J. K. KOURIAN.

MACHINE FOR OPERATING UPON BLANKS.

APPLICATION FILED SEPT. 5, 1911.

1,163,669.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 1.

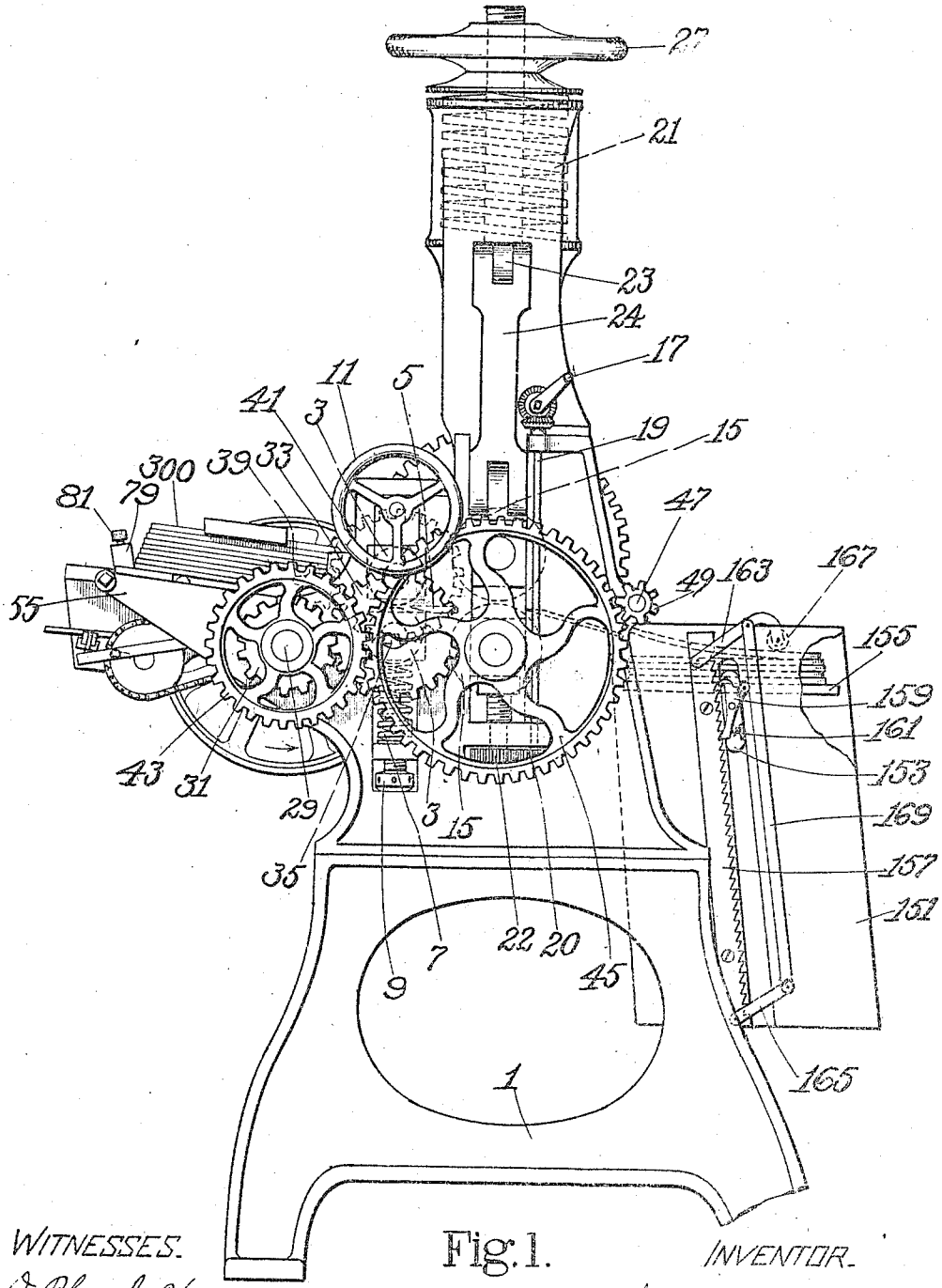

Fig. 1.

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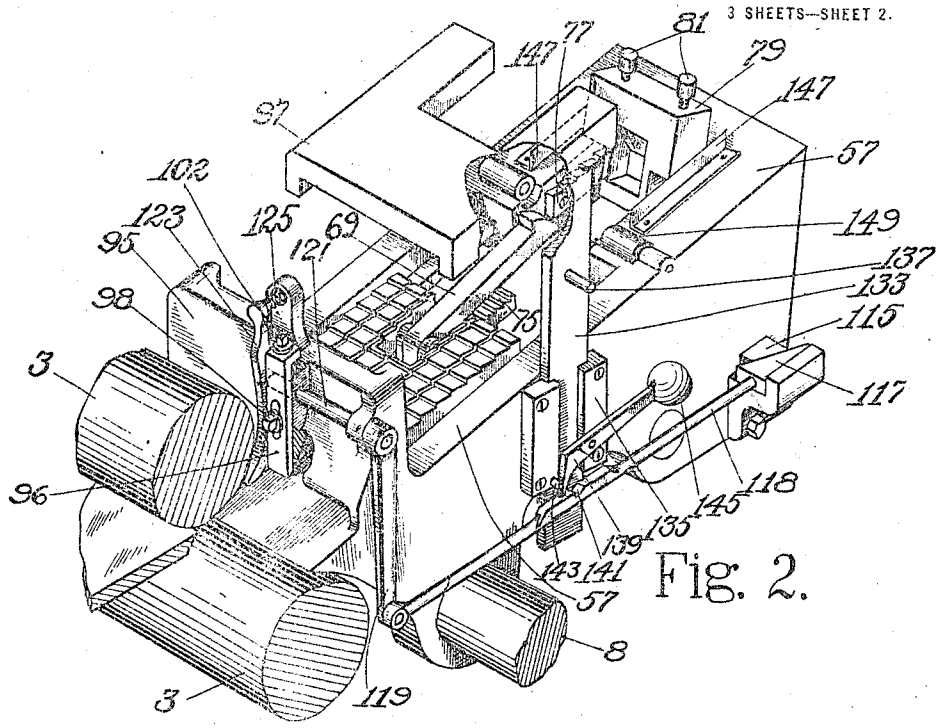

Fig. 2.

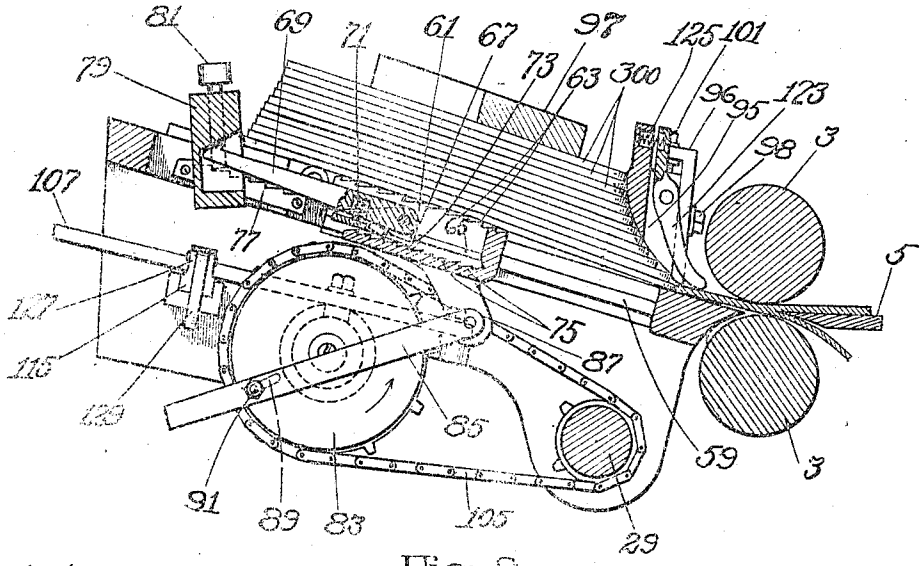

Fig. 3.

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3 SHEETS—SHEET 3.

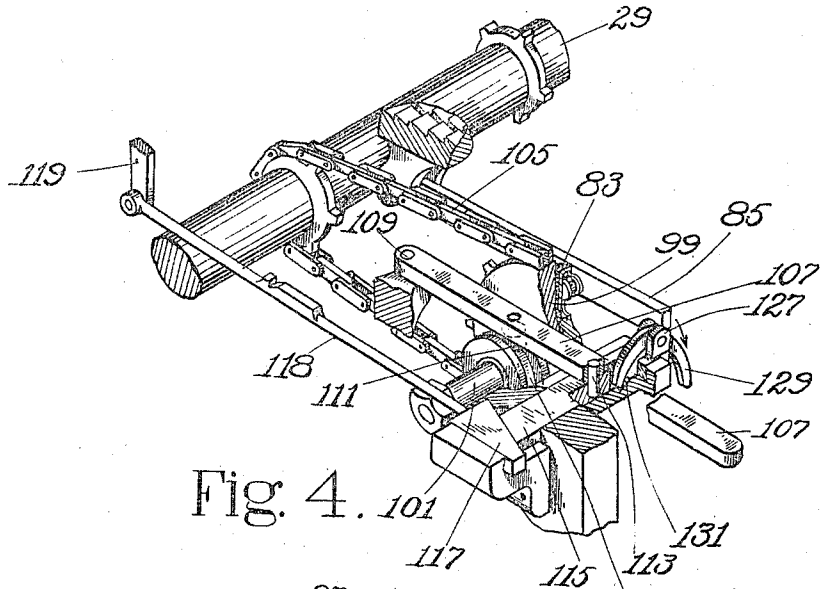

Fig. 4.

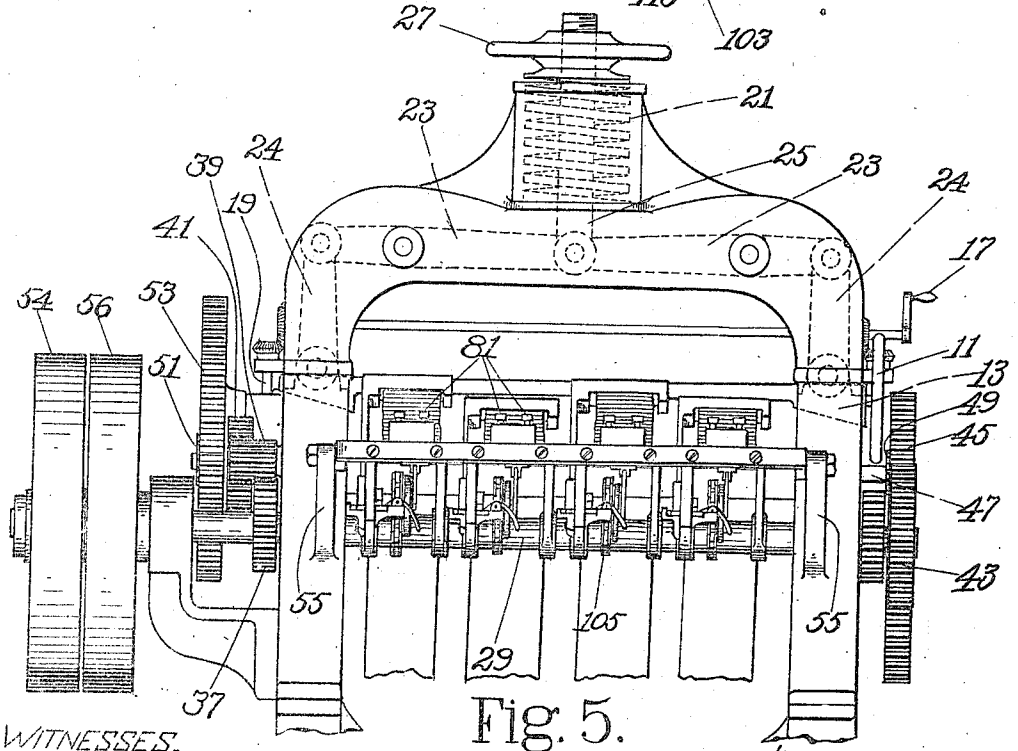

Fig. 5.

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MACHINE FOR OPERATING UPON BLANKS.

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Application filed September 5, 1911. Serial No. 647,688.

To all whom it may concern:

Be it known that I, JACOB K. KOURIAN, a citizen of the United States, residing at Danvers, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Operating Upon Blanks, 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 machines for operating upon blanks and is herein illustrated as embodied in a machine for skiving and rolling leather blanks which are designed for use as soles in the manufacture of boots and shoes. After these soles have been died out, it is necessary that they be skived in order to bring each sole to a uniform thickness. Inasmuch, however, as the died-out soles vary considerably among themselves in thickness, they are first sorted and those which are subsequently to be skived to the same thickness are placed together. There result thus several groups of soles, each group consisting of soles of different size but of approximately the same thickness. The next step is to feed these soles to the skiving machine and hitherto this feeding operation has been done manually, the skiving machine, of course, having previously been adjusted in accordance with the thickness of the individual soles of the particular group to be fed. It is desirable, however, that the soles of each group be fed automatically, and accordingly one object of the present invention consists in the provision of mechanism for feeding blanks of varying length having in combination a support for a pile of blanks, a feed slide comprising a member arranged to engage the blanks one by one, and means for causing said member to engage the edge of each blank successively irrespective of its length. Any suitable mechanism may be provided, and in the illustrative machine the blank engaging member during its rearward stroke is continually pressed upwardly against the lowermost blank and is moved upwardly as soon as the end of the blank is reached.

It is desirable that the blanks be fed straight to the skiving mechanism, and inasmuch as the blanks are not of a uniform width it is manifestly impossible to depend upon the usual magazine having rigid sides. Accordingly another feature of this invention consists in the provision with mechanism for feeding a blank of a knife edge arranged to engage one face of said blank as it is fed forward. In the illustrative machine two such knife edges are shown engaging the rear portion of the lowermost blank and being pressed into the blank by means of a weight superposed upon the pile of blanks; but the particular location of the knife edges and mode of rendering them effective are immaterial.

In any machine in which blanks are fed successively to mechanism which operates upon them progressively, it is desirable that the blank which is being operated upon be carried along far enough to be out of the way before the next succeeding one is fed forward. Accordingly another feature of the invention consists in the provision in a machine having mechanism for feeding blanks successively to operating mechanism of automatic means for causing a pause in the operation of the feed mechanism. In the illustrative machine the pause is dependent upon the position of the blank which is being fed and terminates when the blank is clear of the magazine, the feed mechanism being automatically started again.

In order to facilitate the subsequent handling of the finished soles, another feature of the invention consists in the provision of means for stacking the soles as fast as they have been operated upon; and in the illustrative machine the finished soles are delivered to a platform which slowly sinks as the soles are piled one by one upon it.

These and other features of the invention, including certain details of construction and combinations of parts, will be described in connection with an illustrative machine and pointed out in the appended claims.

Referring to the accompanying drawings,—Figure 1 is a side elevation of a machine in which the present invention is embodied; Fig. 2 is a detail perspective showing the feed mechanism; Fig. 3 is a longitudinal section of a portion of the machine also showing the feed mechanism; Fig. 4 is a perspective of the actuating mechanism for the feed mechanism; and Fig. 5 is a front elevation of the machine.

Referring more particularly to Figs. 1 and

5, mounted in the frame 1 are feed rolls 3 which advance the blanks to a skiving knife 5. The boxes of the lower roll are supported by springs 7 the tension of which may be varied by means of adjusting screws 9, while the boxes of the upper rolls bear against wedges 13 which may be adjusted by means of a hand wheel 11. In front of the skiving mechanism, that is, in the direction of travel of the blanks, there are mounted two pressure rolls 15, the lower of which may be raised and lowered by turning a handle 17 which operates through rods 19 and gears 20 and 22 as shown. These pressure rolls are forced together by a spring 21 acting through levers 23 and a rod 25, the tension of the spring being adjustable by means of a hand wheel 27.

The feed rolls of the skiving mechanism and the pressure rolls of the rolling mechanism are actuated from the driving shaft 29 as follows: A gear 31 fast to the shaft 29 meshes with a gear 33 fast to the shaft 35. At the opposite end of the shaft 29 is a gear 37 which through the idle gear 39 drives the gear 41 which is fast to the shaft of the upper feed roll. The pressure rolls 15 are driven from the gear 43 which meshes with the gear 45, and this gear through idle shaft 47 and gears 49 and 51 drives the gear 53. The driving shaft 29 carries fast and loose pulleys 54 and 56 for the reception of a belt.

The mechanisms described briefly above constitute a skiving and rolling machine, their purpose being to skive and roll the soles which are fed forward by the feed mechanism presently to be described. The details of the skiving and rolling machine, however, will not be set forth, since they form no part of the present invention. It should be understood, however, that the machine which has been thus briefly described is typical generally of machines for operating upon blanks.

Referring to Fig. 5, brackets 55 on the frame are arranged to support a plurality of feed mechanisms, and inasmuch as these feed mechanisms are identical, only one of them will be described. Referring now to Figs. 2, 3 and 4, each feed mechanism comprises a support 57 for a pile of blanks 300, said support in the present case being formed with an inclined top and being cut out to provide space for the moving parts. Mounted upon guideways, one of which is shown at 59, is a slide 61 having teeth 63 to engage the under side of the lowermost blank and aid in the feeding operation. This slide in turn is provided with a guideway 65 on which a block 67 is slidable. Pivoted to this block is a feed member 69 urged constantly upward by a spring 71 and adjustably connected with the slide 61 by means of a pawl 73 which coöperates with ratchet teeth 75 on the slide. Fast to the inner wall of the cut-out portion of the support 57 are two ratchet bars 77, and slidably mounted upon said bars is a controller, herein shown as a weight 79, said weight being permitted to slide forwardly on said ratchet bars but being held from rearward movement by means of pawls 81. The slide, and with it the feed member, is reciprocated from a pulley 83 through a link 85 pivoted at one end to an ear 87 on the slide 61 and near the other end to the pulley 83, said pulley being provided with a slot 89 in which a pivot pin 91 may be adjusted to vary the throw of the slide when desired.

The pile of blanks is held upon the support in a skeleton magazine comprising a front wall 95 and a top wall herein shown in the form of a weight 97, and mounted on the front wall is an adjustable gate or finger 96, held in adjusted position by a screw bolt 98 and being adjustable vertically by a similar bolt 102.

With the construction thus far described and the blanks arranged in order with the longest one at the bottom, the operation of the device is as follows: Starting with the parts in the positions shown in Fig. 3 and supposing the pulley to be rotating in the direction indicated by the arrow, as the slide 61 is moved forward the feed member 69 will be raised by the spring until it engages the end of the lowermost blank. The blank will then be fed forward a given distance after which the slide will begin its return movement. Meantime the controller 79 by reason of its weight will have slid down the inclined rack bars 77 and be firmly held by the pawls 81 in contact with the lowermost blank. The feed member 69 on its return stroke will therefore contact with this firmly held controller with the result that the block 67 will be moved with respect to the slide 61 and the pawl 73 will lock said block in its new position. This operation will be repeated with each succeeding blank, it being evident that the controller 79 will always be in contact with the end of the lowermost blank irrespective of the length of said blank. In order that the controller may exert a straight push upon the block 67, said controller is provided with a cavity having an inclined upper wall whereby the feed member 69 is bent downwardly on its return movement and during the time that the block 67 is being moved with respect to the slide 61 occupies the position shown. It should be particularly noted that by thus varying the location of the path of movement of the feed member, each blank is fed forward the same distance irrespective of its length.

The description of the operation of the feed mechanism as given above has been based upon the assumption that said mecha-

nism moves each blank entirely past the front wall of the magazine. In the illustrative machine, however, each blank is fed only part way past the front wall and is then gripped and pulled forward by the rolls 3 of the skiving mechanism. The gearing of the machine is such that the velocity at which each blank is fed by the feed mechanism is equal to that at which it is drawn forward by the rolls 3 of the skiving mechanism so that a given blank cannot readily interfere with the passage of the preceding one. In order, however, to insure positively that one blank shall not overtake another in its passage through the machine, means are provided for automatically disconnecting the feed mechanism from its actuating mechanism after each reciprocation of the feed member.

Referring again to Figs. 2, 3 and 4, the pulley 83 is driven from a clutch gear 99 slidable and rotatable upon a fixed shaft 101 and provided with a hub having a groove 103, the said clutch gear being driven from the shaft 29 by means of a chain 105. A clutch actuating lever 107 pivoted at 109 to the frame of the machine carries a pin 111 which coöperates with the groove 103 and is pivoted near its outer end at 113 to a slide 115 so that when the slide is in one extreme position power is applied to the pulley 83, while in the other extreme position power is withdrawn therefrom.

A wedge 117 which bears with its inclined face against the inclined end of the slide 115 normally holds the slide in the position shown with the clutch member 99 in contact with the clutch face of the pulley 83. This wedge is carried by a link 118 pivoted to an arm 119 which in turn is carried by a rock-shaft 121 having fast at its opposite end a gate or finger 123. A spring 125 normally holds the gate closed. When, however, the gate is raised by the passage of a blank beneath it, the wedge is withdrawn from contact with the slide 115 and said slide is then free to be moved to throw out the clutch. Referring now to the mechanism for throwing out the clutch, the slide 115 is provided with ears 127 between which is pivoted a pawl 129. This pawl is curved as shown, and its forward end extends through a slot in the slide 115 and into a notch 131 in the frame of the machine, while its rear end is in position to be moved in the direction of the arrow shown in Fig. 4 by the end of the link 85. When, therefore, the pulley 83 is actuated and the feed member 69 has forced a blank beneath the gate 123, the wedge 117 is removed from contact with the end of the slide 115. As the pulley 83 approaches its initial position the extended end of the link 85 strikes the end of the pawl 129, thereby lifting the pawl from the notch 131 and forcing the slide 115 toward the wedge 117. This automatically throws out the clutch and leaves the mechanism in position to be started automatically when the blank has been pulled out from beneath the gate 123. When this latter happens, the spring 125 operates to throw the wedge back into the posititon shown in Fig. 4, thereby throwing in the clutch again. It should be understood that the momentum of the parts is sufficient to carry the end of the link 85 past the pawl 129 after said link has actuated said pawl.

When the last blank has been fed, it is desirable that the feed mechanism should come to, and remain at, rest; and to this end the standard 133 which supports the weight 97 and is slidable in guides 135 carries a pin 137, and as the last blank is fed from beneath the weight this pin bears downwardly upon a pawl 139 and forces it into a notch 141 in the link 118, thereby holding the wedge 117 retracted and the spring 125 compressed. The pawl 139 is pivoted to one of the guides 135 and is normally held with its end in contact with the stop pin 143 by means of a weight 145.

As has been stated, the blanks to be fed may be of different widths so that ordinary rigid side guides cannot be made use of. In order then to insure that a blank shall be fed straight forward and held firmly from angular movement until its forward end is properly gripped by the feed rolls and skiving mechanism, a plurality of knife edges 147 are mounted upon the bed or support 57, and these knife edges are pressed by the weight 97 firmly into the under side of each blank. In order to facilitate the feeding movement a roller 149 is mounted in front of each knife.

In machines of the class described, the blanks that have been operated upon either are allowed to fall indiscriminately from the machine or are taken from the machine one by one by the operator and stacked. In the present machine, however, mechanism is provided for automatically stacking the blanks. A receptacle 151 has slotted side walls, and in these slots are guides, one of which is shown at 153, which are fast to a platform 155, said guides being designed to steady said platform in its descent and in a measure to support said platform by friction. Fast to the side wall of the receptacle and adjacent one of the slots is a ratchet bar 157, and pivoted to the guide and arranged to coöperate with the ratchet bar is a double pawl 159 acted upon by a spring 161. Two arms 163 and 165 are pivoted to the side wall, the upper arm being curved and carrying a roller 167, and these arms are connected by an actuating link 169. It will now be clear that the mechanism for permitting the platform 155 to sink as the soles are piled upon it resembles an escape-

ment, and it should be understood that the escapement is duplicated on the other side of the receptacle.

The operation is as follows: With the parts in the position shown, the platform is held to an extent by the friction between the guides 153 and the walls of the inclined slots, the purpose of said friction being to relieve part of the weight of the platform and soles. The platform is positively held, however, by the lower arms of the pawls. If now another sole is forced under the roller 167 the lower arms of the pawls will be forced outwardly by the actuating rods 169 and the upper arms forced inwardly. The platform will then drop until the upper arms of the pawls engage the next lower teeth of the bars 157, the ends of the lower arms being then part way between two teeth. This slight lowering of the platform will relieve the pressure upon the springs 161, and said springs will immediately act to swing the pawls into the position shown whereupon the platform will fall until the ends of the lower arms of the pawls engage the next lower teeth of the bar and the parts are in the position shown. The forcing of another sole beneath the roller 167 will cause a repetition of the movements described above, and these repetitions will continue until the platform reaches the bottom of the compartment 151. The soles will thus be automatically stacked and hence in a convenient form for being handled.

Although the invention has been set forth in connection with a particular machine, it should be understood that the invention is not limited in the scope of its application to the particular machine shown and described.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length having, in combination, a support for that end of the pile which has the greater dimension, a reciprocating feed member arranged to engage the blanks one by one, and means for causing the path of reciprocation of said member to be shortened progressively as the blanks are fed.

2. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length having, in combination, a support for that end of the pile which has the greater dimension, means for feeding said blanks forward one by one, and means engaging the edge of each blank for causing the blanks to be fed the same distance irrespective of their length.

3. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a feed member, means for moving said member forwardly and backwardly beneath said pile, means for pressing the feed member upwardly during its backward movement so that upward movement of said member will take place when the edge of the lowermost blank is reached, and means dependent upon the length of said blank for arresting said backward movement when said edge is reached.

4. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a feed member, means for moving said member in a closed path, and means dependent upon the length of the blank to be fed for varying the length of the path of movement of said feed member.

5. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a slide, a feed member carried thereby, means for imparting to said slide a reciprocation in a path of fixed location, and means dependent upon the length of the blank to be fed at any given time for varying the length of the path of reciprocation of the feed member.

6. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a slide, a feed member carried thereby for engaging the edge of one blank at a time, said member being effective in the forward direction, means for reciprocating said slide, a spring for holding the feed member up against the lower side of the lowermost blank, and means responsive to the length of the given blank to be fed and acting in conjunction with said spring during the rearward movement of said slide for causing said feed member to be moved into position to engage the rear edge of said blank.

7. Mechanism for feeding blanks of different lengths having, in combination, a support for a pile of blanks, a slide, a feed member carried thereby for engaging the edge of one blank at a time, means for reciprocating said slide, means for moving said feed member in a direction approximately transverse to the direction of reciprocation, and automatic means for varying the location of the path of reciprocation of said feed member.

8. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length having, in combination, a support for that end of the pile which has the greater dimension, a slide, means for reciprocating said slide beneath said pile, a feed member for engaging the lowermost blank, said member being mounted upon said slide and adjustable with respect thereto, and au-

tomatic means dependent upon the length of the lowermost blank for adjusting said feed member, in the direction of its reciprocation.

9. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a slide, means for reciprocating said slide beneath said pile, a feed member for engaging the lowermost blank, said member being mounted upon said slide and adjustable with respect thereto, a controller movable forwardly to contact with the edge of the lowermost blank and arranged to engage said feed member on its rearward stroke, and means for preventing rearward movement of said controller.

10. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a slide, means for reciprocating said slide beneath said pile, a feed member movable angularly and bodily with respect thereto, and means responsive to the length of the lowermost blank for moving said feed member.

11. Mechanism for feeding a pile of blanks of different lengths arranged progressively as to length, having, in combination, a support for that end of the pile which has the greater dimension, a feed slide having ratchet teeth formed thereon, means for reciprocating said slide, a feed member for engaging the end of each blank successively, a pawl between said feed member and ratchet teeth to prevent movement of said member in a rearward direction, and means responsive to the length of the blank to be fed for moving said member in a forward direction.

12. Mechanism for feeding blanks of different lengths having, in combination, a support for a pile of blanks, a slide arranged to be reciprocated beneath said pile and provided with ratchet teeth, a block slidably mounted on said slide, a feed member pivoted to said block, a pawl carried by said block and arranged to coöperate with the ratchet teeth on said slide, a spring tending to move said feed member about said pivot, and means for moving said feed member with respect to said slide.

13. Feed mechanism having a support for a pile of blanks, and mechanism for feeding said blanks one at a time, said feed mechanism being always effective on its forward stroke in combination with a finger past which the blanks are fed, and means responsive to the position of said finger for stopping the actuation of said feed mechanism.

14. Feed mechanism having a support for a pile of blanks and means for feeding said blanks one at a time in combination with a clutch for applying power to reciprocate said feeding means, and automatic means for throwing said clutch into and out of operative position during the interval between the engagement of the feeding means with one blank and its engagement with the next succeeding blank.

15. Feed mechanism having a support for a pile of blanks and means for feeding said blanks one at a time in combination with a clutch for applying power to reciprocate said feeding means, means arranged to throw out said clutch after a blank has been fed a given distance, and means becoming operative during the further passage of the blank for throwing said clutch in again.

16. Feed mechanism having a support for a blank and means for feeding said blank over said support, in combination with a plurality of knife edges for engaging the face of said blank and yielding means for pressing said knife edges into said face.

17. A machine of the class described having a knife, a support for a blank, and means for feeding said blank to said knife, in combination with a plurality of straight guides having thin edges, and means for pressing said guides into the face of said blank to insure proper presentation of said blank to said knife.

18. A machine arranged to deliver soles and similar articles in combination with a vertically movable platform for receiving said soles, a ratchet bar and a pawl for supporting said platform, and means operated by the delivery of a sole for releasing said pawl from said bar.

19. A machine arranged to deliver soles and similar articles one at a time in combination with a vertically movable platform for receiving said soles, means for holding said platform in supporting position, and means operated by the soles as they are delivered for permitting said platform to sink.

20. The combination with mechanism for skiving and mechanism for rolling blanks, of a plurality of feed mechanisms arranged side by side in operative relation to said skiving mechanism, a drive shaft, and means for actuating said feed mechanisms, skiving mechanism and rolling mechanism from said common drive shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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Witnesses:
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ARTHUR L. RUSSELL.