Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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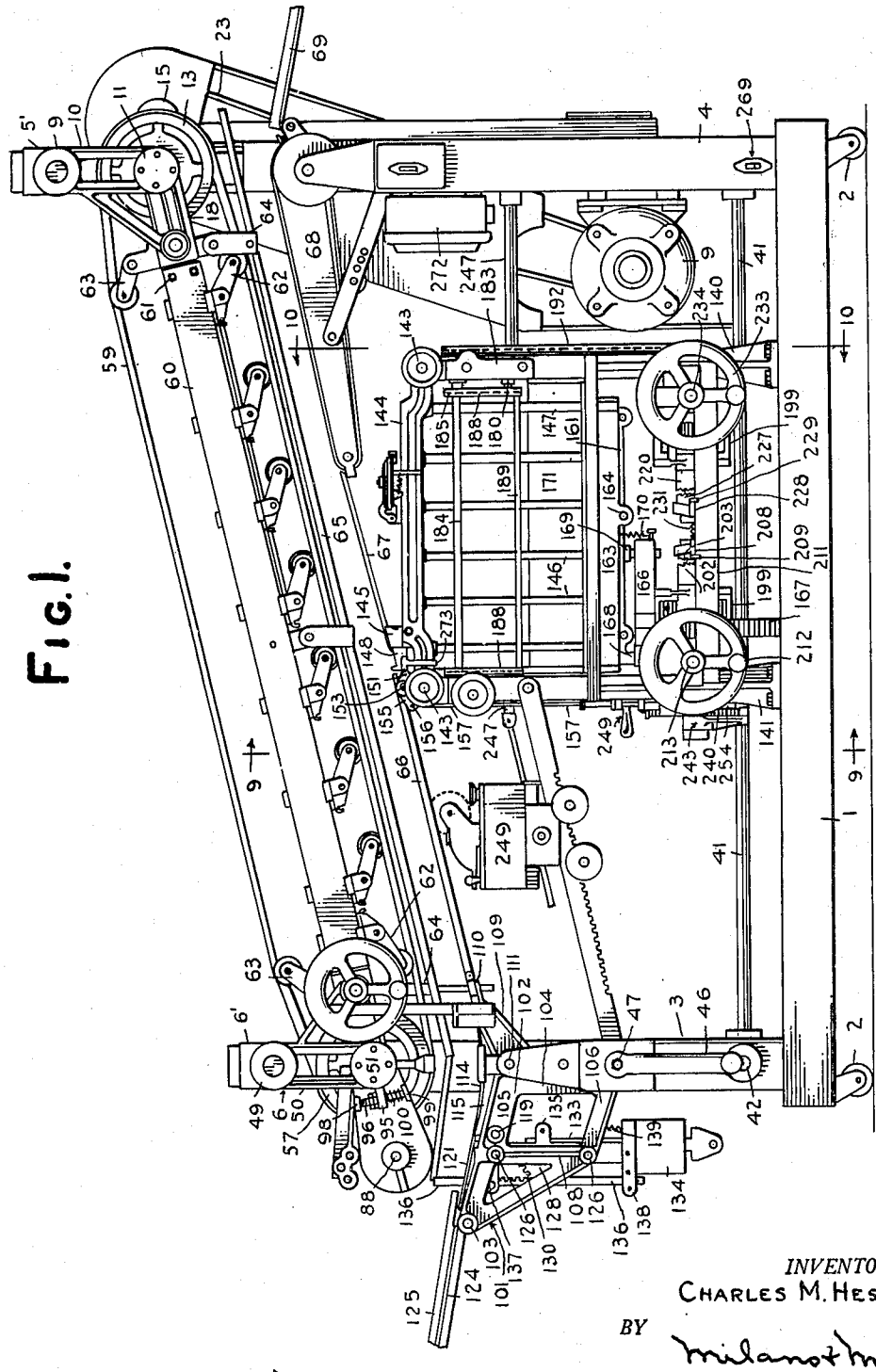
FIG. 1.



INVENTOR.
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BY Milanot & Milano
ATTORNEYS

Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

Filed May 5, 1950 19 Sheets-Sheet 2

FIG. 2.

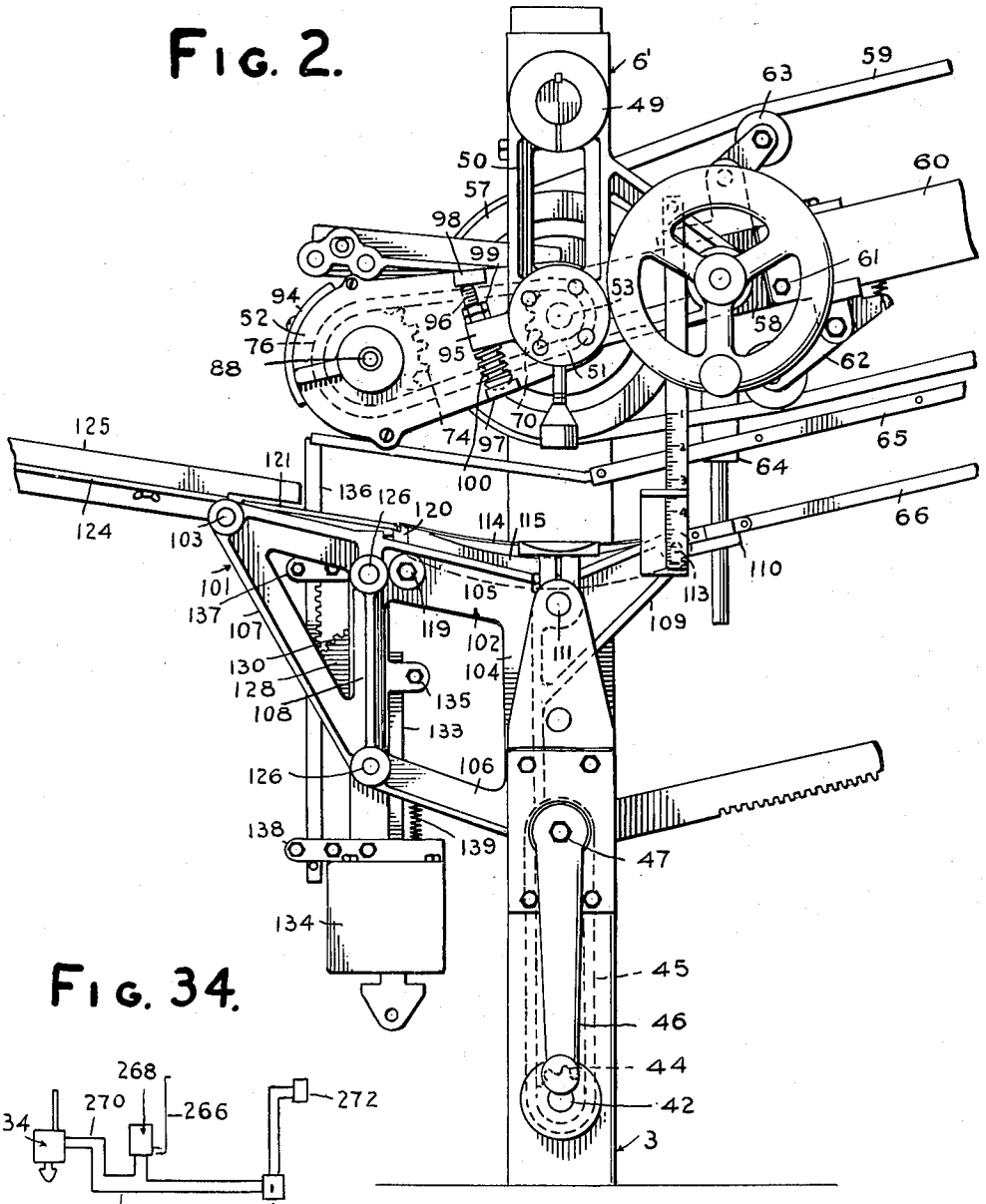
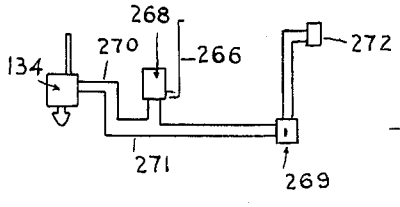


FIG. 34.



INVENTOR.
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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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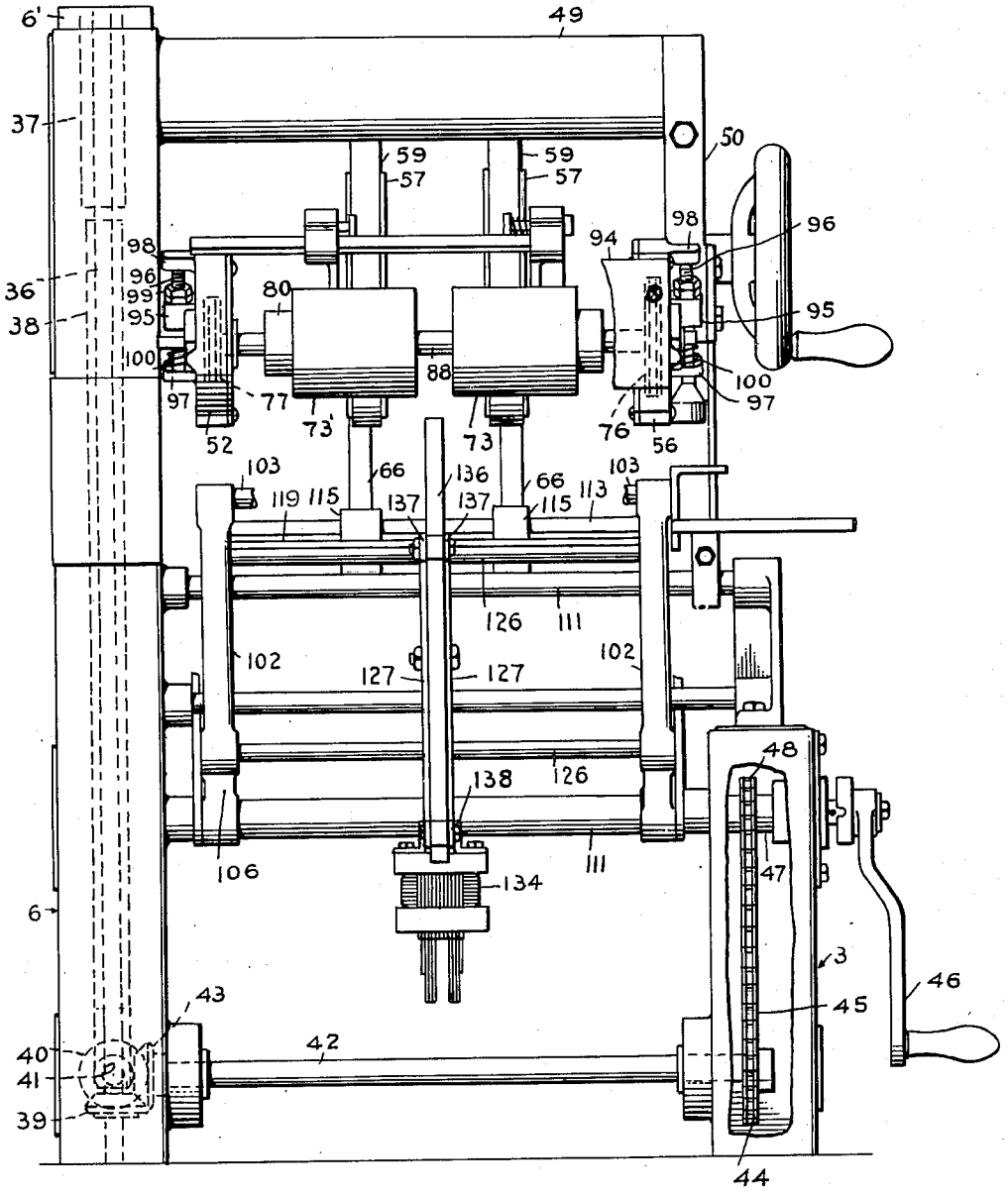
FIG. 3.



INVENTOR.
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Miland & Miland

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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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FIG. 4.

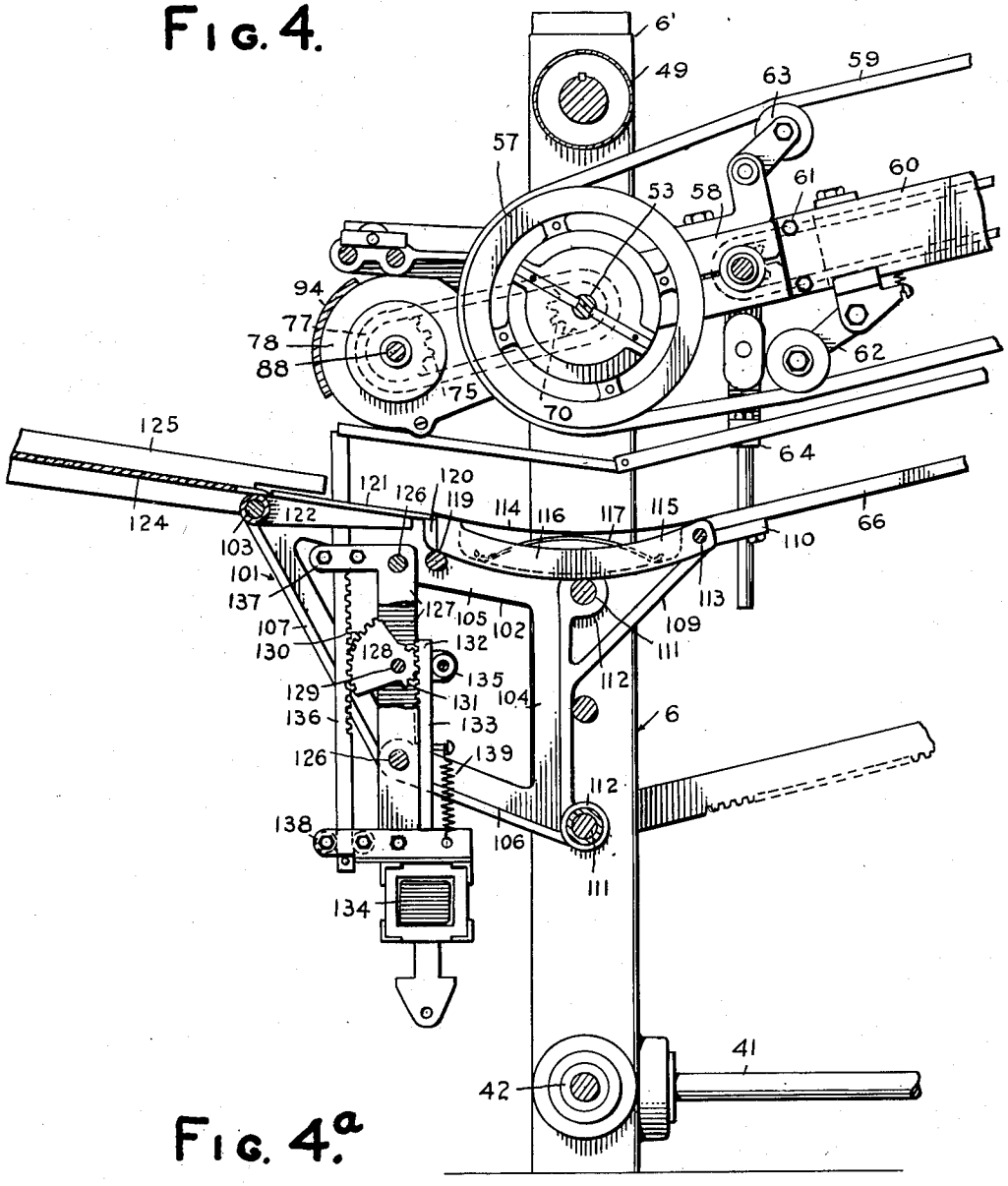
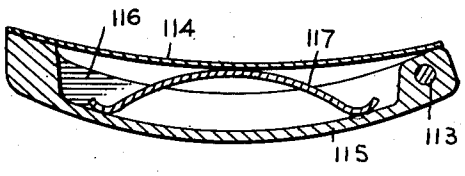


FIG. 4a.



INVENTOR.
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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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FIG. 5.

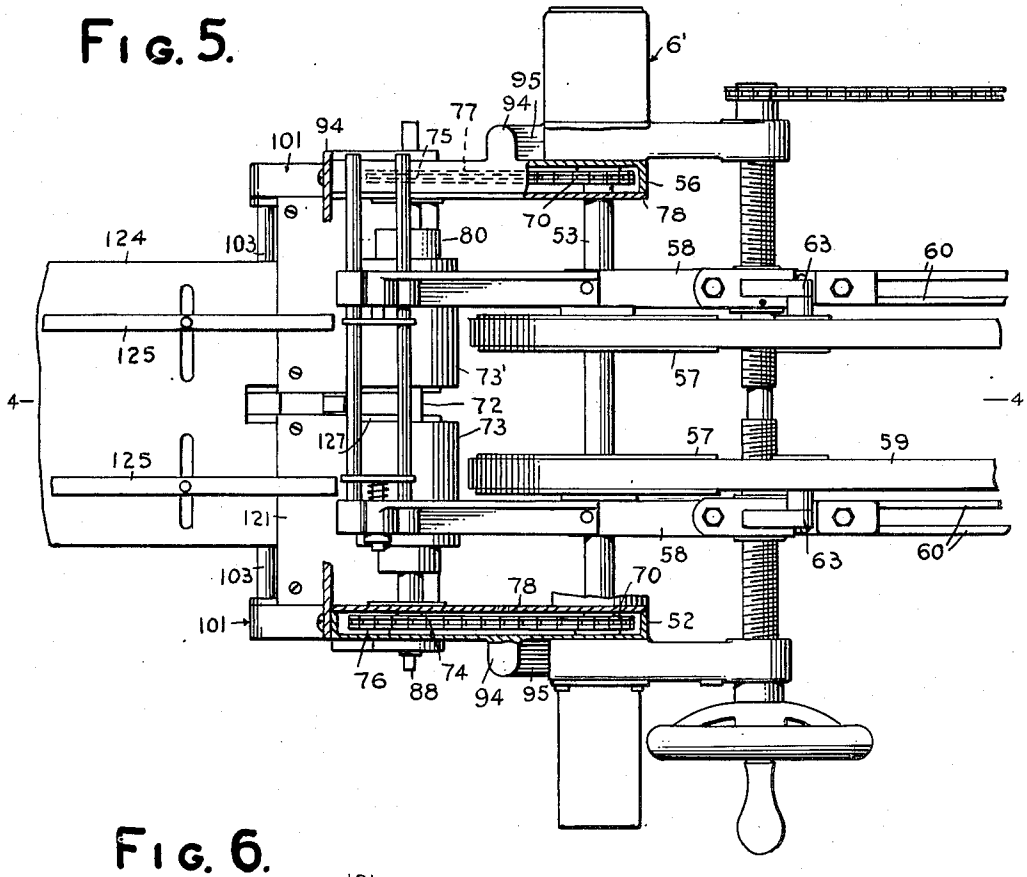
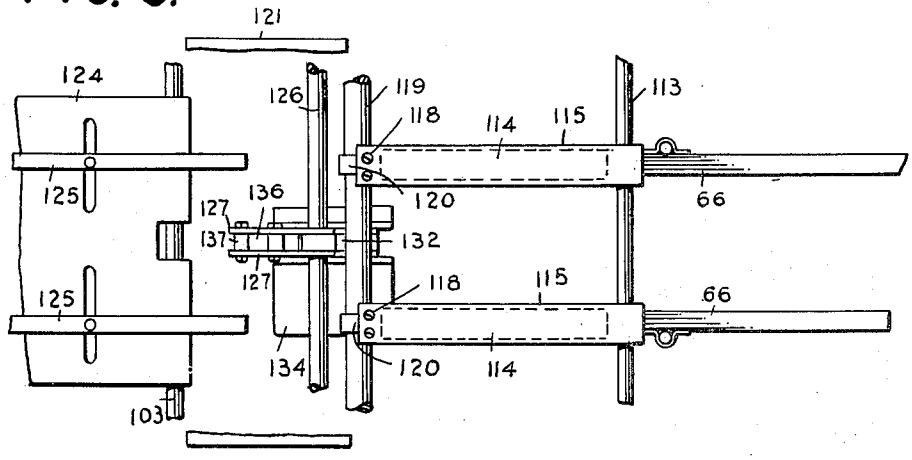


FIG. 6.



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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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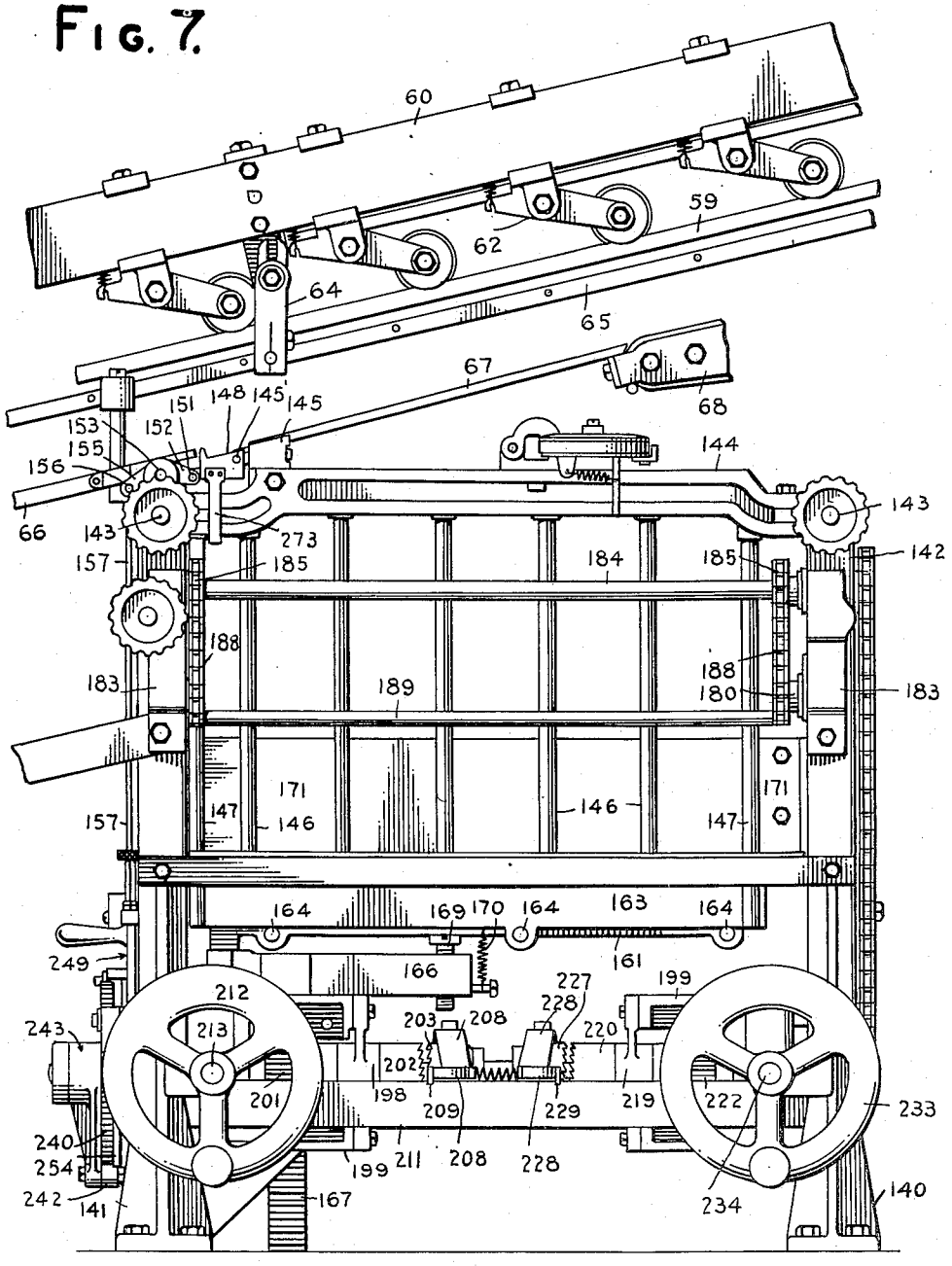
FIG. 7.



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Jan. 20, 1953 C. M. HESSON 2,626,075

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FIG. 32.

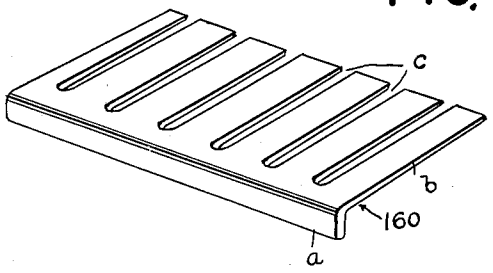

FIG. 8.

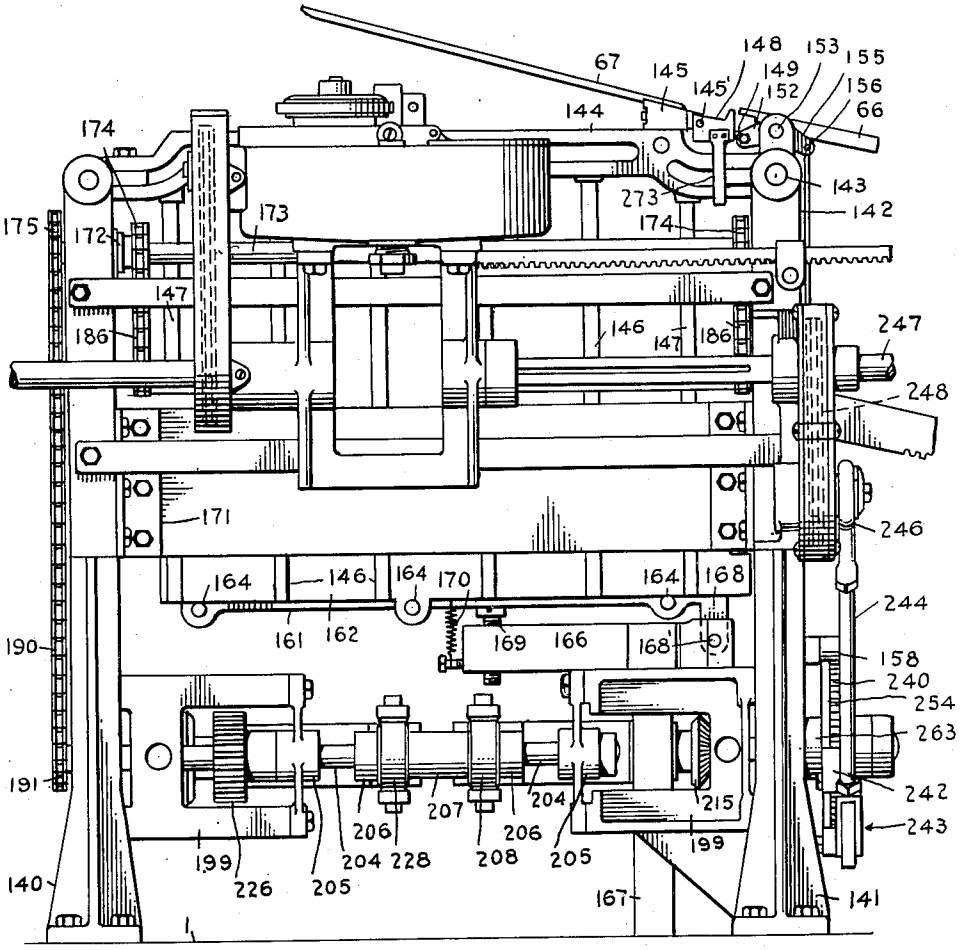

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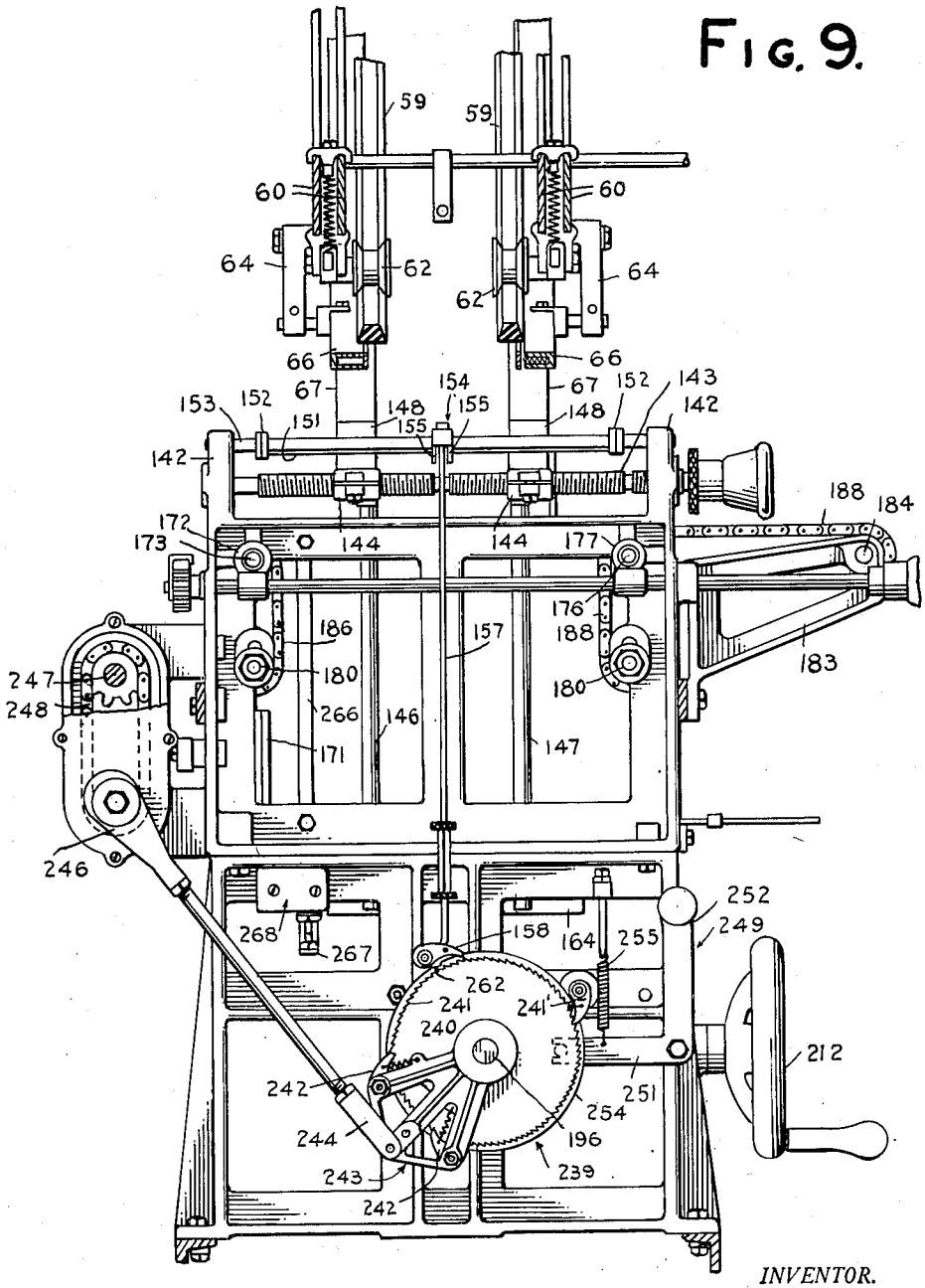
FIG. 9.



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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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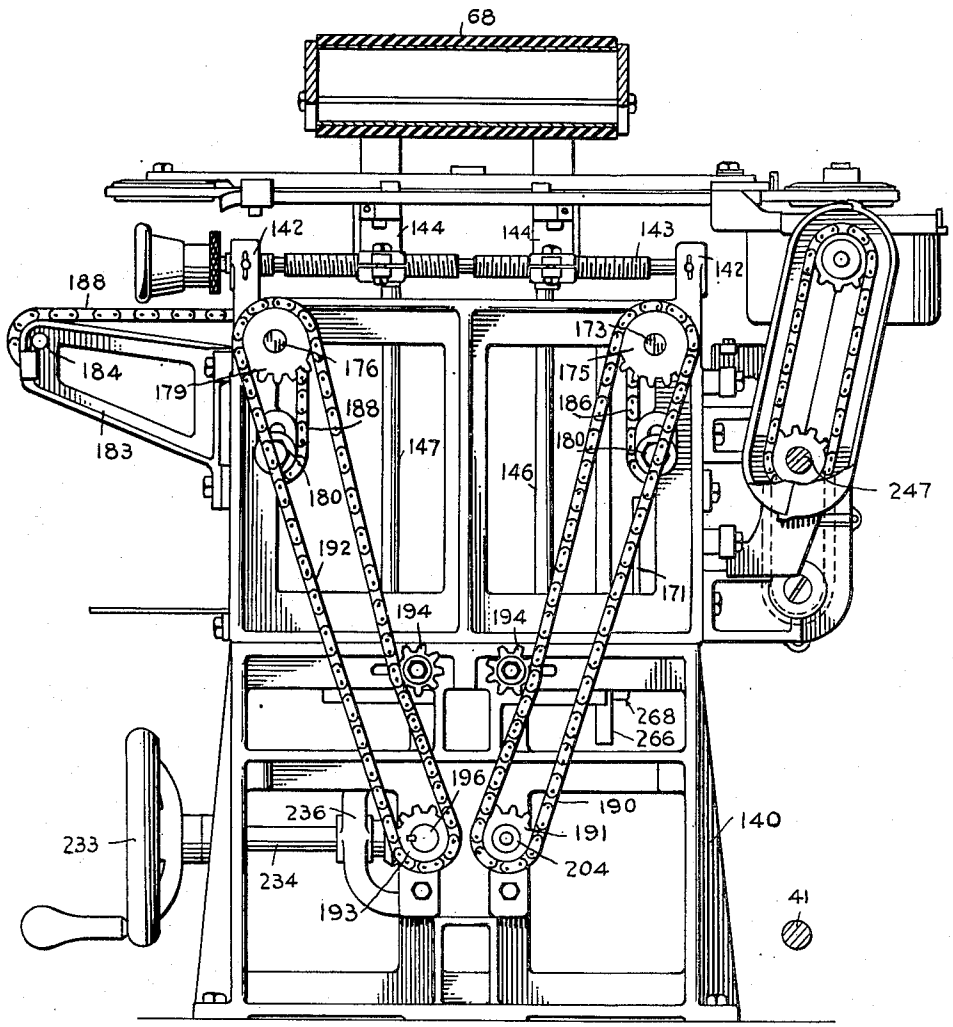
FIG. 10.



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Jan. 20, 1953 C. M. HESSON 2,626,075

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FIG. 11.

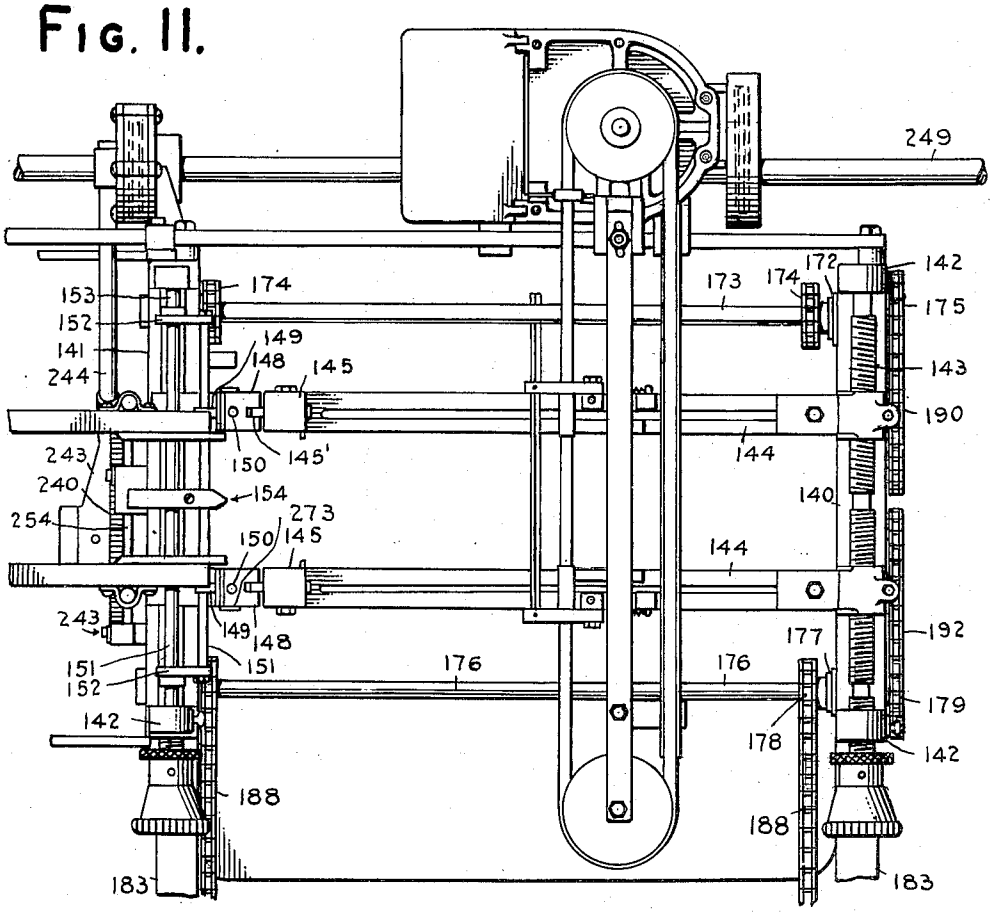
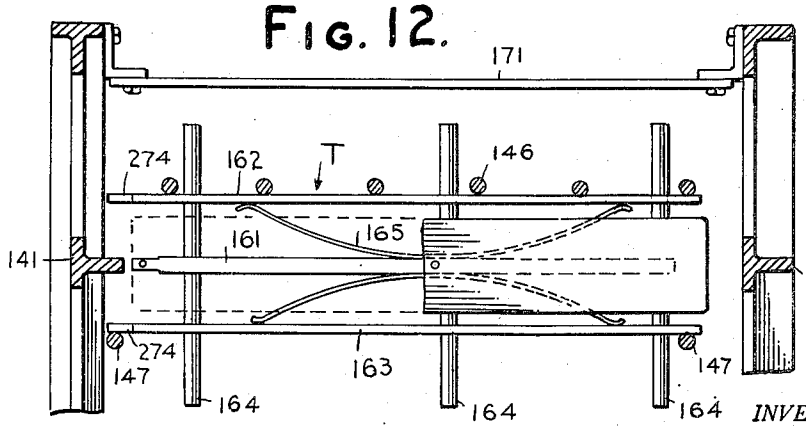


FIG. 12.



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CAN LABELING MACHINE

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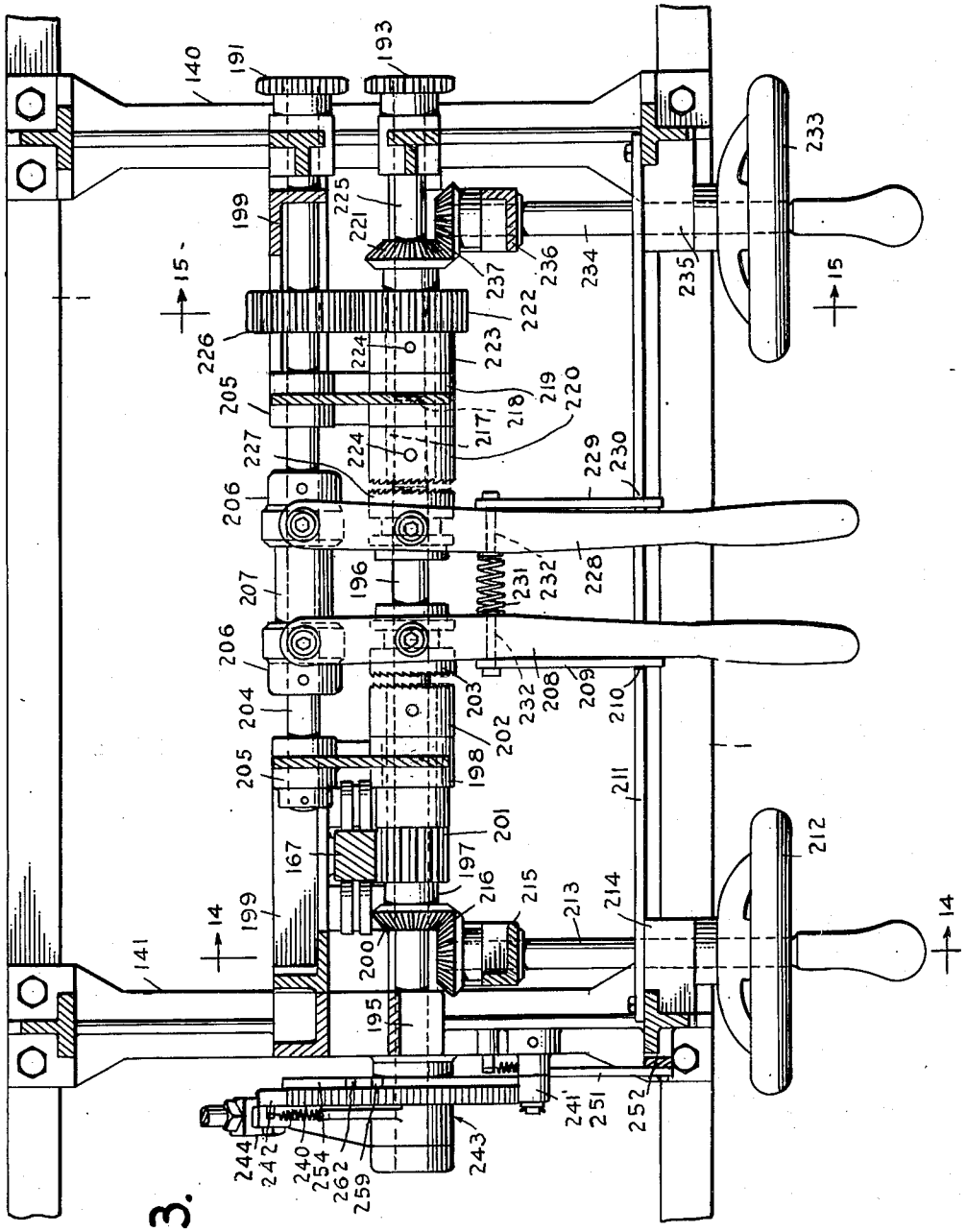

FIG. 13.

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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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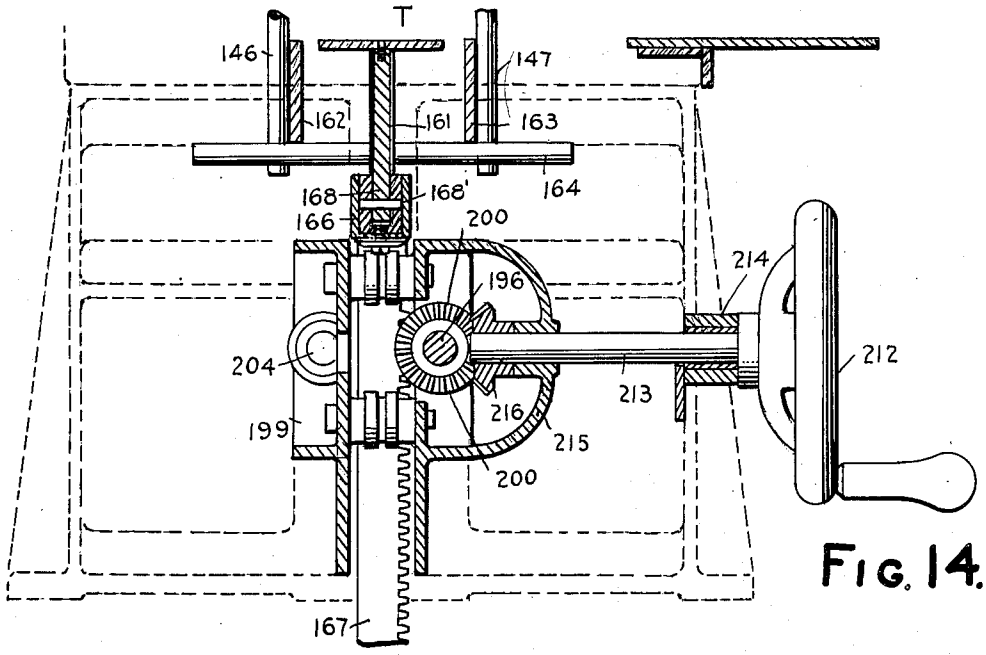

FIG. 14.

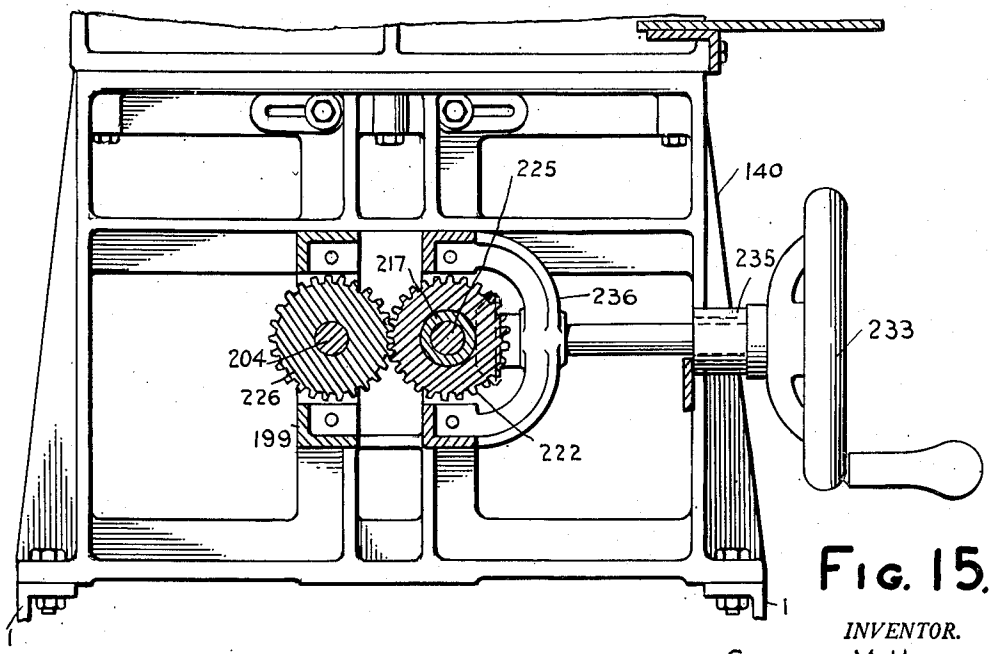

FIG. 15.

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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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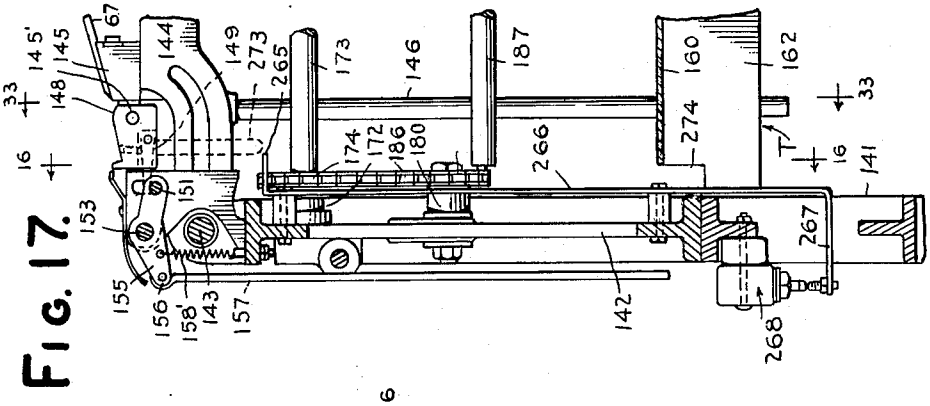

FIG. 17.

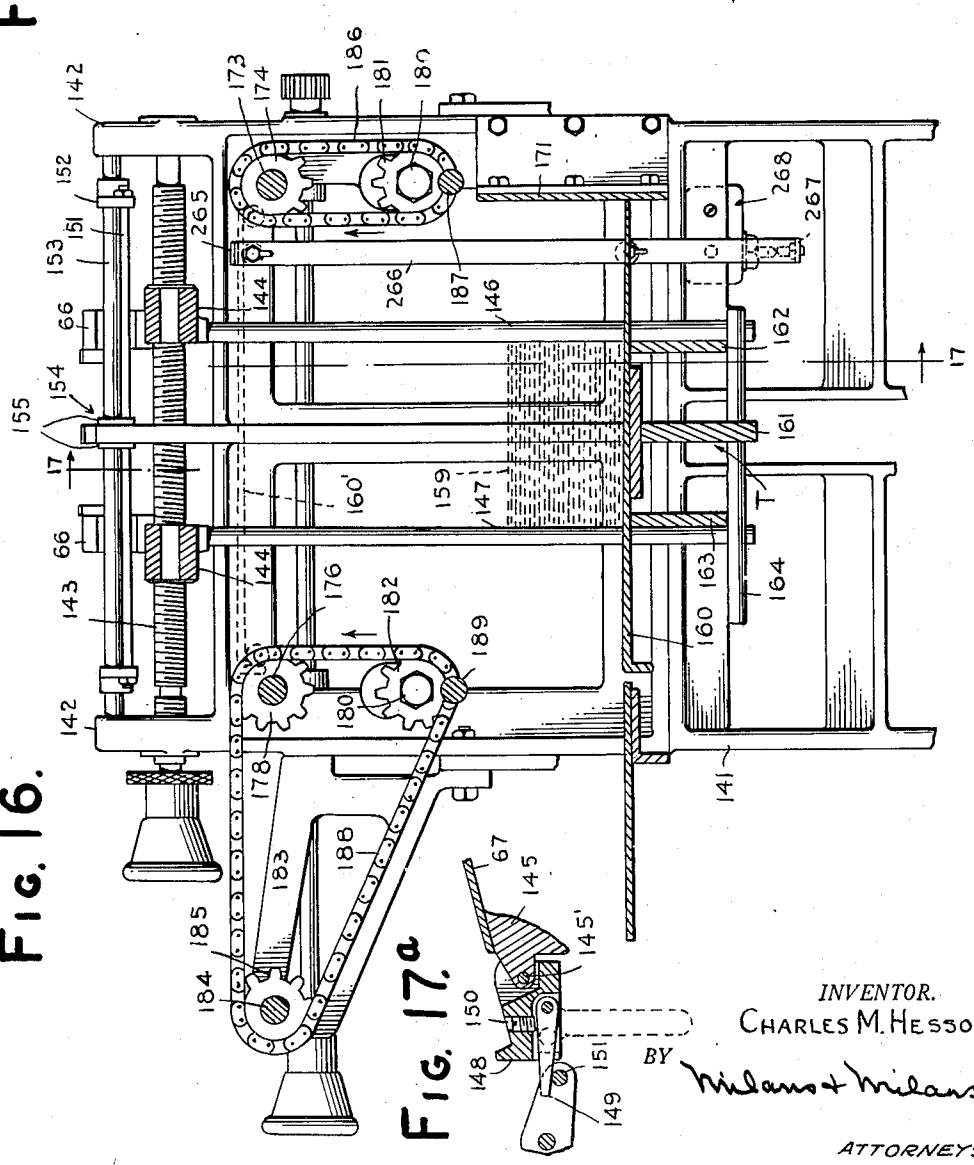

FIG. 16.

FIG. 17a.

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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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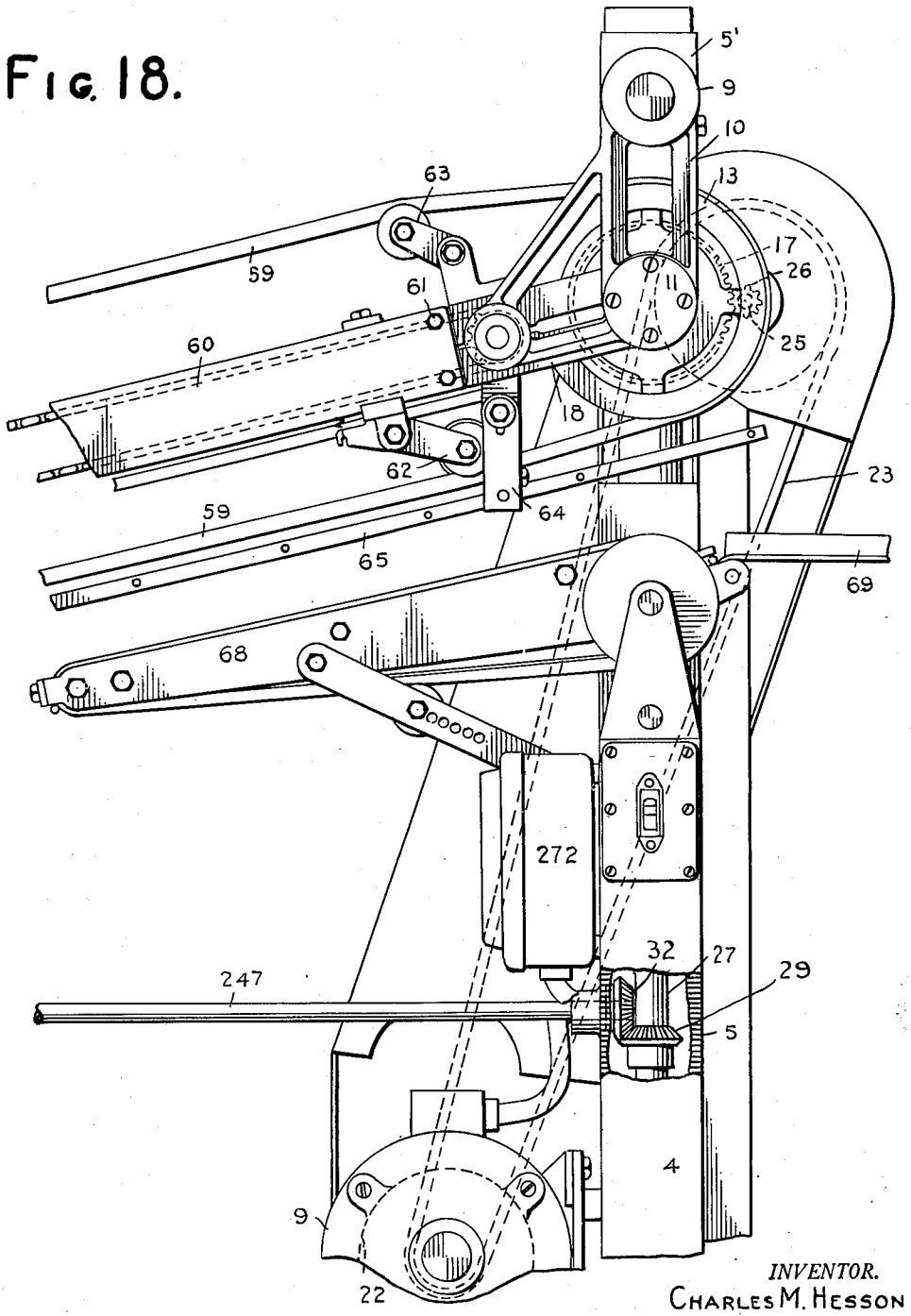
FIG. 18.



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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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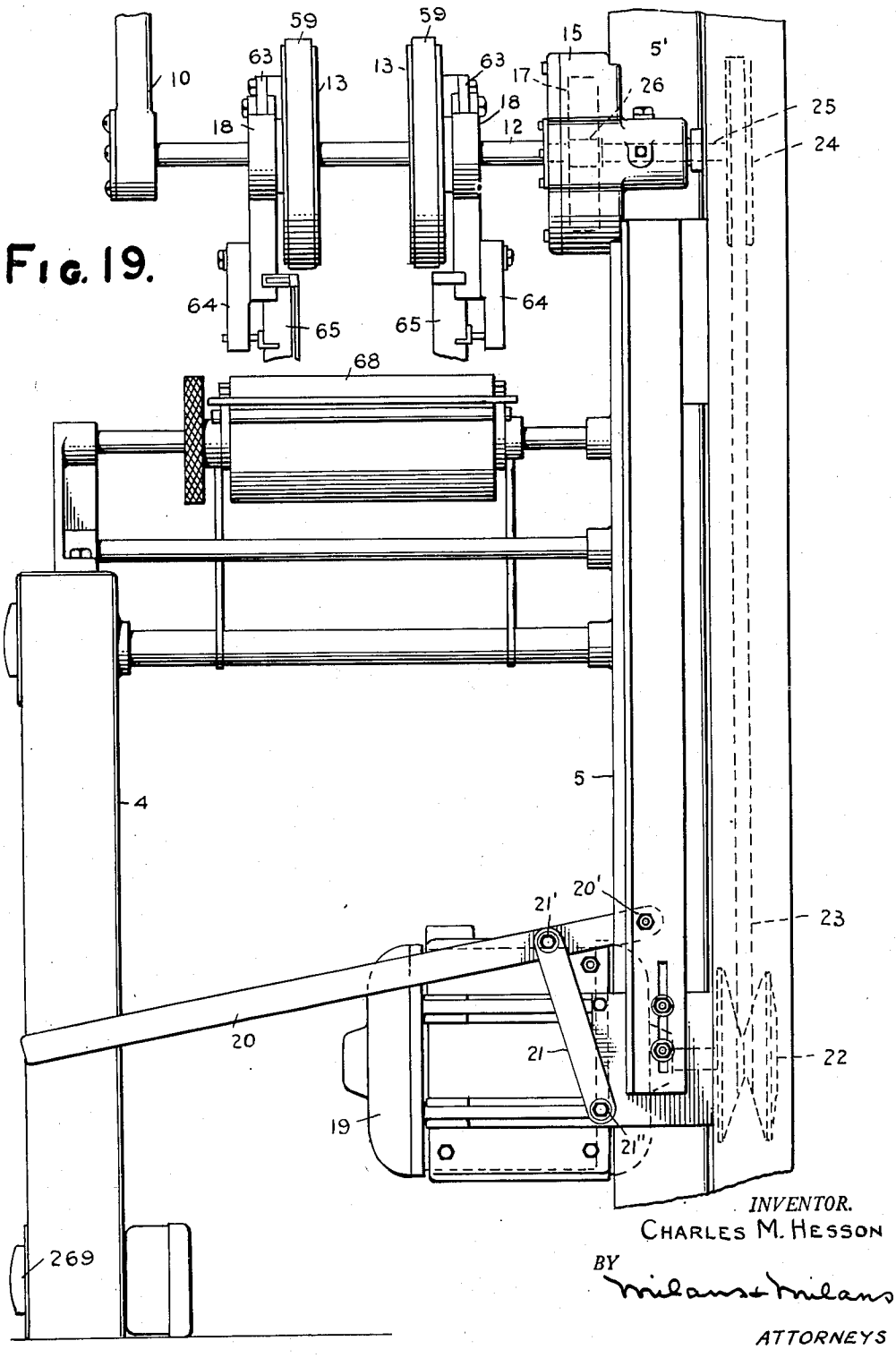
FIG. 19.



INVENTOR.
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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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FIG. 22.

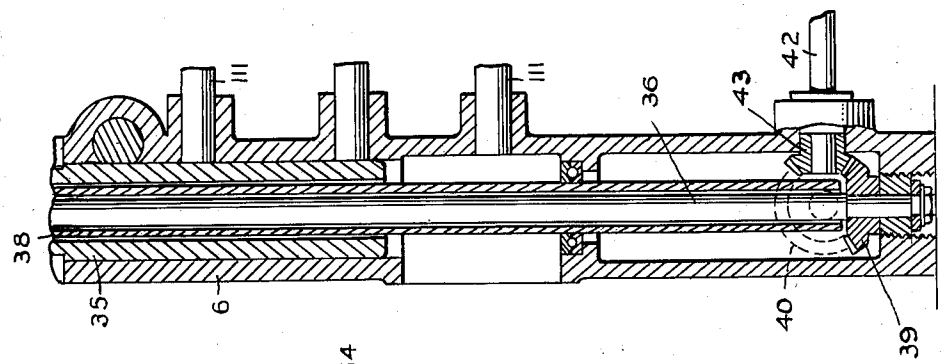

FIG. 21.

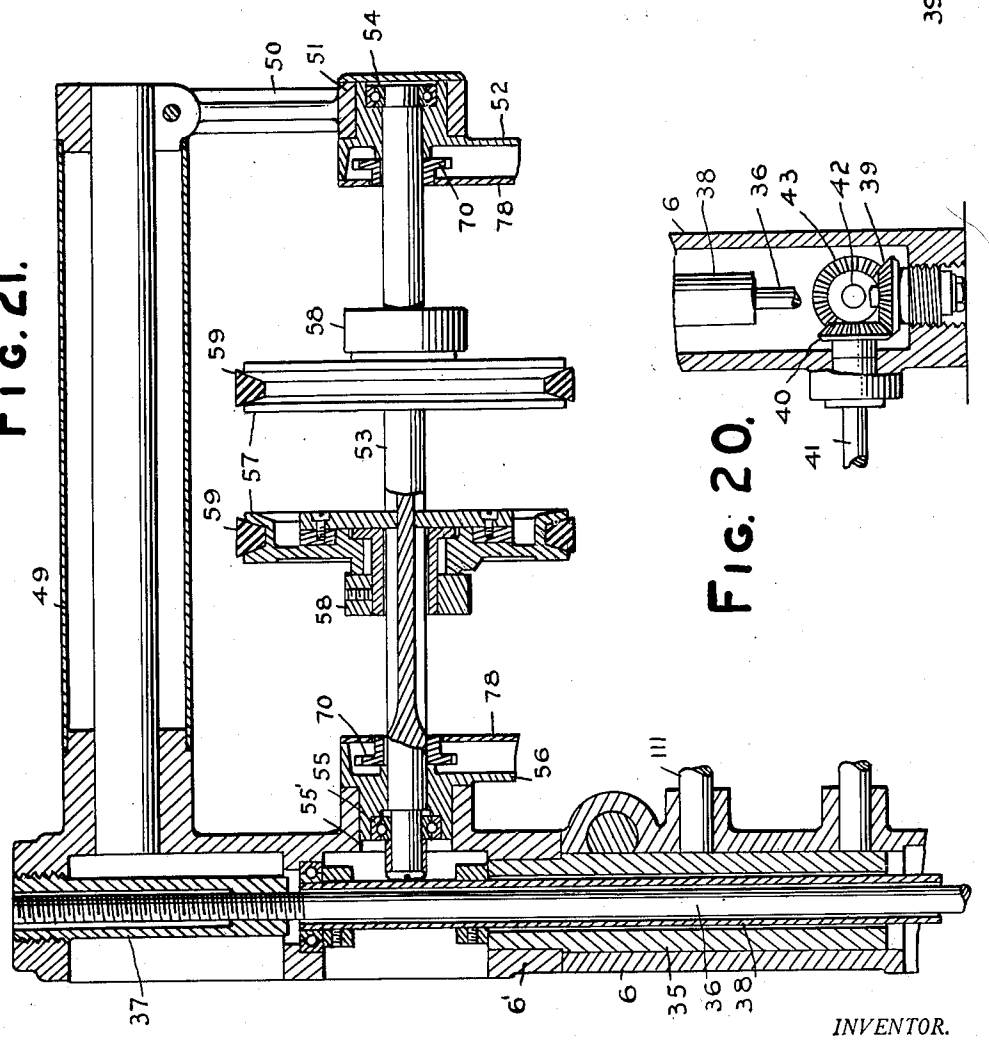

FIG. 20.

INVENTOR.
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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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FIG. 24.

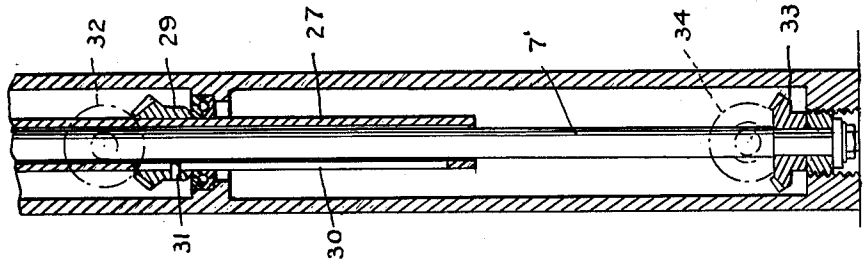


FIG. 25.

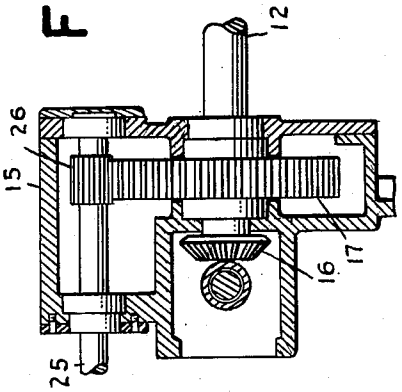
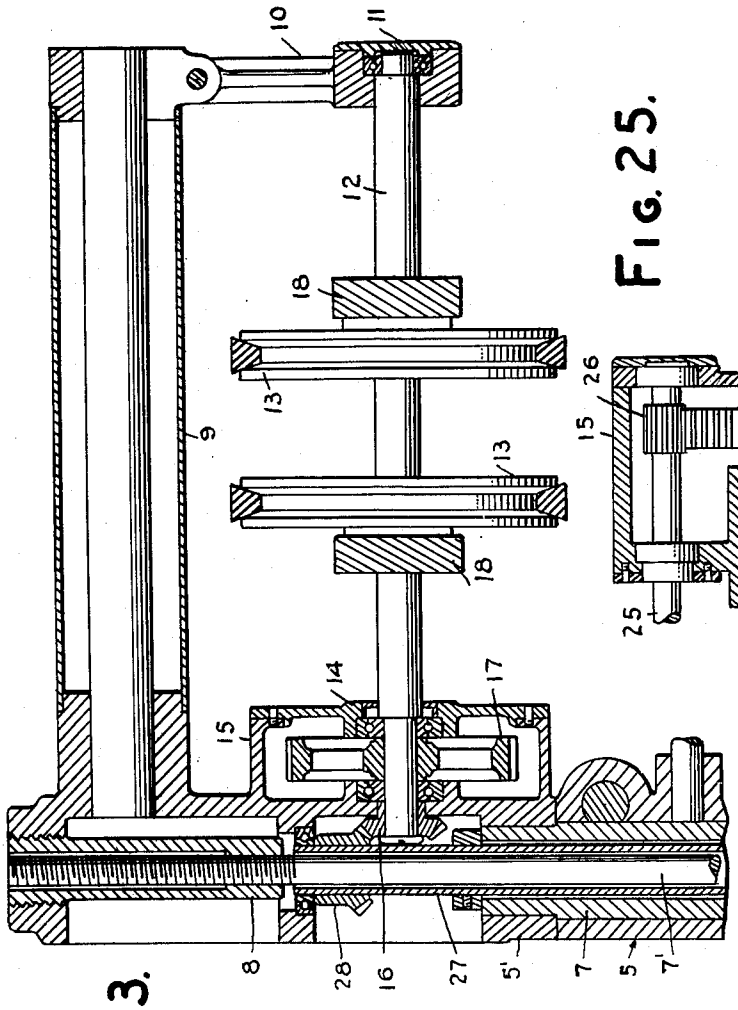


FIG. 23.



INVENTOR.
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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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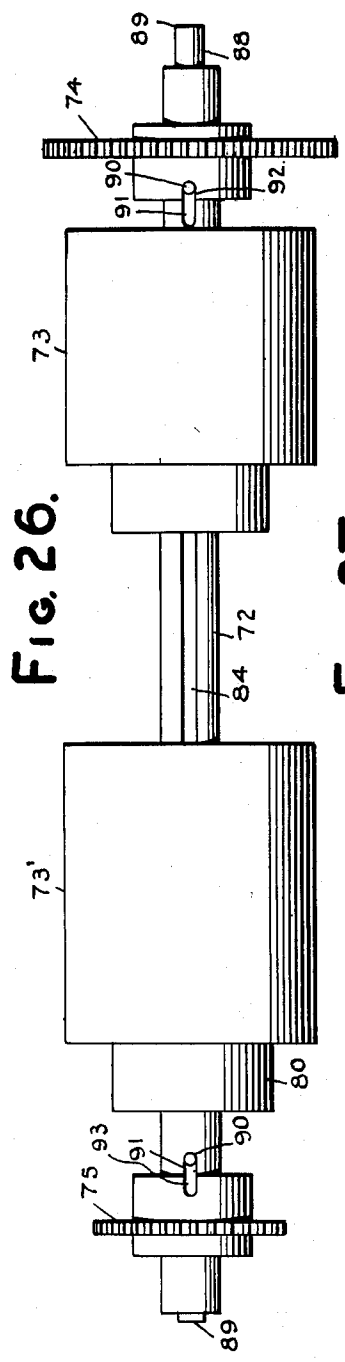

FIG. 26.

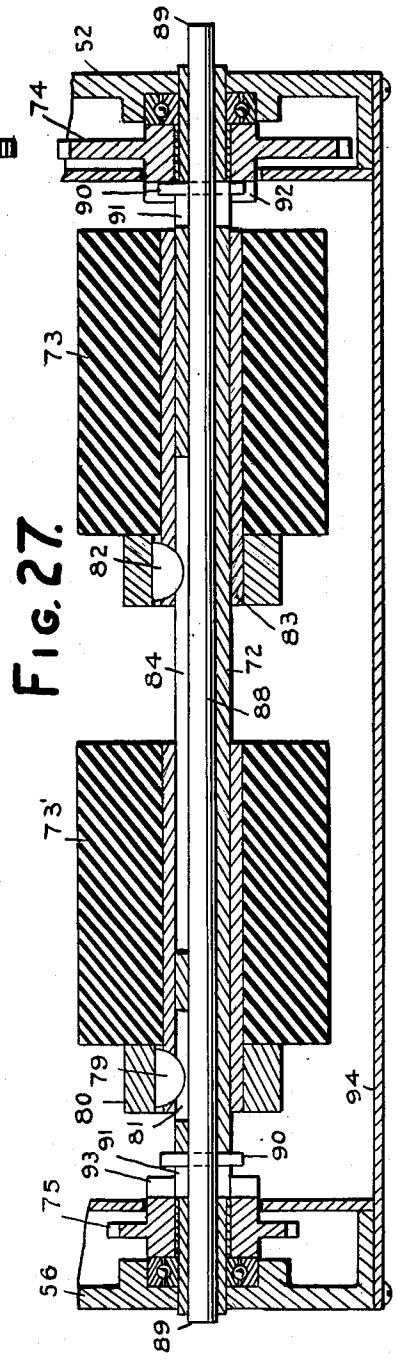

FIG. 27.

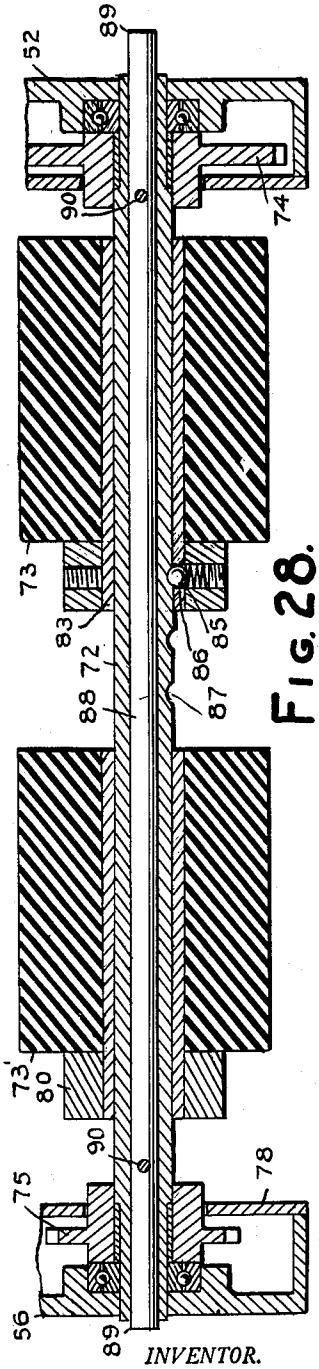

FIG. 28.

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Jan. 20, 1953 C. M. HESSON 2,626,075

CAN LABELING MACHINE

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FIG. 33.

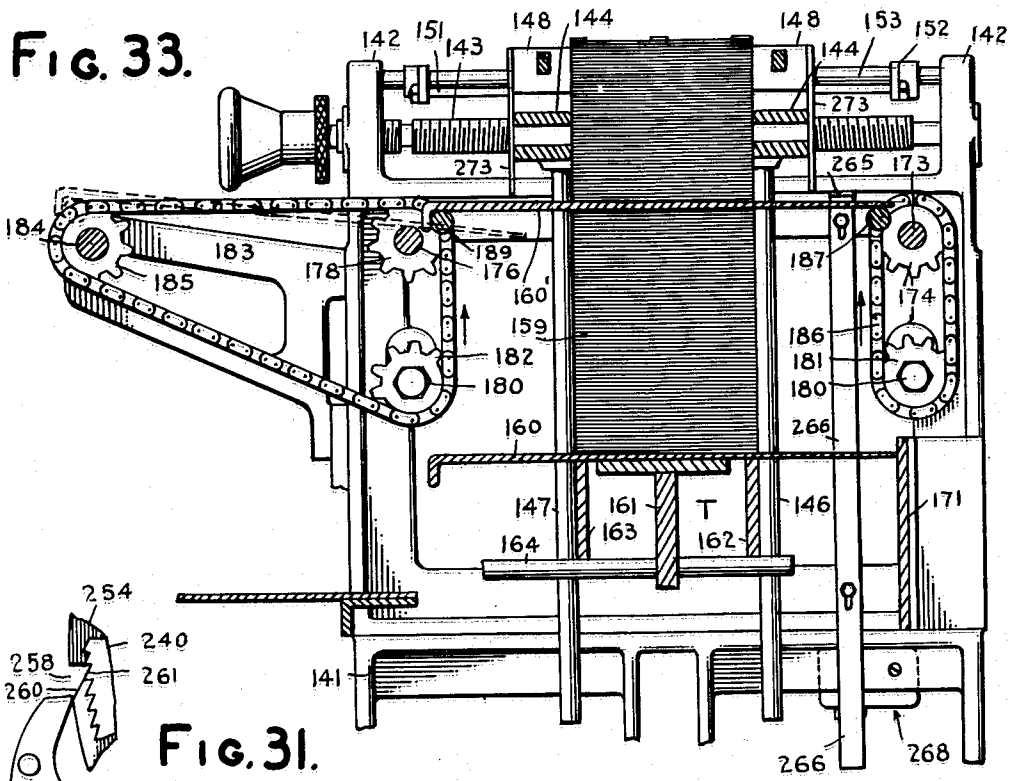


FIG. 31.

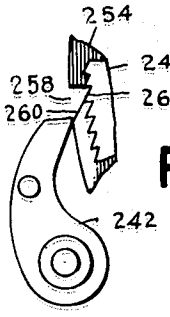


FIG. 29.

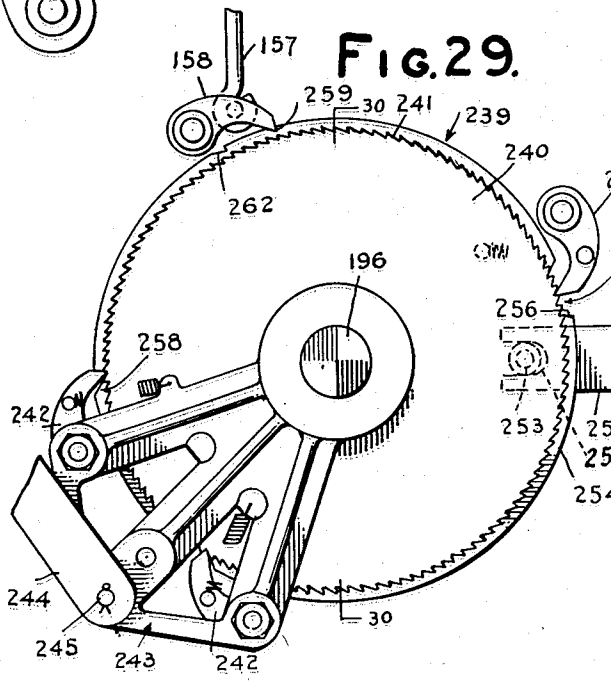
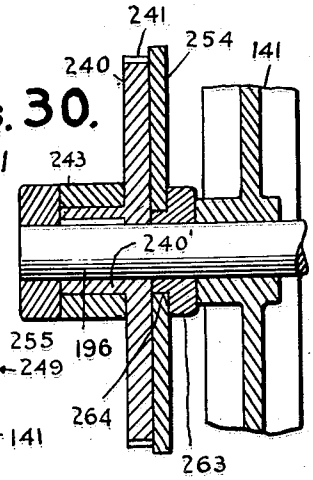


FIG. 30.



INVENTOR.
CHARLES M. HESSON
BY Milans & Milans
ATTORNEYS

Patented Jan. 20, 1953 2,626,075

UNITED STATES PATENT OFFICE

2,626,075

CAN LABELING MACHINE

Charles M. Hesson, Hanover, Pa., assignor to Chisholm-Ryder Company of Pennsylvania, Hanover, Pa., a corporation of Pennsylvania

Application May 5, 1950, Serial No. 160,320

7 Claims. (Cl. 216—58)

1

This invention relates to machines for applying labels to articles of cylindrical form and is designed primarily for placing labels on cans as they are conveyed through the machine over upwardly inclined runways.

The principal object of the present invention is to provide a can labeling machine wherein a new supply of labels may be added to the pack of labels being depleted without shutting down the operation of the machine.

Another object of the invention is the provision of a normal feed table and an auxiliary or continuous feed mechanism which may be operated selectively or simultaneously as the case may require during machine operation, or the act of replenishing the supply of labels, to maintain a proper feed of the pack of labels to a position for engagement by the cans as they pass through the machine, the auxiliary or continuous feed mechanism including endless conveyors which engage and elevate pallets upon which the labels are placed, and manual means to position the conveyors for operation or for the removal of pallets from the machine after a predetermined time.

A further object of this invention is to improve the construction of the mechanism for elevating the normal feed table which includes a constantly rotating drive shaft, novel ratchet mechanism for intermittently operating a driven shaft, elevating means for the normal feed table including a gear and rack construction, elevating means for the pallets including endless conveyor means, and clutches for connecting the driven shaft to these elevating means in a manner whereby the normal feed table and the auxiliary or continuous feed mechanism may be operated selectively or simultaneously to effect the proper advancement of the labels.

A still further object of the invention is the provision of a novel means for causing the ratchet mechanism to become active to effect the drive of the driven shaft and the advancement of the pack of labels as the labels are removed by the cans, this means including adjustable trip levers pivotally associated with the can runways, in the path of the cans moving through the machine and having operative connection with a pawl disengaging disc, associated with the ratchet mechanism, the trip levers being normally held in raised position by spring means but permitted to be moved downwardly by a can when the uppermost label is below a predetermined level, to move the disc and permit the ratchet mechanism to become active to effect the elevation of the pack of labels.

2

With the foregoing objects mentioned, and with other objects in view, which will be noted as the description proceeds, this invention comprises the novel construction and arrangement of parts described in the following specification and shown in the accompanying drawing, and while there is illustrated and described the preferred embodiment of the invention it will be understood that such changes may be made which will come within the scope of the appended claims.

In the drawings:

Figure 1 is a side elevation of the can labeling machine.

Figure 2 is a side elevation of the front end of the can labeling machine.

Figure 3 is an end elevation looking into the labeling machine where the cans enter.

Figure 4 is a sectional view through the front end of the labeling machine taken on line 4—4 of Figure 5.

Figure 4a is a longitudinal sectional view of the plate holder positioned in the front end of the machine.

Figure 5 is a top plan view of the front end of the can labeling machine.

Figure 6 is a detail plan view of the front end of the runway over which the cans pass on entering the can labeling machine.

Figure 7 is a front elevation of the label feeding mechanism.

Figure 8 is a rear view of the label feeding mechanism, shown in elevation.

Figure 9 is a sectional view looking into the front end of the label feeding mechanism, taken on line 9—9 of Figure 1.

Figure 10 is a sectional view looking into the rear end of the label feeding mechanism taken on line 10—10 of Figure 1.

Figure 11 is a top plan view looking down on the label feeding mechanism.

Figure 12 is a detail view looking down upon the label supporting table.

Figure 13 is a top plan view illustrating the drive for the label feeding mechanism.

Figure 14 is a sectional view taken on line 14—14 of Figure 13.

Figure 15 is a sectional view taken on line 15—15 of Figure 13.

Figure 16 is a sectional view of the label feeding mechanism taken on line 16—16 of Figure 17.

Figure 17 is a sectional view taken through one of the frame members of the label feeding mechanism, showing parts in elevation.

Figure 17a is a detail view of the trip lever shown in Figure 17.

Figure 18 is a front elevation of the rear end of the can labeling machine.

Figure 19 is an end view of the can labeling machine shown in elevation.

Figure 20 is a detail view showing part of the drive for adjusting machine parts.

Figure 21 is a sectional view taken through the front rear standard illustrating the supporting means for the can conveyors.

Figure 22 is a sectional view of the lower end of the standard illustrated in Figure 21.

Figure 23 is a sectional view taken through a standard at the rear of the can labeling machine illustrating the support and drive of the can conveying mechanism.

Figure 24 is a sectional view of the lower end of the standard illustrated in Figure 23.

Figure 25 is a sectional view illustrating the drive to the can conveying mechanism.

Figure 26 is a detail view of the can feeding and spacing rolls.

Figures 27 and 28 are sectional views of the feed and spacer rolls illustrated in Figure 3.

Figure 29 is a front elevation of the ratchet mechanism.

Figure 30 is a sectional view taken on the line 30—30 of Figure 29.

Figure 31 is an enlarged sectional view of a portion of the ratchet mechanism illustrated in Figure 29.

Figure 32 is a perspective view of a pallet.

Figure 33 is a sectional view through the label feeding mechanism taken on the line 33—33 of Figure 17, illustrating the manner of inserting labels therein.

Figure 34 illustrates the circuit employed in connection with the can stop mechanism.

Referring to the drawings there is illustrated a labeling machine which is quite similar in construction to that disclosed and described in my U. S Letters Patent No. 1,995.306, granted March 26, 1935, to which patent reference might be had for certain details of construction, such as the arrangement of the various drive shafts driven from a single source of power, adjustable features of the machine for accommodating cans of different sizes and other details not specifically set forth in the present drawings, and described in this specification.

In the drawings 1 indicates a platform upon which the labeling machine is mounted. the same being provided with casters 2 permitting the machine to be readily moved from place-to-place when desired.

Projecting vertically from the platform are the hollow standards 3, 4, 5 and 6 providing the main support for the super structure. consisting of the various elements for properly conveying the cans through the machine during labeling operations. Standards 5 and 6 are constructed in two sections so that the upper sections and associated parts carrying the conveyor mechanism may be adjusted relative to the runways or tracks to accommodate cans of different sizes, said structure to be later described.

On reference to Figure 23 the upper section 5' of the standard 5 has a depending tube 7 secured thereto and telescopically received in the lower section of said standard. Passing through this standard, and within the tube 7, is a rotatable shaft 7' having threaded connection with a nut 8 rigidly secured in the upper end of section 5' whereby rotation of the shaft 7' will elevate or lower the upper section and parts carried thereby as desired.

Extending laterally from the upper end of section 5' of the standard 5, is an arm 9 supporting a depending bracket 10 provided with a bearing 11 forming a support for the outer end of a rotatable shaft 12 on which are mounted, for rotation therewith, pulleys 13. The inner end of shaft 12 is received in bearings 14 seated in the walls of a gear box 15 and extends beyond the box to receive a beveled gear 16. Between the bearings 14, and secured to the shaft 12, is a gear 17 by which the shaft 12 is rotated. Castings 18, loosely connected to the pulleys 13, and carried by the shaft 12, project forwardly and act as supports for frame members to be later described.

Referring to Figures 18 and 19, 19 indicates the electric motor for driving the various operating parts of the labeling machine and is slidably mounted on standard 5 so as to be adjusted or raised vertically by means of the lever 20 and link 21, the lever being pivoted at one end as indicated at 20' to the standard 5, while the link is pivoted to the lever 20 at 21' and to the standard 5 at 21''. To the shaft of the motor 19 is secured a self-adjusting pulley 22 of a well-known design, driving an endless belt 23. The belt 23 is trained over a pulley 24, carried by a shaft 25. At the inner end of the shaft 25 is a gear wheel 26 which meshes with the gear wheel 17.

As far as the description has proceeded it will be noted that on starting the motor 19 a drive will be set up through the pulley 22, belt 23, pulley 24, gears 26 and 17 to rotate the pulleys 13, carried by the shaft 12 and that on adjusting the motor vertically the diameter of the adjustable pulley will vary and change the speed of drive of the belt, resulting in a change of operating speed of the pulleys 13 and other operating parts driven through connections with the shaft 12 to be later described.

Surrounding the rotatable shaft 7', and within the tube 7, is a hollow shaft 27 having a beveled gear 28 secured to its upper end and meshing with the beveled gear 16 whereby the hollow shaft 27 receives its drive from the shaft 12. Located within the standard 5 is a beveled gear 29 slidably receiving the lower end of the hollow shaft 27, there being a slot 30 provided in this hollow shaft whereby the gear 29 is coupled to the shaft for rotation therewith by means of the pin 31. Meshing with gear 29 is a second beveled gear 32 which provides the drive for the label feeding mechanism to be later described.

Secured at the lower end of the rotatable shaft 7' is a beveled gear 33 meshing with a similar gear 34.

Referring to Figures 21 and 22 there is illustrated the standard 6 having the upper section 6' adjustably associated therewith. The section 6' is similar to the section 5' in that it has a depending tube 35 secured thereto and telescopically received in the lower section of the standard. Passing through this standard 6 and within the tube 35 is a rotatable shaft 36 having threaded connection with a nut 37 rigidly secured in the upper end of the section 6' whereby rotation of the shaft 36 will elevate or lower the upper section and the associated parts as desired.

It will be noted that a filler sleeve 38 is positioned between the shaft 36 and the depending tube 35 in lieu of the hollow drive shaft 27 illustrated in connection with the standard 5.

Secured to the lower end of shaft 36 (Figure 22) is the beveled gear 39 meshing with a beveled

gear 40. In order that the shafts 7' and 36 may have like movement so as to produce the same adjustments of the sections 5' and 6' a coupling shaft 41 (Figure 1) is provided to which is secured the beveled gears 34 and 40. On referring to Figure 3 there is illustrated a manual means for adjusting sections 5' and 6' which includes a drive shaft 42 having at one end a beveled gear 43, meshing with the beveled gear 39 and at the other end a sprocket wheel 44 over which is trained the sprocket chain 45. The sprocket chain receiving its drive through the medium of the hand crank 46, shaft 47 and sprocket wheel 48. It will be apparent that on operation of the hand crank 46, section 6' of standard 6, and the parts carried thereby, will be adjusted through the medium of the sprocket chain 45, drive shaft 42, gears 43 and 39 and the shaft 36 through its threaded connection with the nut 37 secured in the section 6', and that a like movement will be imparted to section 5' through gear 40, shaft 41, gears 34 and 33 and shaft 7' through its threaded connection with the nut 8 secured in the upper section 5'.

Again, referring to Figures 21 and 22, the upper section 6', of standard 6, has an arm 49 extending laterally therefrom and the end of this arm has a depending bracket 50 provided with a bearing 51 forming a support for a pivoted hollow arm 52 of a frame in which feed rolls are supported to be later described.

A shaft 53 has one of its ends journaled in the end of the hollow arm 52, as indicated at 54, while the other end of the shaft is received in the bearing 55 of the hollow arm 56, the latter being pivoted as at 55' in the upper section 6' of standard 6. Keyed to the shaft 53, for rotation therewith, are the pulleys 57 and loosely connected with these pulleys are the castings 58 to which frame members are connected and which will be later described. Pulleys 57 are driven by the conveyor belts 59 which in turn are driven by pulleys 13.

On referring to Figures 1, 18 and 23, castings 18 which are carried by shaft 12 are shown as being directed forwardly and downwardly and attached to these castings in overlapping relation are the frame plates or members 60 which are secured to the castings 18 by bolts 61. The opposite ends of the frame plates or members are likewise secured to the castings 58 (see Figures 1, 2 and 4). The frame plates or members form the supports for the spring projected pressure rollers 62 which engage the conveyor belts 59 so that the latter are held in proper position to contact and feed the cans through the machine, there being mounted on the castings 18 and 58 suitable belt tightening rollers 63.

Suspended from the castings 18 and the frame plates 60 are the hangers 64 which support can guide rails 65, the guide rails being engaged by the can ends so that the cans are properly conveyed through the machine and passed the labeling station. After the cans have entered the labeling machine they pass over the runway, consisting of the track sections 66, track sections 67, directly over the labels, onto the fixing pad 68, which is in the form of an endless belt, and out of the machine onto the delivery chute 69.

Referring to Figure 21 the hollow arms 52 and 56 are shown as mounted on the shaft 53 for swinging movement and enclose the sprocket wheels 70 which are keyed to and receive their drive from the shaft 53. At the forward end of the arms there is provided the bearings 71 for

receiving the ends of the hollow shaft 72 on which are mounted the feed and spacer rolls 73 and 73', which rolls may be of the same or different widths. Loosely mounted on the hollow shaft 72 are the sprocket wheels 74 and 75 receiving their drive through the medium of sprocket chains 76 and 77 (Figure 5), which chains in turn are driven by the sprocket wheels 70 keyed to the shaft 53. To the inner sides of the hollow arms 52 and 56 are secured the cover plates 78.

As will be seen in Figure 26 the can feed and spacer rolls 73 and 73' are of different widths, while the can feed and spacer rolls 73 and 73' of Figures 27 and 28 are shown as being of the same width. Feed and spacer roll 73' is mounted on the hollow shaft 72 to rotate therewith and have a limited longitudinal movement thereon to present different portions of its outer surface in contact with the can being fed into the machine. To accomplish this result the key 79, carried by a sleeve 80, forming a part of the feed roll 73', engages in the slot 81 of the hollow shaft 72. Feed and spacer roll 73, also mounted on the hollow shaft 72 to rotate therewith, is adapted to be adjusted to different positions thereon when feeding in cans of various types, such as paint cans having bail receiving sockets or ears.

The key 82, carried by a sleeve 83, forming a part of the feed and spacer roll 73, engages in the slot 84 permitting longitudinal movement of the feed and spacer roll relative to the shaft 72 and in order to hold the feed and spacer roll 73 in the adjusted position, a spring ball latch 85 is provided, the ball being contained in an aperture 86 in the sleeve 83 and adapted to be seated in one of the recesses 87.

It will be noted that the sprocket wheel 74 is of larger diameter than sprocket wheel 75 so that the feed rolls may be rotated at different speeds when handling cans of different diameters.

In order to properly space the cans before delivery to the conveyor belts 59 is it necessary to drive the feed and spacer rolls at a surface speed less than that at which the conveyor belts travel and when handling cans of large diameter it is required that the speed of the feed and spacer rolls be further reduced to accomplish the proper feed of such larger cans. Two different sprocket and chain drives 76 and 77 have been provided to rotate the feed and spacer rolls 73 and 73', as required. The sprocket and chain drive 76 including the larger sprocket wheel 74 will produce the slower drive or rotation of the feed and sprocket rolls 73 and 73'.

In order to accomplish the change of speed of rotation of the feed and spacer rolls the following clutch construction is employed.

Within the hollow shaft 72 is a shiftable rod 88, having its ends 89 extending beyond the pivoted arms 52 and 56 so as to be manually operated to change the position thereof and effect a change in speed of the feed and spacer rolls, to be later described. Rod 88 is provided with a pin 90 adjacent each end thereof, these pins forming one part of a clutch mechanism and pass through slots 91 in the hollow shaft 72 to actively engage and rotate the same. On shifting the rod 88 to the right, as viewed in Figure 27, a pin 90 will enter the recess 92 in the hub of the sprocket 74 and the feed rolls will be clutched for drive to said sprocket wheel. A reversal of the movement of rod 88 will cause the clutching in of sprocket wheel 75 as a pin 90 will enter the recess 93 in the hub of the sprocket wheel 75. Attached to the

ends of the pivoted arms 52 and 56 is a guard plate 94.

As a means to adjust the frame comprising the pivoted arms 52 and 56 and the guard plate 94, so that the feeding and spacing rolls may have proper contact with cans being fed into the machine, the upper section 6' of the standard 6 and the depending bracket 50 are provided with like constructions consisting of lugs 95 (see Figures 2 and 5) through which extend adjusting screws 96. It will be noted in Figure 2 that the head of screw 96 contacts a lug 97 projecting laterally from the lower edge of the pivoted arm 52 and that the end of the screw engages a lug 98 projecting laterally from the upper edge of the pivoted arm 52.

Nuts 99 are contained on the screw 96, engaging the lug 95 and on adjusting these nuts on the screw the screw will be moved and through its contact with lug 98 will adjust the frame so as to hold or adjust the feeding rolls in proper position to contact and feed a can into the machine and not fall to a point where entrance of a can is prevented.

A spring 100 surrounds each of the adjusting screws 96, having one end engaging the lug 95 and the other end contacting the head of the adjusting screw. With the spring 100 in the position shown the pivoted arms 52 and 56, as well as the feeding and spacing rolls carried thereby, will be permitted to move vertically to a limited degree.

In Figures 2, 3 and 4, 101 indicates a cradle frame comprising the spaced brackets 102 and the cross tie rod 103. Each bracket consists of a rear vertical section 104, top section 105, bottom section 106, front section 107, central vertical section 108 and rear extension 109, the latter forming a support 110 at its extreme end for the track 66. Spanning the space between the standards 3 and 6, are the bracket-supporting rods 111 which pass through the eyes 112 forming a part of the rear vertical section 104. Extending between the rear extensions 109, and mounted in the ends thereof, is a rod 113 providing a pivotal support for the yielding spring plates 114 and the plate holders 115. The plate holders 115 are recessed at 116 to receive bow springs 117 which yieldingly support the spring plates 114, the spring plates being secured to the forward end of the plate holders by screws 118. The forward end of the plate holders 115 rest upon a transverse rod 119 supported in the top section 105 of the brackets 102.

Extending forwardly from the plate holders are lugs 120 upon which the rear ends of the hinged plates 121 rest. These plates 121 are secured to hinge members 122 having pivot eyes 123 surrounding the cross tie rods 103. Also supported by the cross rods 103 is the can feed platform or chute 124 having adjustably associated therewith can guides 125.

Positioned between the brackets 102, and supported by cross rods 126, is a can stop mechanism for preventing the entrance of cans in the machine when the supply of labels is depleted to a predetermined extent, the same comprising a pair of plates 127 apertured to receive the cross rods 126 and spaced to accommodate therebetween a segmental gear 128 pivotally mounted on a pin 129. The gear 128 is provided with groups of teeth 130 and 131, the latter teeth being engaged by a rack 132 forming a part of the movable core 133 of an electric solenoid 134, attached to the lower ends of the plates 127. A guide 135 is employed to hold the rack 132 in engagement with the teeth 131. The teeth 130 engage and operate the rack bar 136 which is adapted to move vertically through the guides 137 and 138. Connected to the solenoid 134 and its movable core 133 is a spring 139 functioning to hold the rack bar 136 elevated and position the upper end thereof in the path of the cans being fed to the machine. The solenoid 134 operates to move the rack bar 136 downwardly removing the upper end of the rack bar from the path of the incoming cans and functions under the control of an electric circuit to be later described.

Extending upwardly from the platform 1 are the end frame members 140 and 141 of the label feeding mechanism, the upper ends of these frame members being provided with extensions 142 through which pass the adjusting screws 143. Mounted on these adjusting screws, and having threaded engagement therewith, are the longitudinally extending bars 144 which may be adjusted towards or away from one another depending upon the size of the cans being labeled. The bars 144 provide the supports for the blocks 145 and to these blocks are attached the track sections 67.

Depending from one of the bars 144 are the rear guide rods 146 acting as back stops or guides for the pack of labels, while guide rods 147 extend from the other or front bar 144. Pivotally attached to the blocks 145 at 145' are the trip levers 148 which are positioned along the side edges of, and slightly below, the top labels of a pack during normal operation, these trip levers being provided with adjustable fingers 149, held in adjusted position by set screws 150. The adjustable fingers 149 operatively engage a transverse shaft 151 having its ends set in rearwardly extending arms 152 attached to the shaft 153. Midway between the arms 152 is a bell crank lever 154 comprising plates 155 through one end of which passes the shaft 151, the other end of the bell crank lever having connected thereto as at 156 a rod 157. This rod 157 operates a pawl 158 of a ratchet mechanism to be later described. Spring 158' normally holds the trip levers 148 in their elevated position due to its connection with the bell crank lever 154.

In many instances it is found that one edge of a stack of labels is higher than the other due to the type of printing thereon and in order that both of the trip levers may be properly positioned relative to the labels, and both fingers of said trip levers simultaneously engage the transverse shaft 151, it is necessary to provide the adjustment set forth.

In Figures 12 and 16 a stack of labels 159 is disclosed as resting upon a pallet 160, the latter being supported upon the normal feed table T comprising the longitudinally extending transversely spaced table sections 161, 162 and 163 and extending through the table section 161, intermediate the ends thereof, are the rods 164 upon which the table sections 162 and 163 rest and are adjusted transversely thereon by springs 165, the adjustment of these sections being limited by contact of the table sections 162 and 163 with the guide rods 146 and 147. The guide rods 146 and 147 being adjusted, as previously described, according to the width of the labels being used. The table construction just described is pivoted to a head block 166, formed integral with the rack bar 167, so that the table may be tilted as required to properly present the labels to a can. This adjustment of the table is accomplished by providing the table section 161 with a depending lug

168 and pivotally connecting this lug to the head block 166 as indicated at 168', there being an adjusting screw 169 upon which the table rests and is held in such position by a spring 170. To the rear of the guide rods 146, and attached to the end frame members 140 and 141 of the labeling mechanism, is a stop plate 171 for correctly positioning the pallets 160 with reference to the table T and the conveyor chains to be later described.

As a means for elevating the auxiliary label supports or pallets the following structure is employed:

Journaled in like bearings 172, in the frame members 140 and 141, is a rotatable shaft 173 having keyed thereto the sprocket wheels 174, the shaft 173 having one of its ends passing through the frame 140 and keyed thereto is a sprocket wheel 175. Positioned forwardly of the shaft 173 is another rotatable shaft 176 journaled in like bearings 177, in the frame members 140 and 141, and having keyed thereto sprocket wheels 178, the shaft 176 having one of its ends passing through the frame member 140 and keyed thereto is a sprocket wheel 179. Also mounted in the frame members 140 and 141 are the stub shafts 180, rotatably carrying the sprocket wheels 181 and 182. Extending forwardly of the frame members 140 and 141, and attached thereto are the brackets 183 forming the support for the rotatable shaft 184, carrying the sprocket wheels 185. Trained around the sprocket wheels 174 and 181 are the sprocket chains 186 to links of which is secured a rung 187 adapted to provide a support for the inner end of a pallet 160.

Trained around sprocket wheels 178, 182 and 185 are sprocket chains 188, similar in form and function as sprocket chains 186, and to links thereof is secured a rung 189 adapted to provide a support for the outer end of a pallet 160. As the pallets are supported on the rungs 187 and 189 any movement of the chains in the direction indicated by the arrows will elevate the pallet and labels supported thereby.

Trained around sprocket wheel 175 is a sprocket chain 190 receiving its drive from a sprocket wheel 191. Trained around sprocket wheel 179 is a sprocket chain 192 receiving its drive from a sprocket wheel 193. Adjustably mounted in the frame members 140 and 141 are the sprocket chain tightening sprockets 194. Sprocket chains 190 and 192 are driven at the same rate of speed by gearing to be later described, so that the pallets 160 are moved vertically by the rungs 187 and 189 and retained in a horizontal plane.

Extending longitudinally of the labeling machine, and journaled in a bearing 195, is a driven shaft 196 intermittently rotated by a ratchet mechanism to be later described.

Loosely mounted on the drive shaft 196 is a rotatable sleeve 197 passing through a bearing 198, provided in one of the extensions 199 of the frame members 140 and 141, the sleeve having secured thereto the beveled gear 200, a gear 201 meshing with the teeth of the table rack bar 167 and a clutch element 202. Keyed to the shaft 196 to rotate therewith, and slide thereon, is a second clutch element 203, the same being adapted to engage the clutch element 202 to thereby set up a drive between the shaft 196 and the rotatable sleeve 197.

Arranged parallel with the shaft 196 is a rotatable shaft 204, journaled in bearings 205 also provided in the frame extensions 199. This shaft 204 has one of its ends extending through the end frame member 140 and has keyed thereto the sprocket wheel 191. Loosely mounted on the shaft 204, and confined by the fixed collars 206, is a spool 207. As a means for operating the clutch element 203 so as to engage the clutch element 202, there is provided a lever 208 having operative connection with the clutch element 203 and pivotally associated at one end with the spool 207. In order that the lever may hold the clutch 203 in declutched position a latch bar 209, pivoted to the lever, is employed which sets in a recess 210 of the bar 211. 212 indicates a hand wheel carried by the shaft 213, passing through bearings 214 and 215 and being provided at the end thereof with a beveled gear 216 meshing with the gear 200. It will be seen that on engaging the clutch element 203 with the clutch element 202, and the shaft 196 rotated, a drive will be set up through the clutch elements, sleeve 197, gear 201 and rack bar 167 to elevate the table T and pallet associated therewith, and that the table may be elevated or lowered manually by means of the hand wheel 212, the shaft 213 and beveled gear 216 meshing with the gear 200.

As a means for elevating the auxiliary label supports or pallets 160, the following structure is provided: 217 indicates a hollow shaft, in which the end 218 of the shaft 196 is journaled. This hollow shaft 217 passes through a bearing 219 forming a part of the frame extension 199 of the frame member 140 and to one end of this hollow shaft is secured the clutch element 220 and at the other end thereof formed integral therewith is the beveled gear 221. Also mounted on the hollow shaft 217 is a gear 222 having a hub 223 through which passes a pin 224 coupling the gear 222 with the hollow shaft and the driven shaft 225. On the end of the driven shaft is the sprocket wheel 193. Gear 222 meshes with gear wheel 226 keyed to the shaft 204. Keyed to the shaft 196, to rotate therewith and slide thereon, is a second clutch member 227, the same being adapted to engage the clutch element 220 to thereby set up a drive between the shaft 196 and the hollow shaft 217. As a means for operating the clutch element 227 there is provided a lever 228 having operative connection with the clutch element 227 and pivotally associated at one end with the spool 207. In order that the lever 228 may hold the clutch element 227 in declutched position a latch bar 229, pivoted to the lever 228, is employed which sets in a recess 230 of the bar 211. A spring 231 surrounds the pivot pin 232 for the latch bars 209 and 229 and is designed to force the levers 208 and 228 in clutch-applying position when the latch bars are raised. Indicated at 233 is a hand wheel for rotating the shaft 234 passing through bearings 235 and 236. At the end of the shaft 234 is a beveled gear 237 meshing with the gear 221.

It will be seen that on engaging the clutch element 227, with the clutch element 220 and the drive shaft 196 rotating, a drive will be set up through the clutch elements, sleeve 217, and gears 222 and 226 to drive the shafts 207 and 225 at the same speed and likewise drive the sprocket chains 190 and 192. It can also be seen that the sprocket chains 190 and 192 may be driven manually by means of the hand wheel 233, shaft 234 and beveled gear 237 meshing with the gear 221.

In Figures 9 and 29 a ratchet mechanism 239 is disclosed for imparting an intermittent rotary movement to the shaft 196. Secured to the shaft 196 is a ratchet wheel 240 having ratchet teeth 241 adapted to be engaged by the holding pawl

241' and the spring biased ratchet-advancing pawls 242, pivotally mounted in a pawl carrying frame 243, the latter being loosely mounted relative to the ratchet wheel 240 for oscillatory movement.

The pawl carrying frame 243 receives its drive through a reciprocating shaft 244 being pivotally connected therewith, as indicated at 245. The opposite end of the reciprocating shaft 244 has connection with an eccentric 246 rotating through the medium of the continuously driven shaft 247 and the associated chain and sprocket gearing 248. This driven shaft 247 is operatively connected with the gear 32 driven by the sleeve 27 contained within the standard 5 and in addition to providing the drive for the ratchet mechanism extends therebeyond to be operatively connected with the glue supplying mechanism 249 which functions to apply spots of glue on the cans as they pass through the machine.

Pivotally attached to the frame member 141 is a bell crank lever 249' having arms 250 and 251, the end of the arm 250 being bifurcated at 252 to receive a pin 253 carried by a control disc 254 mounted in back of, and adjacent to, the ratchet wheel 240. This bell crank lever 249' is designed to rotate the control disc under normal operation of the machine in an anti-clockwise direction with the assistance of the spring 255. The movement of the control disc in an anti-clockwise direction is limited by the holding pawl 241' engaging the wall 256 of the cut-out portion 257 in the periphery of the disc. The control disc is notched at 258 to receive and control the action of the ratchet wheel advancing pawls 242. Holding pawl 158, operatively connected to the rod 157, engages in the notch 259 to hold the ratchet mechanism inactive and stop the feed of labels when the pack of labels has been raised to the desired height and slightly above the trip levers 148. As the labels are removed from the top of the pack by the cans the trip levers 148 are moved downwardly by can contact and through the associated mechanism, previously described, the holding pawl 158 is removed from the notch 259, allowing the control disc 254 to move in an anti-clockwise direction as indicated by the arrows. The movement of the control disc, as described, permits the advancing pawls 242 to actively engage the next ratchet tooth to advance the ratchet wheel the distance of one tooth and drive the label feeding mechanism to advance the pack of labels, the pawls 242 during this operation also return the control disc to its original position to be again held by the holding pawl 158. This action of the ratchet mechanism is repeated until the labels have again reached the desired height to be contacted by the cans.

As will be seen on referring to Figure 31, the advancing pawl 242 merely slides on the surface 260, of the notch 258, and the surface 261 of a ratchet tooth 241 when the ratchet mechanism is inactive and the control disc 254 is held by the holding pawl 158. There are times when it is desirable to manually disengage the rachet mechanism from the label feeding means in order to manually operate the latter and this is accomplished by grasping the bell crank arm 251 and moving it in an anti-clockwise direction as indicated by the arrows. On moving the bell crank lever, as stated, the control disc 254 will be rotated in a clockwise direction and the pawl 158 will enter the notch 262. In this position of the control disc the pawls 241' and 242 will be removed from the recesses or notches of the control disc 254 and ride on the periphery of said control disc.

In Figure 30 it will be noted that the ratchet wheel 240 is mounted directly on the shaft 196 to rotate the same and is provided with a hub 240' for loosely receiving the pawl carrying frame 243. The ratchet wheel 240 is held spaced from the frame member 141 by a collar 263 having a hub 264 upon which the control disc rotates.

On referring to Figure 16 there is disclosed, in dotted lines, a pallet 160' which has been raised by the rungs 187 and 189 and the conveyor chains 186 and 188 to a point where the same is ready to be removed from the machine by the operator. On rotation of the hand wheel 233, after placing the clutch element 227 in declutched position, the sprocket chains 188 and their associated rung will function to remove the pallet from between the labels and out of the machine. Should the operator neglect to remove the pallet and the label feeding mechanism continues to operate, the pallet 160' during its course of further vertical travel will engage the arm 265 of a sliding switch operating rod 266 thereby elevating this rod. The arm 265 extends at right angles to the sliding switch operating rod 266 and is in the path of movement of the pallet. The lower end of the switch operating rod is provided with a horizontal extension 267 carrying an adjustable contact screw engageable with a micro-switch 268 to open the same. The manually operated switch 269 in the standard 4, the micro-switch 268 and the solenoid 134 are placed in series in an electric circuit comprising conductors 270 and 271, receiving current from the main switch box 272. When the micro-switch 268 is thrown in open position by movement of the switch operating rod 266, being engaged by the pallet, the circuit to the solenoid is opened and the solenoid de-energized, permitting the spring 139 to raise the rack bar 136 and project the upper end thereof into the path of oncoming cans so as to discontinue the feed of cans into the machine. It is preferred to raise the rack bar 136 by spring means rather than the solenoid so as to avoid damaging the can which may happen to be directly over the rack bar when the latter is elevated.

In addition to providing the means just described for discontinuing the feed of cans into the labeling machine the trip levers 148 have attached thereto depending fingers 273 which may be engaged by the pallet to elevate the trip levers and leave the ratchet mechanism inactive.

When using the normal feed table T alone for advancing the labels to the label applying station there is means provided to prevent the table from being raised beyond a predetermined height. In order to discontinue the feed of the normal feed table at the desired time, table sections 162 and 163 are provided with abutments 274 which will engage with the transverse shaft 151 to prevent the latter from being moved in a downward direction by the trip levers 148 thereby holding the ratchet mechanism in an inactive state.

On setting up this label machine for operation the switch in the main switch box 272 is closed for furnishing current to the motor 19, to drive the different operating mechanisms and to supply current to the circuit including the conductors 270 and 271 to energize the solenoid 134 whereby the rack bar 136 is lowered to remove the upper end thereof from the path of the incoming cans

being fed to the labeling machine. At this point, as a means of testing whether the advancing pawls **242** are in proper position to operate the label feeding mechanism, the operator depresses one of the trip levers **148** to see that feed is accomplished. After completing the test the clutch elements **203** and **227** are moved to de-clutching position, the normal feed table T lowered to full extent by operating the hand wheel **212** and the pallet-supporting rung **189** is moved to a point out of the machine adjacent the sprocket wheels **185** by the operation of the hand wheel **233**. The clutch elements **203** and **227** are now placed in clutching engagement with their respective clutch elements **202** and **220** and a pallet **160** is placed upon the normal feed table T, as illustrated in Figure 16 or, if preferred, the supporting rung **189** may be moved as just described after the clutch elements have been engaged with one another.

As will be noted in Figure 32 the pallet **160** has a depending flange *a* at its front edge adapted to be engaged by the rung **189** in the act of removing the pallet from between the labels and out of the machine, and is wedge-shaped as indicated at *b* so as to be easily withdrawn from between the labels of a pack and is provided with elongated slots *c* permitting the back end of the pallet to pass beyond the guide rods **146** and abut against the stop plate **171**. Having now positioned the pallet upon the normal feed table, approximately 2000 labels are placed thereon and manually raised through the operation of hand wheel **212** to label-applying position wherein the uppermost labels are slightly above the top of the trip levers **148**. The hand wheel **233** is now turned to place rungs **187** and **189** in position to engage the underside of, and raise the pallet slightly above, the normal feed table T, the latter being lowered to receive another pallet and additional packs of labels. Rungs **187** and **189** have like movements to simultaneously contact the underside of a pallet due to the gear drive including the meshing gears **222** and **226** and the associated chain and sprocket gearings. Having provided the necessary labels, cans are placed on the chute **124** to be fed into the machine in spaced relation by the feed and spacer rolls **73** and **73'** to the conveyor belts **59** over the yielding spring plates **114**, which prevents crushing the cans, and onto the track sections **66** and **67**, the latter track section being over the pack of labels where a can will pick-up the uppermost label, pass on its way over the fixing pad **68** and out of the machine. As the labels are removed from the pack the can ends will engage the trip levers **148** to depress the same and set the ratchet mechanism in motion to drive the auxiliary or continuous feed mechanism, previously described, to again elevate the labels to label-applying position.

As will be seen on referring to Figure 33, the first supply of labels have been partly removed by the cans passing through the machine and a second supply added thereto, placed upon another pallet and supported by the normal feed table T. In this instance both the normal feed table T and the auxiliary or continuous feed mechanism are in operation to advance the labels, as the clutch members **203** and **227** have been placed in clutching engagement with their respective clutch members **202** and **220**. The upper pallet is shown as having reached a point in its vertical travel where the same is to be removed, as previously described, by the manual operation of the hand wheel **233** to a position illustrated in dotted lines. If the operator fails to remove the pallet at this time and the feed of labels is continued the pallet will move the sliding switch operating rod to open the micro-switch and prevent the entrance of cans into the machine, as previously stated, and will also engage the fingers **273**, attached to the trip levers **148**, to hold the latter in elevated position, retaining the ratchet mechanism inactive and stopping the feed of labels.

Having fully described my invention and the operation thereof what I claim as new and desire to secure by Letters Patent is:

1. A can labeling machine comprising a runway including track sections, a label applying station in said runway, a feed table, and means operable intermittently to actuate the feed table to feed labels to said applying station, said actuating means being controlled by the height of a pack of labels relative to said applying station and comprising a ratchet mechanism, a control disc for the ratchet mechanism, a holding pawl for the control disc, means normally urging said disc in a direction to effect actuation of said ratchet mechanism and cause feeding of labels to said applying station, operating means for releasably maintaining the holding pawl in engagement with the control disc, and a pivoted trip lever associated with the track sections at the label applying station engaging the operating means for the holding pawl, whereby cans on passing through the machine engage and depress the trip lever when the height of the label pack permits so as to raise the holding pawl to permit movement of said control disc in the aforesaid actuating direction and thereby permit ratchet operation and feeding of the labels to the label apply station.

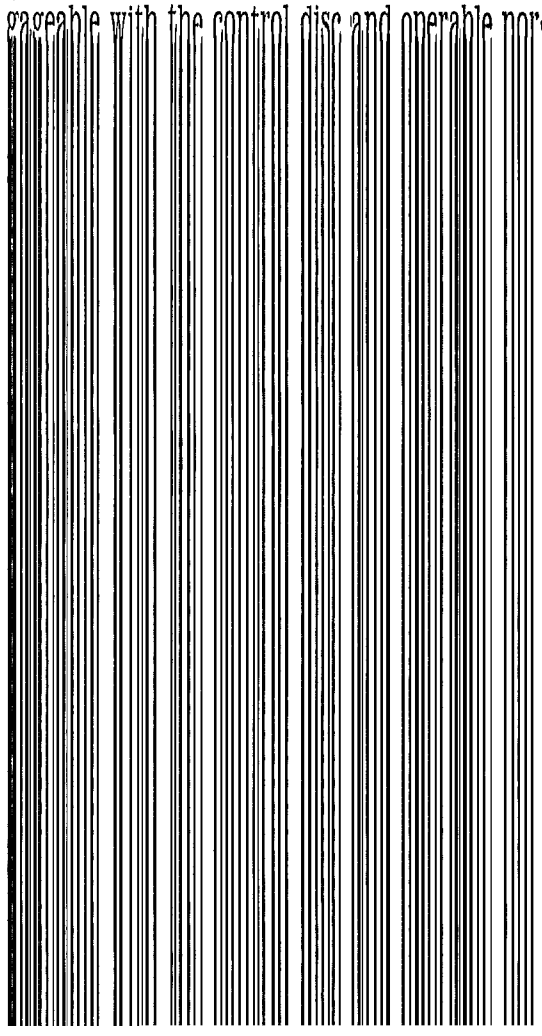
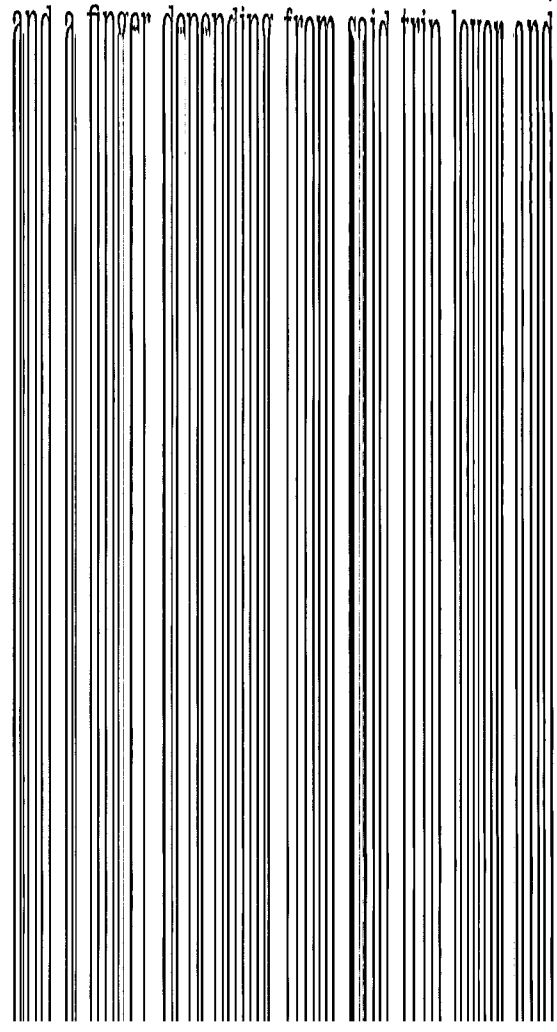
2. The structure of claim 1 further characterized by the ratchet mechanism including a ratchet wheel and an oscillatable driving pawl, the pawl normally being held by the control disc from functioning to drive said ratchet wheel and said control disc having a notch in the periphery thereof extending radially inward a greater distance than the teeth in the ratchet wheel, whereby when the holding pawl for said control disc is raised said disc is moved by said urging means to coincide said notch in said disc with said driving pawl and permit said driving pawl to drive said ratchet wheel and feed said label pack, said driving pawl during said driving movement thereof also moving said control disc to restore it to its position wherein it is engaged by its holding pawl and said disc thereby prevents said driving pawl from driving said ratchet wheel until said trip lever is again actuated by cans engaging the same due to the height of said label pack being lowered sufficiently to permit such engagement.

3. A can labeling machine comprising a runway including track sections, a label applying station, trip levers associated with said track sections, a label feed table, and means operable to actuate the feed table comprising a ratchet wheel, an oscillatory frame associated with the ratchet wheel, an advancing pawl pivotally carried by said frame, continuously operating drive means for oscillating said frame, a holding pawl engageable with the ratchet wheel, a control disc of greater diameter than said ratchet wheel and having a notch in which the advancing pawl is receivable to permit the pawl to engage and advance the ratchet wheel when the disc is in one position and said disc holding said pawl inoperative when moved from said position, a hold-

ing pawl for the control disc receivable in a notch provided in said disc, the control disc holding pawl being interconnected to the trip levers for actuation thereby and the control disc being provided with a second notch in which the control disc holding pawl is receivable, a bell crank for moving the control disc in one direction to disengage the ratchet holding and ratchet advancing pawl from the ratchet wheel, so as to permit lowering of said feed table to replenish the labels thereon, the control disc being held in said pawl-disengaging position by entrance of the disc holding pawl in the second notch, and spring means connected to the bell crank lever for moving the control disc in the opposite direction to effect engagement of the advancing pawl with the ratchet wheel when said trip levers release said disc holding pawl from the first mentioned notch in said disc.

4. A can labeling machine comprising a runway including track sections, power means, a belt assembly driven thereby to propel cans along said runway, a label applying station in said runway, and a label feed table, in combination with means operable intermittently to operate the label feed table under the control of the labels, said operating means comprising a feed pawl continuously and positively oscillated by said power means, a ratchet wheel engageable by said feed pawl and operable thereby to elevate said label feed table, a control disc oscillatably mounted adjacent said ratchet wheel for movement between positions wherein said disc respectively holds said feed pawl out of engagement with said ratchet wheel or permits engagement of said pawl with said wheel, a holding pawl engageable with the control disc and operable nor-

plying station, the ratchet mechanism comprising a ratchet wheel, an oscillatory frame associated with the ratchet wheel and carrying a pivoted ratchet advancing pawl, continuously operating drive means for oscillating said frame, a holding pawl engageable with the ratchet wheel, a control disc having a notch which receives the advancing pawl and permits engagement thereof with the ratchet wheel when the disc is moved to one position and said disc being operable when moved from said position to hold the ratchet advancing pawl inactive, a holding pawl for the control disc receivable in a notch provided in said disc to hold said disc away from said one position, the control disc holding pawl being operatively interconnected to the trip lever and the control disc being provided with a second notch in which the control disc holding pawl is receivable, a lever engaging the control disc and operable to move it to said one position, the control disc normally being held by entrance of the disc holding pawl in the second notch to position the disc to hold the advancing pawl disengaged from the ratchet wheel, and spring means connected to said lever for moving the control disc to said one position.

6. The can labeling machine set forth in claim 1 further including means carried by said feed table and interchangeable with said trip lever upon the supply of labels on said table nearing exhaustion, whereby said trip lever is held against pivotal movement and thereby prevents said holding pawl from disengaging said control disc.

7. The can labeling machine set forth in claim 1 further including a pallet supported by said feed table and arranged to hold a pack of labels,