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PATENTED APR. 4, 1905.

H. HAULICK, W. A. WALLING & G. J. WINKLE.

LABELING MACHINE.

APPLICATION FILED AUG. 22, 1903.

4 SHEETS—SHEET 1.

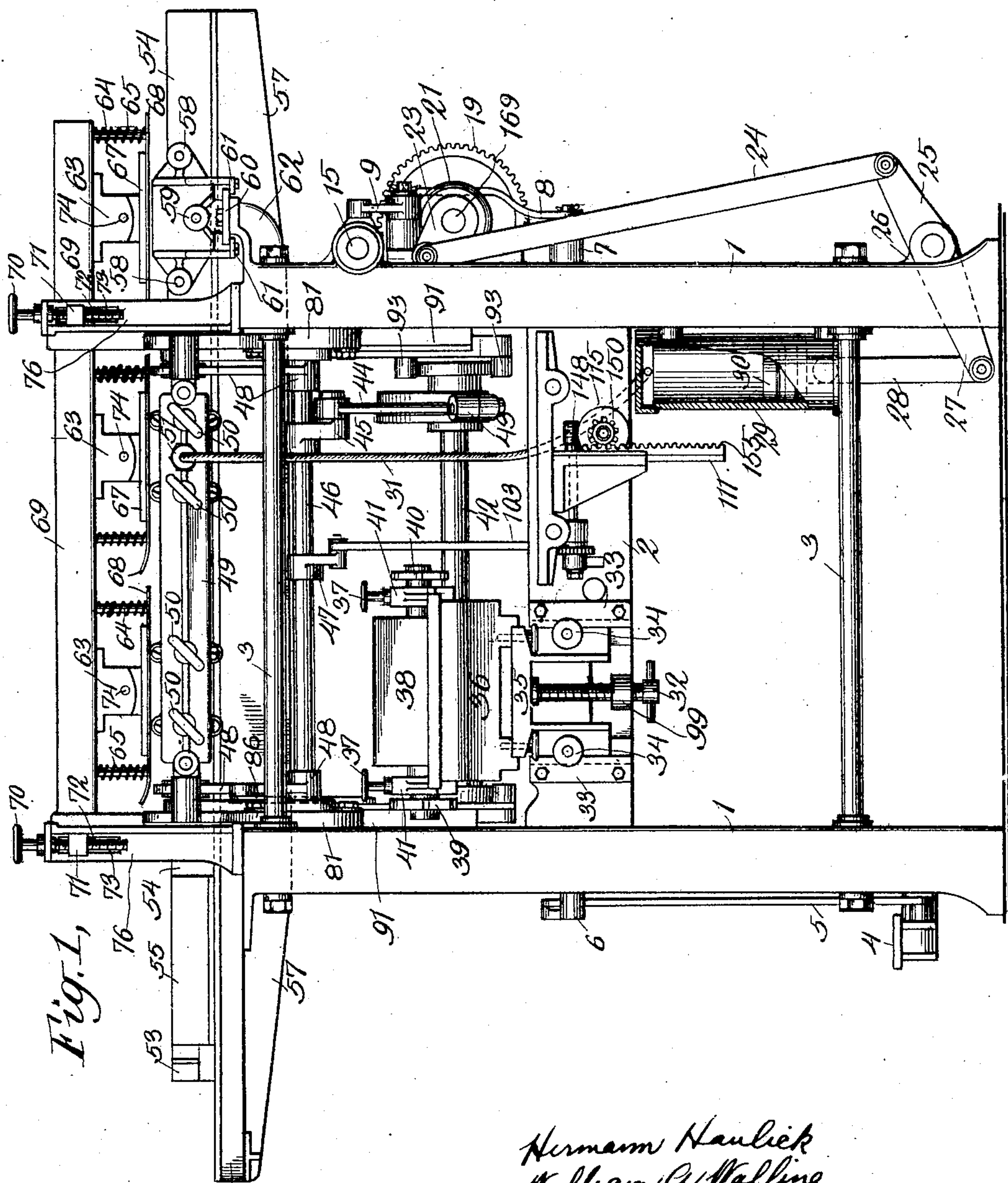


Fig. 1.

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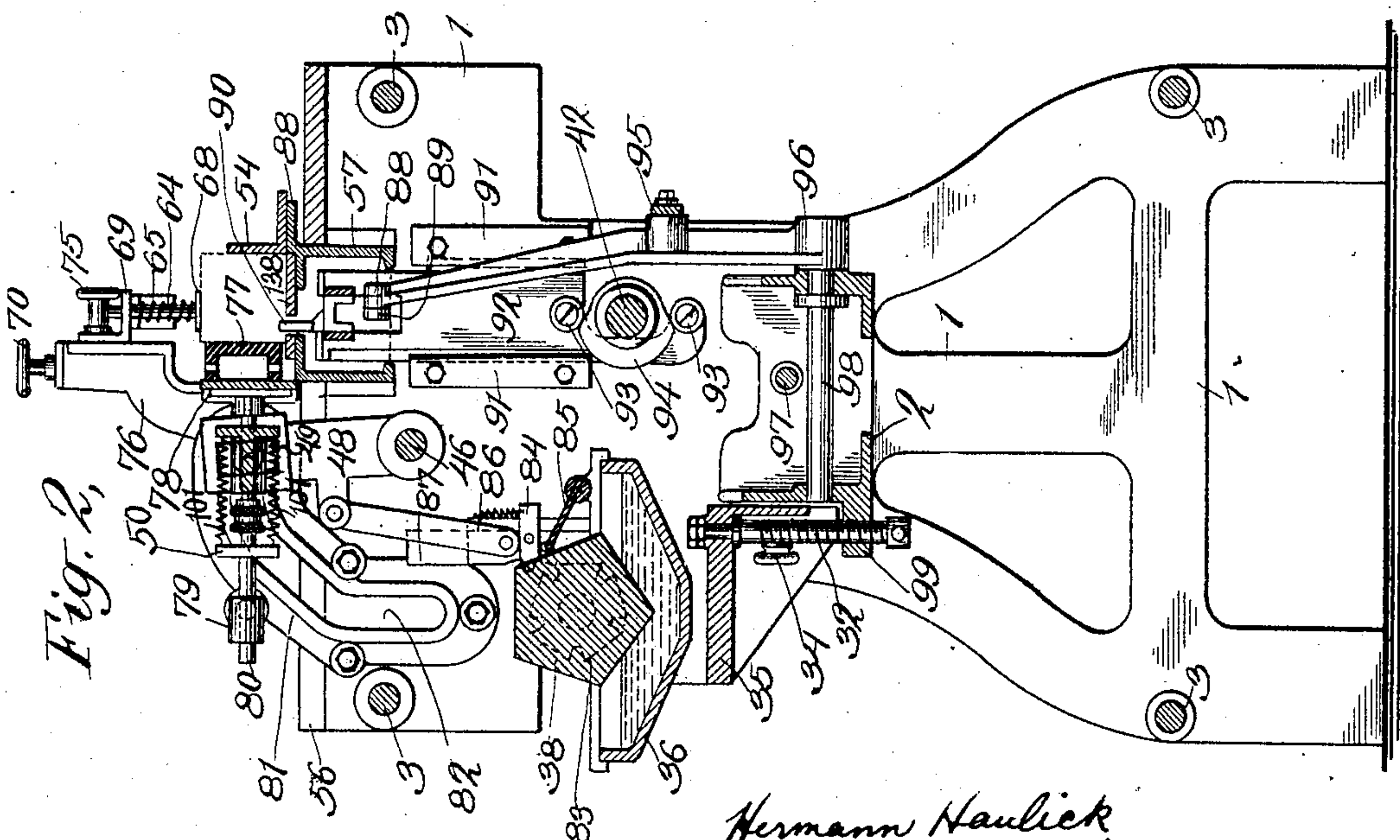
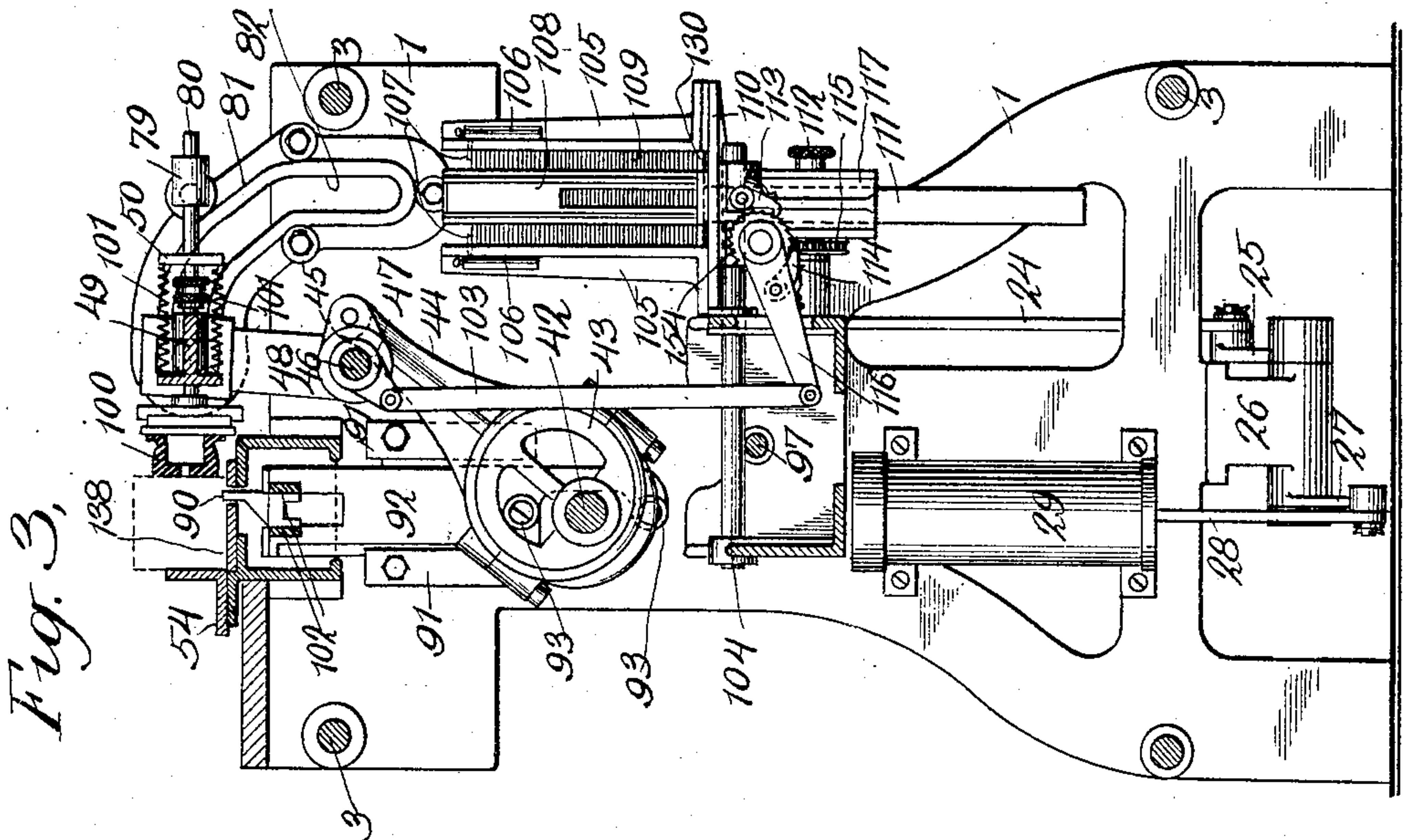
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4 SHEETS—SHEET 2.



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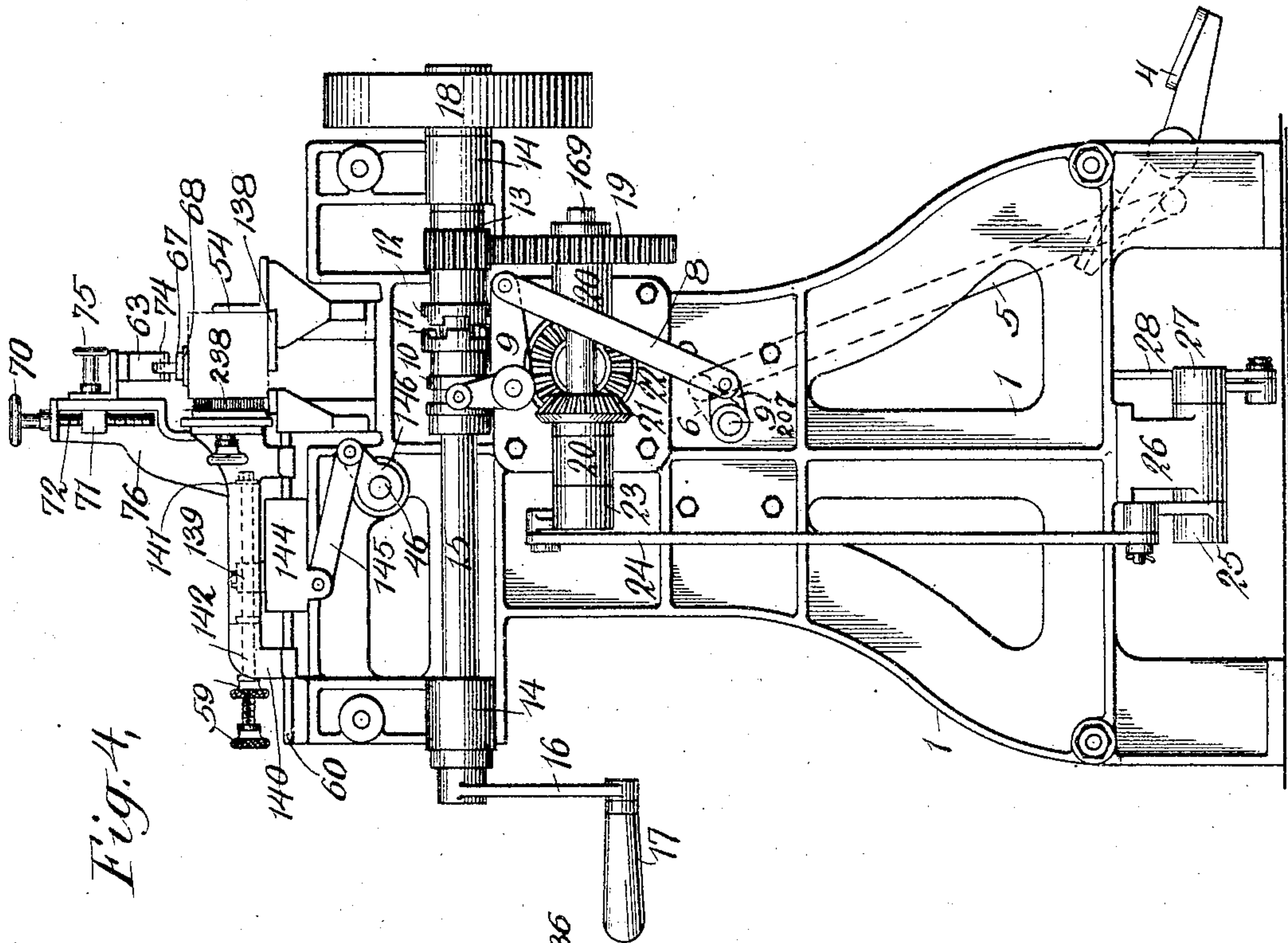


Fig. 4.

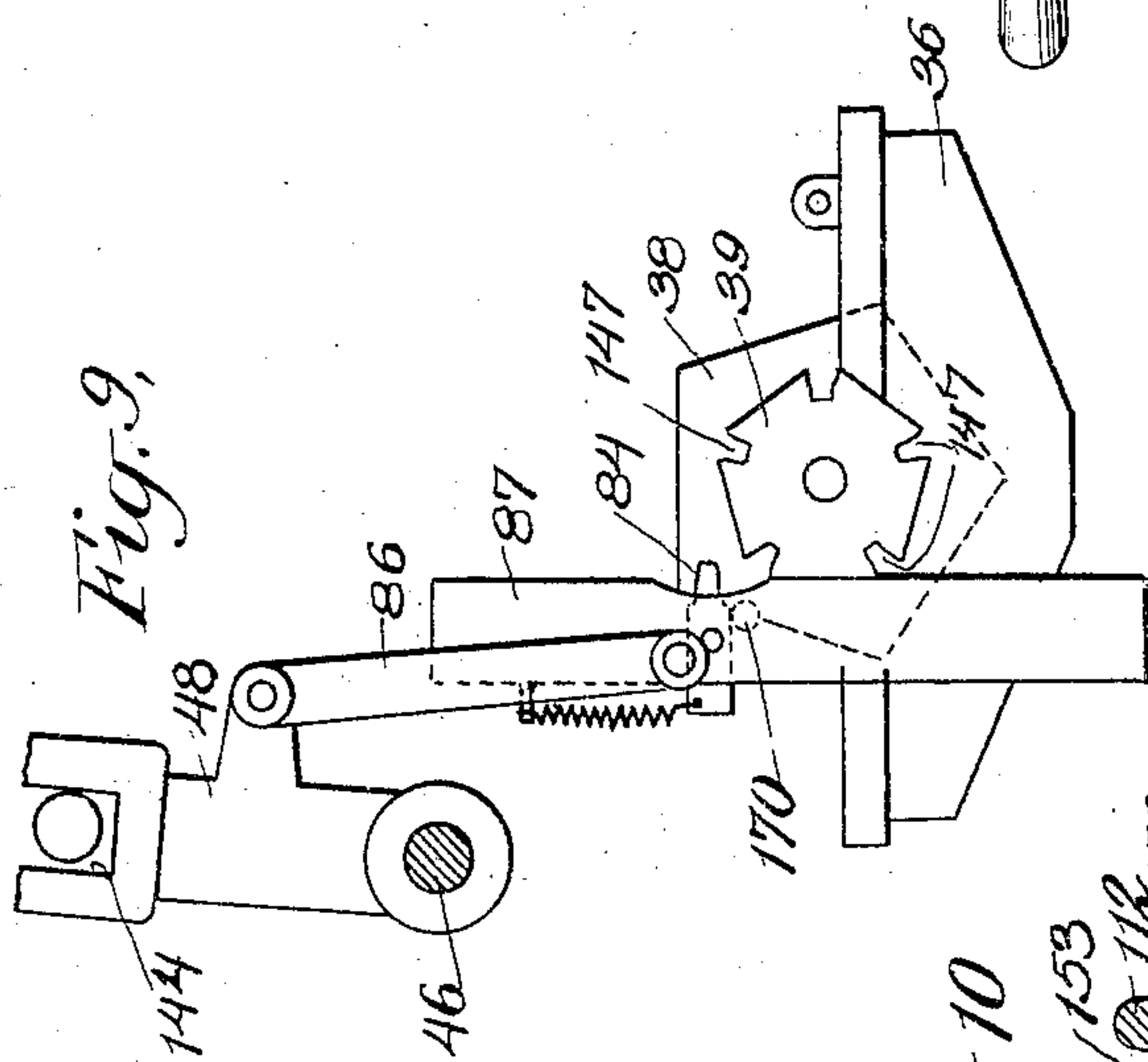


Fig. 9.

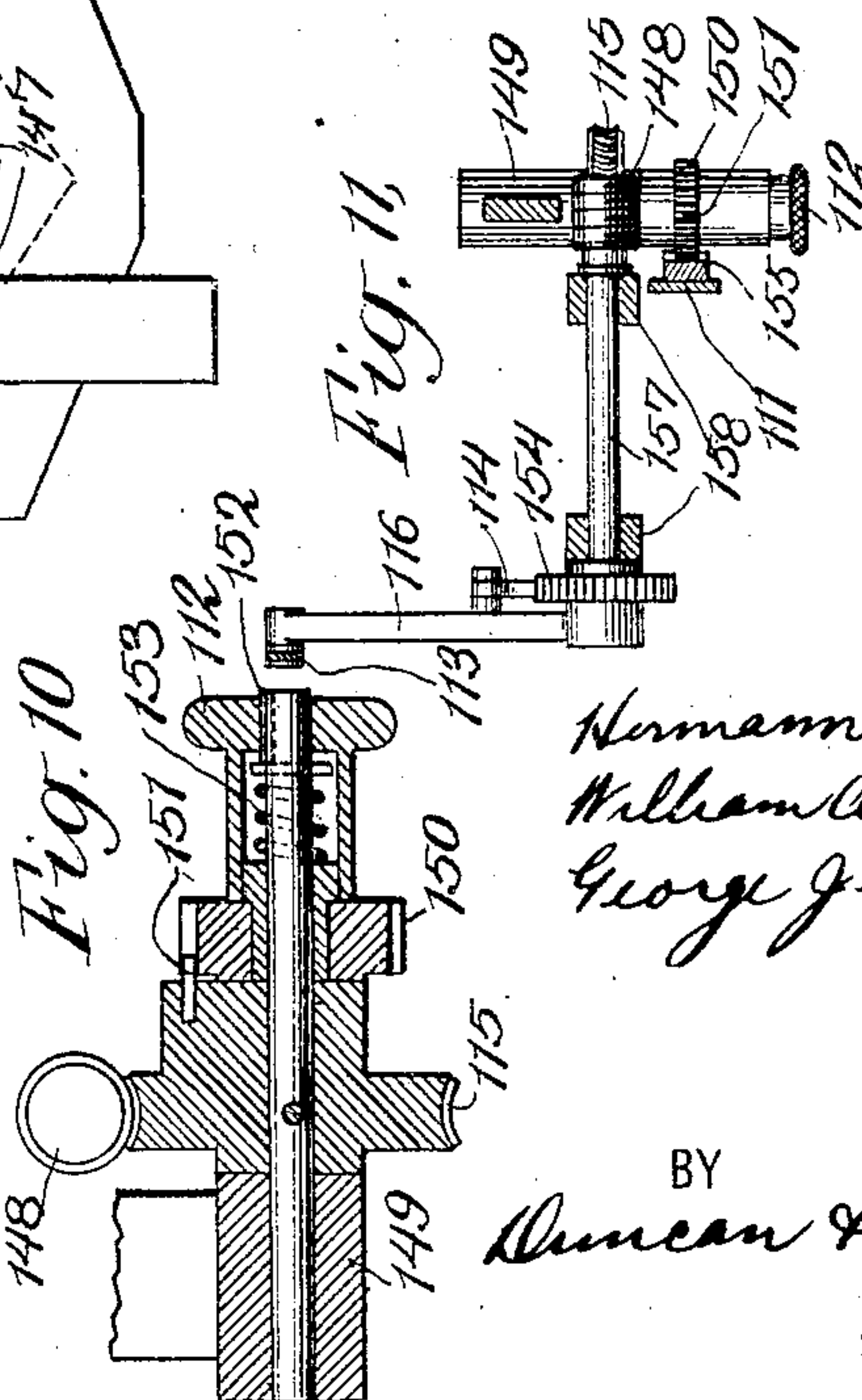


Fig. 10.

Fig. 11.

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LABELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,495, dated April 4, 1905.

Application filed August 22, 1903. Serial No. 170,379.

To all whom it may concern:

Be it known that we, HERMANN HAULICK, a subject of the German Emperor, and WILLIAM A. WALLING and GEORGE J. WINKLE, citizens of the United States, residents of New York city, in the county and State of New York, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to labeling-machines for applying labels to a series of articles fed successively along a runway.

In the accompanying drawings, Figure 1 is an elevation of a machine embodying this invention. Fig. 2 is a transverse section showing the paste apparatus. Fig. 3 is a transverse section showing the label-feeding mechanism. Fig. 4 is an end elevation. Fig. 5 is a longitudinal vertical sectional view. Fig. 6 is a detail plan view showing the label-box. Figs. 7 and 8 are details of the label-box construction. Fig. 9 is a detail of the paste-feeding mechanism. Figs. 10 and 11 are details of the label-feeding mechanism. Fig. 12 is a partial plan view of the machine.

Article-feed.—In the embodiment of the invention shown in the accompanying drawings the machine is provided with a suitable rigid frame comprising the standards 1, connected by the longitudinal members 2 and the rods 3, so as to form a rigid support for the operating mechanism. As is seen in Figs. 2 and 5, a table 57 extends throughout the whole length of the machine, and upon this table is mounted the lower guiding member 138, preferably formed in two parts, as indicated, with the longitudinal feed-slot between them. The lateral guiding member 54 is also secured to the portion 88 of the table to form a runway and is preferably adjustable, the securing-bolts 137 being provided and operating in suitable slots in the guiding member to allow for its lateral adjustment. In this way a runway is formed along which articles may be fed throughout the length of the machine. Suitable retaining devices, which may take the

form of the spring-pressed retainers 68, are preferably mounted adjacent this runway to hold articles fed along the same in position at the various stations. These retainers are preferably given the curved faces indicated in Fig. 5 and are mounted by the box 67, preferably having a loose pivotal connection with the retainer-bar 69 through the pins 74. These retainers also preferably have fixed thereto the pins 64, passing through suitable holes in the retainer-bar and inclosed by the springs 65, which tend to force the retainers down into operative engagement with the articles upon the runway, as indicated. The retainer-bar is preferably mounted so as to be adjustable with respect to the runway, the means indicated for that purpose comprising the securing-screws 75, which, as seen in Figs. 4 and 5, cooperate with the nuts 71, moving in the slots 73 of the standard 76. These nuts are controlled by the screws 72, which may be operated by the handles 70 to secure an accurate adjustment of the retainer-bar at either end of the same, after which the bar may be rigidly clamped in position by the screws 75.

A series of articles are preferably intermittently fed along the runway and are held in position by the retainers at the several stations, so that labels may be applied to the articles. This feeding of the articles may be accomplished by feeders which project into the runway on any side of the same, and, as indicated in the drawings, the feeders project up through the slot in the lower guiding member 138, so as to simultaneously engage each one of a series of articles and feed them one station forward along the runway. The series of feeders 90, which may, if desired, have the facings of yieldable material indicated, are rigidly secured to the feeder-bar 102. This bar is shown as mounted to reciprocate in the upper end of the slides 92. These slides are mounted to move vertically in the guides 91 and are operated by the cams 94 on the shaft 42, these cams being engaged by the rolls 93, secured to the slides, so that as the shaft rotates the slides are simultaneously given a vertical movement. The shaft 42 is

driven from the power-axle 169 by the bevel-gears 21 22, and the feeder-crank 124 upon the power-axle imparts a reciprocation to the feeder through the link 123, pivoted to the lever 88. The lower end 96 of this lever is secured to the pin 98, which, as seen in Fig. 2, has a suitable bearing in the frame, and the link 89 is pivoted to the free end of this lever and to the feeder-block 119. This block is mounted in suitable slots in the feeder-bar and is controlled by the adjusting-screw 120, passing through the threaded nut 122 of the feeder-bar and held rigidly in position with relation thereto by the lock-nut 121. By this means a longitudinal reciprocation is imparted to the feeder-bar and, furthermore, the extreme forward position of each of the feeders is simultaneously adjusted by the adjusting-screw, as described. These vertical and longitudinal movements of the feeders are so timed that the feeders are simultaneously and positively projected into the runway when in their rearward position. (Indicated in Fig. 5.) Then they move forward, feeding each of the articles in the runway one station forward. Thereupon the slides drop, withdrawing the feeders from the runway, and their rearward reciprocation is made while in inoperative position. If, therefore, articles are continuously fed into the rear end of the runway in engagement with the stop 53 (indicated in Fig. 12) and between the guiding member 54 and the lateral stop 55, adjustably secured to the table by the screws 136, the feeders intermittently feed these article forward from station to station and discharge them from the forward end of the runway, where they may be received in any desired manner.

Paste mechanism.—At the rear station along the runway paste is applied to the articles, in this instance to only one lateral face of the same. As is seen in Fig. 2, the paste-platform 35 is movably mounted on the frame, its vertical position being adjusted by the screw 32, the upper end of which is swiveled in the platform and the lower end of which passes through a threaded lug 99 on the frame. As is seen in Fig. 1, this platform is guided in its vertical movement by the guideways 33 and may be rigidly secured in any position by the screws 34 indicated. The paste-receptacle 36 is preferably detachably secured to the platform, suitable guides being formed in the receptacle which coact with the platform, as indicated in Fig. 1, suitable screws or other means holding the two firmly together during the operation of the machine. Within the receptacle the paste-drum 38 is rotatably mounted, this drum revolving in suitable bearings 41, preferably provided with the tightening-screws 37 and being provided at one end with the stop-wheel 40, which may be engaged by a suitable ratchet, and at the other end with the feed-wheel 39, which is provided with the feeding-notches 147. (See Fig. 9.) The slide

87 is mounted in suitable bearings to reciprocate vertically and is provided with the pivoted spring-pressed pawl 84, projecting toward the feed-wheel and engaging the notches 147. This pawl is normally held in the position indicated in Fig. 9; but when the slide moves downward this pawl is free to move in an upward direction away from the pin 170, so that the feed-wheel is not rotated, the wheel being normally held stationary and in proper alinement by the engagement of the flat faces of the wheel by the slide. Upon the upward movement of the slide, however, the pawl 84, which has moved against the pin 170, engages one of the notches 147, and thereby rotates the feed-wheel through a portion of a revolution, so as to bring a freshly-pasted face past the doctor 85 (indicated in Fig. 2) and into the horizontal position on top of the drum. The paste may be taken from the paste-drum in any way and applied to the article at the pasting-station on the runway.

The labeling-support 49 is mounted at either end in the guides 82 in the brackets 81, secured to the frame of the machine, as is indicated in Figs. 2 and 12, the ends of the support being preferably provided with suitable rolls 135 to cooperate with the guides, which may be given the closed form indicated. This support is preferably provided at either end of the same with the stems 80, rigidly secured thereto and loosely passing through the swiveling sleeves 79, secured to the pins 159, rotating in the lugs 160 of the brackets. The support is revolved by the arms 48, mounted upon a rock-shaft 46 and provided with slots 144, (see Fig. 9,) loosely engaged by either end of the support. The rock-shaft may be operated from the shaft 42 by the eccentrics 43. (Indicated in Fig. 3.) The eccentric-rods 44 are operated by these eccentrics and are pivoted to the cranks 45 on the rock-shaft to impart an oscillation thereto. As the arms are rotated by the rock-shaft they rotate the label-support, and as the support is rotated the connection of the stems with the swiveling sleeves oscillates the support during its substantially rotary movement. It will be seen, furthermore, that the guides 82 are so shaped that at either end of its partial rotation the support travels in a straight path perpendicular to the adjacent face of the article on the runway and to the upper surface of the paste-drum. The paste-pad 77, preferably formed of yielding material, such as rubber, is secured to the plate 78, this plate being preferably mounted on rigid stems 161, passing through suitable apertures in the labeling-support and connected with the yokes 50. The springs 101 connect these yokes with the labeling-support, while the forward movement of the yokes is limited by suitable set-nuts 134, indicated. (See Fig. 12.) These springs serve to yieldingly press the paste-pad into engagement with an article on the runway and also when it is at the other

end of its travel into engagement with the paste-drum to take paste therefrom.

Label-feeding.—After the articles have been pasted and fed along to the succeeding station (indicated in Fig. 3) a label is applied to the pasted face of each article, which may be done by the mechanism indicated in that figure. The yielding suction-pad 100, which may be formed of rubber and provided with a number of suction-apertures in its face, may be mounted upon the labeling-support in the manner described, so as to be yieldingly pressed into engagement with the articles by the springs 101. As indicated in Fig. 1, the suction-pipe 31, preferably of flexible material, is connected with the union of a tube 51, communicating with the interior of the suction-pad. The other end of this pipe connects, as indicated, with the pump-cylinder 29, secured to the frame of the machine. The plunger 30 operates within this cylinder, being connected by the link 28 with the rock-lever 27, pivoted about the lug 26 and having its opposite end 25 connected by the link 24 with the crank 23 on the power-axle. By this means suction is applied to the paste-pad, so as to pick up a label from a pile, carry the label into engagement with a pasted article, and then to release the suction and leave the label adhering to the article. The label-platform 110 is mounted upon the frame of the machine and supports a pile of labels 109, the guides 105 and 108 being mounted upon the platform, preferably adjustably, by the bolts 128 and 129, which operate in slots in the guides, so that the guides form substantially a skeleton label-box and guide the pile of labels at their edges. As indicated in Fig. 6, some of the guides are preferably mounted on a movable plate 173, which may be pivoted about the pin 174 and its other end secured by the bolt 176, which engages the slot 175. In this way these guides may be removed by being swung out of position, so that the labels may be readily replenished. The plunger 130 is mounted upon the rod 111, which is guided by a suitable bearing 117. The rod is preferably provided with rack-teeth 155, (see Fig. 1,) and the pinion 150 engages these teeth to feed the plunger and rod upward. The pinion is rotated by the worm-wheel 115, operated by the worm 148. This worm is intermittently rotated by the ratchet-wheel 154, secured thereto, this ratchet being engaged by the spring-pressed pawl 114 on the lever 116. (See Fig. 3.) This lever is connected by the link 103 with the crank 47 on the rock-shaft 46, so that the ratchet is gradually fed around, the spring-pressed holding-pawl 113 preventing its rearward movement. By this compensating gear a pile of labels is fed forward during the operation of the machine, and the top of the pile is constantly maintained in proper position. The manual feeding and setting mechanism (indicated in Fig. 10) may be employed to ad-

just the position of the plunger and labels when new labels have been supplied to the machine. The shaft indicated is supported in a suitable bearing 149, and the worm-wheel 115 is fastened thereto. The pinion 150 is preferably loose upon the shaft and is secured thereto by the clutch-pin 151, secured to the worm-wheel and adapted to engage in one of the toothed spaces of the pinion or other apertures therein. This pinion is rigidly secured to the handle 112, which is splined by the feather 152 to the shaft. A light spring 153 normally holds the pinion in engagement, but allows for the manual withdrawal of the same for the purpose of adjusting the position of the plunger by turning the handle 112 after disengaging the power-compensating gear. As the suction-pad comes down to engagement with the pile of labels the upper label adheres to the pad, and suitable separating means is employed to prevent the withdrawal of more than a single label from the label-box. A number of separator-fingers 107 are indicated engaging the upper label of the pile. Each finger, as shown in Fig. 8, is adjustably secured to the weighted body of the separator by the screw 131, the separator being preferably provided with the enlarged flange 132, which projects beyond the ribs 133 in the guide. The separator is in this manner allowed a limited vertical movement to accommodate any variation that there may be in the position of the upper label in the pile and also is allowed to move freely a limited distance with the upper label as it is withdrawn. If desired, also additional separating-fingers, such as 127, may be provided, and these fingers may be rigidly mounted, if desired, upon the guides 108. In the operation of this label-feeding mechanism the upper label of the pile 109 is engaged by the suction-pad, which moves perpendicularly down against it and adheres to the pad as the pad moves upward, and this upward movement tends to carry the separating-fingers 107 and the separators attached thereto upward. Since the fingers cannot move farther than the slots in the guide allow, the label after it has risen to a slight extent, so as to be free from contact with the label-pile, must bend at its edges around the separating-fingers 107. This action separates the top label from any others that may adhere to its under surface, and this separating action is assisted by the additional separating-fingers 127. The pressure with which the movable separating-fingers 107 operate, as well as their position about the sides of the label, should be so adjusted as to give the best separation with the particular character of label with which they are used. It will be noted in this connection that since the suction-pad is guided so that it moves vertically at the time it enters the label-box and since it is spring-pressed it moves perpendicularly against the upper label of the pile and re-

mains in contact therewith for a considerable time due to its spring mounting, so that suction can be effectually applied to the pad. Its vertical movement, therefore, away from the labels prevents the lateral displacement of the labels remaining in the pile or the distortion of any of the labels as they are removed. The suction-pad is accurately guided, furthermore, as it moves against an article in the runway, so that the label is accurately applied thereto.

Presser device.—The labels as applied to the pasted articles upon the runway are preferably smoothly pressed into position upon the same at the next station beyond the label-feeding mechanism. For this purpose a presser-pad 238 of bristles or other yielding means is provided, this pad being secured upon the slide 140 by suitable screws 58. This slide is mounted upon the ways 60 and is operated by the block 144, which also is mounted upon these ways, this block being reciprocated by the link 145, connecting the same with the crank 146 upon the rock-shaft 46. (See Fig. 4.) The reciprocation of the presser-pad is regulated by the stem 141, which carries a spring engaging the lug 139 and tending to bring this lug into contact with the collar on the same, indicated behind the same. The rear portion of this stem is indicated as threaded and as engaging the slide 140, its position therein being rigidly maintained by the lock-nut 59. By this means the length of time that the presser-pad 138 remains in engagement with an article on the runway can readily be adjusted.

The driving-shaft 15 is mounted in suitable bearings 14 on the frame and may be operated by the driving-pulley 18 or by the crank 16, having the handle 17 indicated. (See Fig. 4.) This shaft carries the pinion 13, which engages the gear 19 on the driving-axle 169, which rotates in the bearings 20 on the frame.

The clutch 12 is rigidly secured to the pinion 13, and the coöperating clutch 11 is splined to the shaft 15, the position of this movable clutch 11 being controlled by the shifting lever 9 engaging the collar 10 on the clutch. This lever is connected to the link 8, which is operated by the rock-arm 207 on the shaft 9. This shaft has secured thereto the arm 6, connected by the link 5 with the treadle 4, so that by this means the clutch may be readily thrown into operative position to drive the machine from the power-shaft or be thrown out of engagement to stop the machine.

It is of course understood that many modifications may be made in the size, proportion, and numbers of parts of this machine and that those familiar with this art may employ parts of the same without using the whole of this machine and may use parts in connection with other devices without departing from the spirit of this invention or losing the advantages of the same.

We do not desire to be limited to the disclosure which has been made in this case; but what we claim as new, and what we desire to secure by Letters Patent, is set forth in the appended claims.

We claim—

1. In labeling-machines, a runway, feeders adjacent said runway, means to reciprocate said feeders and means to project said feeders into and withdraw them from said runway during their reciprocation, adjustable spring-pressed retainers adjacent said runway, and labeling devices to coöperate with said runway to apply labels to articles fed along the same, said labeling devices comprising means to support a pile of labels and to feed the same forward, a labeling-support, means to move said labeling-support and to oscillate the same during its movement, a suction-pad yieldingly mounted on said support and separating-fingers lightly engaging the upper label of said pile and having a limited free movement with said upper label as it is withdrawn.

2. In labeling-machines, a platform, guides on said platform for a pile of labels, weighted separator-bodies mounted in slots in said guides, separating-fingers adjustably mounted in said bodies to engage the top label of a pile, rigid separating-fingers normally out of contact with said labels and a picker to engage the top label of said pile to separate the same therefrom.

3. In labeling-machines, a platform, guides for a pile of labels mounted on said platform, a plunger operating between said guides, means to advance said plunger as labels are removed from said pile, yieldable weighted separator-bodies mounted in closed slots in said guides, separating-fingers secured to said bodies and normally engaging the top of said pile and a picker to remove the top labels from said pile.

4. In labeling-machines, guides to support a pile of labels, means to advance said pile as labels are removed therefrom, yieldable separating-fingers engaging the top of said pile, means to limit their movement away from said pile with the top label and a picker to remove the top label of said pile.

5. In labeling-machines, guides to support a pile of labels, means to advance said pile as labels are removed therefrom, separating-fingers lightly engaging the outer labels of said pile, and means to limit the movement of said fingers away from said pile, said fingers being moved by the outer label of said pile in the same direction as said label during its withdrawal.

6. In labeling-machines, guides to support a pile of labels, a separating-finger to lightly engage the outer label of said pile, means to remove the outer label from said pile and means to positively limit the movement of said finger with said outer label, said finger being moved by the outer label of said pile in the

same direction as said label during its withdrawal.

7. In labeling-machines, guides for a pile of labels, a separating-finger to engage the outer label of said pile and means to allow a limited free movement of said finger by the outer label of said pile in the same direction as said label is moved during its withdrawal.

8. In labeling-machines, a platform, guides on said platform for a pile of labels, part of said guides being removable to allow the replenishing of said labels, separating-fingers engaging the outer label of said pile and having a limited free movement with said labels as they are withdrawn, a plunger within said guides, compensating mechanism to feed forward said plunger as said labels are withdrawn comprising a disengageable clutch to manually adjust the position of said plunger and a pneumatic picker to engage said labels.

9. In labeling-machines, a runway, means to support a pile of labels adjacent said runway, a movable labeling-support, guides for said support, the portion of said guides adjacent said label pile being substantially perpendicular to the top label, a rotating arm connected to said support to rotate the same, a swiveling collar adjacent said guides, a stem on said support passing through said collar to oscillate said support as it is rotated, and a labeling-pad yieldingly mounted on said support to engage said labels and an article on said runway.

10. In labeling-machines, a runway, means to support a pile of labels adjacent said runway, a movable labeling-support, guides for said support, portions of said guides adjacent said pile of labels and said runway being substantially straight to guide said support perpendicularly toward said labels and an article on said runway, an arm connected to said support to rotate the same, means to oscillate said support as it is rotated, a suction-pad yieldingly mounted on said support and a pump connected to said pad to create suction therein while said pad is being yieldingly held in engagement with said labels and to relieve said suction to apply a label to an article.

11. In labeling-machines, means to support a pile of labels, a picker to engage the outer label of said pile, a separating-finger to lightly engage the outer label of said pile and move with the same during its withdrawal and means to stop the movement of said finger after said outer label is free from said pile.

12. In labeling-machines, a runway, means to feed articles from station to station along said runway, a paste-drum, means to support

a pile of labels, a labeling-support, means to move said support and to oscillate the same during its movement, said means comprising guides formed substantially straight adjacent said runway and said label pile to guide said support perpendicularly toward said label pile and said runway and labeling-pads yieldingly mounted on said support to engage said paste-drum and said label pile.

13. In labeling-machines, a runway, feeder slides adjacent said runway, cams to simultaneously move said slides toward and from said runway, a feeder-bar mounted in said slides, feeders thereon to be projected into said runway and means to reciprocate said feeder-bar to move said feeders forward while they are projected within said runway.

14. In labeling-machines, a runway, labeling devices cooperating with said runway, feeder-slides adjacent said runway, means to operate said slides, a feeder-bar, feeders thereon in said slides, said feeders being projected into and withdrawn from said runway, and means adjustably connected with said feeder-bar to reciprocate the same.

15. In labeling-machines, a runway, labeling devices to cooperate with said runway, feeders, means to reciprocate said feeders, and means comprising a feeder-slide to project said feeders into said runway before they reciprocate forward and to positively withdraw them therefrom at the end of their forward reciprocation.

16. In labeling-machines, a runway, labeling devices cooperating with said runway, vertically-movable slides below said runway, cams to operate said slides, a feeder-bar mounted in said slides, feeders on said bar to be projected into and withdrawn from said runway and means timed with said cams to reciprocate said feeder-bar.

17. In labeling-machines, a paste-receptacle, a paste-drum rotatably mounted in said receptacle, a feed-wheel provided with notches and with flat faces secured to said drum, a reciprocating slide engaging said feed-wheel and cooperating with the flat faces thereof to maintain the alinement of said drum and a spring-pressed pawl on said slide to engage said notches to intermittently rotate said drum.

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