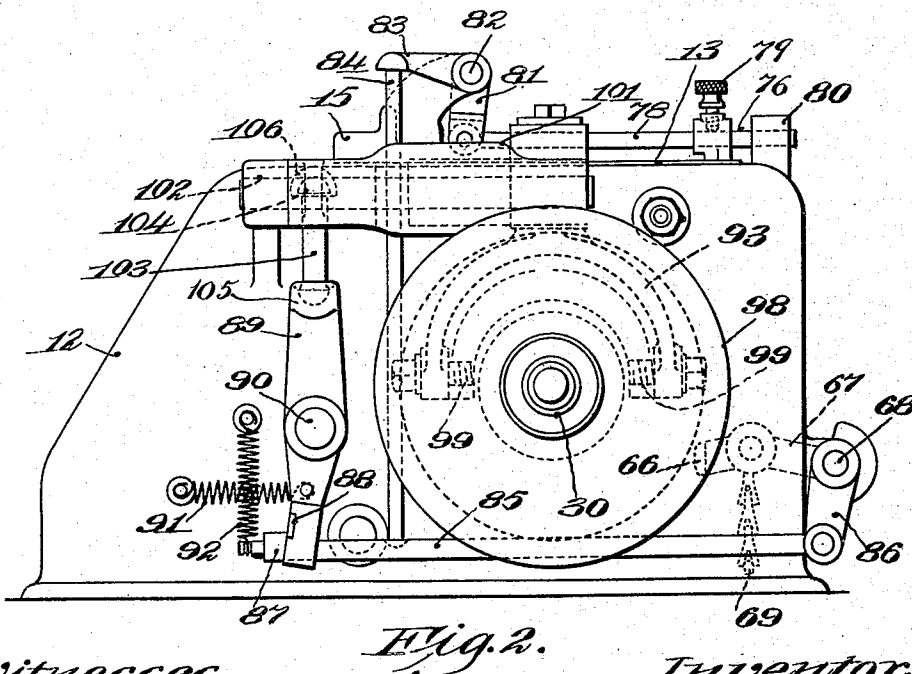
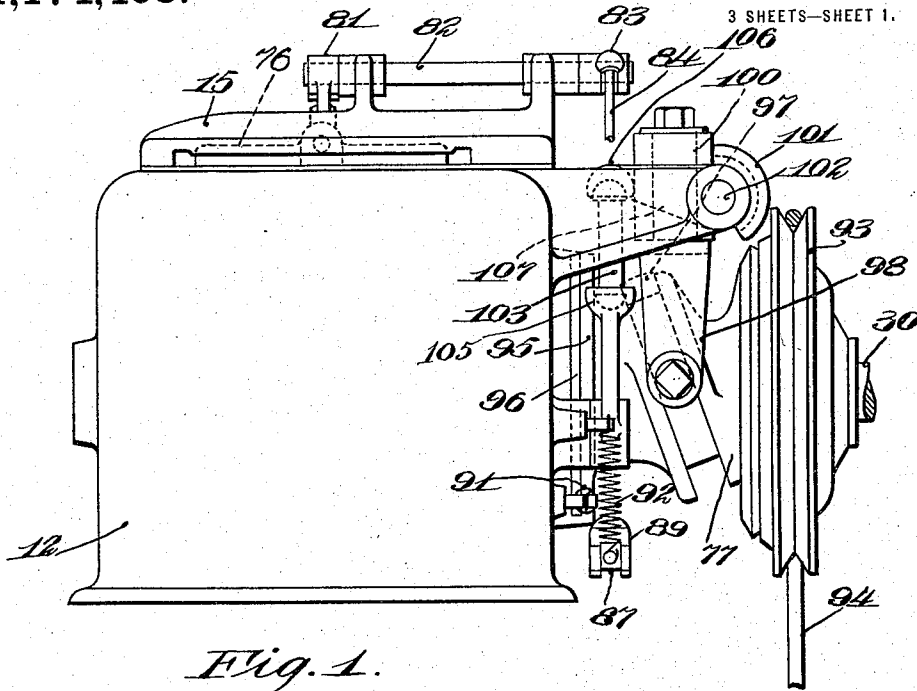


J. GOULDBOURN & A. E. JERRAM.
MACHINE FOR RENDERING SOLES FLEXIBLE.
APPLICATION FILED FEB. 24, 1914.

1,174,408.

Patented Mar. 7, 1916.

3 SHEETS—SHEET 1.



Witnesses
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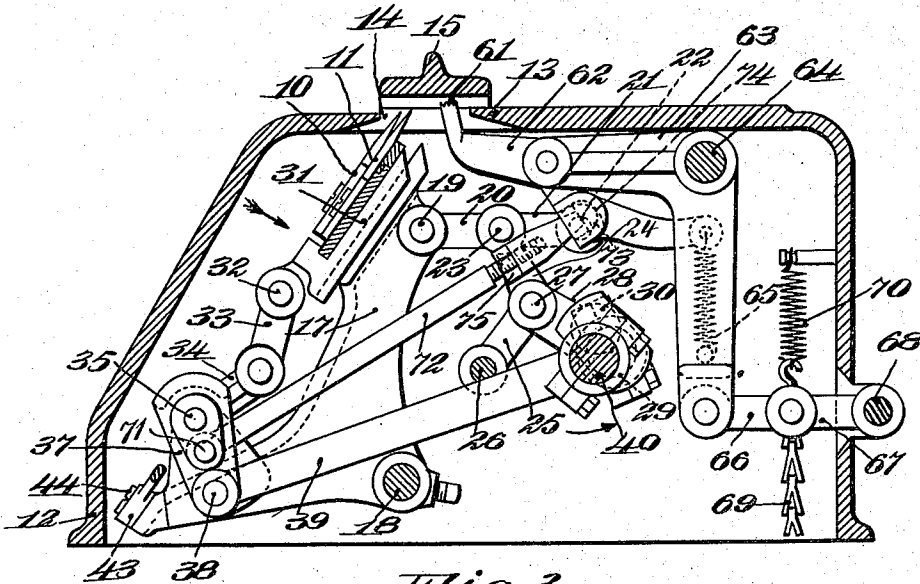


Fig. 3.

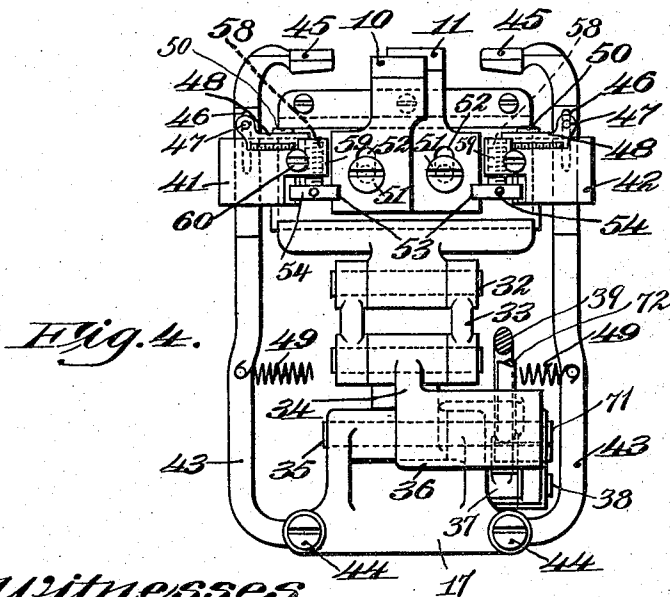


Fig. 4.

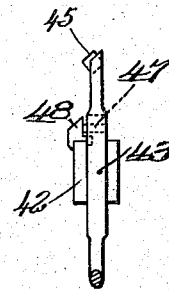


Fig. 5.

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3 SHEETS—SHEET 3.

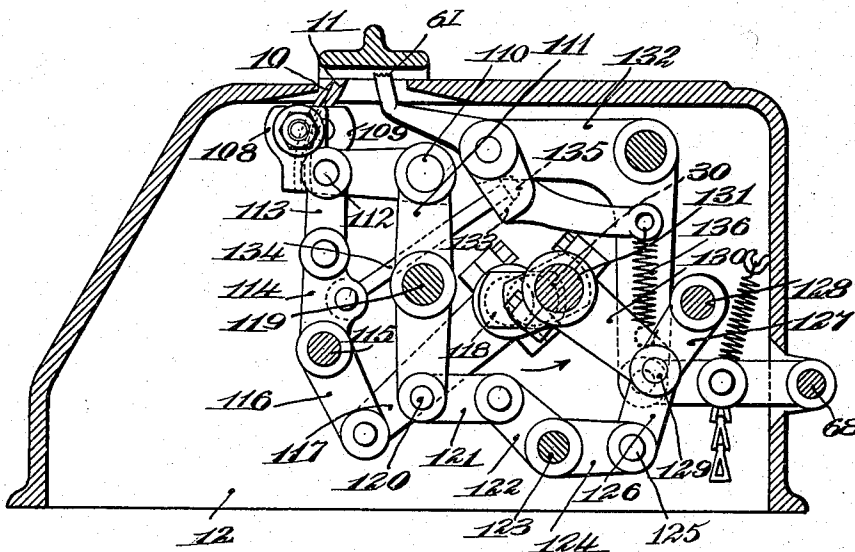


Fig. 6.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR RENDERING SOLES FLEXIBLE.

1,174,408.

Specification of Letters Patent.

Patented Mar. 7, 1916.

Application filed February 24, 1914. Serial No. 820,641.

To all whom it may concern:

Be it known that we, JOSEPH GOULDBOURN and ARTHUR ERNEST JERRAM, subjects of the King of Great Britain, residing at Leicester, England, have invented certain new and useful Improvements in Machines for Rendering Soles Flexible; and we 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 machines for making a series of slashes or cuts across the surface of soles of boots and shoes for the purpose of rendering them flexible.

The object of the invention is to improve such machines and also to provide means whereby the sole shall be slashed for a predetermined distance along its length. With this object in view a feature of the invention contemplates the provision of means for making a series of slashes or cuts across the surface of soles of boots and shoes in combination with means for automatically stopping the operation of the machine when the sole has been slashed a predetermined distance along its length.

In accordance with a further feature of the invention the means for automatically stopping the operation of the slashing means are controlled by the sole which determines the time when such means shall be thrown into operation. Preferably, the operation of the stopping means is controlled by an adjustable gage which is adapted to be engaged and moved by the sole and which when so moved will cause the stopping means to be thrown into operation.

A further feature of the invention relates to improved mechanism for operating the knives to cause them to slash and feed the sole and also to improved mechanism for automatically releasing the presser foot, which holds the sole during the operation of the knives, while the sole is being fed.

These and other features of the invention will be understood from the following description of preferred embodiments of the invention which show the present invention as applied to a machine of the type described and shown in Letters Patent of the United States, No. 1,126,350, dated January

26, 1915, issued on an application filed by Arthur Bates and assigned to the assignee of this application.

In the accompanying drawings, showing the best embodiment of the invention at present known, Figure 1 is a front elevation of a slashing machine of the type shown in said Letters Patent with a preferred embodiment of the stop mechanism of the present invention applied thereto; Fig. 2 is a right side elevation of the machine shown in Fig. 1; Fig. 3 is a side elevation, partly in section, of the interior mechanism of the machine shown in Fig. 1 showing particularly the improved mechanism for operating the knives to slash and feed the sole and also the mechanism for operating the presser foot; Fig. 4 is a plan, looking in the direction of the arrow Fig. 3, showing the gages and their method of connection with the knife slides; Fig. 5 is a detail of the gage mechanism; and Fig. 6 is a view, similar to Fig. 3, showing a modified form of the knife and presser foot operating mechanism.

In the machine about to be described there are provided, as in the machine of said Letters Patent, two knives 10 11 which are adapted to cut into the work to form a slash and which are arranged to overlap one another, see Fig. 4, means being provided for automatically relatively moving the said knives to vary their overlap for the purpose of obtaining a series of slashes or cuts which extend into close proximity to the channel on either side of the sole notwithstanding variations in the width of soles. These knives are situated one behind the other, see Fig. 3, and when forced into the sole are thereafter moved in a direction to feed it through a distance such that the slash made by one knife during one slashing stroke will be brought into alinement with the other knife so that during the succeeding slashing stroke the said slash will be increased in length by the said last mentioned knife. The knives have imparted to them a four-way motion so as first to slash the work, then to feed it forward, then to retire therefrom, and finally to move back to their starting position.

The frame of the machine is in the form of a box 12 within which the mechanism is

situated, the upper portion of the said frame forming a table 13 over which the sole is fed. A slot 14 is formed in this table through which the knives operate and situated above the slot is a bridge 15 against which the sole is continuously, or it may be intermittently, pressed by a presser foot, as will be described later.

In order to enable the four-way motion to be imparted to the knives they are carried by a swinging frame 17 which is pivoted at 18 to the machine frame 12, and has pivoted to it at 19 one member 20 of a toggle link, the other member 21 of which is pivoted to the machine frame at 22. Pivoted to the knuckle 23 of this toggle is one member 24 of a second toggle, the other member 25 of which is pivoted at 26 to the machine frame. The knuckle 27 of the toggle 25, is connected by means of a link 28 to a crank pin 29 on the driving shaft 30. The two toggles just described, which for the sake of convenience will be referred to as the feeding toggles, are so arranged that as the toggle 24, 25, is straightened by operation of the crank pin 29, the toggle 20, 21 will be broken. As a result the swinging frame 17 will be swung about its pivot 18 carrying the knives 10, 11 with it and these knives having previously been forced into the sole as hereinafter described, the sole will be fed forwardly, *i. e.*, to the right viewing Figs. 3 and 6. The sole having been fed the knives are retracted therefrom and the feeding toggles are moved reversely, the breaking of the toggle 24, 25, straightening the toggle 20, 21, and causing the knives and swinging frame 17 to be moved in a reverse direction to the position shown in Fig. 3. The straightening of the toggle 20, 21 causes a pause in the motion of the swinging frame 17 and gives the knives time to enter the sole and form a new slash.

In order to force the knives 10, 11 into the sole to make the slash they are carried by a slider 31 which is mounted to reciprocate in the swinging frame 17. To this slider is pivoted at 32 one member 33 of a toggle the other member 34 of which is pivoted on a pin 35 carried by the swinging frame 17. The member 34 of this toggle is provided with a laterally projecting portion 36 (Fig. 4) having a downwardly projecting arm 37 (Fig. 3) and pivoted to this arm at 38 is a connecting rod 39 which is connected to a crank pin 40 on the driving shaft 30. From the foregoing it will be understood that when the toggle 33, 34, is straightened and broken the knives will be respectively forced into and retracted from the work. The straightening of the toggle causes the knives to pause in the work a sufficient time to enable the feed to take place.

As the width of an insole varies at different parts means are provided to enable the length of the slash to be varied correspond-

ingly as the knives progress along the length of the sole and conveniently these means are controlled by one or more devices which bear on the edge of the insole. As previously mentioned, in order to carry this into effect two knives are used which conveniently enter the work at an oblique angle and are mounted one behind the other. The width of each of these knives is equal to the length of the narrowest slit which it would be required to cut and in order to increase the length of the cut means are provided whereby the knives may be moved laterally, relatively to each other so that as the leading knife forms a slash of its width during one stroke, at the next slashing stroke the knife which is behind it, and which is situated to one side of it, will cut partly into the slash which the leading knife has just made and will also by reason of its lateral displacement cut more or less to one side of said slash but in alinement therewith thereby increasing its length.

Preferably the desired result is obtained by mounting the knives 10, 11 in independent slides 41, 42, which are mounted in the reciprocating slider 31 so that when the slides are operated they will be moved laterally relatively to each other for the purpose just set forth. In order to move these knife slides two levers 43, which are pivoted at 44 to the swinging frame 17, are provided with inturned portions 45 which form gages and which are adapted to bear on the edge of the sole at either side. Each of these levers is provided with a slot 46 in which is situated a roller 47 carried by a plate 48 adjustably secured, for a purpose which will be pointed out later, to each of the slides 41, 42. The gages 45 are held in engagement with the edge of the sole by means of a spring 49 which tends to move the two levers 43 toward each other.

From the foregoing it will be understood that as the swinging frame 17 is moved in a direction opposite to that which causes the work to be fed the gages 45 will be moved along the contour of the sole and the levers 43 will be moved laterally accordingly and will shift the knives 10, 11, laterally, relatively to each other, into position in readiness for their next slashing stroke.

Each of the plates 48 is slidably connected with its respective knife slide 41 or 42, as shown in Fig. 4, and is locked in position thereon by means of a screw 50 which passes through a slot in said plate and is threaded into its slide. By this arrangement each of the slides 41 and 42 can be moved in a direction to move its attached knife nearer to or farther away from its respective gage, so that the distance of the ends of the cuts from the channel can be varied. In the construction shown a scale is provided (see Fig. 4) on each of the plates

48 which is adapted to cooperate with an index on its respective knife slide so that the adjustment of the slide can be accurately determined

5 In order to vary the depth of cut, each of the knives 10, 11, is mounted on its slide by means of a screw 51 which passes through a slot 52 formed in the knife and is threaded into its respective slide. Each knife is provided with a slot 53 into which fits the head 54 of an adjusting screw 58 which is threaded into a split sleeve 59 formed on the slide. By turning this adjusting screw in one or the other direction the knives can be shifted 10 longitudinally so that the depth of cut will be varied. The adjusting screws 58 are held in their position of adjustment by means of clamping screws 60 which tighten up the split sleeves.

20 The machine is provided with a presser foot 61 which is formed as a two-armed lever 62 and is pivoted to a bell-crank lever 63 which in turn is pivoted at 64 to the frame of the machine. The presser foot 61 is normally held in elevated position on the lever 63 by means of a spring 65 one end of which is attached to the lever 62 and the other end of which is attached to the lever 63. The bell-crank lever 63 has pivoted thereto one 25 member 66 of a toggle the other member 67 of which is secured to a rock-shaft 68 (Figs. 2 and 3) journaled in the frame of the machine. To the knuckle of this toggle is attached, by means of a chain 69, the starting 30 treadle, not shown, and the arrangement is such that when the treadle is depressed to start up the machine the members of the toggle are brought into alinement with each other as shown in Figs. 3 and 6 and the bell-crank lever 63 is swung about its pivot 64 and the presser foot 61 is moved into engagement with the sole. A spring 70 is provided to keep the toggle normally broken, upwardly as in Fig. 2, so as to keep the 40 presser foot normally out of engagement with the sole.

In order to move the presser foot 61 automatically away from the sole during the feed thereof, the downwardly projecting 50 arm 37 of the toggle 33, 34, has pivoted thereto at 71 a rod 72 having at one end a ball 73 which is adapted to fit into a socket 74 formed in the lever 62. The arrangement is such that when the toggle 33, 34, is broken 55 the ball-headed rod 72 will be moved in such a position that the presser foot 61 can move into engagement with the sole under the influence of its spring 65 while when the toggle 33, 34 is straightened and the knives are 60 in the work the rod 72 will force the presser foot downwardly and away from the sole. The rod 72 is made in two parts which are adjustably secured together, as shown in Fig. 3, so that its length can be varied and the 65 pressure of the presser foot on the sole be

varied. The two parts of the said rod are locked together by means of a nut 75.

The operation of the machine so far described may be briefly re-stated as follows:—The starting treadle having been depressed and consequently the driving shaft 30 started to rotate, the toggle 33, 34 is straightened and the knives 10, 11 are driven into the work to cause a double slash and simultaneously the presser foot 61 is moved away from the sole. Thereafter the feeding toggles 20, 21 and 24, 25, operate to swing the swinging frame 17 about its pivot 18 to feed the sole. The knives 10, 11, are then retracted from the sole and the presser foot 61 is allowed to move into engagement therewith under the influence of its spring 65. While the sole is firmly held between the bridge 15 and the presser foot 61 the swinging frame 17 is moved in a reverse direction and with it the levers 43 and gages 45. During this movement the gages move along the contour of the sole and the overlap of the knives is varied according to the contour.

The amount of feed as previously mentioned is equal to the distance between the two knives so that on the next succeeding slashing stroke one of the knives will be in alinement with the rear slash previously made but will be situated more or less to one side thereof.

In order to release the clutch and so stop the machine when the sole has been slashed to a predetermined distance along its length there is provided an adjustable gage 76 (Figs. 1 and 2) against which the sole engages at a predetermined time and which when so engaged is moved thereby and causes mechanism to be thrown into operation to throw out the clutch, actuate the brake member 77 (Fig. 1) and stop the machine. The gage 76 preferably takes the form of a cross bar which rests on the surface of the work table 13 and which is mounted on a rod 78 so that it can be slid longitudinally thereof into various positions of adjustment. The gage is locked in position on the rod 78 by a thumb-screw 79 which is provided for this purpose. The gage 76 is situated at the rear of the machine, see Fig. 2, and in such a position that as the sole is fed under the bridge 15, and along the surface of the work table 13, it will at a certain time, dependent upon the longitudinal position of adjustment of the gage upon the rod 78, contact with the said gage. The rod 78 is mounted for endwise movement and is supported at its rear end in a guide 80 on the frame 12 and at its front end by a downwardly extending arm 81 to which it is pivoted. The arm 81 is secured to the inner end of a rock-shaft 82 mounted in bearings (see Fig. 1) which project from the top of the bridge 15. To the outer end of the rock-shaft 82 is secured a thrust arm 83. The thrust arm 83

engages a downwardly extending thrust rod 84 which bears upon a trip member 85. The trip member 85 is supported at its rear end by an arm 86 secured to the rock-shaft 68 (Figs. 2 and 3). The front end of the member 85 is provided with an abutment face 87 which during the operation of the machine engages an abutment face 88 formed on the lower end of a lever 89 which is pivoted to the frame of the machine at 90 (Fig. 2) and which constitutes one member of a toggle. The lower end of this toggle member 89 is forked (see Fig. 1) and when the abutment faces 87 and 88 are in engagement the front end of the trip member 85 is straddled by the said fork. When the toggle member 89 and trip member 85 are so engaged the clutch elements of the clutch 77 will be engaged with each other and the machine will be driven if, as will be explained later, the starting treadle has been depressed. When, however, the trip member 85 is moved away from the toggle member 89 the said member will be swung about its pivot 90 by a spring 91 and will cause the machine to be unclutched. A spring 92 normally holds the abutment face 87 in engagement with the abutment face 88.

The operation of the automatic stop mechanism is as follows: The gage 76 having been adjusted along the rod 78 toward or away from the bridge 15 an amount dependent upon the length of the part of the insole which is required to be slashed and having been locked in its position of adjustment, by means of the thumb screw 79, the machine is started into operation. As the work is fed under the bridge it will gradually approach the gage until finally it will contact therewith and when this takes place the rod 78 to which the gage is attached will be moved endwise and through its connection with the rock-shaft 82 will rock the latter and will cause the thrust arm 83, and through it the thrust rod 84, to be moved downwardly. The downward movement of the thrust rod will move the trip member 85 out of engagement with the toggle member 89. This member will, as previously mentioned, through the influence of its spring 91, be swung about its pivot 90 and be moved into a position to cause the following clutch and brake mechanism to be operated. This clutch and brake mechanism, see Figs. 1 and 2, comprises a driving pulley 93 to which power is applied by a belt 94 from any convenient source and which is loosely journaled on a bush on the driving shaft 30 of the machine. A combined clutch and brake member 77 is splined upon a sleeve fixed on the driving shaft 30 so that it is compelled to rotate therewith but can be moved longitudinally thereof. The clutch and brake member 77 has a conical face that is adapted

to fit into a similarly shaped recess in the driving pulley 93. The clutch and brake member 77 is also provided with a flange 95 that is adapted to engage with a brake ring 96. Any convenient and well known means for normally maintaining the members of a friction clutch in operative position may be employed to hold the member 77 in engagement with the driving pulley 93. The member is moved to disengage it from the pulley by the following mechanism: A swash ring 97 is inserted in a groove so formed in the member 77 that the plane in which the swash ring lies is inclined in relation to the axis of the driving shaft, see Fig. 1. The swash ring 97 is supported by what is virtually a gimbal joint comprising a fork 98 that embraces the ring and has its ends pivoted thereto by studs 99, the axis of this pivotal connection being so disposed that it does not intersect the axis of the main shaft. The second joint of the gimbal comprises the shank 100 of the fork which is journaled in a boss formed on a member 101 which is supported by a rock-shaft 102 suitably journaled in bearings on the machine frame. The above construction and arrangement is such that during the rotation of the clutch member the fork 98 will be oscillated by the swash ring 97 about the axis of the shank 100 of the fork. Further it will be understood that as the axis of the pivotal connection between the fork 98 and the ring 97 does not intersect that of the driving shaft the axis of the shank 100 will have a movement of translation in addition to its oscillating movement. This movement of translation while the machine is running will cause the fork 98 and member 101 to oscillate in a direction longitudinally of the driving shaft about the axis of the shaft 102 and so long as the member 101 is permitted to oscillate the clutch member 77 will be maintained in engagement with the driving pulley. If, however, the member 101 be prevented from oscillating, the swash ring 97 will move the rotating clutch and brake member 77 lengthwise of the shaft until it is disengaged from the driving pulley 93 and forced into contact with the brake ring 96 thus stopping the machine. The means for stopping the oscillation of the oscillating member 101 comprises a strut 103 having a ball 104 at each end, one of which fits into a socket 105 formed in the toggle member 89, the other of which fits into a socket 106 formed in an arm 107 projecting from the oscillating member 101. The arrangement is such that the toggle member 89 and strut 103 form a toggle, which when the treadle is depressed, the abutment face of the member 89 being in contact with the abutment face 87 formed on the trip member 85 at this time, is broken

and allows the oscillating member 101 to oscillate. When, however, the trip member 85 is moved by the thrust rod 84 in the manner previously described the toggle member 89 will be moved about its pivot 90 and the toggle formed by this member and the strut 103 will be straightened by the spring 91 and this will hold the oscillating member 101 stationary and thereby the swash ring 97 will move the rotating clutch 77 lengthwise of the shaft until it is disengaged from the driving pulley 93 as just mentioned.

As previously stated, the starting treadle is attached by a chain or other suitable connections to the knuckles of the toggle 66, 67, the member 67 being secured to the shaft 68 which carries the arm 86 that supports the rear end of the trip member 85. Assuming that the machine is at rest and that therefore the toggle 103, 89, is straight and that the trip member 85 is in engagement with the toggle member 89, the operator when he depresses the treadle to start the machine will move the members of the toggle 66, 67 into alinement with each other, and this movement will first move the presser foot 61 into engagement with the work and will then, by reason of the connection 86 to the trip member 85, move this member rearwardly of the machine. This movement of the trip member 85 will break the toggle 103, 89 and thus free the oscillating member 101 and engage the clutch. As long as the treadle is held depressed the machine will continue to operate until the trip member 85 is operated in the manner just described. When the treadle is released after the machine has been automatically stopped and allowed to rise under the action of the spring 70 the shaft 68 will be rocked by the spring 70 in a reverse direction to that just described and the trip member 85 will be moved forwardly, *i. e.*, in a reverse direction to what it was moved when the treadle was depressed, and in addition will be moved upwardly by its spring 92. This will cause the member 85 to reengage the toggle member 89 so that when the treadle is again depressed the toggle 103, 89, which at this time is straight, will be broken and the machine started up. It will be understood that if the treadle is released at any moment before the automatic mechanism comes into operation and is thus allowed to rise, the trip member 85 will, as just stated, be moved forwardly and this will allow the spring 91 acting on the toggle member 89 to swing said member about its pivot to straighten the toggle and thus stop the machine.

In the alternative construction of the means for slashing and feeding the work, illustrated in Fig. 6, each of the two knives 10, 11, which in this instance are arcual in form are mounted in blocks 108, 109, which

are supported at one end by a shaft 110 carried by a feed lever 111 and at the other end by a shaft 112 carried by one member of a toggle 113 which is provided for the purpose of moving the knives upwardly and downwardly into and out of the work. The other member 114 of the toggle just mentioned is pivoted to the frame of the machine at 115 and is provided with a downwardly extending arm 116 to which is pivoted a connecting rod 117 connected with a crank pin 118 on the driving shaft 30 of the machine. The arrangement of the toggle 113, 114, is such that when the toggle is broken the knives will be moved downwardly and out of the work and will swing about the shaft 110 carried by the feed lever 111 while when the toggle is straightened they will swing about the shaft 110 and will be moved upwardly into engagement with the sole to produce a slash.

As previously stated the blocks are moved, in order to cause the knives to feed the work, by means of a feed lever 111 and this lever is pivoted to the frame of the machine at 119 and has pivoted thereto at 120 one member 121 of a toggle, the other member 122 of which is pivoted at 123 to the frame of the machine. The member 122 of the toggle is provided with an arm 124 to which is pivoted at 125 one member 126 of a second toggle, the other member 127 of which is pivoted to the frame of the machine at 128. To the knuckle 129 of the toggle 126, 127, is pivoted a connecting rod 130 which is connected to a crank pin 131 on the driving shaft 30. The arrangement of this toggle mechanism for moving the blocks to feed the work is such that when the toggle 126, 127 is broken the toggle 121, 122 will be straightened and the lever 110 will be swung about its pivot 119 and will move the blocks and knives to feed the work.

The operation of the mechanism for feeding the work and the mechanism for moving the knife into the work is as follows:—The toggle 113, 114 for moving the knives into the work having been straightened so as to produce a slash the feed lever 110 is then swung about its pivot 119 to cause the knife to feed the work and during this feeding movement the knuckle of the toggle 113, 114 is moved by its crank 118 and connecting rod 117 in the same direction as that of the blocks so that the feed given to the blocks is substantially in a straight line. This construction also is provided with a presser foot 61 mounted on a bell-crank lever 132 in a manner similar to that of the preferred construction. In order to move the presser foot away from the sole during the feed the presser foot is provided with a recess 133 in which is adapted to fit a rod 134 having a rounded head 135 which rod is pivoted to the member 114 of the toggle 113, 114.

During the feed of the work and while the knuckle of the toggle 113, 114 is being moved in the direction of the feed lever, this rod will turn the presser foot about its pivot and against its spring 136 and will move it out of contact with the sole. On the reverse movement, when the knives are being returned, the rod 134 will tend to move out of the recess 133 and the spring 136 will move the presser foot 61 again into engagement with the sole.

The blocks 108, 109 are mounted so as to slide laterally on the shaft 110, carried by the feed lever 111, and the shaft 112, carried by the toggle 113, 114. These blocks have connected thereto suitable gages which are adapted to bear against the edge of the sole and move the blocks and knives laterally, relatively to each other to vary the length of the slash, as previously described in connection with the preferred embodiment of the invention.

The operation of the alternative construction of the machine is substantially the same as that of the preferred construction.

It should be distinctly understood that the invention is not to be considered as limited to the particular embodiments shown and described, as those skilled in the art will recognize that it could be constructed in a variety of ways and still fall within the scope of the appended claims. It is also to be understood that the embodiments of the invention could readily be applied by a skilled mechanic to other types of machines for slashing soles.

What is claimed as new, is:—

1. In a shoe sole slashing machine, a combined four-motion sole slashing and sole feeding device, mounted for movement toward and from the sole at an acute angle to produce parallel overlapping slashes in the sole, two alternately operating toggles operably connected to said device to create the four-motion movement, and cranks for actuating said toggles, substantially as described.

2. A shoe sole slashing machine, having, in combination, a combined sole slashing and sole feeding knife, and means for operating said knife comprising a knife carrier, and two sets of toggle mechanism connected therewith, one set being constructed and arranged to move the carrier and its knife toward and from the sole to produce a slash, and the other set of toggle mechanism being constructed and arranged to advance the carrier and its knife to feed the sole forward for the production of another slash, substantially as described.

3. A shoe sole slashing machine, having, in combination, a combined sole slashing and sole feeding knife, and means for operating said knife comprising a knife carrier, a toggle for moving said knife to slash the sole, a second toggle for moving said knife

to feed the sole, and means for operating said toggles alternately, substantially as described.

4. A shoe sole slashing machine, having, in combination, a combined sole slashing and sole feeding knife, and means for operating said knife comprising a knife carrier, a toggle for moving said knife to slash the sole, a second toggle for moving said knife to feed the sole, and a driving shaft having two angularly placed cranks, one for each of said toggles and operatively connected thereto, whereby said toggles are caused to act on said knife alternately, substantially as described.

5. A shoe sole slashing machine, having, in combination, a combined sole slashing and sole feeding knife, and means for operating said knife comprising a swinging support, a knife carrier mounted thereon, means to move said carrier and its knife relatively to said support toward and from the sole to produce a slash, and means to move said support in a direction to advance the carrier and its knife to feed the sole forward for the production of another slash, substantially as described.

6. A shoe sole slashing machine, having, in combination, a sole slashing knife, means to reciprocate said knife toward and from the sole, a support to receive the thrust of the knife, means to advance the knife while in the sole to feed it, a presser foot, means acting on the presser foot to cause it to engage and hold the sole on said support, and means operated by said knife reciprocating means to intermittently withdraw the presser foot from the sole, substantially as described.

7. A shoe sole slashing machine, having, in combination, a combined sole slashing and sole feeding knife, and means for operating said knife comprising a knife carrier, a toggle for moving said knife to slash the sole, a second toggle for moving said knife to feed the sole, means for operating said toggles alternately, a presser foot to engage the sole and hold it during the slashing stroke of the knife, and operative connections between said slash producing toggle and presser foot for actuating said presser foot by the movement of the toggle, substantially as described.

8. A shoe sole slashing machine, having, in combination, at least two parallel slashing knives, gages for engaging the edge of the sole constructed and arranged to provide for an unslashed margin on the sole, and means for adjusting said knives laterally relatively to said gages to vary the width of said unslashed margin, substantially as described.

9. A shoe sole slashing machine, having, in combination, means for supporting a sole, means for slashing the sole, means for ad-

vancing the sole step-by-step for the operation of the slashing means, and means controlled by the advance movement of the sole for automatically stopping the operation of the slashing means after the sole has been slashed a predetermined distance along its length, substantially as described.

10. A shoe sole slashing machine, having, in combination, means for supporting a sole, means for slashing the sole, means for advancing the sole step-by-step for the operation of the slashing means, a movable gage arranged in the line of advance of the sole, and mechanism connected to said gage for automatically stopping the operation of the machine when the leading edge of the sole engages and moves said gage, substantially as described.

11. A shoe sole slashing machine, having, in combination, means for supporting a sole, means for slashing the sole, means for advancing the sole step-by-step for the operation of the slashing means, a movable gage arranged in the line of advance of the sole, mechanism connected to said gage for automatically stopping the operation of said slashing means when engaged and moved by the advancing sole, and means for adjusting said gage relatively to the slashing means to vary the length of the slashed area, substantially as described.

12. A shoe sole slashing machine, having, in combination, means for supporting a sole, means for slashing the sole, means for advancing the sole step-by-step for the operation of the slashing means, a movable gage arranged in the line of advance of the sole, a clutch controlling the operation of the machine, means continually tending to move in a direction to cause the clutch to be thrown out, a holding device for said means, which, when the machine is running holds said means from movement, and operative

connections between said gage and device for releasing said device when the gage is moved by the advancing sole and permit said means to perform its function, substantially as described.

13. A shoe sole slashing machine, having, in combination, means for slashing the sole and feeding it forward, a stop mechanism, and means for operating said stop mechanism controlled by the advance movement of the sole, substantially as described.

14. A shoe sole slashing machine, having, in combination, means for slashing the sole and feeding it forward, a stop mechanism, and means for operating said stop mechanism controlled by the advance movement of the sole, said means being adjustable to vary the extent of said advance movement and the length of the sole area which is slashed, substantially as described.

15. A shoe sole slashing machine, having, in combination, means for slashing the sole, means for feeding the sole forward for the progressive operation of the slashing means along the sole, and means controlled by the advance movement of the sole for stopping the operation of the slashing means, and means for predetermining the extent of said advance movement whereby the length of the slashed area is regulated, substantially as described.

16. A sole slashing machine, having, in combination, means for slashing the sole and feeding it forward, and means controlled by the advance movement of the sole for stopping the operation of the slashing means, substantially as described.

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Witnesses:

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