No. 723,468. PATENTED MAR. 24, 1903.

J. L. KIEFFER.

SOLE ROUGH ROUNDING AND CHANNELING MACHINE.

APPLICATION FILED AUG. 29, 1902.

NO MODEL. 7 SHEETS—SHEET 1.

FIG. 1.

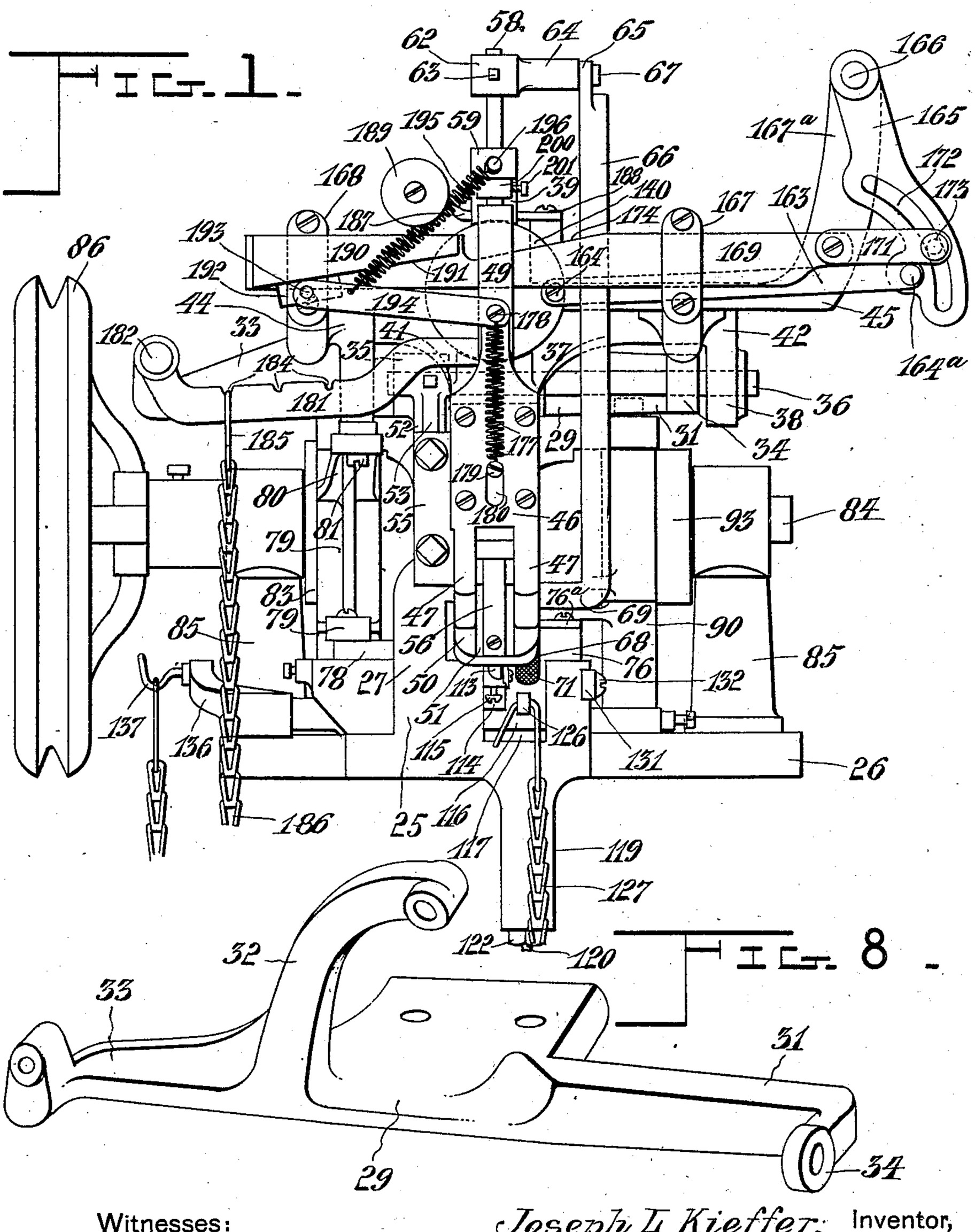

FIG. 8.

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NO MODEL. 7 SHEETS—SHEET 2.

FIG. 9.

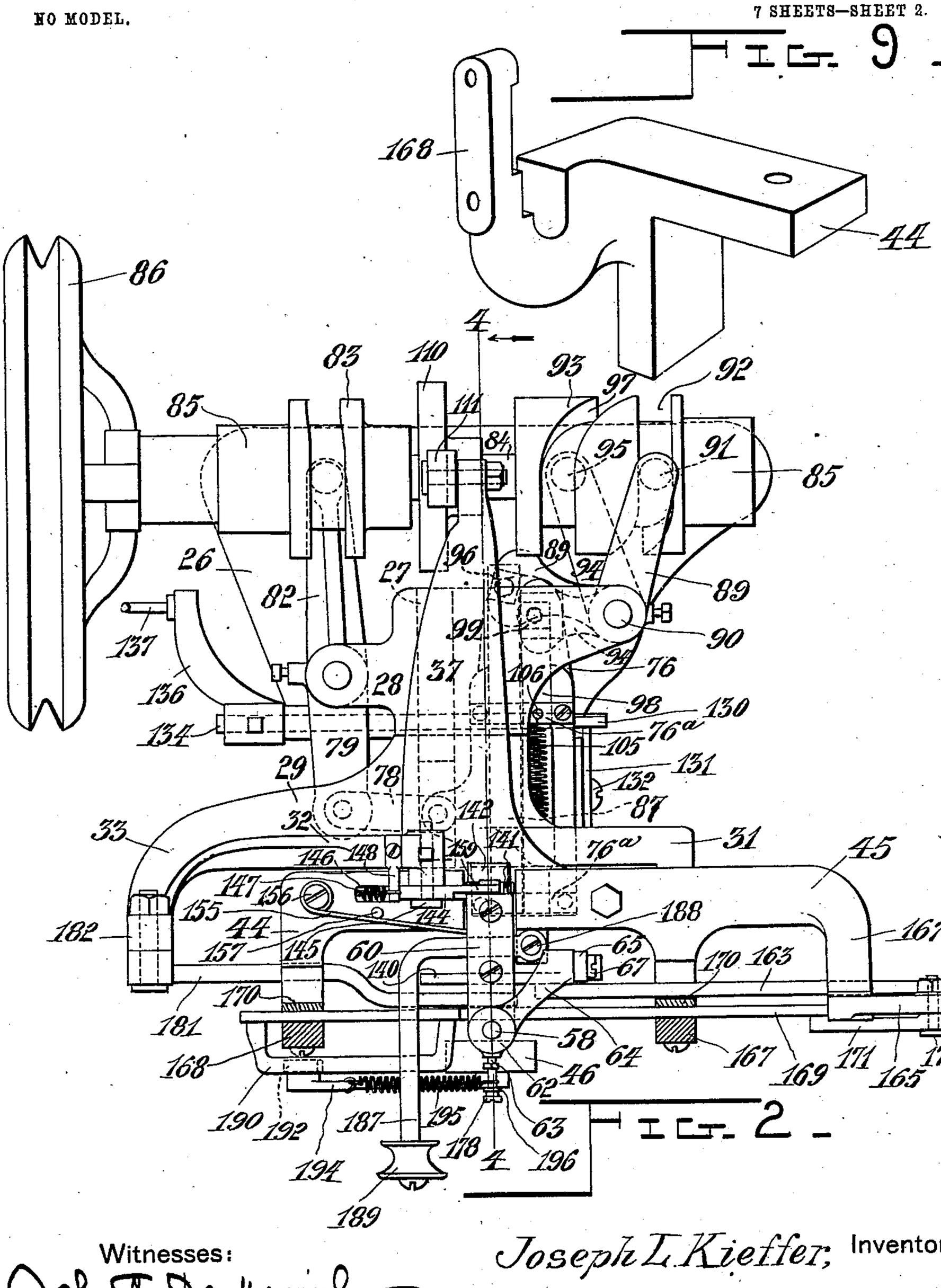

FIG. 2.

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NO MODEL. 7 SHEETS—SHEET 3.

FIG. 10.

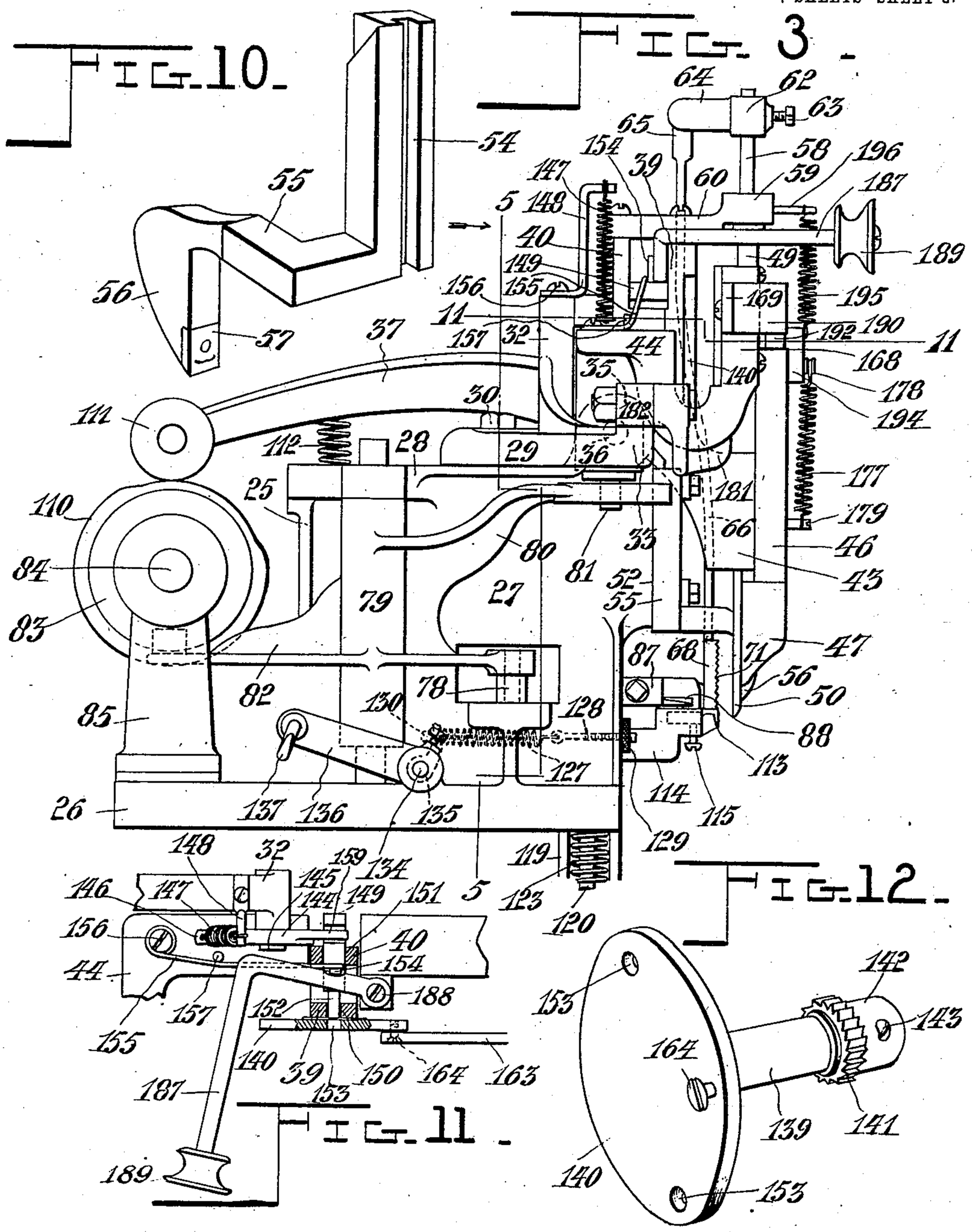

FIG. 11.

FIG. 12.

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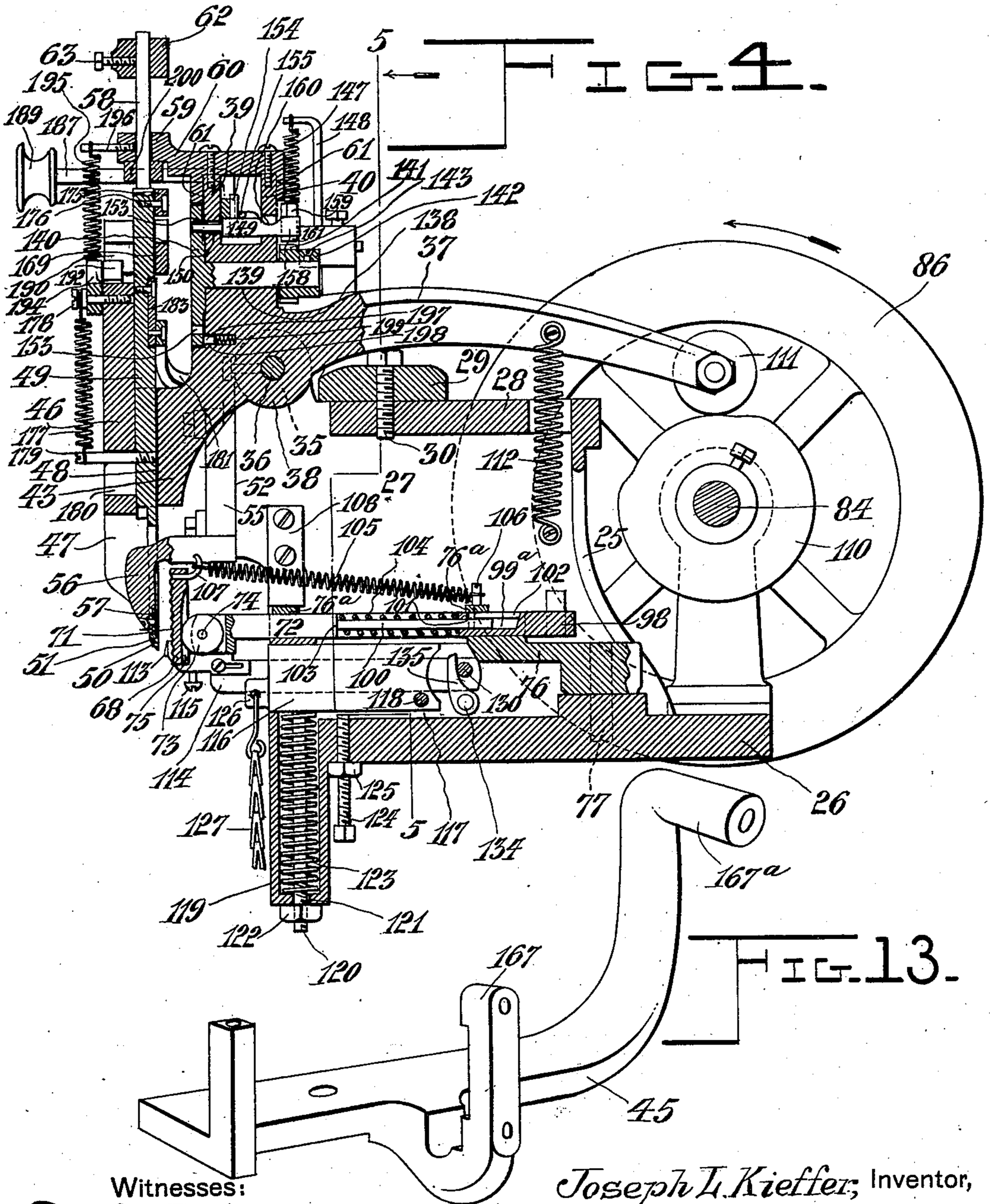
NO MODEL. 7 SHEETS—SHEET 4.



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NO MODEL. 7 SHEETS—SHEET 5.

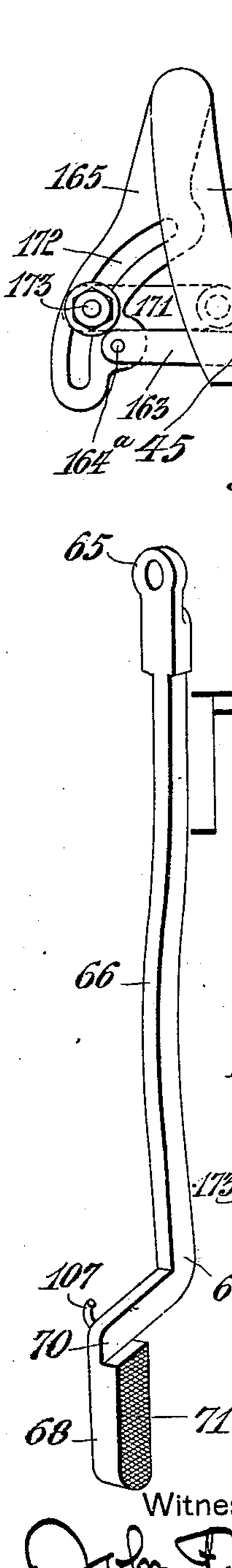

FIG. 14.

FIG. 15.

FIG. 16.

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NO MODEL. 7 SHEETS—SHEET 6.

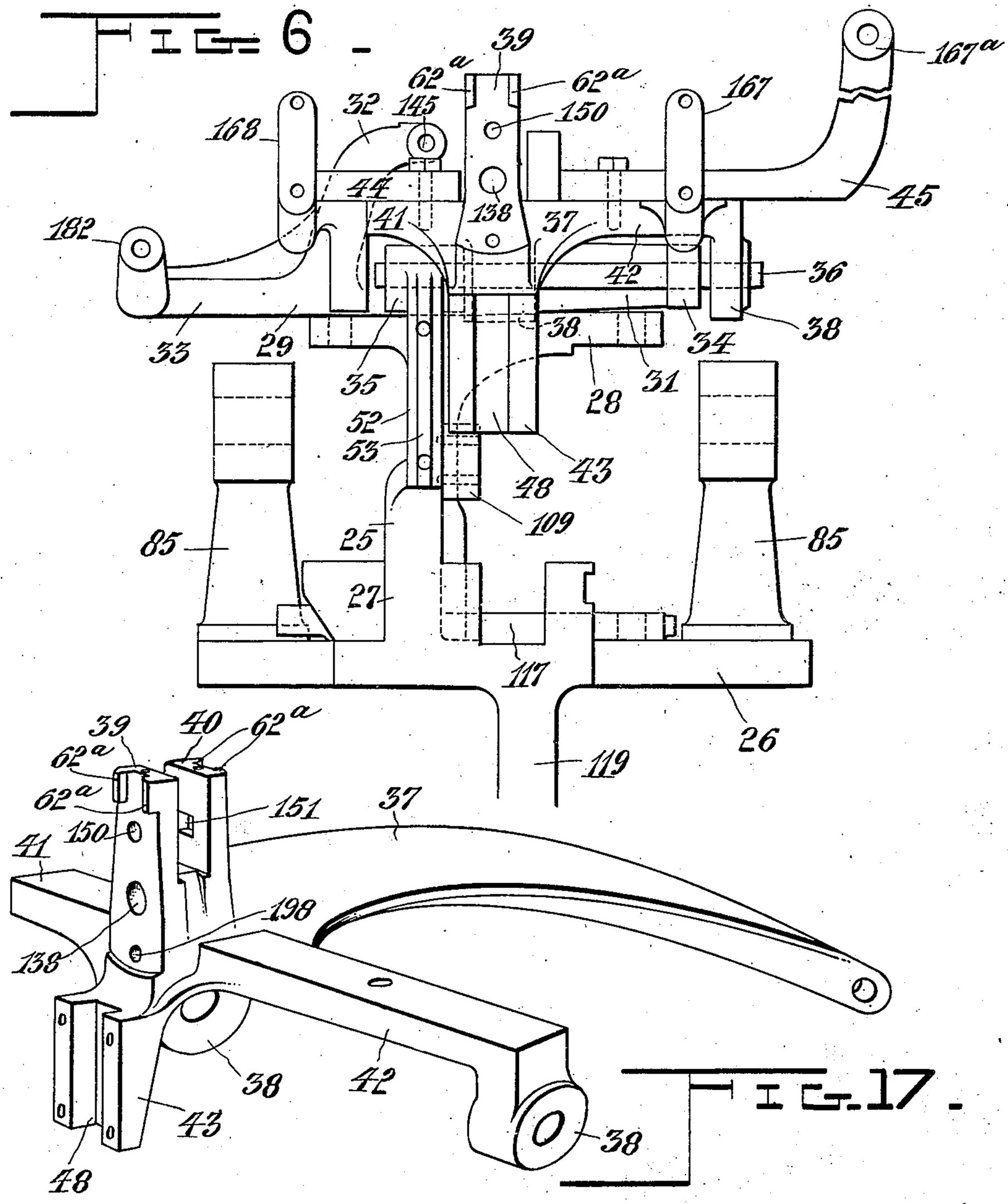

FIG. 17.

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NO MODEL. 7 SHEETS—SHEET 7.

FIG. 7.

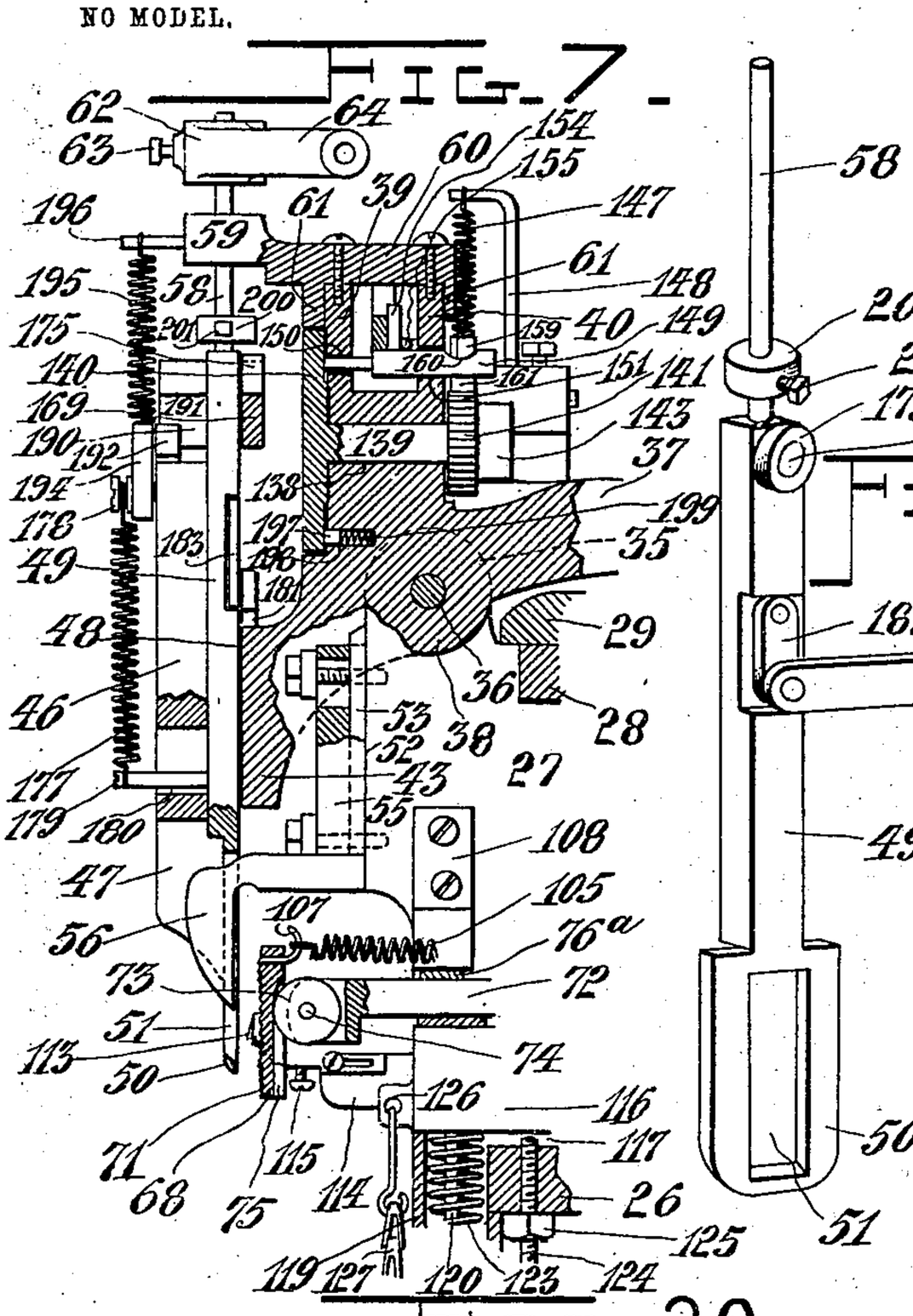


FIG. 18.

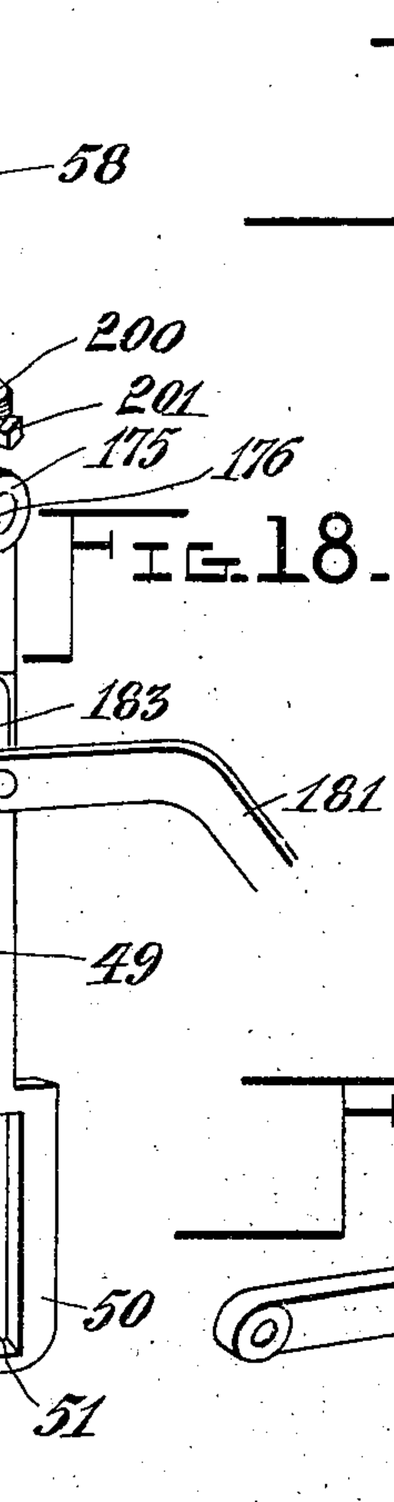


FIG. 19.

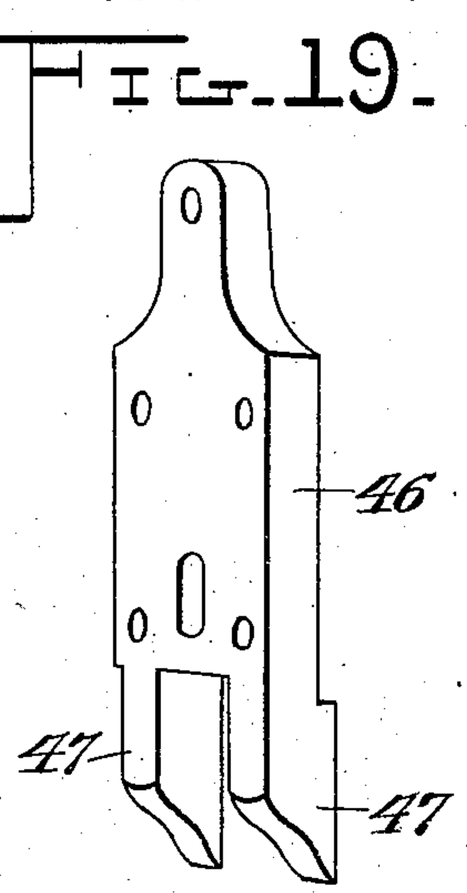


FIG. 21.

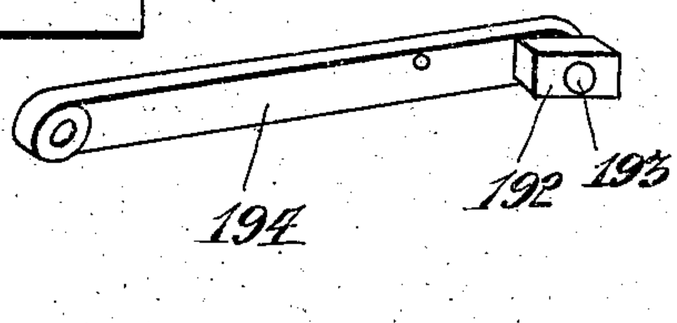


FIG. 20.

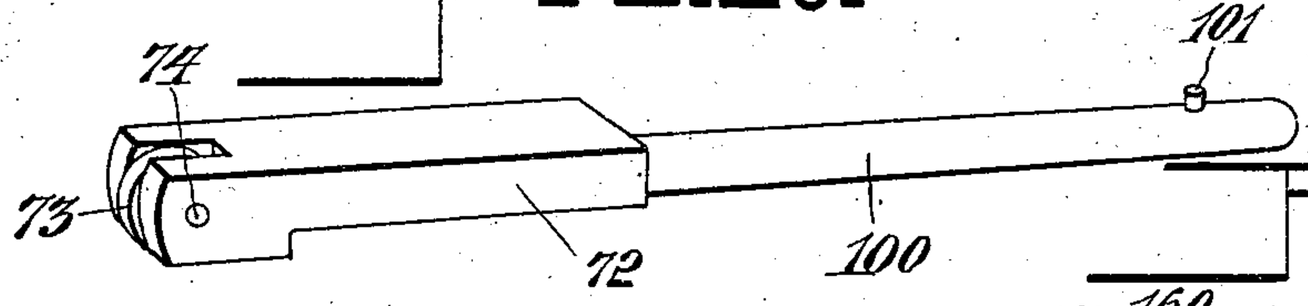


FIG. 22.

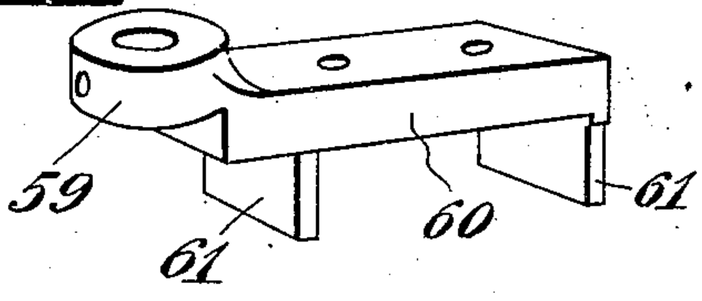


FIG. 23.

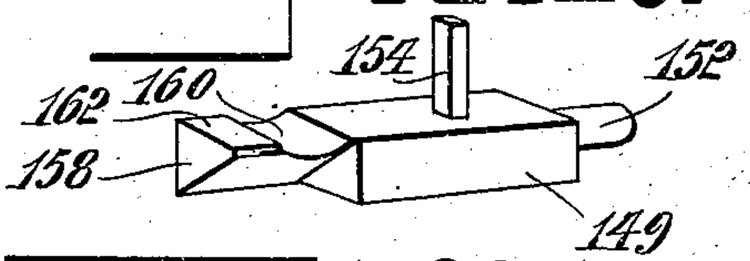
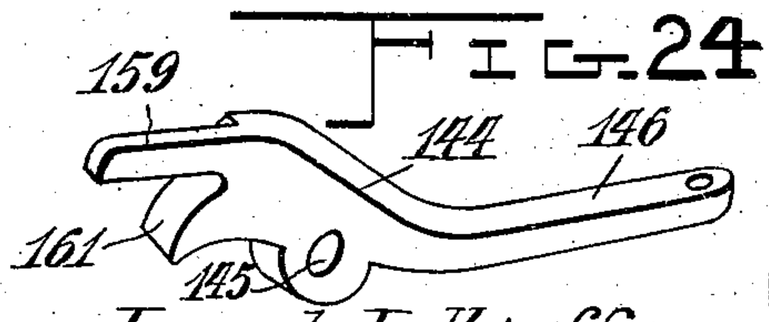


FIG. 24.



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UNITED STATES PATENT OFFICE.

JOSEPH LOUIS KIEFFER, OF MONTREAL, CANADA.

SOLE ROUGH-ROUNDING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 723,468, dated March 24, 1903.

Application filed August 29, 1902. Serial No. 121,523. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LOUIS KIEFFER, a subject of the King of Great Britain, residing in the city and district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Sole Rough-Rounding and Channeling Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to those machines employed in the process of making boots and shoes which are made use of immediately after the sole-blank has been loosely secured to the last and before the latter has been removed from the upper prior to the sewing operation and which are designed to round off or trim the edge of the sole roughly to its proper shape and simultaneously form a channel in the under side of the sole.

In general the object of my invention may be stated to improve on foregoing machines of this class by providing a wider range of adjustability, greater simplification, and a greater versatility of the machine.

In particular the main object of my invention is to provide means for mechanically rough-rounding or trimming the edge of the sole to a variable distance from the seam or upper, so as to form what is known as the "Baltimore edge." Heretofore machines have been made for this purpose which have either been too complicated for general use or else they have required for their successful operation too much skill in handling on the part of the operator, and such machines were arranged to accomplish only imperfectly the object sought. In my present machine I aim to form the widening and narrowing edge of the sole by graduated mechanical and entirely automatic operation, so that the variations in width shall be smooth and gradual and can be properly regulated according to the style desired.

Another object of my invention is to provide improved means for clamping the sole during the feeding operation, so that there shall be no rubbing or punching of holes in the leather, and at the same time the material will be firmly gripped between suitable jaws and fed along the proper distance.

To these ends my invention consists in a machine of that type having a horizontal cam-shaft at the rear and a crescent-shaped feed-lever having a jaw-plate at its lower end coacting with a cam-operated clamping-bar and a reciprocating trimming-cutter, which are adapted to coöperate with said jaw-plate in cutting the work and feeding it forward at the proper time.

My invention further consists in the mechanism for forming the Baltimore edge just referred to, which consists, broadly speaking, in mounting the lower end of the jaw-plate carried by the feed-lever to reciprocate up and down and providing mechanism for gradually raising or lowering it, according to whether it is desired to form a narrower or wider sole edge.

My invention further consists in the improved form of the feeding devices, comprising a pair of coöperating jaws, which are so connected together and to the feed-lever as to be simultaneously moved back and forth to feed the material, also simultaneously raised and lowered to diminish or increase the width of the sole edge, and likewise simultaneously open and close together upon the sole. This feature of the invention also comprises a reciprocating bar, which acts resiliently upon the rear jaw of the pair and has an antifriction-roller mounted thereon, which forms the point of abutment with said jaw.

My invention further consists in the construction and combination of parts hereinafter described, and more particularly pointed out in the claims.

My improved rough-rounding and channeling machine is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation of the complete machine. Fig. 2 is a plan view of the same, a pair of the supporting-brackets for the sole-edge-regulating bar being shown in section. Fig. 3 is a side elevation from the left side of the machine. Fig. 4 is a sectional elevation from the right, taken on the line 4 4 of Fig. 2. Fig. 5 is a transverse sectional elevation of the machine, taken on the line 5 5

of Figs. 3 and 4 looking toward the front. Fig. 6 is a front elevation of the frame or stationary parts of the machine and the frame parts of the feed-lever. Fig. 7 is a longitudinal sectional elevation of the front portions of the machine, taken on the same line as Fig. 4, but showing a different position of the parts. Fig. 8 is a perspective view of a stationary frame-block mounted on the head of the machine. Fig. 9 is a similar view of the bracket-block mounted on the left hand of the feed-lever. Fig. 10 is a similar view of the guide-piece forming the cutting-plate against which the trimming-cutter acts. Fig. 11 is a plan view, partly in section, on the line 11 11 of Fig. 3, showing the operating mechanism for the sole-edge-regulating device. Fig. 12 is a perspective view, on an enlarged scale, showing the operating-shaft of the sole-edge-regulating device. Fig. 13 is a perspective view of the bracket-block mounted on the right-hand end of the feed-lever. Fig. 14 is a similar view of the rear clamping member, which coöperates with the forward member to feed the work along. Fig. 15 is a perspective view of a part of the sole-edge-regulating mechanism from the rear side. Fig. 16 is a similar view of the sole-edge-regulating bar disconnected from the other parts of the apparatus. Fig. 17 is a similar view of the casting forming the body of the feed-lever of the machine. Fig. 18 is a similar view from the rear of the reciprocating gage-plate and a part of the mechanism connected therewith. Fig. 19 is a similar view of the supporting-block for the gage-plate. Fig. 20 is a similar view of the reciprocating bar which actuates the rear clamping-plate. Fig. 21 is a similar view of the reaction-bar operating in connection with the sole-edge-regulating bar to equalize the end thrust of the latter. Fig. 22 is a similar view of a bracket-block forming a part of the movable framework mounted on the feed-lever. Fig. 23 is a similar view of the bolt employed for throwing the sole-edge-regulating mechanism into and out of operation. Fig. 24 is a similar view of the operating-pawl of the sole-edge-regulating mechanism.

The same numerals of reference denote like parts in all the figures of the drawings.

The frame of the machine is formed principally of a casting 25, which has a horizontal base-plate 26, adapted to be secured to a pedestal or any suitable support for the machine, and having, further, an upstanding plate 27 at its center, which forms the work-head and to which are secured the greater number of the moving parts and the remaining pieces forming the frame. On its upper side the plate 27 has a horizontal flange 28, to which is bolted the casting 29, formed, as shown in Fig. 8, by means of bolts 30. The casting 29 has three projecting arms 31, 32, and 33, each of which has a lug on its extremity, as shown, for pivotally mounting one of the parts of the apparatus. The right-hand lug 34 on the arm 31 coöperates with a lug 35, formed on the work-head, to secure the stationary axle 36, on which is pivotally mounted the feed-lever 37, which is shown in enlarged perspective view in Fig. 17 and has two journal-lugs 38, mounted on the pin 36 on opposite sides of the lug 34, and the feed-lever 37 has also an endwise-reciprocating movement on the axle 36, as will be hereinafter described. The feed-lever 37 has a central upstanding pair of lugs 39 and 40, a pair of laterally-extending lugs 41 and 42, (the latter of which carries one of the bearing-lugs 38,) and a vertically-depending lug 43 at its front side, each of which is arranged for bolting various parts thereto to secure the operating mechanism. To the left-hand lug 41 is secured a casting 44 (shown in Fig. 9) and to the right-hand end a casting 45, (shown in Fig. 13,) these being shown in assembled position in Fig. 6 and having properly-positioned lugs for carrying the apparatus which they support, as will be hereinafter described.

The lug 43 on the feed-lever 37 is faced in front for the attachment of the supporting-block 46, (shown in Fig. 19,) which has a pair of parallel extensions 47 on its lower end, and the lug 43 has a vertical slot or groove 48 in the center, in which slides the rectangular gage-bar 49. (Shown in Fig. 18.) The lower end of this gage-bar is widened out into a rectangular gage-plate 50, which has a rectangular slot 51 in its center, and the extensions 47 on the lower end of the supporting-block 46 are for the purpose of supporting the back of this gage-plate, so as to hold it up to its work, as shown in Fig. 7.

The front edge of the plate 27, forming the work-head, is faced, as shown at 52, and provided with an interlocking rib 53, with which is engaged the grooved surface 54 of the cutting-block 55, whose lower end 56 is brought down to a point and adapted to extend through the slot 51 of the gage-plate, as shown, so as to be in proper position for coöperation with the cutter. The lower end of the guide 56 is recessed to permit the insertion of a small cutting-plate 57 of soft metal, against which the trimming-cutter is adapted to work.

The upper end of the gage-bar 49 is extended in the shape of a cylindrical post 58 and is guided in its movement by a bearing-lug 59, formed on the end of the bracket-block 60, which is shown in Fig. 22, and is secured to the upper ends of the two parallel lugs 39 and 40, having interlocking snugs 61 on its lower surface, which fit between corresponding snugs 62^a on the outer faces of the lugs 39 and 40. The post 58 extends a considerable distance above the lug 59 and has secured thereto at its upper end a collar 62 by means of a set-screw 63. The collar 62, as shown in Figs. 1, 2, 3, 5, and 7, has a horizontal bracket 64, extending obliquely to the right and rear at an angle of forty-five degrees with the longitudinal and transverse planes, and its end is faced in the longitudi-

nal plane to form a pivot-bearing for the pivot-lug 65 of the depending bar 66, which swings on the pivot-bolt 67, screwing into the end of the bracket 64. The bar 66 depends to a point opposite the lower end of the gage-bar 49 and has formed opposite the gage-plate 50 a clamping-plate 68, the bar 66 having a pair of rectangular bends 69 and 70, so as to bring the plate 68 directly opposite the gage-plate, and it has, further, a roughened front surface 71, which is adapted to grip the lower side of the sole and hold it firmly during the operation of feeding. This clamping-plate 68 is acted on from the rear by a reciprocating bar or bolt 72, which has at its front end a roller 73, mounted on a transverse pin 74 and rolling in a vertical groove 75, formed in the rear side of the clamping-plate. The reciprocating bar 72 takes the place of and is similarly mounted to the clamping-bar which was formerly in use and had the clamping-surface formed directly upon its front end, which coacted with the depending gage-plate or end of the feed-lever. Therefore a full description of its mounting need not be here given; but it may be briefly described with reference to Figs. 2, 4, and 5.

As in former machines of this type there is an oscillating guide-block 76, pivoted on a vertical pin 77 and swung from side to side synchronously with the feed-lever, this being accomplished by means of the link 78, (shown in dotted lines in Fig. 2,) which connects it with the three-armed lever 79, the upper forward arm 80 of which lever is likewise connected by a swivel-pin 81 to the feed-lever 37, and the rearwardly-extending arm 82 of the lever 79 is oscillated laterally at the proper times by a grooved cylinder-cam 83 on the main shaft 84, which is supported in posts 85 at the sides of the frame-base, and carries an overhung driving-wheel 86. The guide-block 76 has a longitudinal groove in its upper surface, in which reciprocate side by side the bar 72 and also the cutter-bar 87, (indicated in dotted lines in Fig. 2, and the end of which is shown in Fig. 3,) to which end is clamped so as to project forwardly the trimming-cutter 88. The guide-block 76, together with the two reciprocating bars 72 and 87, are shown in transverse section in Fig. 5. The bars 72 and 87 are held in their position in the guide-block by a pair of straps 76^a, overlying their upper sides and secured to the guide-block. The cutter-bar 87 is oscillated by a bell-crank lever 89, which is operatively connected with it by a swivel-joint 96, and is mounted on the pivot-post 90, carried by ears of the frame, and the rear arm of the lever 89 carries a trundle-roll 91, which works in a cam-groove 92, formed in a cylindrical cam-block 93, carried by the right-hand end of the main shaft. The bar 72 is similarly reciprocated by a bell-crank lever 94, mounted on the same pin 90 as the lever 89, and its rear end carries a trundle-roll 95, which operates in a cam-groove 97, formed in the same cam-block 93 as the cam-groove 92. The lever 94 does not, however, engage the bar 72 directly, but only through the medium of a block 98, whose rear end is connected with the lever 94 by a swivel-joint 99. The block 98 has a recess 99^a in its end to receive a cylindrical post 100 on the rear end of the bar 72, (see Fig. 20,) and the motion of the bar 72 is limited with respect to the block 98 by a small transverse pin 101 on the upper side of the post 100, which reciprocates in a slot 102. (See Fig. 4.) Between the forward face of the block 98 and the shoulder 103, formed at the base of the post 100, is mounted on the latter a strong coil-spring 104, which acts to keep the bar 72 pushed into its foremost position, in which the pin 101 strikes against the forward end of the slot in which it reciprocates. When, therefore, the lever 94 is oscillated forwardly to advance the bar 72 and bring the clamping-plate 68 up against the gage-plate on the end of the feed-lever, the clamping-plate will advance until the sole of the shoe is firmly clamped, whereupon the further advancement of the block 98 will cause the compression of the spring 104. In order to hold the plate 68 at all times in contact with the roller 73 and the end of the bar 72, I further provide a retractile spring 105, which is connected at one end to a stationary post 106, mounted on the rear strap 76^a and at the other end to a hook 107, projecting from the rear face of the clamping-plate, as shown in Figs. 4 and 7. The oscillating guide-block 76, with its reciprocating bars, is held against any vertical movement by an abutment-block 108, whose lower end projects against the upper surface of the forward strap 76^a and which is screwed firmly to a lug 109 on the side of the work-head, as shown. (See Figs. 4 and 5.)

The two jaws formed by the clamping-plate 68 and the gage-plate 50 are operated simultaneously toward and from each other, so as to alternately clamp and release the shoe-sole. The closing movement of the clamping-plate 68 takes place, as has already been described, by the reciprocating movement of the bar 72, caused by the cam-lever 94 operating in the groove 97. The opening and closing movement of the gage-plate 50 is caused by the oscillation of the feed-lever 37 on its axle 36, which is caused by the action of a surface cam 110, carried on the main shaft at about its center, with which contacts a trundle-roll 111, carried by the rear end of the feed-lever, and the latter is held pressed against the cam 110 by a tension-spring 112, connected to the frame.

The channel-cutter employed in my machine may be of any preferred type, that herein shown being one in common use and not of my invention. A detailed description is not, therefore, necessary. The cutter-blade for the channel is shown at 113, and it is formed with an adjustable shank secured in the cutter-bar 114 by a set-screw 115. The

cutter-bar is mounted to reciprocate in a guide-block 116, which is oscillably mounted in a recess 117 in the base-plate 26 and is pivoted on a transverse pin 118. (See Fig. 4.) The channel-cutter has therefore an oscillating up-and-down movement and likewise a reciprocating back-and-forward movement. In the base-plate 26 is formed a spring-socket 119, into which projects a depending post 120, secured to the lower face of the guide-block 116, and this post projects through a hole 121 in the lower end of the socket 119 and has mounted on its projecting end a nut 122, and surrounding it is a strong compression-spring 123. The downward motion of the guide-block 116 is limited by an adjustable stop-screw 124, which projects up from below through a threaded socket in the base-plate and is secured in place by a lock-nut 125. On the forward end of the block 116 is an eye-lug 126, to which may be attached a chain 127, running to a treadle or other means by which the channel-cutter may be manually depressed. This is for the purpose of permitting a certain variation in the distance between the edge of the sole as cut by the rough-rounding cutter 88 and the channel. For inserting and removing the work into and from the machine the channel-cutter bar 114 is held resiliently in its forward position by a spring 127^a, mounted in a suitable longitudinal recess in the frame and whose forward end is secured to an adjusting-screw 128 for regulating the tension of the spring, which is done by a milled-headed nut 129, carried on the outside of the hole through which the screw 128 projects. The rear end of the spring 127^a is secured to a cross-bar 130, mounted in the rear end of the cutter-bar 114, so that the tension of the spring 127^a draws the bar forwardly, its forward motion being limited by a slotted stop-plate 131, (see Figs. 1, 2, and 5,) adjustably secured by a screw 132, projecting through the slot 133 to the side of the frame. For retracting the cutter-bar 114 to insert the work into the machine or remove it therefrom is employed a rock-shaft 134, transversely mounted in the frame-base and having a wiper 135 at its inner end, which strikes against the cross-bar 130, and at its outer or left-hand end is mounted the rock-arm 136, having fastening means, such as a hook 137, for a cord running to a treadle, which is pressed upon when it is desired to retract the channel-cutter bar.

I will now describe the parts of my apparatus which relate particularly to the automatic regulation of the position of the gage-plate 50, whereby the so-called "Baltimore edge" is formed.

In the head of the feed-lever 37 and at the base of the upstanding lugs 39 and 40 is formed a journal-aperture 138, in which is journaled a shaft 139, whose forward end carries a disk 140 and whose rear end has mounted thereon a ratchet-wheel 141, the hub 142 of which projects rearwardly to the end of the shaft 139 and is secured thereto by a screw 143. With the ratchet-wheel 141 cooperates a pawl 144, (shown in Fig. 24,) which is pivoted at 145 upon the upstanding lug 32, Fig. 8, carried by the stationary part of the framework, and has a rearwardly-projecting arm 146, to which is connected one end of a tension-spring 147, whose other end is secured to a post 148, mounted on the lug 32 of the frame, so as to keep the pawl 144 always resiliently pressed against the teeth of the ratchet-wheel when not raised therefrom by the disengaging bolt 149. (Shown in detail in Fig. 23.) This bolt reciprocates forward and backward in the holes 150 151, formed, respectively, in the lugs 39 and 40 at about their center and just over the shaft 139, so that its forward end comes opposite a point near the periphery of the disk 140. The body of the bolt 149 is formed of rectangular section, as shown, and operates in the rectangular aperture 151 of the lug 40, as shown, to prevent it from turning; but its forward end is formed as a cylindrical pin 152, which reciprocates in the cylindrical aperture 150 of the lug 39 and is adapted to project through one of a pair of cylindrical apertures 153 of the same size formed in the periphery of the disk at opposite sides thereof—that is to say, at opposite extremities of the same diameter. From the upper side of the body of the bolt 149 projects a post 154, against the rear face of which presses a wire spring 155, secured to the upper side of the bracket-block 44, as at 156, and kept pressed forwardly by a post 157, the action of the spring being to keep the bolt 149 resiliently pressed forwardly against the rear face of the disk 140. The rear end of the bolt 149 is formed with a projecting triangular lug 158, which underlies an overhanging finger 159 on the pawl 144. At the base of the lug 158 is formed a gouge 160, which is sufficiently deep to permit the finger 159 to drop thereinto far enough for the nose 161 of the pawl to engage with the ratchet-teeth, and this will happen when the bolt 149 is retracted, as shown in Fig. 7, being held in its position by the abutment of the pin 152 against the rear face of the disk 140. So long as one of the holes 153 does not come opposite the pin 152, therefore, the pawl 144 will act upon the ratchet-teeth to turn the latter at each advance or feed movement of the feed-lever—that is to say, at each movement toward the left—and this turning of the ratchet-wheel 141 will cause the disk 140 to be turned simultaneously. The intermittent rotation of the disk 140 with each feed movement of the machine will continue until one of the holes 153 comes opposite the pin 152, whereupon the spring 155 will cause the said pin to drop thereinto, thus holding the disk against any further advancement, and at the same time the raised flat surface 162 of the lug 158 will be brought under the finger 159, so as to raise the latter and carry the nose 161 of the pawl out of engagement

with the ratchet-wheel, and the latter will thereafter cease to turn.

With the disk 140 is connected a pitman-bar 163, whose end is pivoted thereto by a screw 164, fixed in the periphery of the disk, midway between the two holes 153—that is to say, on a diameter at right angles thereto. The other end of the pitman 163 is connected by a pin 164ª to a slotted swinging arm 165, which rocks upon a pivot-pin 166, carried by the upstanding lug 167ª on the casting 45, as shown in Fig. 13. The casting 45 carries, however, another upstanding lug 167 and the casting 44, Fig. 9, carries a similar upstanding lug 168. The two lugs 167 and 168 are in horizontal line with each other at opposite sides of the feed-lever and are recessed or notched upon their rear sides, as shown, to form sliding bearings for the sole edge or gage-regulating bar 169, which is held in place by capping-straps 170. This bar is connected by a link 171 with an arcuate slot 172, formed in the swinging arm 165, so as to be reciprocated by the latter, and the end of the link 171 is adjustably connected with the slot 172 by a setting-bolt 173. At about the center—that is to say, between the two bearing-lugs 167 and 168 and immediately opposite the gage-bar 49—the upper edge of the regulating-bar 169 is cut away to form an oblique cam-surface 174, with which contacts during the process of automatically forming a Baltimore edge the trundle-roll 175, mounted on a post 176 on the rear face of the gage-bar. The trundle-roll 175 is normally held out of contact with the cam-surface 174 and with the bar 169 generally by a spring 177, whose upper end is connected with a post 178, secured to the upper end of the supporting-block 46 and its lower end to a post 179, projecting through a slot 180 in the supporting-block and secured on the front face of the gage-bar 49; but the gage-bar may be depressed at will by the operator by means of a lever 181, fulcrumed on a post 182, carried by the projecting arm 33 (see Fig. 18) and connected at its other end to the gage-bar 49 by a vertical connecting-link 183, which is let into the rear face of the gage-bar, so as to be flush therewith, as shown. The lever 181 may have formed on its upper surface a series of notches 184, into which fits a hook 185 on the end of a chain 186, running to a treadle, by which the lever 181 is depressed, thus depressing the gage-bar 50 to the required amount. As the holes 153 and the screw 164 are at distances of ninety degrees from each other around the periphery of the disk 140, it will be seen that when the pin 152 is projecting into one of the holes in the disk the bar 169 will be at one of the extremities of its movement—that is to say, in its farthest position either to the right or left. When the pawl 144 is dropped into engagement with the ratchet-wheel 141, the disk 140 will then be intermittently rotated, so as to slide the bar 169 to its other extreme position, whereupon the pin 152 will drop into the opposite hole 153. During this operation the gage-bar is kept depressed against the surface 174 by means of the lever 181 until it reaches the extremity of its movement or until the desired widening of the sole edge has reached its greatest extent in case the bar 169 is moving from left to right. The ratchet-wheel 140 is set in motion by manually retracting the bolt 149, which is done by means of a bent handle-arm 187, pivoted at 188 to the frame of the machine (see Fig. 2) and extending between the two lugs 39 and 40, and thence outwardly to the front of the machine and having a handle-knob 189 on its extremity. The operation of this bolt is shown in Fig. 11. Its rear edge abuts against the post 154 of the bolt 149, so that when the knob 189 is swung to the left the bolt 149 is retracted, which permits the pawl 144 to drop by reason of the finger 159 coming opposite the notch 160, and the machine being in operation the rotation of the ratchet-wheel 141 immediately begins, which throws the hole 153 out of line with the pin 152, and the handle-knob 189 being released the bolt is ready to be shot forward again as soon as the disk has passed through one hundred and eighty degrees.

During the movement of the regulating-bar 169 from left to right owing to the pressure of the roller 175 on the oblique surface 174 there is a resilient horizontal thrust toward the right, which tends to accelerate the movement of the regulating-bar and sometimes make it move faster than it should move, the ratchet slipping two or three teeth at once. In order to prevent this, I provide a counteracting cam-piece 190, whose ends are bent rearwardly and secured to the bar 169 on opposite sides of the bearing-lug 168 and extending in front of the latter, so as to embrace the same. The lower edge 191 of the cam-piece 190 is oblique and of substantially the same slant as the edge 174, and against it presses a sliding block 192, which is pivoted upon a pin 193 on the end of a link-bar 194, which is itself pivoted on the post 178, as shown, and there is a spring 195 connecting a point near the outer end of the link-bar 194 with a post 196, which projects forwardly from the front surface of the guide lug 59. The effect of this spring is to keep the block 192 pressed against the surface 190 in a vertical direction, so that the horizontal thrust toward the right caused by the pressure of the roller 175 on the gage-bar is counteracted by the resultant horizontal thrust in the opposite direction caused by the block 192. In order further to prevent the bar 169 from moving farther than the distance through which it is positively moved by the pawl 144, I provide a small brake-block 197 of elastic and frictional material, such as rubber or leather, which reciprocates in a cylindrical recess 198, formed in the base of the lug 39, Fig. 17, at

the rear side of the periphery of the disk 140 and is pressed against the latter by a spring 199, seated against the base of the recess 198.

In order to limit the upward movement of the gage-plate 50 and adjust its stationary position when the edge-regulating devices are not being used, I provide a collar 200, mounted on the post 58 at the upper end of the gage-bar below the lug 59 and secured to the post 58 in a position to abut against the lower side of the lug 59 by a set-screw 201.

In the operation of my machine the work, which consists of a shoe upper and welt, together with a sole-blank loosely attached to the last in position, is placed between the cutting-block 56 and the channel-cutter by retracting the latter by pressing on the treadle, which is connected with the rock-arm 136, as above described, which permits the work to be inserted in position, after which the channel-cutter is released and presses against the lower face of the sole. It will be understood, of course, that the lower face of the sole is directed to the rear, and the upper will project beyond the clamping-pieces, so that the edge of the gage-plate 50 will project into the crease or rand of the shoe. When the work is being inserted, the main shaft must of course be in such a position that the clamping-jaws formed by the gage-plate 50 and clamping-plate 68 are swung apart or open from each other. When the machine is started, these will be first swung toward the right in open position and then swung together, so as to close upon the sole and welt and clamp them together during the feed operation, this taking place by the simultaneous action of the cans, which operate the feed-lever and the reciprocating bar 72. Immediately thereafter the three-armed cam-lever 79 will be oscillated, so as to carry the feed-lever, clamping-bar, and the other oscillating parts simultaneously to the left, carrying the work with them, and thus causing the channel-cutter 113 to enter the base of the sole and form a channel therein. At the end of the feed movement the rough-rounding cutter 88 is quickly advanced and retracted, so as to make a small incision through the sole-blank at the point where the edge of the sole is to come, and thereafter the clamping-jaws are again opened and returned to the right and feed the work forward as before. The roughened surface 71 of the clamping-plate 68, which strikes against the under surface of the sole, enables the latter to be gripped very tightly and prevents any slipping of the work during the feed.

The above description of the mode of operation refers only to the case where rounding is performed with a uniform width of sole edge, in which case the width is regulated by the position of the collar 200 on the upper end of the gage-bar, whereby the gage-plate, which projects into the rand of the shoe, will cause the position of the sole relative to the cutters to be raised or lowered. Suppose now it is desired to form what is known as a "Baltimore" edge, which is a sole edge formed wider at the fore part of the sole than at the shank and likewise wider on the outside than on the inside of the shoe. Suppose that it is desired, for instance, to form this edge on the left-hand shoe. The shoe, partially completed in the manner described, is placed with the shank between the clamping-jaws and the toe pointing toward the right and the machine set in motion. At the start of the operation the regulating-bar must be located at the left-hand limit of its motion—that is to say, at the opposite extremity from that shown in Fig. 1—and as the work is started the operator will pull the handle 189 of the bent handle-arm 187 to the left for an instant, which immediately allows the pawl 144 to drop upon the ratchet-wheel and sets the regulating mechanism in motion. At the same time the operator must press upon the treadle connected with the lever 181, so as to cause the roller 175 to roll along the upper edge of the regulating-bar. For a short distance the roller will roll on the parallel part of the edge, so that the sole edge will be of uniform width along the shank until the ball of the sole is reached, when the roller 175 will strike the oblique surface 174, which will cause the gage-plate 50 to gradually descend, and consequently carry the seam farther from the trimming and channel cutters, and therefore widen the edge of the sole proportionately. This widening will increase gradually until the regulating-bar 169 has reached the opposite limit of its motion, as shown in Fig. 1, whereupon the pin 152 will drop into the hole 153 in the disk 140 and the motion of the regulating-bar will cease, so that if continued pressure is exerted upon the lever 181 the wide sole edge will remain around the front portion and toe of the sole. When the operator reaches that part of the sole edge where its width is to be diminished, he will then without stopping the machine give another sidewise pull to the handle-bar 187, when the regulating-bar will be started in the opposite direction and will now gradually raise the gage-plate 50 until the roller 175 reaches the parallel portion of the bar 169 and rolls thereon, whereupon the motion of the regulating-bar is again automatically stopped by the dropping of the pin 152 into one of the holes 153. Should the operator at any time wish to give the edge of the sole a fancy or varied conformation to his own taste, this can be readily done independently of the bar 169 by depressing the lever 181 to whatever extent may be desired. Moreover, the amount of variation in the width of the sole edge can be regulated by the position of the setting-bolt 173 in the slot 172, as, of course, the travel of the bar will be less when the bolt 173 is at the upper portion of the slot than when it is at the lower portion. Furthermore, it will be seen that inasmuch as the clamping-plate 68 is suspended from the upper end of the gage-

bar it will move up and down with the latter, and consequently there will be no friction between the two clamping-surfaces and the work, as is the case with machines wherein the reciprocating bar 72 is caused to directly clamp the work against the gage-plate with its forward end. The rear face of the clamping-plate 68 rolls upon the antifriction-roller 73, so that there is also no friction between the bar 72 and the clamping-plate during the vertical movement of the latter.

The features above described combine to secure a machine which will quickly and automatically cut to shape a sole with a variable width of projecting edge in the manner described and without any adjustment during the operation.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the following claims or of mechanical equivalents to the structures set forth.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a rough-rounding machine of the type described, the combination of a feed-lever, a vertically-movable plate carried on the end thereof, and a clamping-plate coacting with said plate to hold the work, said clamping-plate being vertically movable simultaneously with said first-named plate.

2. In a rough-rounding machine of the type described, the combination of an oscillable reciprocable feed-lever, a vertically-movable plate carried by the lower end thereof, a clamping-plate coacting with said first-named plate and swung from the upper end thereof so as to be movable vertically at the same time therewith, and means for oscillating said clamping-plate and feed-lever simultaneously in opposite directions so as to open and close upon the work.

3. In a rough-rounding machine of the type described, the combination of a feed-lever rotatable on a horizontal axis, means for oscillating said feed-lever about said axis, a vertical gage-bar mounted in the head of said feed-lever and carrying a gage-plate on the lower end thereof, a swinging bar hung from the upper end of said gage-bar, a clamping-plate on the lower end of said swinging bar, and cam-operated means for simultaneously closing said gage-plate and clamping-plate together.

4. In a rough-rounding machine of the type described, the combination of a feed-lever rotatable on a horizontal axis, means for oscillating said feed-lever about said axis, a vertical gage-bar mounted in the head of said feed-lever and carrying a gage-plate on the lower end thereof, a swinging bar hung from the upper end of said gage-bar, a clamping-plate on the lower end of said swinging bar, a reciprocating bar at the rear of said clamping-plate, and means for projecting and retracting said bar.

5. In a rough-rounding machine of the type described, the combination of a feed-lever rotatable on a horizontal axis, means for oscillating said feed-lever about said axis, a vertical gage-bar mounted in the head of said feed-lever and carrying a gage-plate on the lower end thereof, a swinging bar hung from the upper end of said gage-bar, a clamping-plate on the lower end of said swinging bar, a reciprocating bar at the rear of said clamping-plate, means for projecting and retracting said bar, and a roller mounted on a horizontal pivot in the front end of said bar and on which the rear face of said clamping-plate is adapted to roll.

6. In a rough-rounding machine of the type described, the combination of a feed-lever mounted on a horizontal axis, means for oscillating said feed-lever about said axis, means for reciprocating said lever in the direction of its axis, a vertical gage-bar slidably mounted in the head of said feed-lever and having a projecting gage-plate on its lower end, a swinging bar adjustably hung from the upper end of said gage-bar, a clamping-plate on the lower end of said swinging bar, a reciprocating bolt adapted to be projected against the rear face of said clamping-plate, a spring resiliently holding said clamping-plate in contact with said reciprocating bolt, an independent reciprocating block 98 mounted at the rear of said bolt and sliding coaxially therewith, a spring between said block and bolt, and means for reciprocating said block, substantially as described.

7. In a rough-rounding machine of the type described, the combination of a feed-lever mounted on a horizontal axis, means for oscillating said feed-lever about said axis, means for reciprocating said lever in the direction of its axis, a vertical gage-bar slidably mounted in the head of said feed-lever and having a projecting gage-plate on its lower end, a swinging bar adjustably hung from the upper end of said gage-bar, a clamping-plate on the lower end of said swinging bar, a reciprocating bolt adapted to be projected against the rear face of said clamping-plate, a spring resiliently holding said clamping-plate in contact with said reciprocating bolt, an independent reciprocating block 98 mounted at the rear of said bolt and sliding coaxially therewith, a spring between said block and bolt, means for reciprocating said block, an antifriction-roller mounted in the head of said reciprocating bolt upon a transverse pin and rolling in a groove in the rear face of said clamping-plate, and means for simultaneously oscillating said feed-lever, clamping-plate and reciprocating bolt in a lateral direction.

8. In a rough-rounding machine of the type

described, the combination of a work-head, a stationary cutting-block fixed to said work-head and depending from the forward side thereof, channel and trimming cutters coöperating with said cutting-block and working against the same, a feed-lever mounted on a horizontal axis in said work-head and having a rearwardly-extending cam-arm, a main shaft mounted at the rear of the machine, means for driving said shaft, a cam engaging the end of said cam-arm to oscillate said feed-lever, a vertical gage-bar mounted in the head of said feed-lever, a quadrangular gage-plate carried on the lower end of said gage-bar and having a vertical slot therein through which said cutting-block projects, a swinging arm adjustably suspended from said feed-lever, a clamping-plate mounted at the lower end of said swinging arm and coöperating with said gage-plate to clamp the work between them, a reciprocating bolt 72 adapted to be projected against the rear side of said clamping-plate, an antifriction-roller carried by the head of said reciprocating bolt and on which said clamping-plate rolls, a guide-block 76 pivotally mounted on the frame of the machine and in which said reciprocating bolt oscillates, a cam-lever 79 connected to said feed-lever and guide-block to simultaneously reciprocate the same laterally, a cam mounted on the main shaft of the machine and operating said lever, a reciprocating block 98 mounted coaxially with said reciprocating bolt and resiliently connected therewith by a spring, a cam-lever adapted to project and retract said reciprocating block, and a third cam mounted on said main shaft and with which said last-mentioned cam-lever engages, substantially as described.

9. In a rough-rounding machine of the type described, the combination of a feed-lever mounted on a horizontal axis, means for oscillating said lever about said axis, a vertically-slidable gage-bar mounted in the head of said feed-lever, a gage-plate carried on the lower extremity of said gage-bar, means for reciprocating said feed-lever from side to side to advance the work, and means for regularly raising or lowering said gage-bar as the work proceeds, whereby to gradually increase or diminish the width of the sole edge.

10. In a rough-rounding machine of the type described, the combination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating said feed-lever, clamping means coöperating with said feed-lever to hold the work, means for reciprocating said feed-lever laterally to advance the work through the machine, a vertically-slidable gage-bar mounted in the head of the machine, a gage-plate carried on the lower end of said gage-bar and adapted to project into the rand of the shoe, and means for intermittently raising or lowering said gage-bar by successive small amounts with each feed motion, substantially as described.

11. In a rough-rounding machine of the type described, the combination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating said feed-lever, clamping means coöperating with said feed-lever to hold the work, means for reciprocating said feed-lever laterally to advance the work through the machine, a vertically-slidable gage-bar mounted in the head of the machine, a gage-plate carried on the lower end of said gage-bar and adapted to project into the rand of the shoe, a horizontal transversely-mounted regulating-bar having an oblique cam-face, a roller carried by said gage-bar coacting with said cam-face, and means for regularly advancing said regulating-bar whereby to gradually raise or lower said gage-plate to increase or diminish the width of the sole edge, substantially as described.

12. In a rough-rounding machine of the type described, the combination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating said feed-lever, clamping means coöperating with said feed-lever to hold the work, means for reciprocating said feed-lever laterally to advance the work through the machine, a vertically-slidable gage-bar mounted in the head of the machine, a gage-plate carried on the lower end of said gage-bar and adapted to project into the rand of the shoe, a cam-roller carried by said gage-bar, a transverse horizontal regulating-bar carried on the head of the feed-lever and reciprocable transversely of said gage-bar, said regulating-bar having an oblique cam-surface with which said cam-roller engages, and means for automatically advancing said regulating-bar first in one direction and then in the opposite direction, whereby the width of the sole edge is first increased and subsequently diminished, substantially as described.

13. In a rough-rounding machine of the type described, the combination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating said feed-lever, clamping means coöperating with said feed-lever to hold the work, means for reciprocating said feed-lever laterally to advance the work through the machine, a vertically-slidable gage-bar mounted in the head of the machine, a gage-plate carried on the lower end of said gage-bar and adapted to project into the rand of the shoe, a horizontal transversely-mounted regulating-bar having an oblique cam-face, a roller carried by said gage-bar coacting with said cam-face, means for regularly advancing said regulating-bar whereby to gradually raise or lower said gage-plate to increase or diminish the width of the sole edge, a reaction oblique cam edge 191 carried by said bar, and a piece carried by the head of said feed-lever and pressing resiliently against said reaction edge in a vertical direction, whereby to counteract the horizontal thrust against said first-named cam edge, substantially as described.

14. In a rough-rounding machine, the com-

bination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating the same about said axis to clamp the work, a coacting piece between which and the feed-lever the work is clamped, means for reciprocating said feed-lever laterally to advance the work, a rotatable disk carried in the head of said feed-lever, a ratchet-wheel carried on the shaft of said disk, a pawl mounted on the work-head of the machine and adapted to engage with said ratchet-wheel to rotate the same when the feed-lever is reciprocated laterally, a sole-edge-regulating bar mounted transversely in the head of said feed-lever, connecting means between said regulating-bar and a point in the periphery of said disk to reciprocate the bar when said disk is rotated, said bar having an oblique cam edge, a vertically-slidable gage-bar carried in the head of the machine, a gage-plate carried on the lower end of said gage-bar, and a cam-roller mounted on said gage-bar and adapted to roll on said cam edge.

15. In a rough-rounding machine, the combination of a feed-lever mounted to oscillate on a horizontal axis, means for oscillating the same about said axis to clamp the work, a coacting piece between which and the feed-lever the work is clamped, means for reciprocating said feed-lever laterally to advance the work, a rotatable disk carried in the head of said feed-lever, a ratchet-wheel carried on the shaft of said disk, a pawl mounted on the work-head of the machine and adapted to engage with said ratchet-wheel to rotate the same when the feed-lever is reciprocated laterally, a sole-edge-regulating bar mounted transversely in the head of said feed-lever, connecting means between said regulating-bar and a point in the periphery of said disk to reciprocate the bar when said disk is rotated, said bar having an oblique cam edge, a vertically-slidable gage-bar carried in the head of the machine, a gage-plate carried on the lower end of said gage-bar, a cam-roller mounted on said gage-bar and adapted to roll on said cam edge, a spring resiliently supporting said gage-bar at the upper limit of its movement, and a manually-operated lever 181 connected with said gage-bar to depress the same into engagement with said cam edge.

16. In a rough-rounding machine of the type described, the combination of a feed-lever mounted on a horizontal axis, means for oscillating said lever about its axis to clamp the work, means coacting with the lower end of said lever to clamp the work therebetween, a disk pivoted in the head of said feed-lever, a ratchet-wheel mounted on the shaft of said disk, a pawl carried by a stationary part of the frame and engaging with said ratchet-wheel, a sole-edge-regulating bar mounted transversely in the head of said feed-lever, a swinging arm 165, a link connecting a point in the periphery of said disk with said swinging arm, said swinging arm having a longitudinal slot therein, a link-bar pivotally connected with one end of said regulating-bar and having its other end adjustably mounted in said slot, a cam-surface formed on said regulating-bar, a gage-plate mounted on the lower end of said feed-lever, and means operatively connecting said gage-plate with said cam-surface, whereby the reciprocation of said regulating-bar is caused to raise or lower said gage-plate by successive small amounts with the feeding of the work.

17. In a rough-rounding machine of the type described, the combination of a feed-lever mounted on a horizontal axis, means for oscillating said lever about its axis to clamp the work, means coacting with the lower end of said lever to clamp the work therebetween, a disk pivoted in the head of said feed-lever, a ratchet-wheel mounted on the shaft of said disk, a pawl carried by a stationary part of the frame and engaging with said ratchet-wheel, a sole-edge-regulating bar mounted transversely in the head of said feed-lever, a swinging arm 165, a link connecting a point in the periphery of said disk with said swinging arm, said swinging arm having a longitudinal slot therein, a link-bar pivotally connected with one end of said regulating-bar and having its other end adjustably mounted in said slot, a cam-surface formed on said regulating-bar, a gage-plate mounted on the lower end of said feed-lever, means operatively connecting said gage-plate with said cam-surface, a reciprocating bolt 149 having a pin 152 adapted to project through holes in the periphery of said disk, means resiliently acting on said bolt to project it into its forward position, the rear end of said bolt being arranged to underlie a part of said pawl to raise it out of operative connection with said ratchet-wheel when said bolt is forwardly projected, and to permit it to fall into engagement with said ratchet-wheel when retracted, and means for manually retracting said reciprocating bolt, substantially as described.

18. In a rough-rounding machine of the type described, the combination of a feed-lever oscillably mounted on a horizontal axis, means for oscillating said feed-lever, a vertically-slidable gage-bar mounted in the head of said lever, a gage-plate mounted on the lower end of said gage-bar, a spring connecting said gage-bar with said feed-lever to hold the same at the upper limit of its motion, and a manually-operated lever 181 connected to said gage-bar to depress the same to any desired amount against the action of said spring, whereby to vary the width of the sole edge.

19. In a rough-rounding machine of the type described, the combination of a feed-lever oscillably mounted on a horizontal axis, means for oscillating said feed-lever, a vertically-slidable gage-bar mounted in the head of said lever, a gage-plate mounted on the lower end of said gage-bar, a spring connecting said gage-bar with said feed-lever to hold the same at the upper limit of its motion, a manually-operated lever 181 connected to said

gage-bar to depress the same to any desired amount against the action of said spring, whereby to vary the width of the sole edge, a guide-lug surrounding said gage-bar at its upper end, and a stop-collar adjustably mounted on said gage-bar beneath said guide-lug, whereby to adjustably regulate the upper limit of the motion of said gage-bar.

20. In a rough-rounding machine of the type described, the combination of a feed-lever oscillably mounted on a horizontal axis, means for oscillating said feed-lever, a vertically-slidable gage-bar mounted in the head of said lever, a gage-plate mounted on the lower end of said gage-bar, a spring connecting said gage-bar with said feed-lever to hold the same at the upper limit of its motion, a manually-operated lever 181 connected to said gage-bar to depress the same to any desired amount against the action of said spring, whereby to vary the width of the sole edge, a bracket carried on the upper end of said gage-bar, a swinging bar 66 depending from the end of said bracket, a clamping-plate carried by the lower end of said swinging bar and coacting with said gage-plate to clamp the work therebetween, said clamping-plate having a roughened surface, and means for alternately separating and closing together said gage-plate and clamping-plate, whereby to successively clamp and release the work, substantially as described.

21. In a rough-rounding machine of the type described, the combination of a feed-lever oscillably mounted on a horizontal axis, means for oscillating said feed-lever, a vertically-slidable gage-bar mounted in the head of said lever, a gage-plate mounted on the lower end of said gage-bar, a spring connecting said gage-bar with said feed-lever to hold the same at the upper limit of its motion, a manually-operated lever 181 connected to said gage-bar to depress the same to any desired amount against the action of said spring, whereby to vary the width of the sole edge, a bracket carried on the upper end of said gage-bar, a swinging bar 66 depending from the end of said bracket, a clamping-plate carried by the lower end of said swinging bar and coacting with said gage-plate to clamp the work therebetween, said clamping-plate having a roughened surface, means for alternately separating and closing together said gage-plate and clamping-plate, whereby to successively clamp and release the work, a guide-lug surrounding the upper end of said gage-bar, a stop-collar adjustably mounted on said gage-bar below said guide-lug to regulate the upper limit of the movement of said gage-plate, a horizontal sole-edge-regulating bar mounted to slide adjacent to said gage-bar transversely thereof and having an oblique cam edge formed thereon, a cam-roller carried by said gage-bar and adapted to roll on said cam edge, means automatically operated by the motion of said feed-lever for advancing said regulating-bar by successive small amounts, and means for adjusting the throw and rate of speed of said regulating-bar.

22. In a rough-rounding machine of the type described, the combination of a horizontally-vibrating feed-arm, means for reciprocating said lever forward and backward, a vertically-slidable depending gage-bar mounted on said feed-arm, a gage-plate carried on the lower extremity of said gage-bar, means for reciprocating said feed-arm from side to side to advance the work, and means for regularly raising or lowering said gage-bar as the work proceeds, whereby to gradually increase or diminish the width of the sole edge.

23. In a rough-rounding machine of the type described, the combination of a horizontally forward-and-backward and laterally vibrating feed-piece, means for reciprocating said feed-piece forward and backward, clamping means coöperating with said feed-piece to hold the work, means for reciprocating said feed-piece laterally to advance the work through the machine, a vertically-slidable gage-bar mounted in the feed-piece, a gage-plate carried on the lower end of said gage-bar and adapted to project into the rand of the shoe, and means for intermittently raising or lowering said gage-bar by successive small amounts with each feed motion, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH LOUIS KIEFFER.

Witnesses:
J. A. MARION,
V. COCHNE.