July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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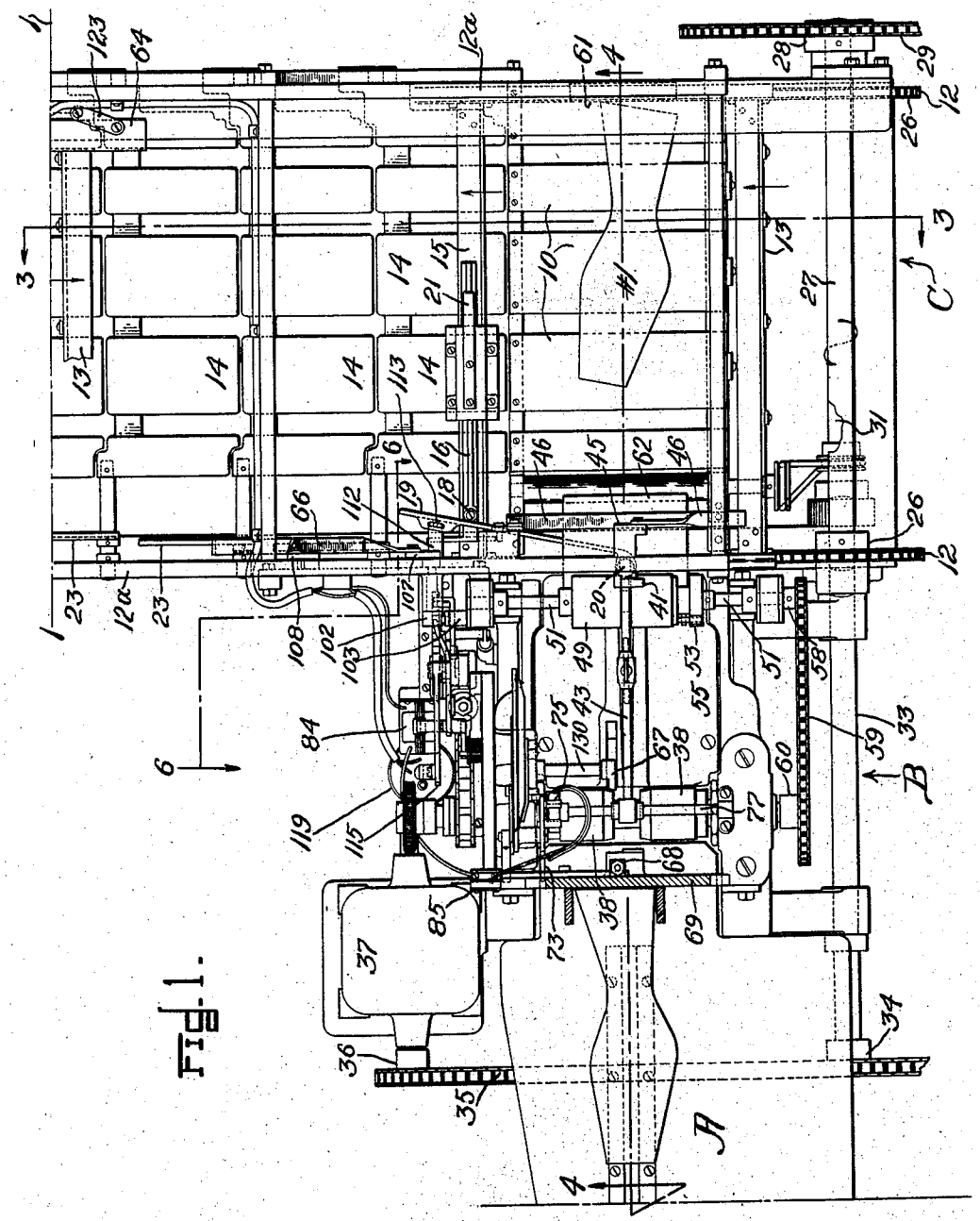


Fig. 1.

INVENTOR.
James J. Donovan
BY Arthur F. Randall
ATTORNEY

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BLANK DISTRIBUTING MACHINE

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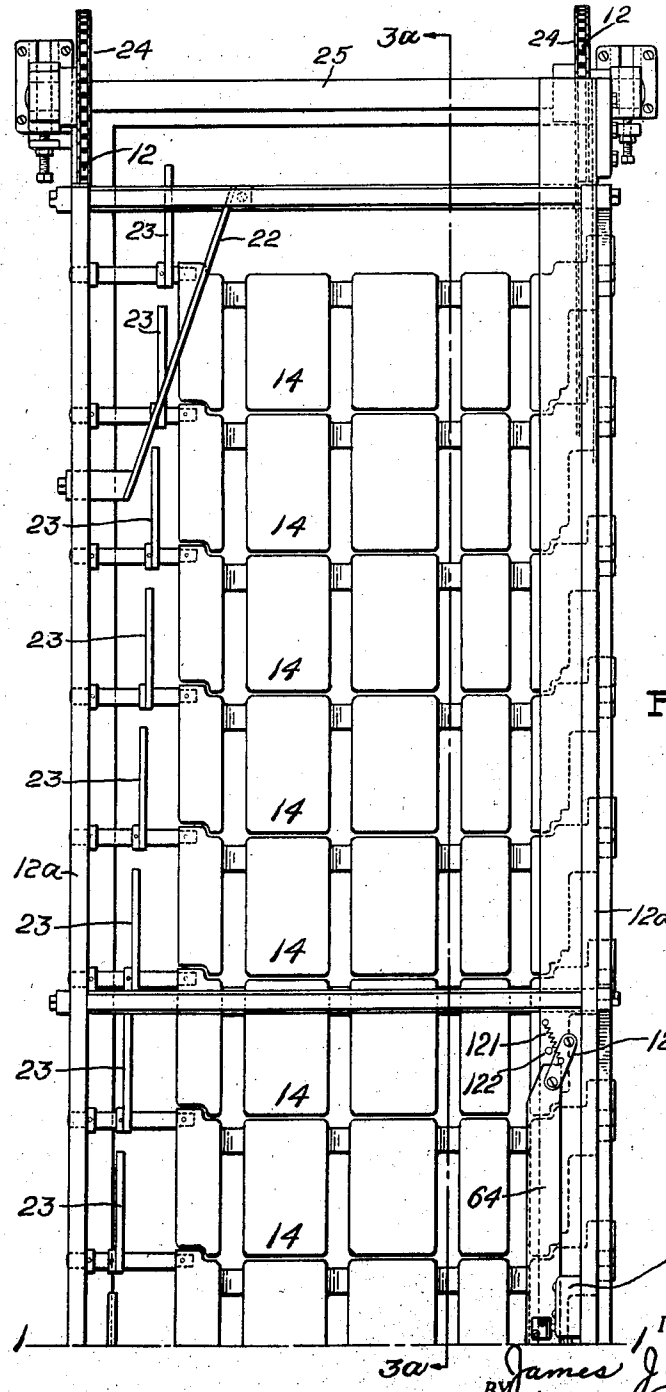


Fig. 1A.

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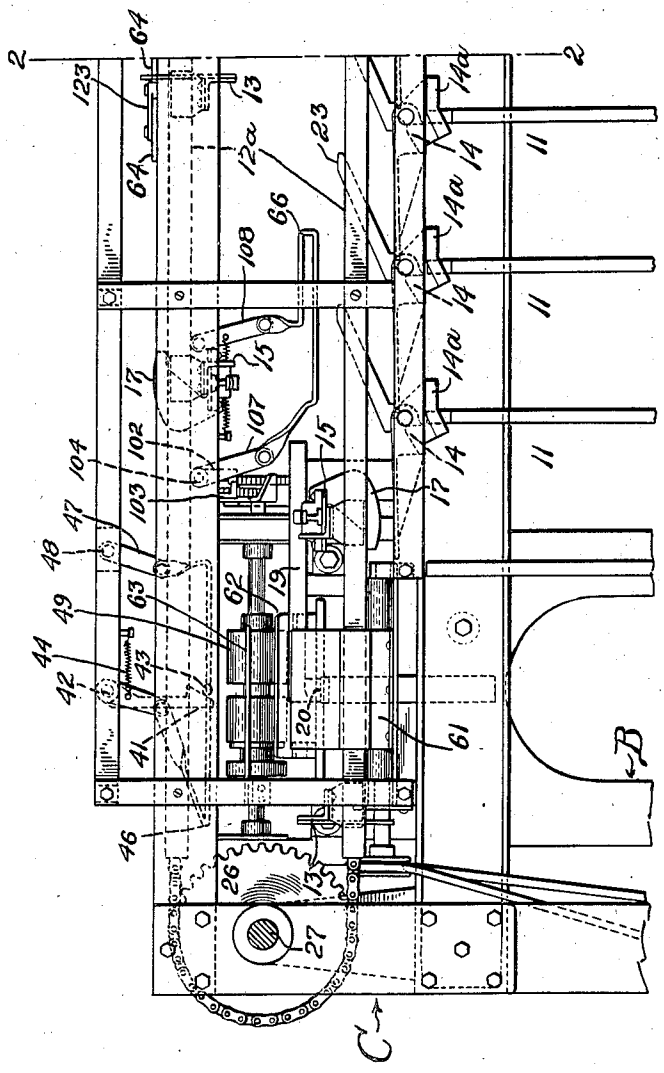


Fig. 2.

INVENTOR.
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BLANK DISTRIBUTING MACHINE

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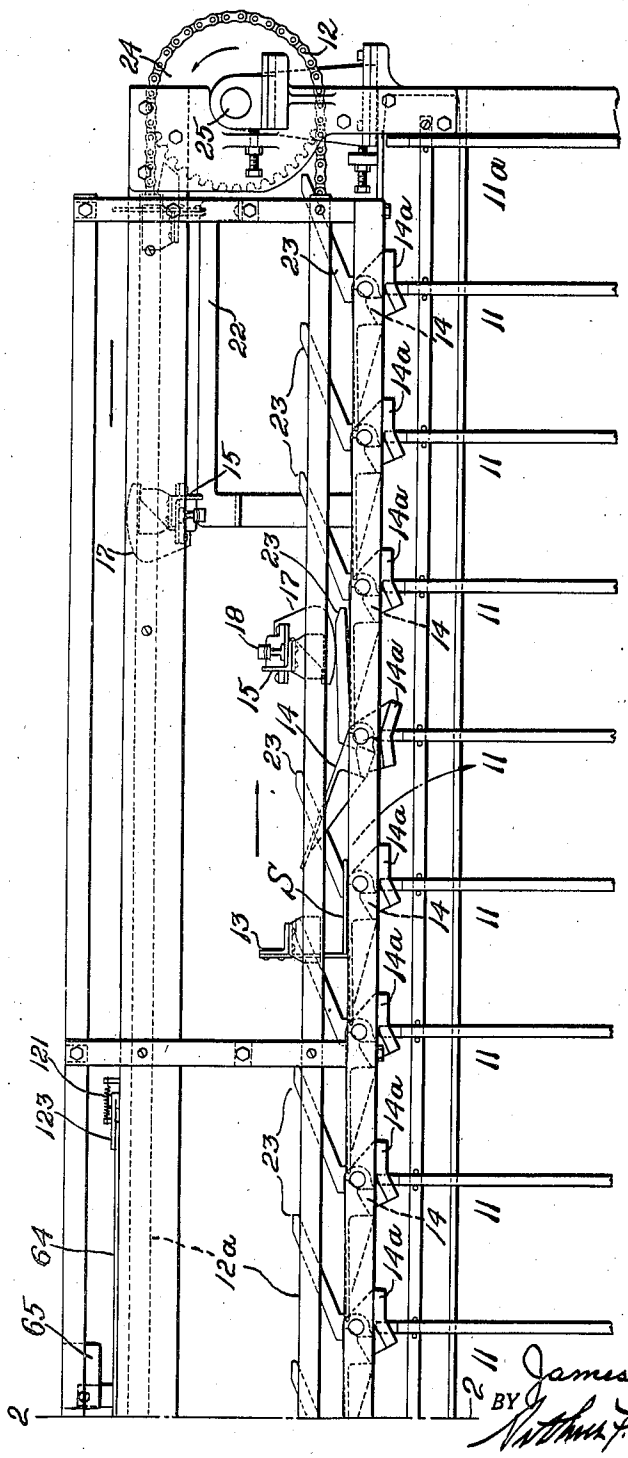


FIG. 2A.

INVENTOR.
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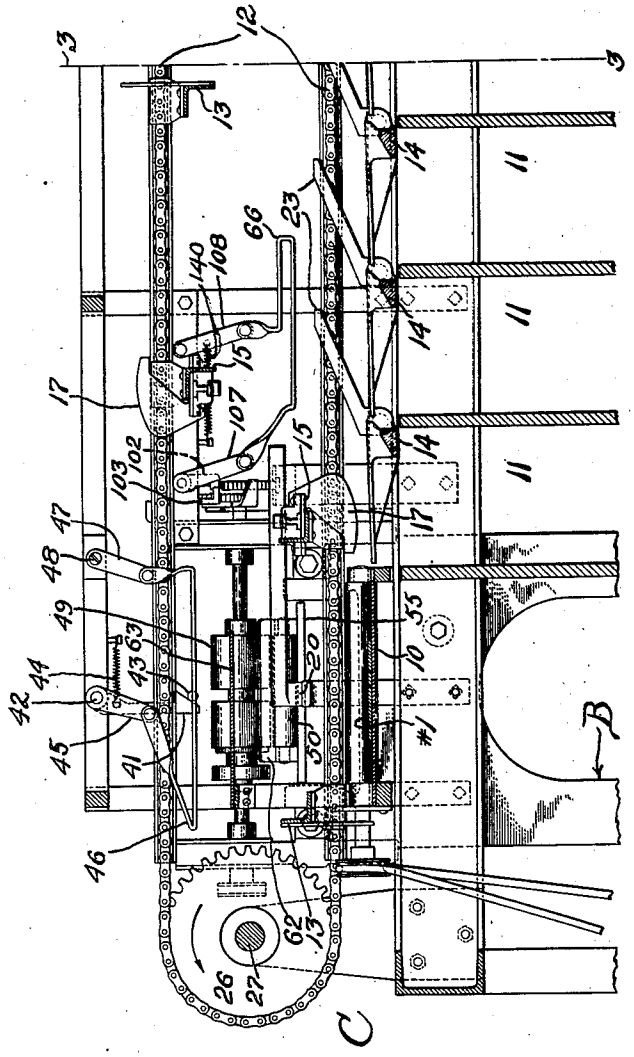


Fig. 7.

INVENTOR.
James J. Donovan
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Arthur F. Randall
ATTORNEY

July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

Filed Aug. 28, 1940 14 Sheets-Sheet 6

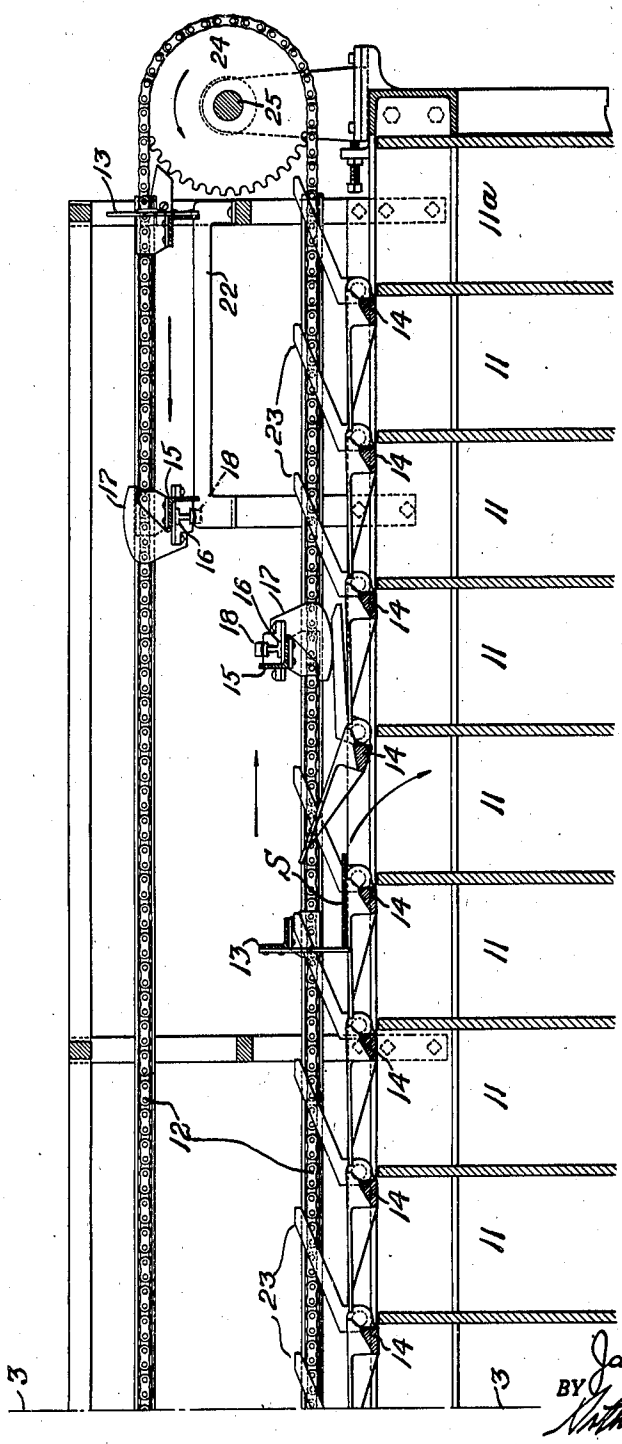


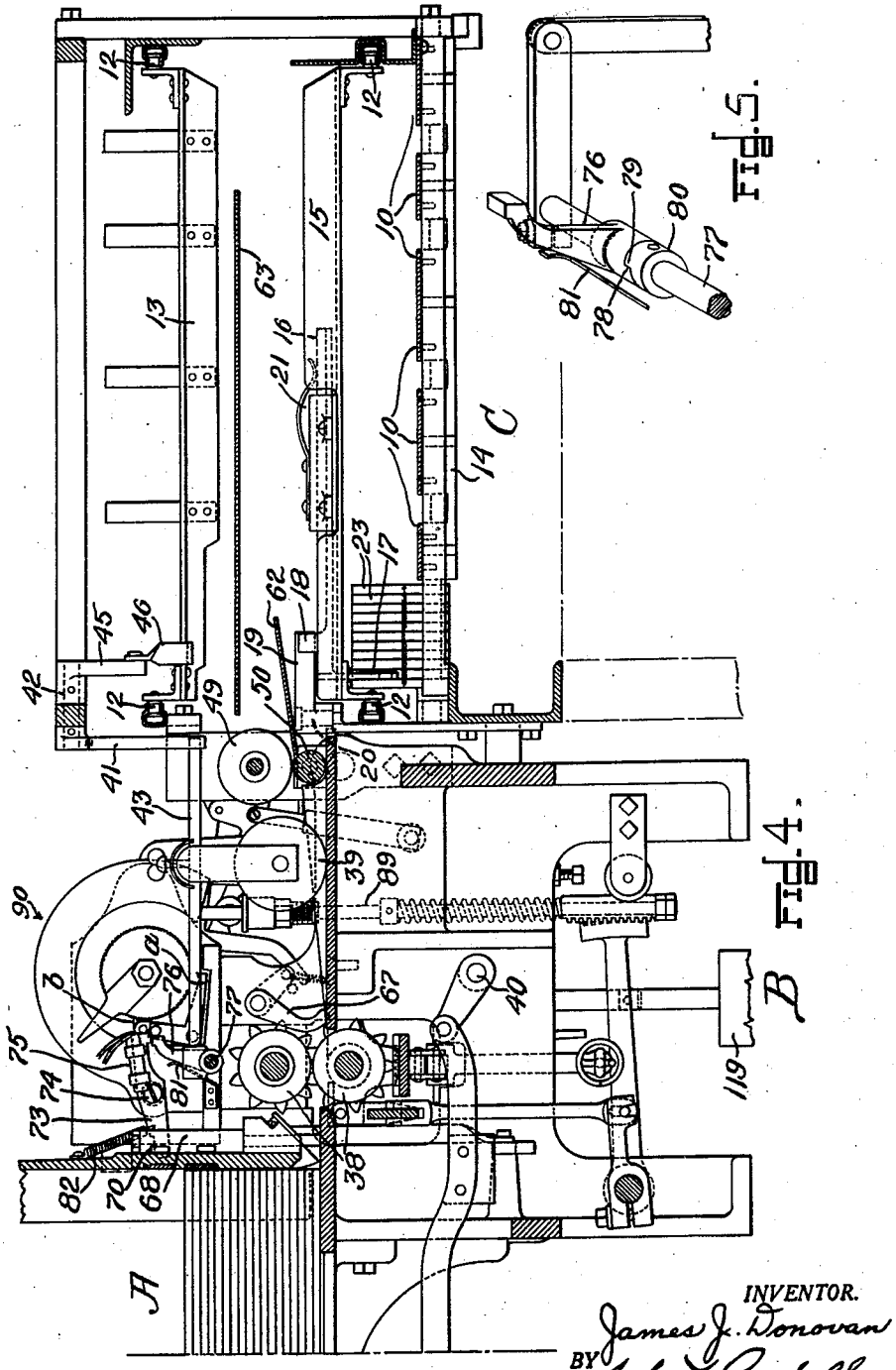
Fig. 3A.

INVENTOR.
James J. Donovan
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Arthur F. Randall
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July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

Filed Aug. 28, 1940 14 Sheets-Sheet 7



INVENTOR.
James J. Donovan
BY
Arthur F. Randall
ATTORNEY

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BLANK DISTRIBUTING MACHINE

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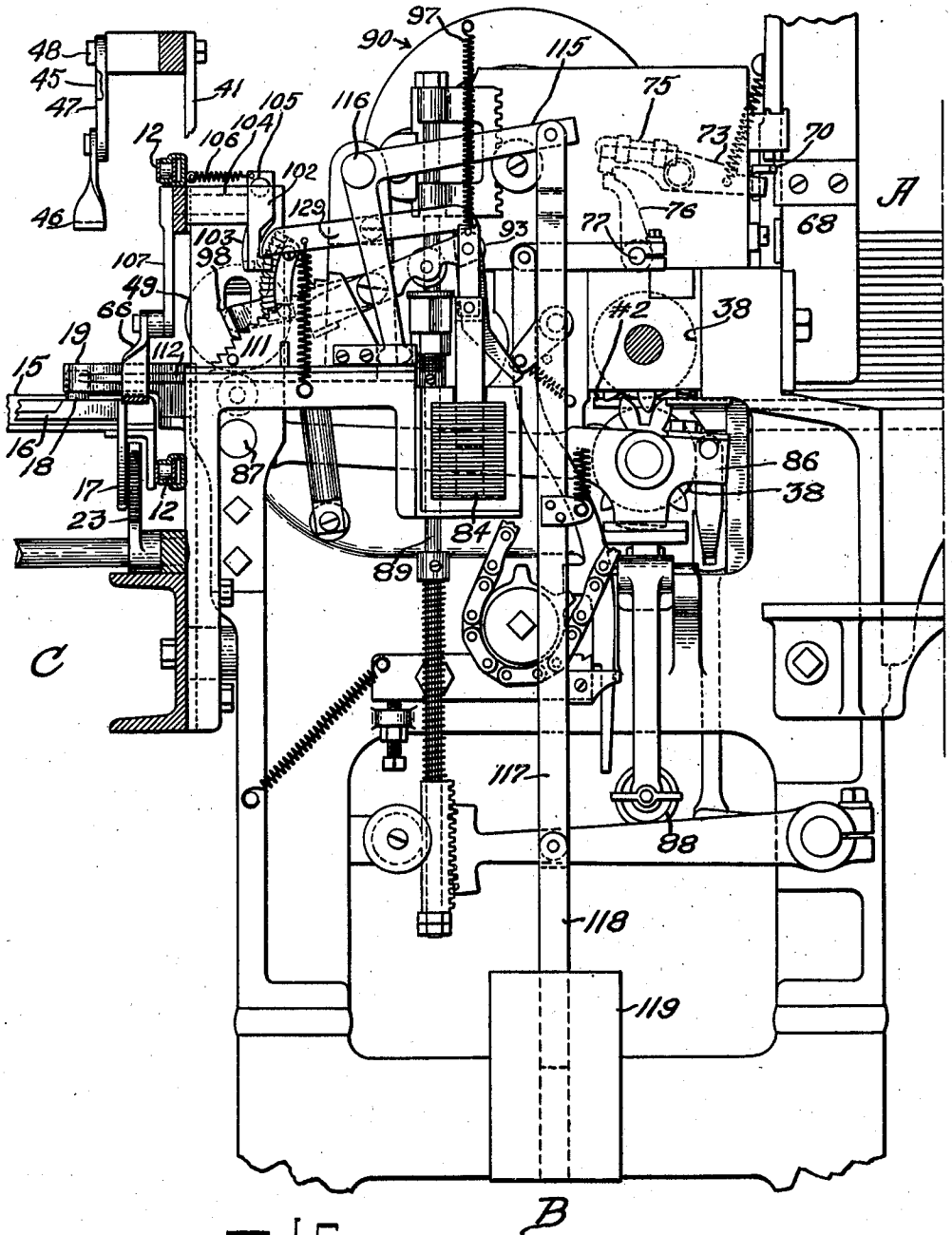


Fig. 6.

INVENTOR.
James J. Donovan
BY
Arthur F. Randall
ATTORNEY

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BLANK DISTRIBUTING MACHINE

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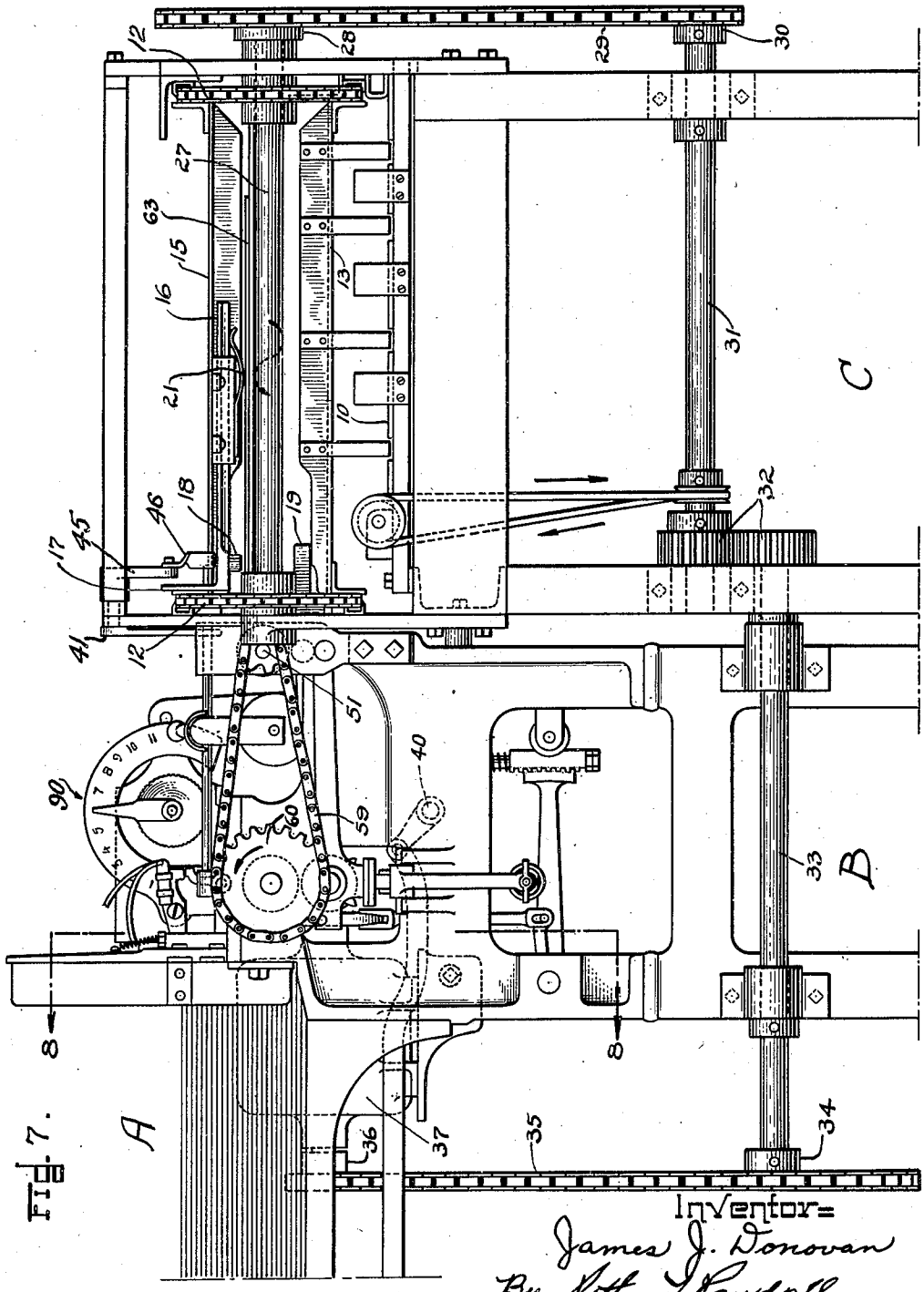


FIG. 7.

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By Arthur F. Randall
Atty.

July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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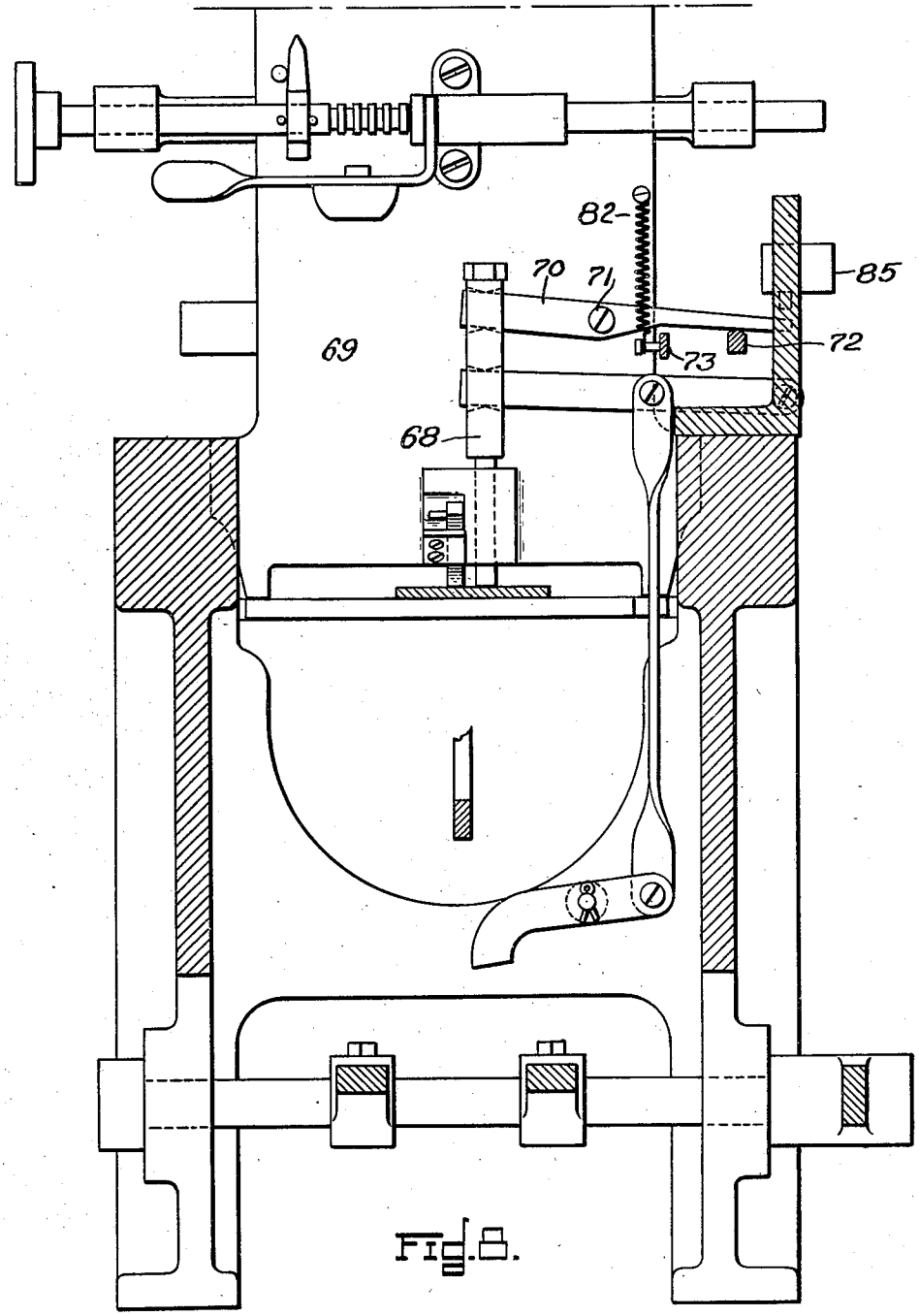


Fig. 8.

INVENTOR.

BY James J. Donovan

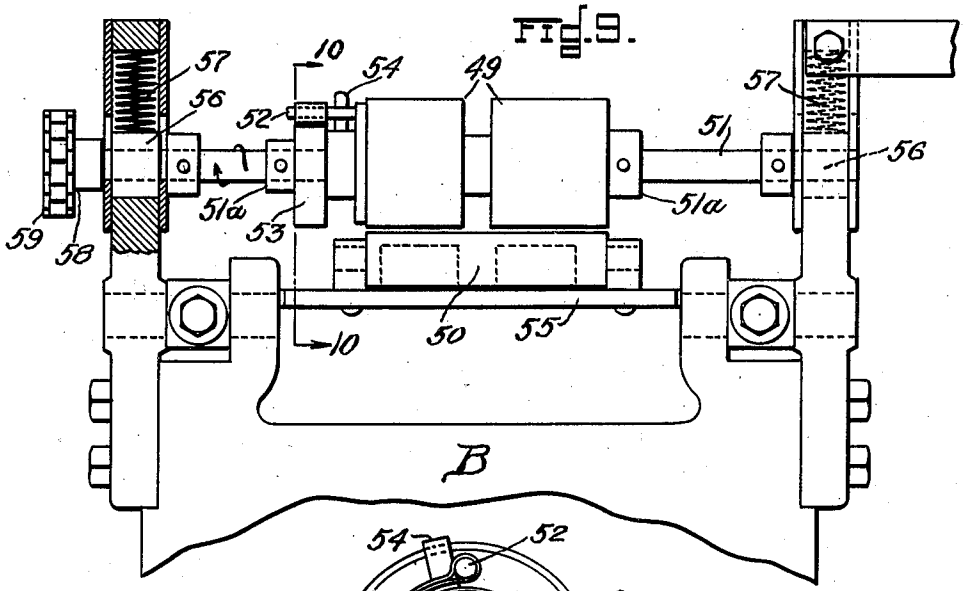
Arthur F. Ramstadt atty.

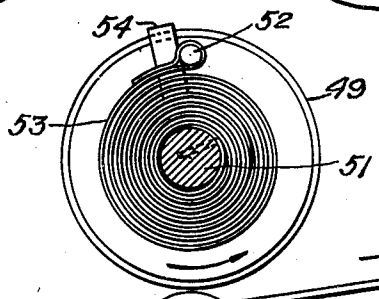
July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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Fig. 9.





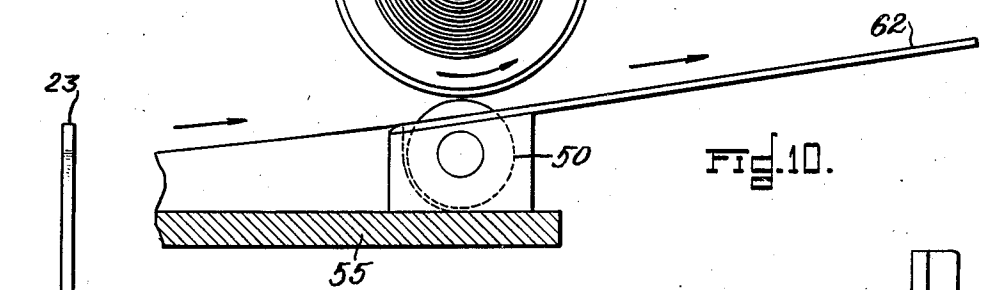


Fig. 10.

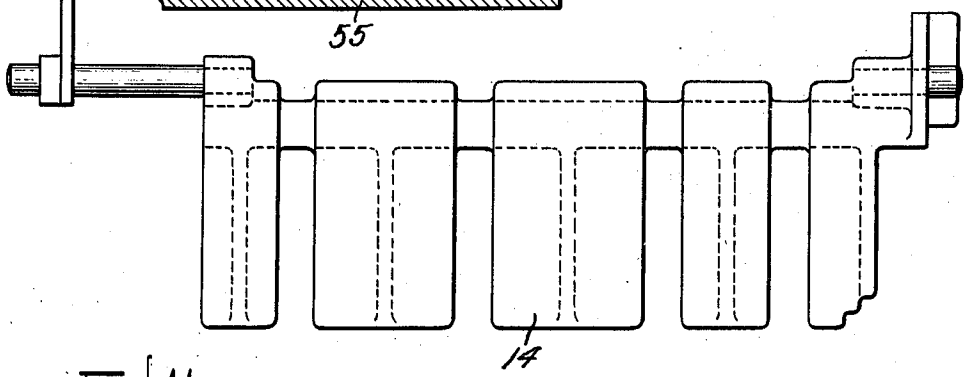


Fig. 11.

INVENTOR.

BY James J. Donovan

Arthur T. Randall atty.

July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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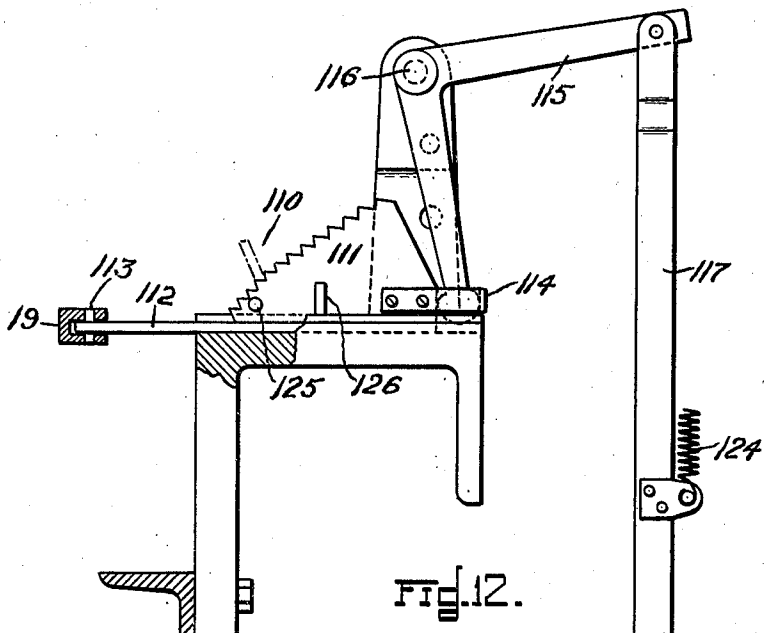


FIG. 12.

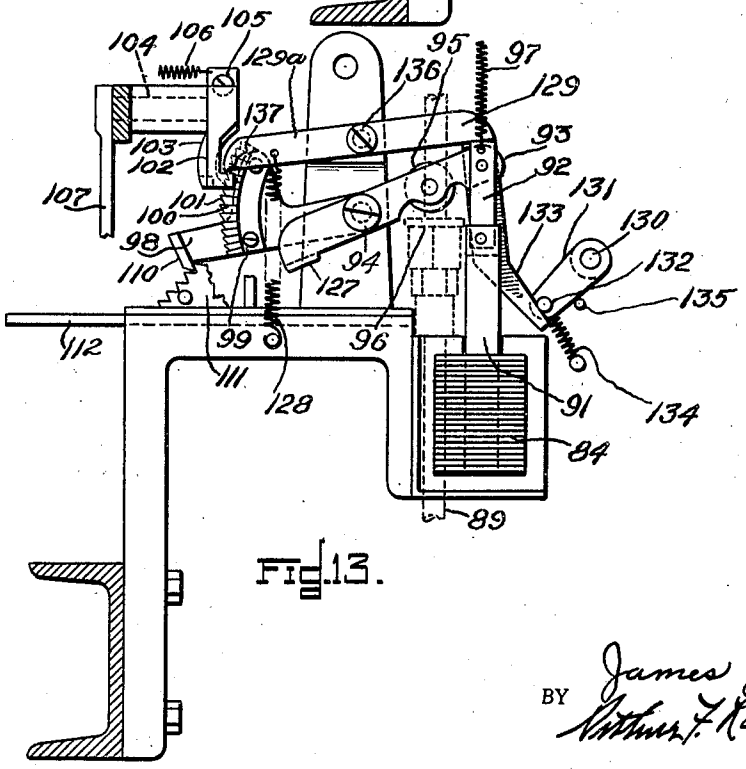
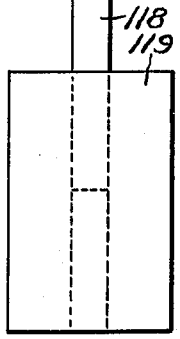


FIG. 13.



INVENTOR.

BY James J. Donovan

Arthur F. Randall Atty.

July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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Fig. 14.

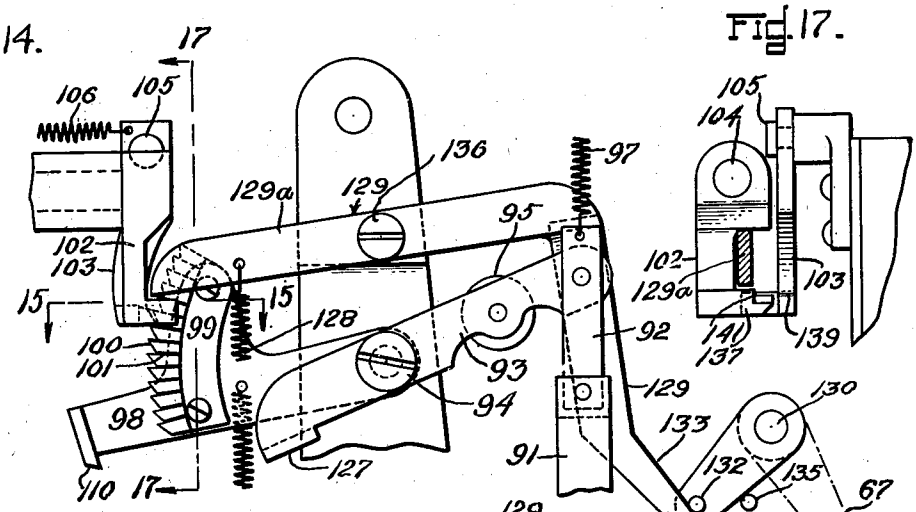


Fig. 17.

Fig. 15.

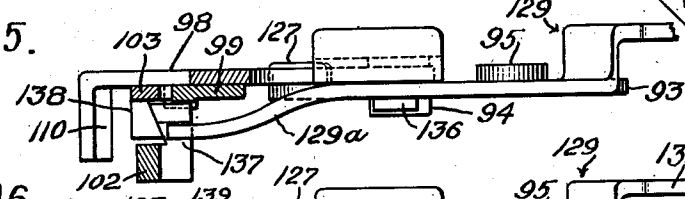


Fig. 16.

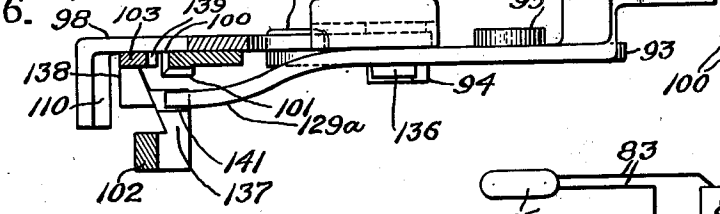


Fig. 18.

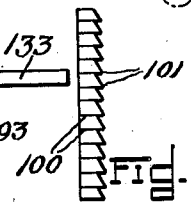
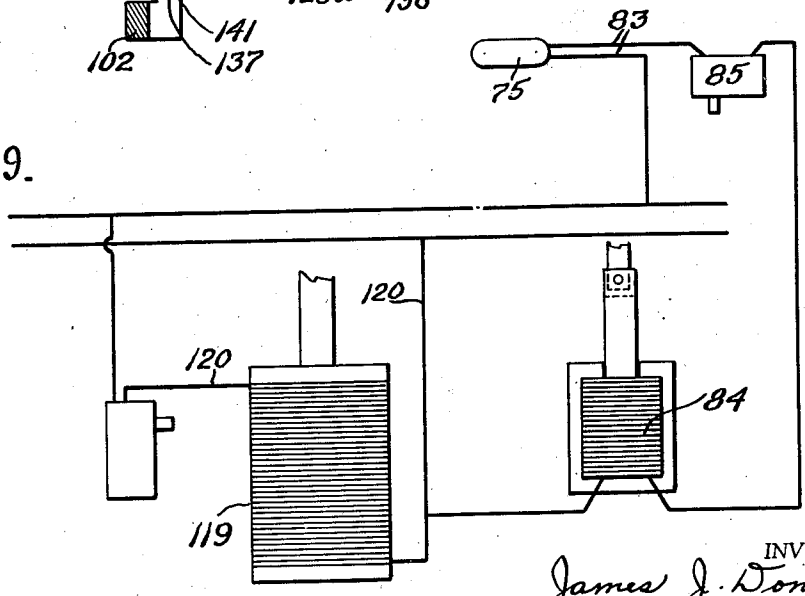


Fig. 19.



INVENTOR.

BY James J. Donovan

Arthur J. Randall Atty.

July 28, 1942. J. J. DONOVAN 2,290,852

BLANK DISTRIBUTING MACHINE

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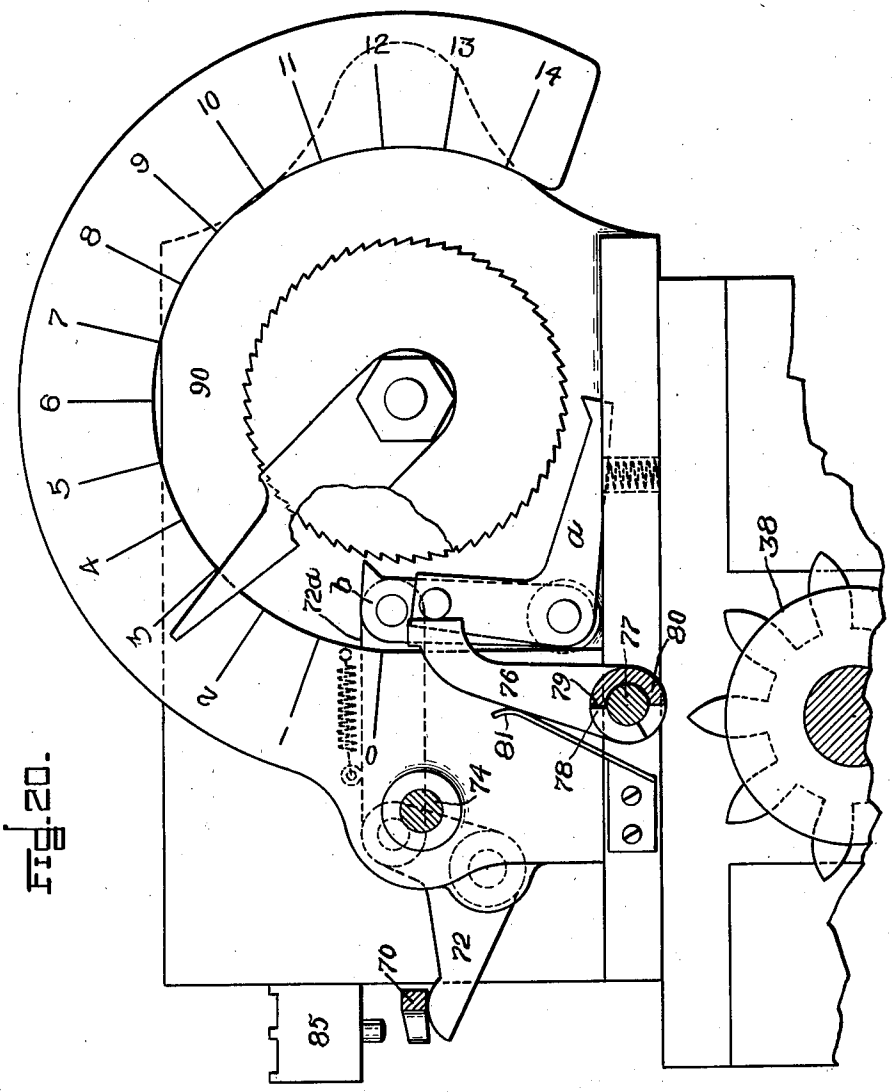


Fig. 20.

INVENTOR.

BY James J. Donovan,
Arthur F. Randall, Atty.

Patented July 28, 1942 2,290,852

UNITED STATES PATENT OFFICE

2,290,852

BLANK DISTRIBUTING MACHINE

James Joseph Donovan, Hartford, Conn., assignor to North American Holding Corporation, Syracuse, N. Y., a corporation of New York

Application August 28, 1940, Serial No. 354,581

14 Claims. (Cl. 209—88)

This invention relates to a machine for measuring and sorting soles, heel lifts, taps and other blanks of the type used in shoe making.

A machine of the class indicated is shown and described in my Patent No. 2,123,136 granted July 5, 1938, and the principal object of my present invention is to improve the construction and mode of operation of machines of the class indicated. It is also an object of this invention to provide an efficient machine of the class referred to which will operate automatically to accurately and rapidly measure the blanks and sort them according to their thicknesses.

To these ends I have provided a machine for measuring and sorting blanks, said machine being constructed and operating as set forth in the following description, the several novel features of the invention being separately pointed out and defined in the claims at the close of said description.

In the accompanying drawings:

Figures 1 and 1*a*, joined at the lines 1—1 appearing thereon, make up a plan view of my improved machine.

Figures 2 and 2*a*, joined at the lines 2—2 appearing thereon, present a side elevation of the distributing mechanism of my improved machine.

Figures 3 and 3*a*, joined at the lines 3—3 appearing thereon, present a longitudinal sectional view of the distributing mechanism.

Figure 4 is a section on line 4—4 of Fig. 1.

Figure 5 is a detail, hereinafter described, relating to the measuring mechanism.

Figure 6 is a partial section on line 6—6 of Fig. 1.

Figure 7 is an end elevation of the machine as viewed from the bottom of Fig. 1.

Figure 8 is a section on line 8—8 of Fig. 7.

Figure 9 is a detail, in elevation, illustrating the construction of the delivery rolls, hereinafter described, by which the measured blanks are delivered to the distributing mechanism.

Figure 10 is a section on line 10—10 of Fig. 9.

Figure 11 is a plan view of one of the gates of the distributing mechanism hereinafter described.

Figures 12 and 13 are details relating to the controller-setting mechanism hereinafter described.

Figure 14 shows somewhat enlarged a portion of the controller-setting mechanism that is illustrated in Fig. 13.

Figure 15 is a section on line 15—15 of Fig. 14, illustrating the construction of a pair of latches, hereinafter described, forming part of said mechanism.

Figure 16 is a section similar to Fig. 15 but showing the pair of latches in their retracted or inoperative positions.

Figure 17 is a section on line 17—17 of Fig. 14 with the adjustable stop arm 98 omitted.

Figure 18 is an edge view of the ratchet segment forming part of the stop arm 98.

Figure 19 is a diagram illustrating the electric circuits provided for the switches and solenoids hereinafter referred to.

Figure 20 is an elevation of a portion of the measuring mechanism showing the pawl and ratchet devices thereof.

The embodiment of my invention, herein illustrated, comprises a hopper that is indicated generally at A (Figs. 1 and 7), a thickness measuring mechanism that is indicated generally at B and a distributing mechanism that is indicated generally at C.

During the operation of the machine the blanks, herein shown as leather soles, are moved forwardly one at a time from hopper A, through the measuring mechanism B and delivered on to a grid-like shelf or platform 10 at the entrance end of the distributing mechanism, said blanks moving along a path that is coincident with the section-indicating line 4—4 of Fig. 1. During the passage of each blank through the measuring mechanism B it is measured for thickness by the latter, and said mechanism automatically controls or sets the distributing mechanism so that the sole is delivered by the latter into one or the other of a series of bins 11 (Figs. 2, 2*a*, 3 and 3*a*) according to its thickness as determined by the measuring mechanism B. That is, the blanks vary in thickness and those of one thickness are segregated from those of other thicknesses by being automatically delivered into that one of the bins 11 allotted to blanks of that thickness.

The distributing mechanism includes a continuously moving carrier comprising a pair of endless chains 12, 12 (Figs. 1, 1*a*, 3, 3*a* and 7) to which the opposite ends of a plurality of pairs of cross-bars 13—15 are fastened.

After a blank has been delivered on to the grid-like platform or shelf 10 of the distributor, as shown in Figs. 1 and 3, it occupies a position in the path of an approaching cross-bar 13 which is in the form of a rake by which said blank is engaged and carried to its destination within one of the bins 11.

The upper end of each bin 11 is normally closed to the entrance of blanks by a pivotally

supported gate 14 (see Fig. 11 also) that is normally held in closed position by gravity. The gates 14 are all disposed in a horizontal row and make up a slideway over which each blank is slid by one of the rakes 13 to its bin, excepting those blanks which are delivered into the first bin that is nearest to the shelf or platform 10.

Each cross-bar 15 is positioned a predetermined distance in front or ahead of its complementary rake 13 and adjustably mounted thereon is a slide 16 (Figs. 1, 2, 3, 3a and 7) provided at its one end with a cam 17, and adjacent to said cam with a truck or roll 18 mounted upon one side of the slide 16 in position to cooperate with an adjustable controller 19 that is pivotally supported at 20 on the frame of the machine. A leaf spring 21 (Figs. 1 and 7) presses yieldingly against slide 16 to frictionally hold the same in its different adjusted positions.

The roll or truck 18 on each slide 16 also cooperates with a fixed cam 22 (Fig. 1a and 3a) on the frame of the machine as will presently be described.

Each gate 14 is made with an upwardly projecting inclined arm 23, and the arms of the several gates are, as shown in Figs. 1 and 1a, relatively offset with respect to one another so that the cam 17 on each cross-bar 15 can only engage one of the arms 23 as said cross-bar and cam move toward the right in Figs. 3 and 3a.

As a rake 13 approaches platform 10 to engage the blank resting thereon (Figs. 1, 3 and 7), the controller 19, whose position has just been automatically determined by the measuring mechanism B according to the thickness of said blank, acts through the truck or roll 18 of the cross-bar 15 immediately in front of said rake to position the slide 16 on said cross-bar so that the cam 17 of said slide will later engage the arm 23 of the gate 14 at the top of the bin 11 into which blanks of that thickness should be delivered.

Thus, as said blank is carried along the slideway by the rake the cam 17 immediately ahead of the rake will act through the arm 23 for which it has been set by controller 19, to open the gate of said arm by forcing the latter downwardly. Therefore, when the blank arrives at the opened gate, it will be deflected by the latter downwardly into the bin that is normally closed by said gate. This will be clear from Fig. 3a which shows one of the gates 14 held open by the cam 17 of one of the cross-bars 15 with its following complementary rake 13 about to shove a blank into its proper bin 11.

Continued movement of the carrier brings the cam bar 15 and its complementary rake 13 into the upper return stretch of the carrier and as the bar 15 passes the stationary or fixed cam 22, referred to above, the latter engages the roll or truck 18 on the slide 16 of said cross-bar 15 and adjusts said slide 16 outwardly to the limit of its movement toward the adjacent chain 12. This re-setting of the slide 16 occurs as the cross-bar 15 and its complementary rake 13 start to traverse the upper stretch of the carrier on their way back toward the platform or shelf 10.

The chains 12 of the carrier are supported at one end of the distributor mechanism by a pair of sprockets 24 fast on a shaft 25 journaled in bearings on the frame of the machine, and by a pair of sprockets 26 at the opposite end of the distributor which are fast on a shaft 27 that is continuously driven in the direction of the arrows (Figs. 1 and 3).

The shaft 27 also carries a sprocket 28 (shown in Fig. 7 but omitted in Fig. 2) connected by a chain 29 with a sprocket 30 fast on a shaft 31, the latter being driven through spur gears 32 by a shaft 33. This shaft 33 carries a sprocket 34 driven through a chain 35 by a sprocket 36 fast on the armature shaft of a motor 37. This motor 37 also continuously drives the shaft of the upper measuring roll of the measuring mechanism B, as usual.

The controller 19 is automatically adjusted on its pivot 20 in a clockwise direction (Fig. 1) according to the thickness of the blank being delivered on to platform 10 just before it is engaged by the roll 18 of one of the cam slides 16 and, therefore, when adjusted for the thinnest blank it will occupy an operative cam-adjusting position nearest to the measuring mechanism, and when adjusted for a blank of maximum thickness it will be at the limit of its movement away from the measuring mechanism.

The arms 23 of the gates are, therefore, offset progressively toward the right (Fig. 1) starting with the arm nearest the measuring mechanism B, so that the thinnest blanks will be delivered into the bin 11 nearest platform 10 while the thickest sorted blanks will be delivered into the bin 11 farthest from platform 10. The blanks delivered into the end bin 11a are not sorted and will be comparatively few in number.

The construction and operation of the measuring mechanism B is, with some exceptions, the same as with the well known Nichol's grading machine such as is shown and described in U. S. Patent to Johnston, No. 1,945,858, dated February 6, 1934. Other patents relating to this class of machine are U. S. Patent to Cogswell No. 1,686,487, dated October 2, 1928, and Nichol's Patent No. 1,582,140, dated April 27, 1926.

Machines of this class comprise a pair of continuously driven measuring or detecting rolls 38 (Fig. 4) to which the blanks are fed one at a time automatically from hopper A and during the passage of each blank through the machine it raises a drop-roll 39 to start the measuring action and said roll is held by the blank in an elevated position until said blank is removed from the machine, such removal being heretofore effected manually.

When the blank is removed from the measuring mechanism the drop-roll 39 falls and acts through the usual mechanism to occasion one revolution of a shaft 40 which is normally at rest. This revolution of shaft 40 acts through the usual feed mechanism to feed forward the lowermost blank within hopper A.

In the present machine the fall of drop-roll 39 off from the rear end of a blank acts through the usual feed mechanism to start the next blank forward from hopper A as heretofore, but the present invention provides for the automatic discharge of the blank from the measuring mechanism on to platform 10 as soon as the rear end of the blank clears the measuring rolls 38.

Also, means is herein provided through which the distributor mechanism acts automatically at times to delay the fall of the drop-roll 39 thereby to maintain the movements of the rakes 13 past the platform 10 in properly timed relation with the delivery of blanks on to platform 10.

That is to say, when operating upon blanks of greatest length, this automatic delay of the fall of drop-roll 39 may not be required or occur, but in operating upon blanks of lesser

length such delay is automatically effected for the purpose stated.

The means for thus automatically controlling the fall of drop-roll 39 comprises a hook 41 depending from one end of a short shaft 42 journaled in a bearing provided on the frame of the distributor mechanism. The lower end of this hook 41 occupies a position alongside of the usual arm 43 which carries the drop-roll 39, and a spring 44 (Fig. 3) yieldingly urges the hook 41 toward and against the arm 43. At its opposite end the short shaft 42 carries a depending arm 45 connected by trip-shoe link 46 with a relatively parallel arm 47 pivotally supported at 48 on the frame of the distributing mechanism.

When a blank under maximum length is moved out from beneath drop-roll 39 as described later, the arm 43 thereof is caught and held in elevated position by the hook 41 which delays the start of the next blank forward from hopper A until a cam bar 15 of the distributor carrier acts through trip-shoe link 46, arm 45 and short shaft 42 to swing the latch hook 41 aside, whereupon drop-roll 39 falls and starts the next blank forward from hopper A.

The trip-shoe link 46 is slightly greater in length than the distance between the cam bar 15 and its following complementary rake 13 so that before cam bar 15 leaves trip-shoe link 46 its complementary rake 13 comes into position beneath said link and continues the support thereof until the rake 13 passes out of engagement with the same.

The reason for thus delaying the return of the latch hook 41 to its normal operative position is to afford time for the rear or trailing ends of the longer blanks to clear the drop-roll 39 before return of the latch to operative position.

Therefore, it will be clear that, regardless of the length of the blanks being operated upon, the start of each blank from hopper A is always definitely timed with respect to the movements of the bars 13—15 past the platform 10 of the distributor mechanism.

When operating upon shoe soles the measuring mechanism B is ordinarily operated so as to feed forward about forty-two of the shortest soles per minute and about thirty of the longest soles per minute. Therefore, in order to utilize time most economically the grading mechanism C is operated at a speed to distribute about thirty-eight soles per minute. In other words, the measuring mechanism feeds the shorter soles forward faster than it does the longer soles, while the distributing mechanism has a fixed capacity of a predetermined number of soles per minute greater than the speed of the longest soles and less than the speed of the shortest soles.

It follows, therefore, that if the measuring mechanism B is feeding soles forward slower than the distributor is distributing the sales, the timing of the engagement of the pairs of cross-bars 13—15 with the trip-shoe 46 will progressively advance relatively to the delivery of soles on to platform 10 during a predetermined number of cycles of the measuring mechanism and then will intervene a period of rest in the passage of soles through the measuring mechanism while shoe 46 dwells in its lowermost position and until re-establishment of normal timed relationship between the measuring mechanism and the movements of bars 13—15 past shoe 46 of the distributor.

The bars 13—15 co-act with the shoe 46 to prevent the measuring mechanism from delivering soles on to platform 10 faster than the distributor distributes them, hook 41 retarding the start of the forward movement of each sole from hopper A until a pair of bars 13—15 engage and lift the shoe 46.

As further explaining the automatic control of the drop-roll by the distributor C through the medium of the hook 41 and shoe 46, let it be assumed that the distributor mechanism is operating with a fixed and normal capacity of thirty-eight soles per minute, and that the soles being handled are of such length that the measuring mechanism B is operating so as to have a capacity of thirty-four soles per minute.

Under these conditions the moment of engagement of each cam bar 15 with shoe 46 is continually advancing, or creeping ahead, with respect to the moment of delivery of the soles on to platform 10 until a point is reached where the trailing bar 13 of said pair departs from the shoe 46 before the drop-roll falls off from the trailing end of the sole that is then being delivered. As a result, the hook 41 automatically holds the arm 43 of the drop-roll in its elevated position thereby delaying the start of the next sole from hopper A until the cross-bar 15 of a following pair lifts the shoe 46, but the delivery of this next sole on to platform 10 will not occur until after said following pair of bars 13—15 has idly passed said platform at a moment when there is no sole upon the latter.

This automatic control of the feeding devices of the measuring mechanism by the distributor conveyor, acting through shoe 46 and parts connected therewith, prevents the delivery of a sole on to platform 10 at a time when a pair of bars 13—15 are passing across the same. In other words, it automatically maintains the operation of the feeding devices of the measuring mechanism in properly timed relation with respect to the movements of the several pairs of bars 13—15 past the platform 10 of the distributor.

The measured blanks are discharged from the measuring mechanism B on to the platform 10 of the distributor by a pair of delivery rolls 49 and 50 (Figs. 1, 3, 9 and 10). The upper delivery roll 49 is loosely mounted upon a shaft 51 between collars 51*a* and carries at its one end a laterally projecting pin or post 52 with which the outer end of a coiled spring 53 is connected. This spring 53 surrounds the shaft 51 and its inner end is fastened to the latter.

The spring 53 normally holds the pin or post 52 against one side of an arm 54 projecting radially from shaft 51, while the latter is continuously driven in the direction of the arrow (Fig. 9). The lower roll 50 is provided at its opposite ends with trunnions journaled in bearings on the usual bedplate 55 of the measuring mechanism B.

Shaft 51 of the upper delivery roll 49 is rotatably supported by journal boxes 56 mounted in vertical ways provided on the frame of the measuring mechanism B, said boxes being yieldingly urged downwardly against stops at the lower ends of said ways by springs 57. At one end thereof shaft 51 carries a sprocket wheel 58 connected by a sprocket chain 59 (Figs. 1 and 7) with a sprocket wheel 60 fast on the shaft of the upper continuously driven measuring roll 38.

Through the connections just described the upper delivery roll 49 is driven so that its peripheral speed is greater than the peripheral

speed of the upper measuring roll 38 and, therefore, while the forward end portion of a blank occupies a position between the delivery rolls 49—50 and its rear end portion occupies a position between the measuring rolls 38, the upper delivery roll 49 will lag behind shaft 51 and spring 53 (Figs. 9 and 10) will be wound up, the radial arm 54 on shaft 51 moving forwardly away from the post or pin 52.

As soon as the rear end of the blank clears the measuring rolls 38, the spring 53 will unwind and rapidly rotate roll 49 in the direction of the arrow (Fig. 10) until the pin or post 52 re-engages the radial arm 54. This rapid rotation of the delivery rolls 49—50 vigorcusly discharges the blank on to the platform 10 (Fig. 1) and in order to prevent the blank from passing beyond said platform, an upstanding abutment wall 61 is provided upon said platform 10 in the path of the blanks, and at the outer side of the platform.

As a blank is thus discharged from between the delivery rolls 49—50 it is directed into its proper position on platform 10 by suitable guide plates 62 and 63 (Fig. 4), the guide plate 63 being omitted from Fig. 1.

As herein shown, the distributor carrier is constructed with four pairs of cross-bars 13—15, the leading cross-bar 15 of each pair being equipped with an adjustable gate-operating cam 17 and the following cross-bar 13 of each pair being constructed to serve as a rake.

It may be mentioned here that during the travel of each pair of cross-bars along the upper return stretches of the chains 12, each rake-bar 13 acts through a movably supported shoe 64 (Figs. 1, 1*a* and 2—2*a*) to close an electric push-button switch 65 and to maintain the same closed for a period of time while a preceding cam-carrying cross-bar 15 is passing the controller 19.

It may also be mentioned here that as each cam-carrying cross-bar 15 passes beyond controller 19 it engages and operates a movably supported shoe 66 (Figs. 1, 2 and 3) for a purpose which will be described later, while the bar 13 of each pair is cut away to avoid engagement with said shoe.

The front wall 69 of hopper A (Figs. 4 and 8) is, as usual, equipped with a vertically movable gate 68 which is automatically raised by the feed mechanism to the limit of its upward movement, as heretofore, each time said mechanism is operated to start a sole from the hopper. As the forward end of each sole emerges from the hopper the gate is dropped by the feed mechanism into position on top of the sole where it remains in an intermediate position until the rear end of the sole clears said gate 63 whereupon the latter falls into its lowermost position and acts through a lever 70 (Figs. 8 and 20), a bell-crank 72; a link 72*a*, and a pawl *b*, to stop the measuring action of the measuring rolls, as heretofore. Gate 68 engages one arm of the usual lever 70 which is fulcrumed at 71 on wall 69 so that said lever is swung on its fulcrum when the gate is moved vertically. The opposite or outer arm of lever 70 is cooperatively associated with the usual bell-crank member 72 through which lever 70 controls the usual stop-grading pawl *b* of the measuring mechanism to hold said pawl out of action while the gate is supported by the sole and to throw said pawl into action when the gate falls off from the rear end of the sole, all as described in the Johnston patent referred to above. See the parts 46, 48, 49 and 50 in Fig. 2 of the drawings of that patent. In Fig. 20 of the accompanying drawings these parts are shown in the positions they occupy when the forward end of the sole or blank is between the measuring rolls and the drop roll 39.

In accordance with the present invention the outer arm of lever 70 is also cooperatively associated with a lever 73 (Figs. 1, 4 and 8) pivotally mounted at 74 on the frame of the machine, and also with a push-button switch 85 fixedly mounted on the frame of the machine.

When the gate 68 is first lifted to its highest point by the feed mechanism to permit the exit of a blank from the hopper A, the outer arm of lever 70 is moved into its lowermost position and acts to tilt the lever 73 on its pivot 74 in a contra-clockwise direction (Fig. 4) against the pull of a spring 82 connected with said lever 73, and also to operate the usual bell-crank 72 (Figs. 4, 8 and 20) to throw the stop-grading pawl *b* out of action. Immediately thereafter the gate 68 is lowered on to the top of the sole that is emerging from the hopper and this partial downward movement of gate 68 raises the outer arm of lever 70 out of contact with the lever 73 as shown in Fig. 8, the stop-grading pawl *b* remaining out of action as shown in Fig. 20.

The lever 73 carries a mercury switch 75, and when said lever 73 is tilted on its pivot 74 by lever 70 (Fig. 8) as the gate 68 is first lifted to the limit of its upward movement by the feed mechanism, three functions are performed, viz., lever 73 is disengaged from an arm 76 (Fig. 4), mercury switch 75 is opened, and push-button switch 85 (Figs. 1 and 8) is opened.

The arm 76 which controls the start-grading pawl *a* of the measuring mechanism is loosely mounted upon the usual rock-shaft 77 which carries the drop-roll arm 43 (Figs. 4 and 5) and its hub is made with a shoulder 78 to cooperate with an opposed shoulder 79 provided on a collar 80 that is fixed to the shaft 77. A spring 81 mounted on the frame of the machine acts against the arm 76 so as to yieldingly urge the shoulder 78 toward the shoulder 79. Spring 81 is a novelty in a measuring mechanism of this type and heretofore arm 76 has been fixedly mounted on shaft 77.

The feed mechanism moves each sole forward from hopper A until its forward end enters between the measuring or calipering rolls 38 after which said continuously driven measuring rolls continue the forward movement of the sole until the rear end of the latter clears the same. As the sole emerges from the hopper A the feed mechanism lowers the gate on to the top of the sole where it is supported in an intermediate position by the latter.

Before the rear end of the sole clears the measuring rolls the forward end thereof has entered between the delivery rolls 49 and 50 so that when released from the grip of the measuring rolls the sole is thrown or tossed on to the platform 10 by said delivery rolls.

During the movement of the forward end of the sole from the measuring rolls toward the delivery rolls, the sole passes under and lifts the drop-roll 39 and thus acts through arm 43, shaft 77 and shoulder 79 (Figs. 4 and 5) to swing arm 76 toward the left (Fig. 4). This permits spring 82 to swing the lever 73 clockwise on its pivot 74 into latching engagement with the upper end of arm 76 so as to lock the latter

in its tilted position with switch 75 closed, for a period of time.

The movement of arm 76, just described, throws into action the usual start-grading pawl *a* of the measuring mechanism thereby starting the measuring action of the measuring rolls 38, and this measuring action continues until the gate 68 falls off from the rear end of the sole and acts through lever 70 to throw the stop-grading pawl *b* of said mechanism (Figs. 4 and 20) into action, as usual, and simultaneously to close the push-button switch 85 (Figs. 1 and 8). The mercury switch 75 and push-button switch 85 are, as shown in Fig. 19, arranged in series in an electric circuit 83 which also includes a solenoid 84 (see Fig. 6 also). Thus the closing of switch 85 as the measuring action is completed, and while switch 75 is closed, serves to close circuit 83 and energize solenoid 84.

When the lever 73 is swung into latching engagement with arm 76 the mercury switch 75 is closed, and when gate 68 is again raised to its highest point by the feed mechanism to permit the exit of another sole from the hopper A, it acts through the lever 70 to open switch 85 and also to disengage the lever 73 from arm 76, thus permitting spring 81 to return shoulder 78 into engagement with shoulder 79 (Fig. 5), the accompanying movement of arm 76 bringing the latter into position to throw the start-grading pawl out of action and lock the lever 73 in its adjusted position, as shown in Fig. 4, with switch 75 also open.

Upon exhaustion of the supply of soles within the hopper A, the forward end of the last sole passing through the measuring mechanism raises the drop-roll 39 thereby swinging arm 76 toward the left (Fig. 4) where it is caught and held by lever 73 with mercury switch 75 closed. As soon as the rear end of said last sole clears the gate 68 the latter drops downwardly and acts through the lever 70 to close the switch 85 thereby energizing the solenoid 84 preparatory to the proper disposition of said last sole by the distributing mechanism.

As soon as the rear end of said last sole clears the drop-roll 39 the latter falls and acts through the usual devices to effect an operation of the feed mechanism and the latter raises and lowers the gate 68. The upward movement of gate 68 at this time acts through lever 70 to throw out of action the usual stop-grading pawl *b* and also to adjust lever 73 so as to free arm 76 thus allowing the latter to be moved by spring 81 into position to throw out of action the usual start-grading pawl *a* and at the same time lock the lever 73 in its upper adjusted position with switch 75 open. The immediately following downward movement of the gate at this time is not interrupted by a sole and therefore acts through the lever 70 to close push-button switch 85, but since mercury switch 75 is then maintained open by the arm 76, the solenoid 84 is not energized.

Thus the mercury switch 75 is provided to prevent overheating of the solenoid 84 when the supply of soles within the hopper A becomes exhausted and it will therefore be clear that said mercury switch is a desirable, but not wholly essential, feature of the present machine.

After replenishing the supply of soles within hopper A the machine is again started by manually raising and releasing the drop-roll 39. This returns the arm 76 into latched engagement with the lever 73 and at the same time effects a single revolution of the feed shaft 40. The accompanying vertical reciprocatory movement of gate 68 trips lever 73 thereby opening switch 75 and freeing arm 76 so that the latter is moved into position to hold lever 73 in its upper adjusted position with the start-grading pawl *a* of the mechanism out of action until drop-roll 39 is engaged and raised by the forward end of the first sole being fed from the hopper. At the conclusion of this first reciprocatory movement of gate 68 the latter is seated upon the top of the advancing sole with lever 70 occupying an intermediate position, as shown in the drawings, and both switches 75 and 85 open.

The lower measuring roll 38 is rotatably supported by a carrier 86 (Fig. 6) which is pivotally mounted on the frame of the machine at 87 and yieldingly supported, as usual, by a spring 88, the free end of the carrier 86 is connected, through the usual devices, with a vertically disposed and vertically movable bar member 89 which is adjusted vertically by each sole as the latter passes between the measuring rolls. Through the connections referred to, the lower measuring roll adjusts bar 89 vertically into a position corresponding with the thickness of the thinnest part of the measured portion of each sole, and at its upper end bar 89 carries the usual rack through which it operates the pointer of the usual indicator 90 of the mechanism.

As shown in Fig. 13, the core 91 of solenoid 84 is connected by a link 92 with one arm of a lever 93 that is pivotally mounted at 94 on the frame of the machine. Between the link 92 and pivot 94 the lever 93 is provided with a truck or roll 95 that is cooperatively disposed with respect to an abutment collar 96 provided on the bar 89. A spring 97 yieldingly supports the core 91 at the limit of its upward movement with the truck or roll 95 out of engagement with the collar 96 and outside of its range of movement so that normally no load is imposed on the bar 89 by the lever 93 and during the measuring action of the machine the bar 89 is fully under control of the measuring mechanism and uninfluenced by any other parts of the machine except the usual pointer mechanism of the indicator.

Loosely mounted on the pivot 94 alongside of lever 93 is a stop arm or member 98 (Figs. 13 and 14) made with an arcuate segment 99 provided with ratchet teeth 100 upon its periphery or edge and with ratchet teeth 101 upon the outer side thereof. These ratchet teeth 100 and 101 are opposed, that is to say, they face in opposite directions and cooperate, respectively, with latches 102 and 103 (Figs. 1, 6 and 13), the teeth 100 facing upwardly and the teeth 101 facing downwardly.

The latch 102 is fixed in position upon one end of a short shaft 104 (Figs. 3 and 6) journaled on the frame of the machine while the latch 103 is pivotally mounted at 105 on the frame of the machine, as shown in Figs. 14 and 17, and yieldingly urged toward the ratchet teeth 100 by a spring 106. Fixed in position upon the opposite end of the short shaft 104 is a depending arm 107 (Figs. 3 and 6) whose lower end is pivotally connected with one end of the shoe 66, hereinabove referred to, the opposite end of said shoe being pivotally connected to the lower end of another arm 108 that is pivotally mounted at 109 on the frame of the machine. The two arms 107 and 108 are parallel and of equal lengths.

The pivotally supported stop arm 98 (Figs. 6, 14–16) is made at its free end with a laterally

extending blade or tooth 110 cooperatively disposed with respect to the serrated edge of a vertically disposed stepped abutment plate 111 which is a rigid part of a horizontally disposed slide-bar 112 (see Figs. 1 and 12 also) mounted in ways on the frame of the machine. One end of this slide-bar 112 is connected through a pin-and-slot connection 113 with the controller 19, hereinabove referred to. The opposite end of slide-bar 112 is provided with a socket 114 which is occupied by the extremity of one of the arms of a bell-crank 115 that is fulcrumed at 116 on the frame of the machine. The other arm of bell-crank 115 is pivotally connected to the upper end of a link 117 whose lower end is pivotally connected to the core 118 of a solenoid 119 whose coil is fixed on the frame of the machine.

As shown in Fig. 19, the solenoid 119 is arranged in a circuit 120 in series with the normally open rake-operated push-button switch 65, hereinabove referred to, and as hereinbefore stated, each rake-bar 13, while traversing the upper course or stretch of the distributor carrier and moving toward the platform 10, acts through the shoe 64 to close the switch 65 and to maintain the same closed for a period of time during which a cam bar 15 is passing controller 19. Normally a spring 121 (Fig. 1a) holds the shoe 64 in endwise abutting engagement with a stop 122 where it is out of engagement with the button of switch 65, but when one of the rake-bars 13 reaches shoe 64 one of the tines of said bar engages and swings the shoe laterally on its parallel supporting links 123 thereby causing the shoe to operate the button of switch 65 and close the latter, said switch being maintained closed by the rake-bar until the latter passes out of engagement with the shoe. The engagement of each rake-bar with the shoe 64 is timed to occur as a preceding cam bar 15 in the lower stretch of the carrier approaches controller 19, and switch 65 is maintained closed by said rake-bar until said preceding cam bar passes beyond controller 19 and its cam has been selectively set or adjusted by the latter.

Normally a spring 124 connected with link 117 (Fig. 12) holds core 118 at the limit of its upward movement with a pin 125 on abutment plate 111 bearing against a stop-pin 126 on the frame of the machine and with slide-bar 112 in its fully retracted position, but when solenoid 119 is energized its core 118 acts through the connections described to throw the slide-bar 112 forward to the extent permitted by the engagement of stepped plate 111 with the adjustable stop arm 98 after the latter has been set in adjusted position by the measuring mechanism B and locked in that position by the distributor mechanism C through its control of latches 102 and 103.

In Figs. 1 and 3 a cam bar 15 is shown in engagement with controller 19 while a rake-bar 13 is in engagement with shoe 64. Under these conditions switch 65 (Figs. 1a and 19) is closed; solenoid 119 (Figs. 6 and 12) is energized; stop arm 98 is locked against movement in either direction by latches 102—103 (Figs. 13, 14 and 15); solenoid 84 is de-energized, a sole #1 occupies a position upon platform 10 of the distributor C and is about to be engaged by a rake-bar 13, and the forward end of a sole #2 is emerging from the measuring rolls. For purposes of illustration, sole #2 is omitted from Figs. 1 and 4, but the forward end portion thereof is shown in Fig. 6.

As the forward end of the sole #2 moves forward from measuring rolls 38 it swings the trip arm 67 (Figs. 4 and 13) laterally and said trip arm is supported by the sole in this displaced position until the rear end of sole #2 clears the same.

Trip arm 67 is fast on one end of a short transverse shaft 130 journaled in a bearing at one side of the frame of the machine and the outer end of this shaft is provided with an arm 131 with which is connected one end of a spring 134 by which said arm is held against a stop 135 on the frame when there is no sole in engagement with trip arm 67.

At its free end arm 131 carries a laterally projecting stud 132 which cooperates with a cam surface 133 provided upon one arm of a bell-crank detent 129 that is fulcrumed at 136 on the frame of the machine. The other arm 129a of this bell-crank is cooperatively disposed with respect to the lower end of latch 102 and has connected to it one end of a spring 128 which yieldingly urges the cam surface 133 toward the stud 132.

When trip arm 67 is swung aside by sole #2, the stud 132 is swung upwardly out of engagement with bell-crank 129 thus allowing spring 128 to urge the arm 129a of said bell-crank downwardly into position upon a laterally projecting tooth 137 provided at the lower end of latch 102 (Figs. 14–17). The lower end of latch 103 is constructed with a laterally projecting lug 138 that is yieldingly held at all times against the side of tooth 137 of latch 102 by the spring 106. The tooth 137 of latch 102 cooperates with the ratchet teeth 101 on stop arm 98 while the lower end of latch 103 is made with a tooth 139 to cooperate with the ratchet teeth 100 on stop arm 98. The contacting surfaces of tooth 137 and lug 138 are beveled or cam-shaped, as shown in Figs. 15 and 16, so that when latch 102 is swung away from teeth 101 on stop arm 98 by upward movement of distributor shoe 66, it acts through lug 138 to swing latch 103 away from ratchet teeth 100 on said stop arm 98. When latch 102 is swung in the opposite direction to engage its tooth 137 with the ratchet teeth 101 on stop arm 98, the spring 106 simultaneously swings latch 103 in a direction to engage its tooth 139 with the ratchet teeth 100 on said stop arm 98.

The arm 108 which supports one end of the shoe 66 (Fig. 3) has connected to it one end of a spring 140 whose opposite end is connected with the frame of the machine. This spring acts through the arm 108, shoe 66, arm 107 and shaft 104 to at all times yieldingly urge latch 102 toward stop arm 98. It will therefore be clear that when shoe 66 is displaced upwardly by a cam bar 15, it acts through the connections described to swing both latches 102 and 103 (Figs. 15 and 16) away from stop arm 98 and said latches are held out of engagement with said stop arm while a cam bar 15 is passing beneath shoe 66. As soon as the cam bar passes shoe 66 spring 140 (Fig. 3) and spring 106 (Fig. 14) return both latches 102—103 into engagement with stop arm 98 as described.

At the moment that the stop arm 98 (Fig. 13) is released from latches 102—103 by upward movement of the distributor shoe 66, the switch 65 (Figs. 1a and 19) is open, solenoid 119 is de-energized and stepped member 111 is held at the limit of its movement toward the right by spring 124 as shown in Fig. 12 so that said stop arm 98 is free to be adjusted in either direction.

When operating upon long soles the distributor shoe 66 (Fig. 6) is raised by a cam bar 15 to disengage latches 102—103 from stop arm 98 while sole #2 is in engagement with trip arm 67 (Fig. 14) and while arm 129a is yieldingly urged downwardly against the top of tooth 137 of latch 102 while the latter is in its retracted position, as shown in Fig. 16. At this time the arm 129a occupies a position in front of a shoulder 141 on tooth 137 so that both latches 102—103 will be locked by arm 129a in their retracted inoperative positions for a period of time after cam bar 15 (Fig. 3) has passed beyond shoe 66 and until the rear end of sole #2 clears the trip arm 67. When trip arm 67 is thus freed from the long sole, the spring 134 (Fig. 13) restores trip arm 67 and the arm 131 to their normal positions with the latter against stop 135. When arm 131 is thus returned to its normal position against stop 135, it swings the bell-crank 129—129a on its fulcrum 136 in a direction to raise the arm 129a thus freeing the latches 102—103 and returning the latter to locking engagement with stop arm 98.

When operating upon short soles, the trip arm 67 (Fig. 14) will be displaced by each of said soles before a cam bar 15 raises the distributor shoe 66 to retract latches 102—103, and in such case the detent arm 129a of the bell-crank 129—129a will drop into position on top of the tooth 137 while the two latches 102—103 occupy their operative positions, as shown in Fig. 15. Shortly thereafter, however, a cam bar 15 will raise the shoe 66 of the distributor thereby retracting the latches 102—103 into their inoperative positions (shown in Fig. 16) which permits arm 129a to drop in position in front of the shoulder 141 (Fig. 17) and hold said latches retracted until the rear end of the sole passes trip arm 67 even though the cam bar 15 has passed the distributor shoe 66.

Thus, whatever be the length of the soles being operated upon, the trip 67 and distribtuor shoe 66 are automatically controlled and operated to afford a limited period of freedom of movement of stop arm 98 during which it is selectively set or adjusted by solenoid 84 to accord with the thickness of each sole as the latter passes through the measuring mechanism B.

As pointed out above, the measuring action of mechanism B starts when drop-roll 39 is raised by the forward end of sole #2 at which time trip arm 67 (Fig. 4) is held by the sole in a laterally displaced position with arm 129a (Fig. 13) resting upon the tooth of latch 102, and the measuring action stops when the gate 68 falls off from the rear end of the sole.

This downward movement of the gate closes switch 85 thereby energizing solenoid 84 (Fig. 13) and the downward movement of core 91 of the latter (Fig. 13) acts through link 92 to swing lever 93 clockwise on its pivot 94. One arm of this lever 93 is made at its extremity with a laterally projecting lug 27 ocupying a position beneath the stop arm 98 and, therefore, if said member 98 is not locked immovable by the latches 102 and 103, the downward movement of core 91 will be accompanied by an upward movement of the lug 127 until the roll or truck 95 is brought to bear against the top of the abutment collar 96 on the vertically adjustable bar or member 89 which has been set and locked by the measuring mechanism.

The stop arm 98 is urged downwardly by gravity assisted, if desired, by a spring. Therefore, if stepped member 111 occupies its fully retracted position and latches 102 and 103 are in retracted positions, the stop member 98 will be positioned vertically by the lug 127 of lever 93, the upward movement of lug 127 being limited by the engagement of roll 95 with abutment collar 96.

Sometimes lever 93 will be operated by solenoid 84 while stop arm 98 is locked in such a position that the lug 127 of lever 93 will engage said stop arm before roll 95 engages abutment collar 96, but the parts will remain in these positions until the distributor shoe 66 is raised, as described, to retract latches 102—103 whereupon the roll 95 will be moved downwardly into position against the abutment collar 96.

Or, solenoid 84 may be energized at a time when stop arm 98 is locked by the latches in such a position that roll 95 is brought to bear against the abutment 96 before the lug 127 enters into engagement with stop arm 98. In such cases the parts dwell in these positions until the distributor shoe 66 is elevated to retract the latches 102—103 whereupon stop arm 96 will fall by gravity, assisted if desired by a spring, into position against the lug 127.

After the stop arm 98 has been angularly positioned by sole #2 moving through mechanism B and locked in that position by the latches 102—103, the solenoid 119 (Fig. 12) is energized and acts through the connections described to move the slide 112 forward until the stepped plate 111 engages the stop arm 98. As pointed out, solenoid 119 is maintained energized while each of the cam bars 15 is passing controller 19, said solenoid being de-energized immediately upon the departure of the cam bar 15 from controller 19. Immediately upon de-energization of solenoid 119 the spring 124 (Fig. 12) retracts slide 112 into a position where pin 125 is against the stop 126. Therefore, the stepped plate 111 occupies its retracted position when stop arm 98 is angularly adjusted or set by lever 93 to accord with the thickness of the thinnest part of the measured portion of the sole as detected by the measuring rolls 38.

After the gate 68 (Fig. 4) falls off from the rear end of the sole to stop the measuring action, said rear end passes the trip arm 67 which raises the arm 129a (Fig. 13) of the bell-crank 129—129a and permits both latches 102—103 to lock stop arm 98 in its adjusted position.

Thus latches 102—103 are restored to engagement with the stop arm 98 to lock the same in its adjusted position before solenoid 84 is de-energized either by the operation of bell-crank 129—129a in the case of long soles or because of a bar 15 passing out of engagement with shoe 66 after operation of said bell-crank in the case of short soles.

When solenoid 84 is de-energized and lever 93 (Fig. 13) is raised by spring 97 out of engagement with abutment collar 96 on the vertical bar 89, the measuring mechanism is free to operate upon the next sole while the measurement of the preceding sole is retained by the controller-setting mechanism, illustrated in Figs. 12 and 13. During the measuring operation the vertically movable bar 89 of mechanism B is, as described, uninfluenced in its movements by the lever 93 which floats loosely on its pivot 94 and this is an important novel feature affording accuracy of measurement and accuracy in the setting of the abutment 96 to accord with the thickness of the thinnest part of the sole detected by the measuring rolls.

What I claim is:

1. A machine of the class described having, in combination, blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted by each blank passing through said mechanism so as to occupy a final position corresponding with a thickness characteristic of said blank as detected by said mechanism and also including blank-controlled pawl and ratchet mechanism for positively locking said member in said final position against movement in either direction; distributing mechanism including a continuously moving endless carrier to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as detected by said measuring mechanism, said distributing mechanism also including a controller that is adjustable to regulate the sorting action of said carrier, and means co-acting with said member while the latter is locked in adjusted position by said pawl and ratchet mechanism thereby to automatically set said controller in an adjusted position which determines the destination of said blank as the latter is distributed.

2. A machine of the class described having, in combination, blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted by each blank passing through said mechanism so as to occupy a final position corresponding with a thickness characteristic of said blank as detected by said mechanism and also including blank-controlled pawl and ratchet mechanism for positively locking said member in said final position against movement in either direction, and said member being made with an abutment shoulder; distributing mechanism including a continuously moving endless carrier to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the position of said member, said distributing mechanism also including a controller that is adjustable to regulate the sorting action of said carrier, and means controlled by each blank as it passes through said measuring mechanism for automatically co-acting with said abutment shoulder at the conclusion of the measuring operation and while said member is locked in adjusted position by said pawl and ratchet mechanism thereby to set said controller in an adjusted position which determines the destination of said blank as the latter is distributed.

3. A machine of the class described having, in combination, blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted and then locked in adjusted position by each blank passing through said mechanism so as to temporarily occupy a fixed position corresponding with a thickness characteristic of said blank as detected by said mechanism; distributing mechanism to which the measured blanks are delivered from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the position of said member; a controller element that is adjustable to regulate the sorting action of said distributing mechanism; means through which each measured blank as it passes through said measuring mechanism co-acts with said member while the latter is locked in adjusted position to predetermine the setting of said controller for said measured blank, and mechanism for thereafter automatically setting said controller in the position predetermined by said means.

4. A machine of the class described having, in combination, blank-measuring mechanism through which the blanks are fed one at a time; distributing mechanism to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as detected by said measuring mechanism, said distributing mechanism including a controller element that is adjustable to regulate the sorting action of said distributing mechanism according to the thickness characteristics of the blanks; means through which each blank passing through the measuring mechanism acts to automatically set said controller element in an adjusted position appropirate to the thickness characteristic of said blank as determined by said measuring mechanism; means for automatically feeding blanks to said measuring mechanism, and means through which the distributing mechanism controls said automatic blank-feeding means so as to maintain the delivery of blanks to the measuring mechanism in timed relation with the operation of the distributing mechanism.

5. A machine of the class described including the combination of claim 4 and wherein said distributing mechanism comprises a continuously traveling endless conveyor provided with blank-engaging rakes, and a slideway on to which the blanks are delivered from said measuring mechanism and by which the blanks are supported in the path of said rakes.

6. A machine of the class described including the combination of claim 4 wherein said distributing mechanism comprises a continuously traveling endless conveyor provided with blank-engaging means, and wherein said conveyor acts through said last-mentioned means of claim 4 to control said automatic blank-feeding means.

7. In a machine of the class described, the combination with blank-measuring mechanism through which the blanks are fed one at a time, of distributing mechanism to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as detected by said measuring mechanism, said distributing mechanism comprising an endless traveling conveyor provided with spaced apart rakes moving in a fixed path of travel; a slideway adjacent to and parallel with said path of travel on to one end of which the blanks are delivered one at a time by said measuring mechanism said slideway comprising a row of normally closed pivotally supported and upwardly opening blank-deflecting gates each provided with an upstanding arm and the several arms being arranged in a row that is disposed obliquely with respect to said path of travel; arm-operating members movably mounted on said conveyor for adjustment transversely thereon, one of said arm-operating members being adjacent to and associated with each of said rakes; a movably supported controller cam normally disposed in the path of travel of said arm-operating members as the latter move with said conveyor so that said members are successively adjusted transversely in one direction on said con-

veyor by said controller cam so as to subsequently selectively operate said arms thereby to open the gates of the latter; means through which each blank, while passing through said measuring mechanism, predetermines the setting of said controller cam in accordance with the thickness characteristic of said blank as detected by said measuring mechanism; mechanism through which said conveyer thereafter acts to set said controller cam in the position predetermined by said last-mentioned means; and means for adjusting each arm-operating member on said conveyor in the opposite direction so as to return the same to a normal position at the limit of its movement in that direction after its rake has delivered a blank at one of said gates.

8. In a machine of the class described, the combination of claim 7 and wherein said last-mentioned means consists of a stationarily supported cam disposed in a position to be engaged by each arm-operating member as the latter passes said cam.

9. In a machine of the class described, the combination of blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted and then locked in adjusted position by each blank passing through said mechanism so as to temporarily occupy a fixed position corresponding with a thickness characteristic of said blank as detected by said mechanism; distributing mechanism to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the locked position of said member, said distributing mechanism including a controller element that is adjustable to control the sorting action of said distributing mechanism; a slide for adjusting said controller element, said slide being made with a stepped abutment; an adjustable stop cooperating with said stepped abutment to limit the movement of said slide in controller-setting direction; means automatically co-acting with said member after the latter has been locked in adjusted position thereby to adjust said stop into a position that is determined by the locked position of said member, and means for automatically moving said slide in a direction to engage its stepped abutment with said stop after the latter has been adjusted thereby to position said controller element in accordance with the thickness characteristic of each blank as determined by said measuring mechanism.

10. In a machine of the class described, the combination of blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted and then locked in adjusted position by each blank passing through said mechanism so as to temporarily occupy a fixed position corresponding with a thickness characteristic of said blank as detected by said mechanism; distributing mechanism to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the locked position of said member, said distributing mechanism including a controller element that is adjustable to control the sorting action of said distributing mechanism; a slide for adjusting said controller element, said slide carrying a stepped abutment; an adjustable stop cooperating with said stepped abutment to limit the movement of said slide in controller-setting direction; a magnet for adjusting said stop; a circuit for said magnet; means through which each blank passing through said measuring mechanism acts automatically to operate said circuit and magnet thereby to adjust said stop into a position that is determined by the locked position of said member, and means for thereaftr automatically moving said slide in a direction to engage its stepped abutment with said stop after the latter has been adjusted thereby to position said controller element in accordance with the thickness characteristic of each blank as determined by said measuring mechanism.

11. In a distributing machine of the class described, the combination of claim 10 and wherein said last-mentioned means includes a slide-operating electro-magnet that is controlled and operated by the distributing mechanism.

12. In a machine of the class described, the combination of blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted and then locked in adjusted position by each blank passing through said mechanism so as to temporarily occupy a fixed position corresponding with a thickness characteristic of said blank as detected by said mechanism; distributing mechanism to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the locked position of said member, said distributing mechanism including a controller element that is adjustable to control the sorting action of said distributing mechanism, and mechanism through which said distributing mechanism acts automatically to adjust said controller element into a position determined by the locked position of said member preparatory to the distribution of each blank by said distributing mechanism.

13. In a machine of the class described, the combination of blank measuring mechanism through which the blanks are fed one at a time, said mechanism including a member which is independently adjusted and then locked in adjusted position by each blank pasing through said mechanism so as to temporarily occupy a fixed position corresponding with a thickness characteristic of said blank as detected by said mechanism; distributing mechanism comprising a continuously moving endless carrier provided with blank-engaging rakes to which the measured blanks are delivered one at a time from said measuring mechanism and by which they are sorted according to their thickness characteristics as evidenced by the locked position of said member, said distributing mechanism also including a controller element that is adjustable to control the sorting action of said distributing mechanism; mechanism operable to adjust said controller element into a position determined by the locked position of said member preparatory to the distribution of each blank by said distributing mechanism, and means through which said distributing mechanism automatically controls and effects the operation of said controller-adjusting mechanism in timed relation with respect to the movements of said rakes.

14. In a machine of the character described, the combination of measuring mechanism including a pair of driven calipering rolls by which the blanks are fed forward and measured one at a

time; blank distributing and sorting mechanism whose sorting action is controlled by said calipering rolls, and means for delivering the measured blanks to said distributing and sorting mechanism comprising a pair of delivery rolls, a continuously driven shaft on which one of said rolls is loosely mounted, a spring having its one end connected with said shaft and its opposite end connected with said last-mentioned roll and through which said roll is normally driven by said shaft so that its surface speed is greater than the surface speed of the calipering rolls, and means for limiting rotary movement of said driven roll on said shaft in one direction under the influence of said spring, said delivery rolls being disposed adjacent to said calipering rolls so that the forward end of each blank is engaged by said delivery rolls before the rear end of the blank departs from between said calipering rolls thereby to cause said driven delivery roll to lag and stress said spring so that when the rear end of said blank clears the calipering rolls the blank is tossed forward into said distributing and sorting mechanism by said spring acting through said driven delivery roll.

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