Aug. 1, 1944. W. D. KIMBALL ET AL 2,354,688

LABELING MACHINE

Filed Oct. 8, 1941 8 Sheets-Sheet 1

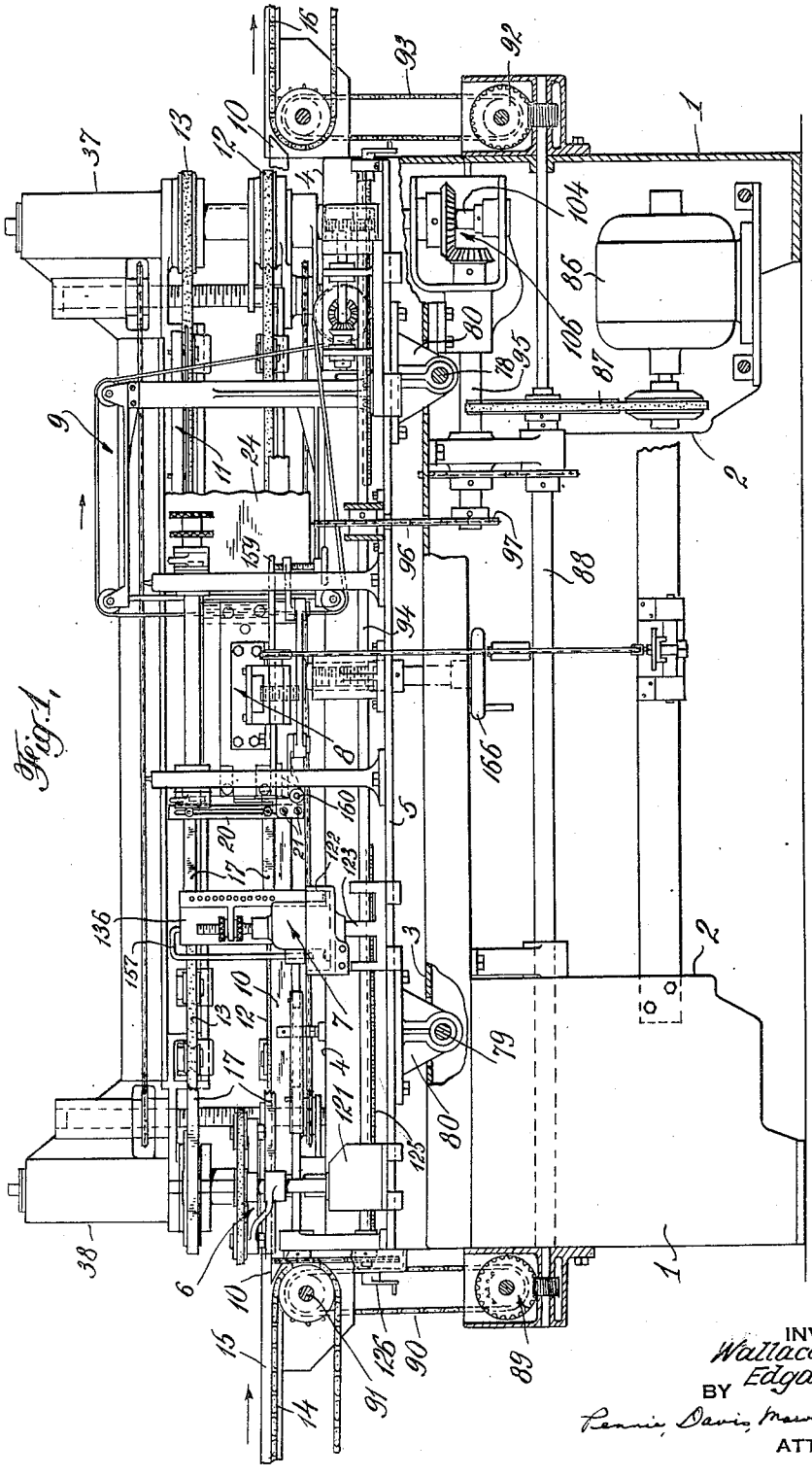


Fig. 1.

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LABELING MACHINE

Filed Oct. 8, 1941 8 Sheets-Sheet 2

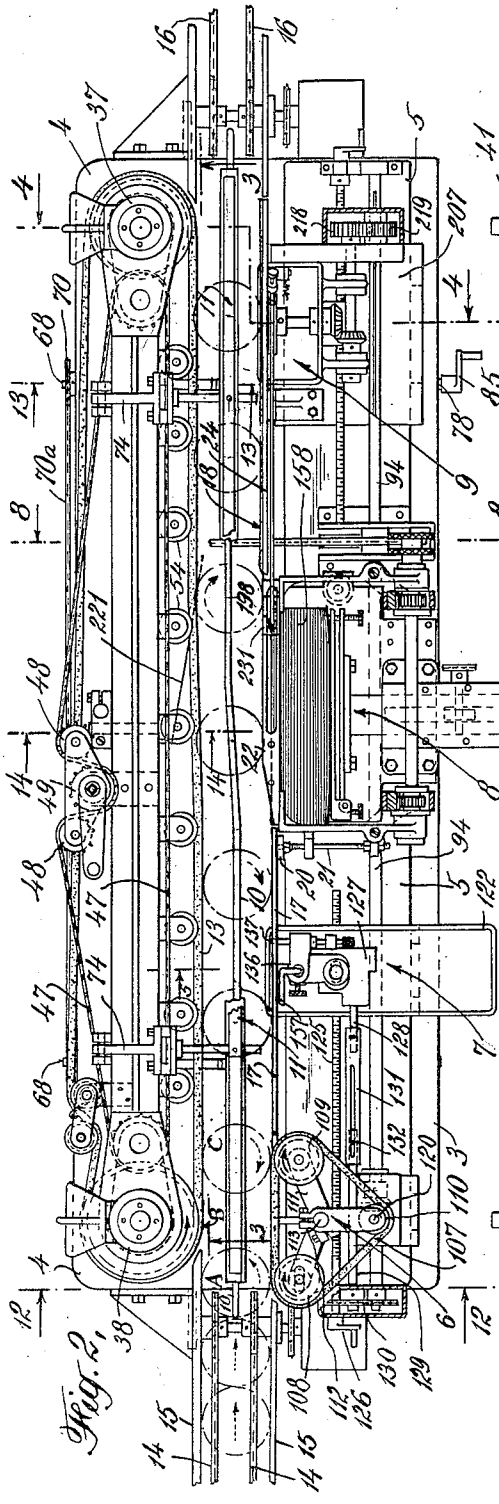


Fig. 2.

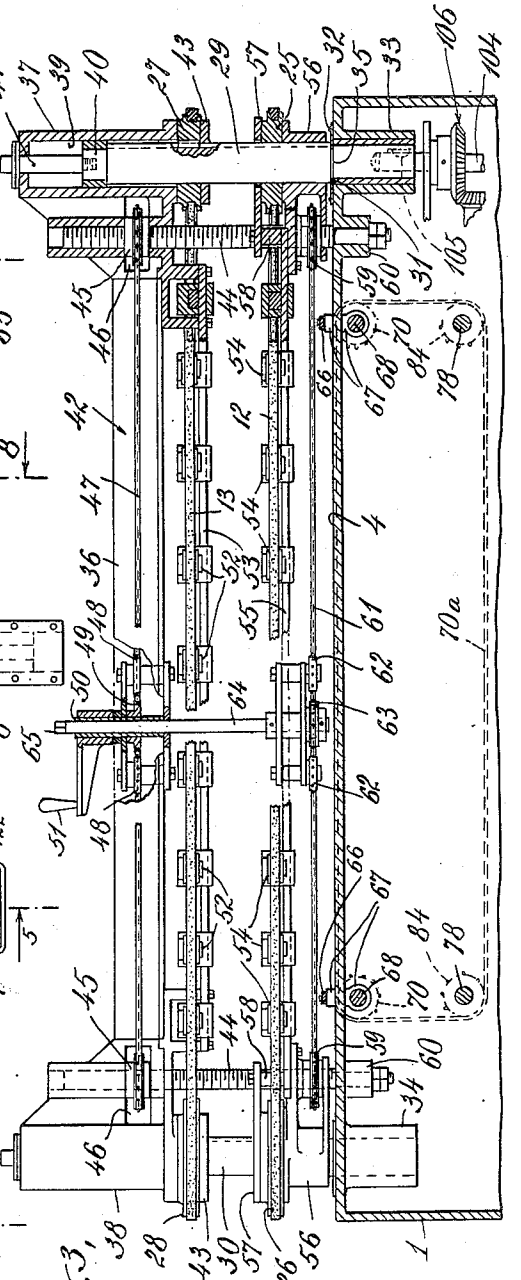


Fig. 3.

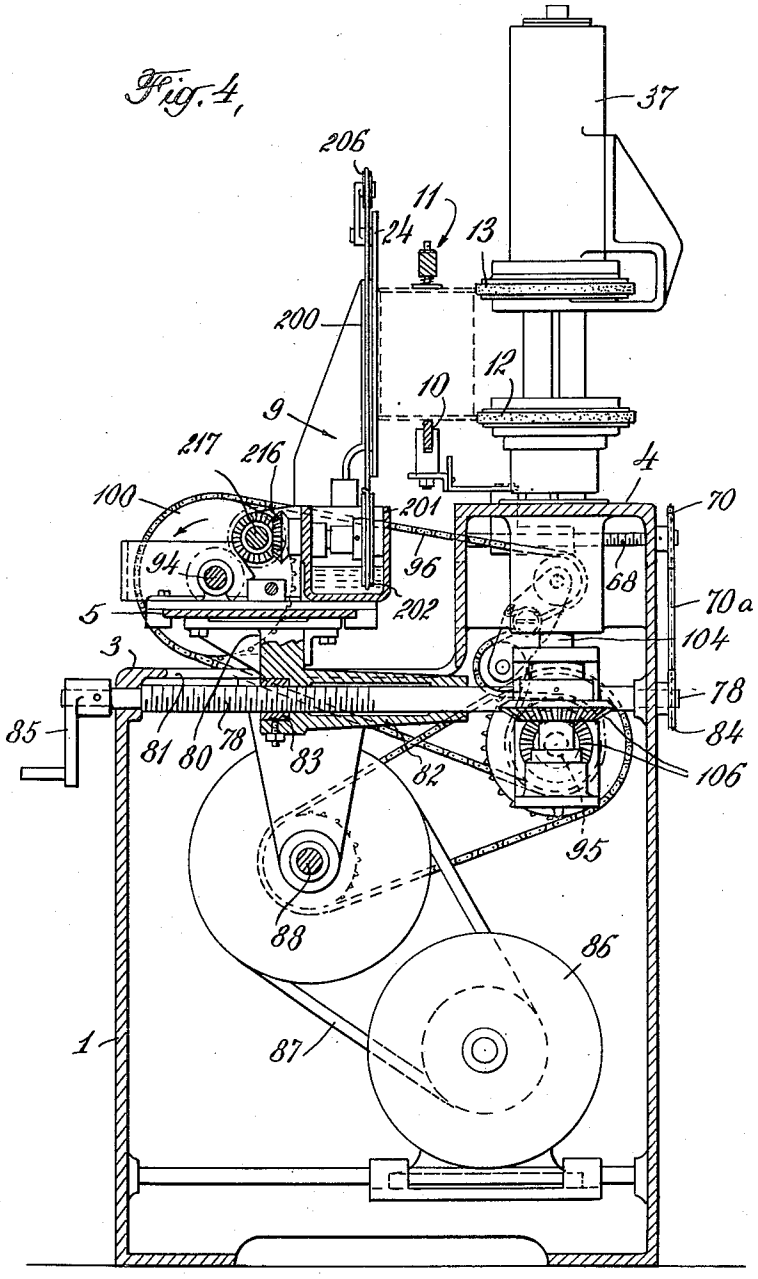
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Fig. 4,



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LABELING MACHINE

Filed Oct. 8, 1941 8 Sheets-Sheet 4

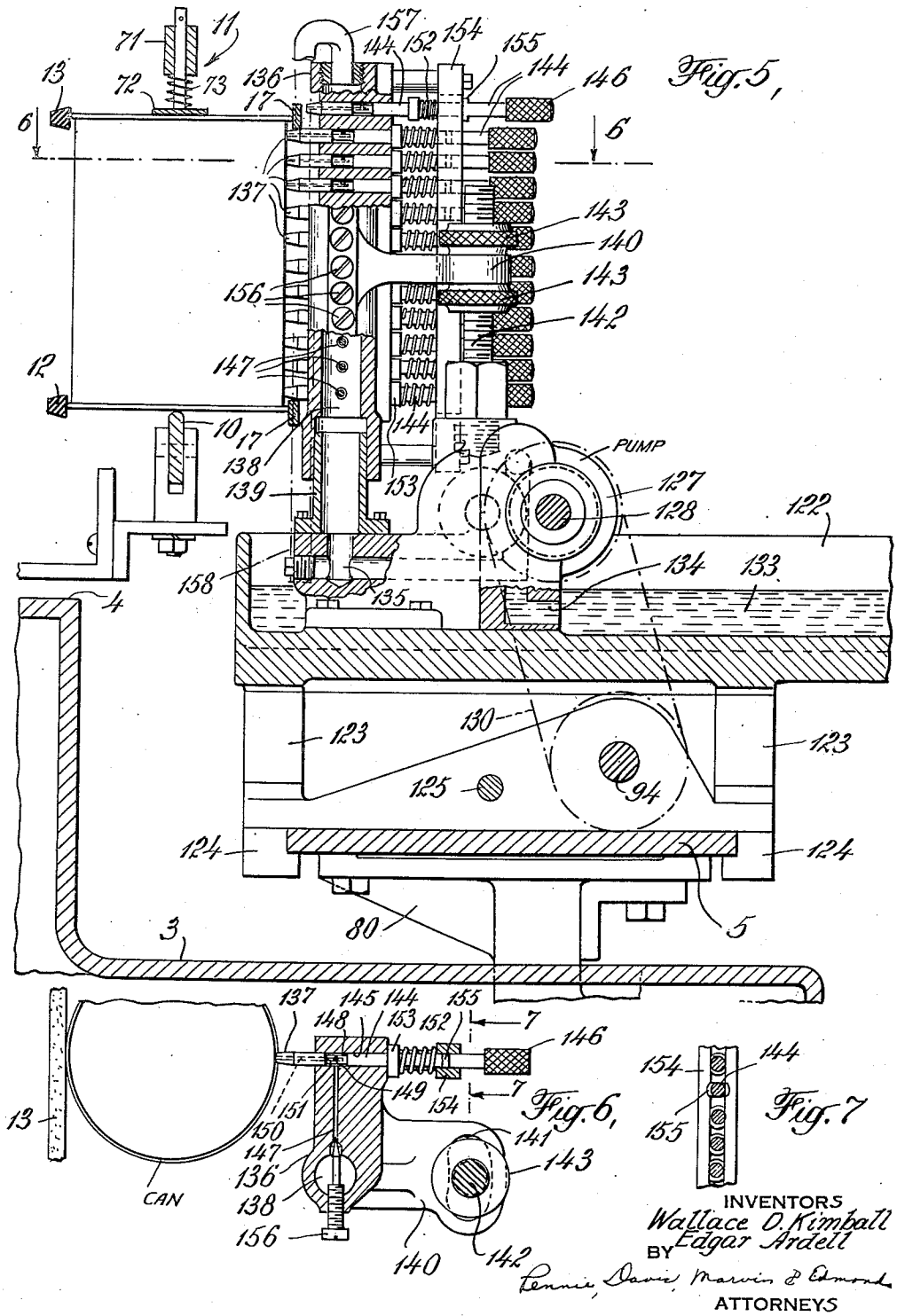


Fig. 5,

Fig. 6,

Fig. 7

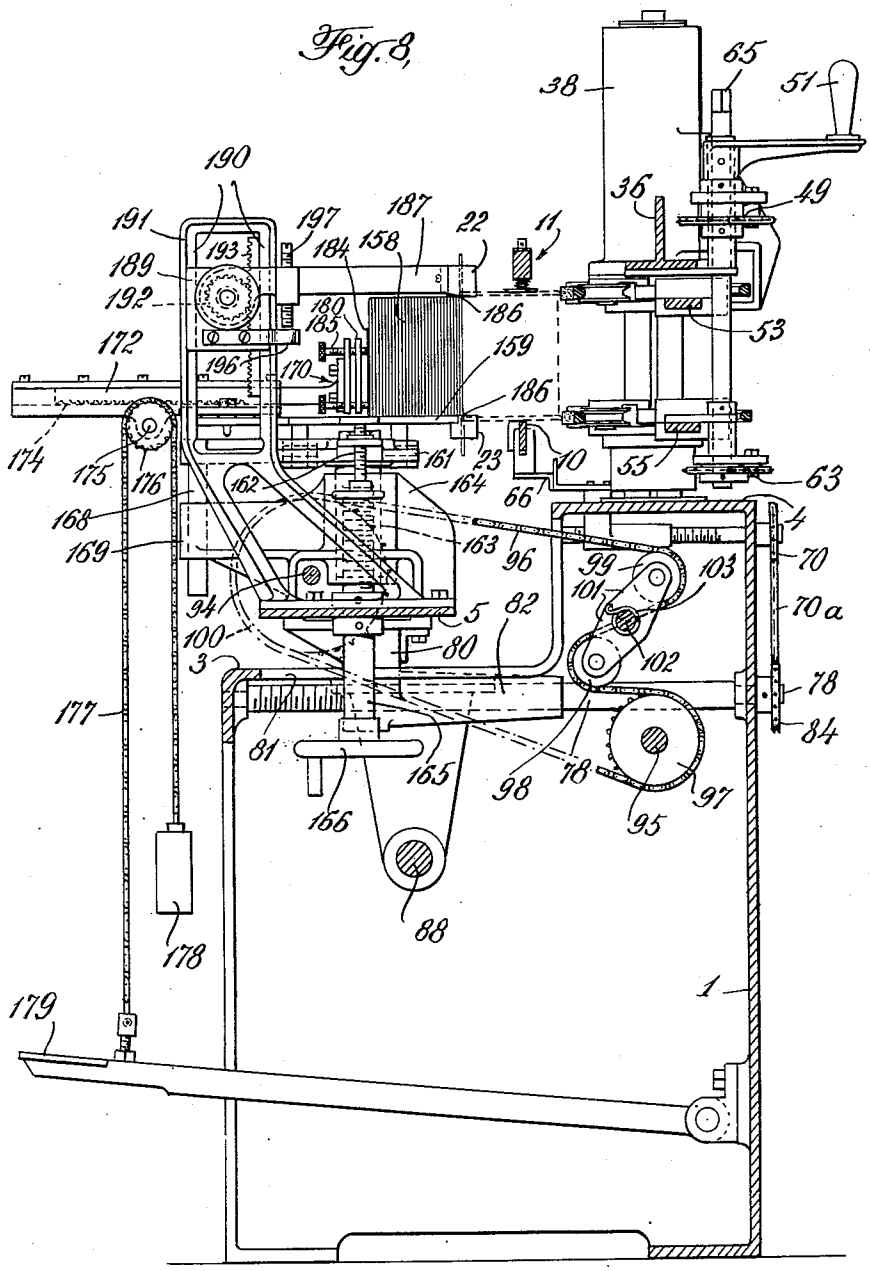
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LABELING MACHINE

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Fig. 8.



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LABELING MACHINE

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Fig. 10,

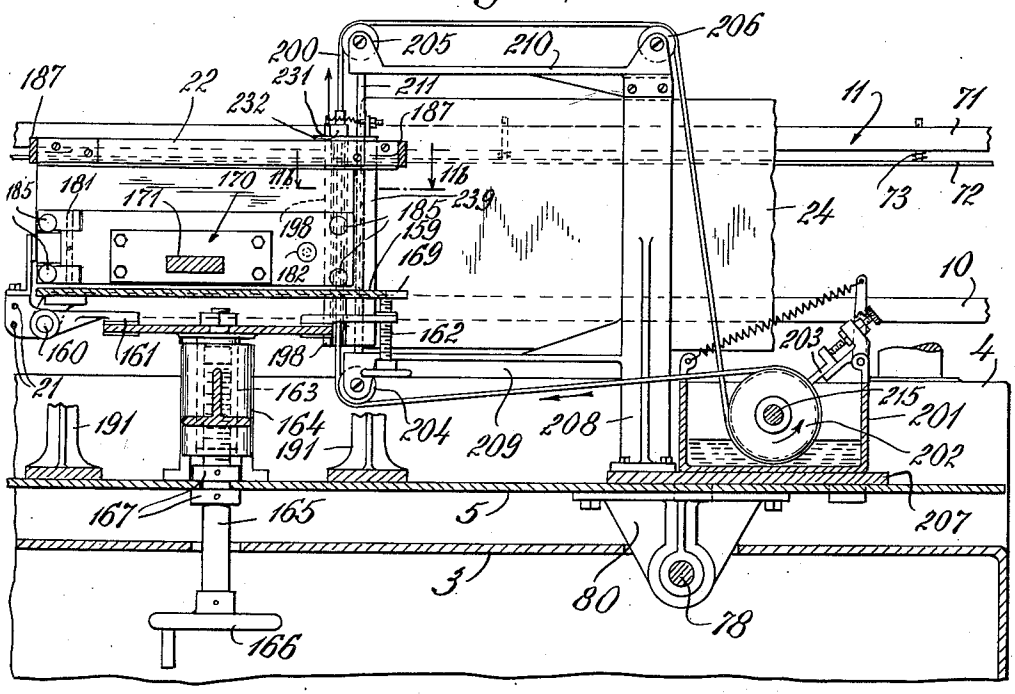
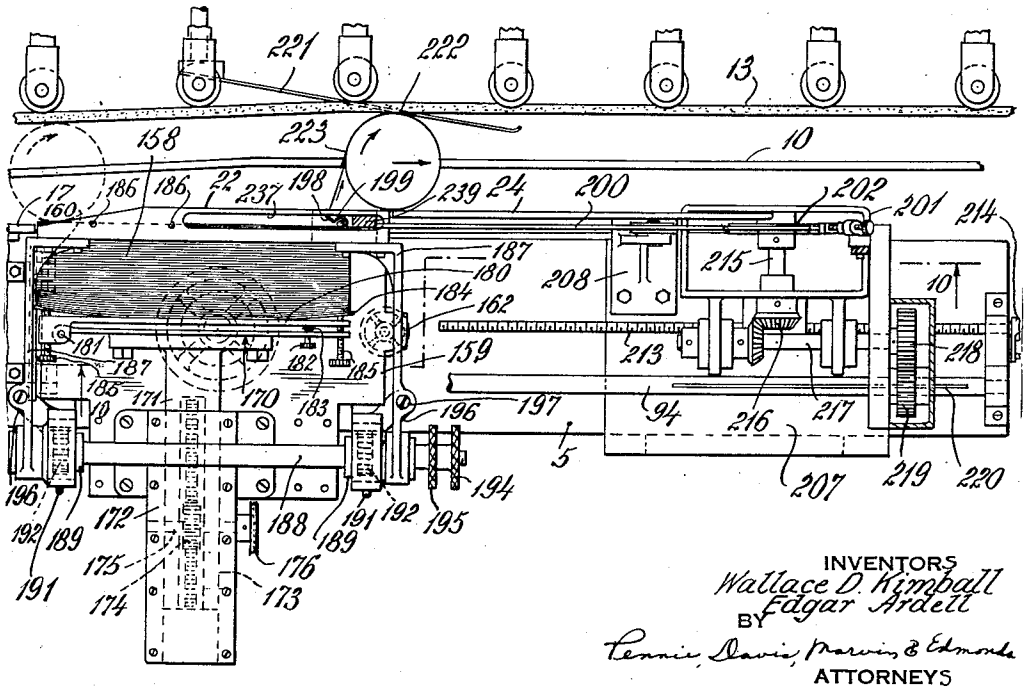


Fig. 9,



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Fig. 11,

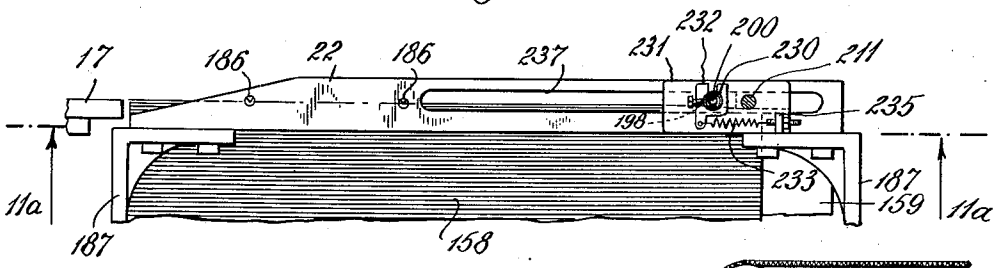


Fig. 11a,

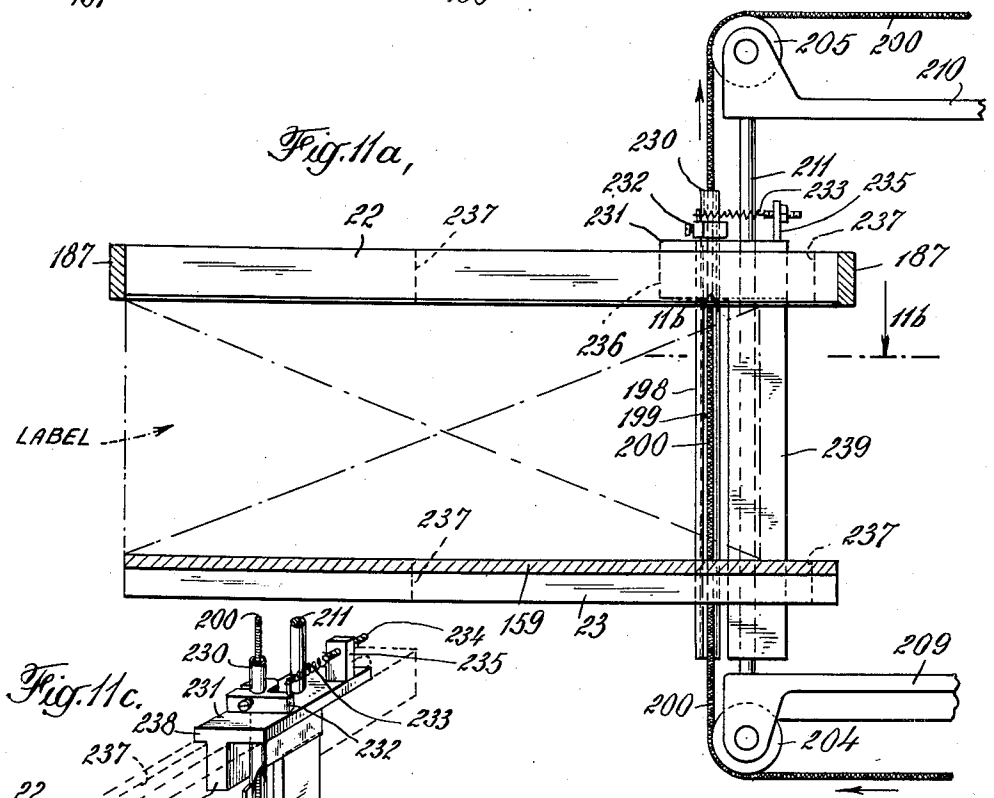


Fig. 11c.

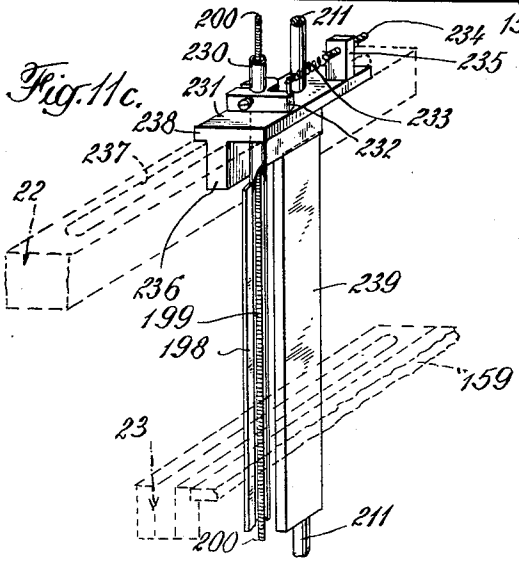
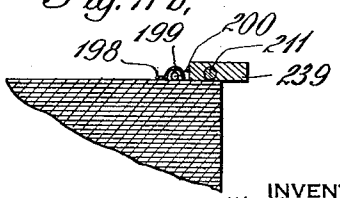


Fig. 11b,

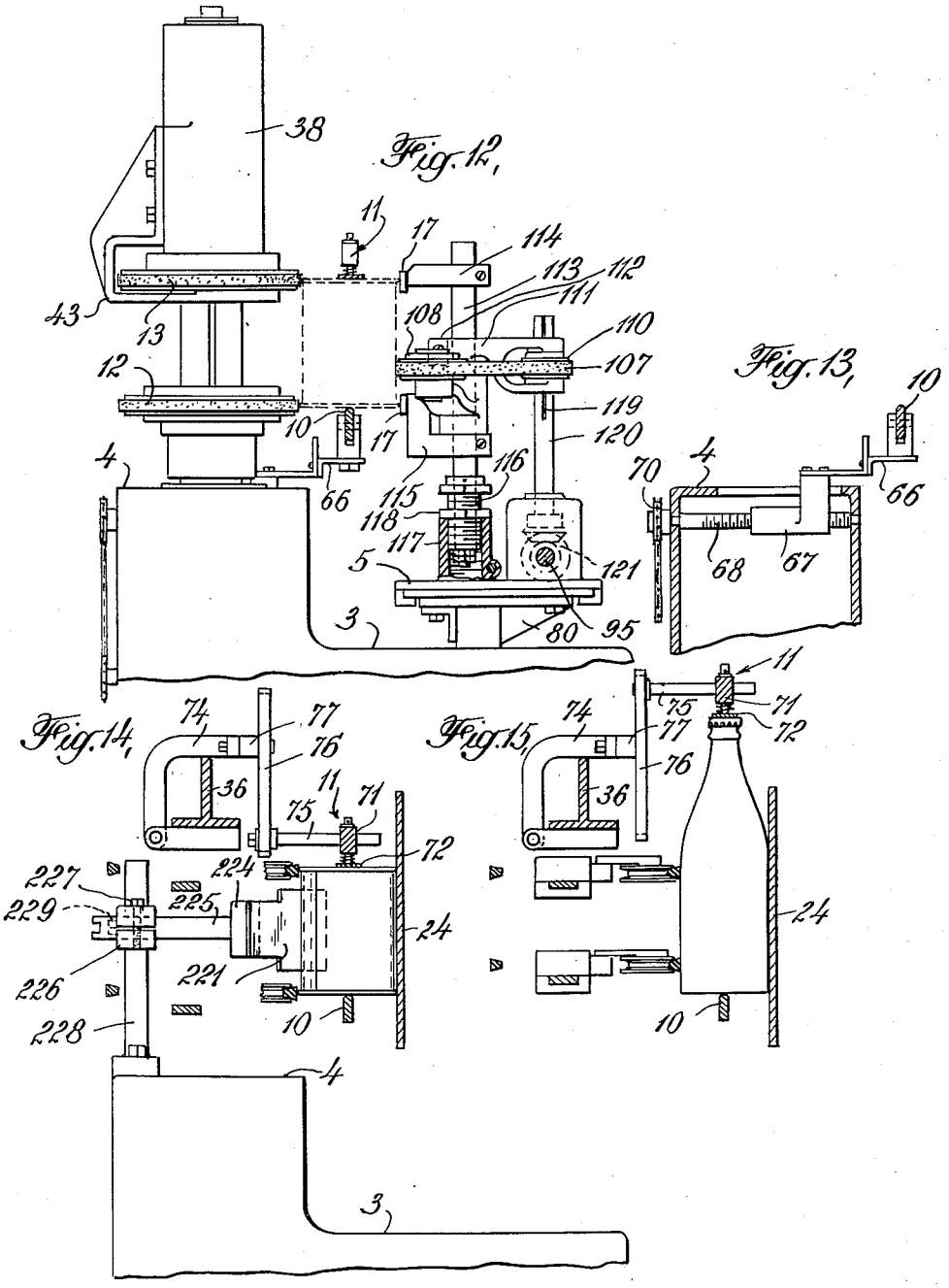


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LABELING MACHINE

Filed Oct. 8, 1941 8 Sheets-Sheet 8



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Patented Aug. 1, 1944

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UNITED STATES PATENT OFFICE

2,354,688

LABELING MACHINE

Wallace D. Kimball, Jackson Heights, N. Y., and Edgar Ardell, Middletown, Conn., assignors to Standard-Knapp Corporation, Portland, Conn., a corporation of New York

Application October 8, 1941, Serial No. 414,196

23 Claims. (Cl. 216—58)

This invention relates to machines for labeling cans, bottles and the like, and, more particularly, to machines of the kind in which the articles are moved through it in upright position or substantially upright position. Although vertical type labeling machines have been proposed heretofore, they have for one reason or another, including extremely high cost, been unsatisfactory. The general object of the invention is to provide an improved vertical labeling machine which can be manufactured at moderate cost and which operates at high capacity.

The cans or bottles to be labeled usually come from a cooking process or a filling machine and then, after receiving their labels, are sent to the casing apparatus where the articles are packed in cases either for shipment or storage. The cans are fed to the labeling machine at a high rate per minute and the casing apparatus is also capable of high speed operation, and an object of the invention is also to provide a label machine which will place the labels on the articles at the necessary high rate per minute, and which will place the labels accurately in position without passing "shiners" or unlabeled articles through the machine.

It is not infrequently desirable to shift over from labeling a batch of articles of one size to the labeling of articles of different size, and it is important that this change-over be accomplished as quickly as possible. Accordingly, an object of the invention is to provide a vertical type labeling machine in which such change-over can be made quickly, to operate upon articles of different diameter or different height.

In changing over from labeling articles of one size to articles of another size, not only does the trackway along which the articles are conveyed have to be enlarged or reduced in size, but also the label magazine which presents the labels one at a time to the articles as they pass along the trackway, must be adjusted so as to cause the labels to be placed accurately in the correct position on the article. In addition the labels themselves sometimes vary in size and in other characteristics such as flexibility. A still further object of the invention is to provide for the adjustment of the label supply in the shortest possible time so that the labels will be correctly applied.

In applying the pick-up adhesive or gum to the articles, by means of which the outermost or foremost label in the magazine is picked off from the label supply and caused to adhere to the can or bottle, the vertical type labeling machine presents problems not present in the horizontal type. One of these is the problem of uniform application of pick-up adhesive throughout the length of the can, or the height of the space to be occupied by the label. Another object of the invention is, accordingly, to provide a pick-up gum applying device or mechanism which solves this problem, and which is also easily adjustable to operate upon articles of different height, and in addition quickly adjustable to obtain the proper deposit of the adhesive upon the surface of the can and the correct amount thereof to suit labels having different characteristics.

Another problem in connection with upright or vertical labeling machines is the smoothing of the label onto the surface of the article without wrinkles and with the lap end registering evenly with the front end, when the label completely encircles the article. This problem arises from the fact that the labels are applied in upright position instead of in horizontal position and the weight of the labels tends to displace them. Another object of the invention is to overcome these difficulties and provide for wiping the label smoothly onto the surface of the article.

A still further object of the invention is to provide a lap end pasting mechanism which is so arranged as to avoid transferring paste to any but the foremost or outermost label in the magazine and which is also conveniently arranged for horizontal adjustment relative to the label magazine to accommodate labels of different lengths.

Another problem connected with vertical labeling machines is the admission of the cans or bottles at the entrance end of the machine in suitably spaced relation to one another, and another object of the invention is to provide for the feeding of the articles one at a time into the machine in uniformly spaced relation.

There is illustrated in the accompanying drawings by way of example a vertical labeling machine embodying the improvements of our invention, and from a consideration of these drawings in connection with the following detailed description, our invention will be understood.

In these drawings:

Fig. 1 is a view in side elevation of the improved labeling machine with parts broken away;

Fig. 2 is a plan view of the machine shown in Fig. 1;

Fig. 3 is a longitudinal vertical section taken on line 3—3 of Fig. 2 showing the independent adjustment of the two carrier belts;

Fig. 4 is a transverse vertical section of the machine taken on broken line 4—4 of Fig. 2, drawn to an enlarged scale;

Fig. 5 is a transverse vertical section taken on line 5—5 of Fig. 2, drawn to a still greater enlarged scale, and showing the gum applying mechanism;

Figs. 6 and 7 are views illustrating details of the gum applying mechanism, Fig. 6 being a sectional view taken on the line 6—6 of Fig. 5 and Fig. 7 being a fragmentary section taken on line 7—7 of Fig. 6;

Fig. 8 is a view similar to Fig. 4 showing particularly the label magazine and its associated mechanism;

Fig. 9 is a plan view of the label magazine and lap end pasting mechanism shown in Fig. 2 but drawn to an enlarged scale;

Fig. 10 is a vertical section taken on broken line 10—10 of Fig. 9;

Fig. 11 is a partial plan view of the label magazine shown in Fig. 9 drawn to an enlarged scale and illustrating the curling bar mechanism;

Fig. 11_a is a vertical section taken on line 11_a—11_a of Fig. 11;

Fig. 11_b is a fragmentary horizontal section taken on line 11_b—11_b of Fig. 11_a and Fig. 10;

Fig. 11_c is a perspective view of the curling bar mechanism;

Fig. 12 is an end view, partly in section taken on line 12—12 of Fig. 2, showing the can timing mechanism;

Fig. 13 is a vertical section taken on the line 13—13 of Fig. 2 showing the lower supporting rail adjustment;

Fig. 14 is a vertical section taken on line 14—14 of Fig. 2 showing the label wiper; and

Fig. 15 is a view similar to Fig. 14 showing the top guide adjusted for the accommodation of bottles instead of cans.

Referring now to the accompanying drawings, and first to Fig. 4, the machine has a hollow frame 1 substantially square in transverse section and cut away at the center of the machine on both sides (Fig. 1) as indicated at 2, this space on each side being covered by a sheet metal plate (not shown). Frame 1 has at the front a flat top portion 3 (Fig. 4) and at the rear of this and elevated somewhat, there is a flat shelf portion 4. Above the flat portion 3 there is supported in horizontally adjustable but vertically fixed position an elongated plate 5 which extends longitudinally from end to end of the machine and upon which are mounted the can-timing mechanism 6 at the entrance end of the machine, the pick-up gum applier 7, the label magazine 8 and the lap end pasting mechanism 9, as well as the various members which constitute the can guides.

Above shelf portion 4 of the frame are mounted the supporting track 10, on which the cans or bottles are supported in their travel through the machine, the top guide 11 for guiding the tops of the articles and the carrier belts 12 and 13, by means of which the cans are conveyed through the machine supported on bottom track 10 and in rolling contact with the can guides which are on the opposite side of the can trackway from the carrier belts. These can guides will be described in detail later on.

It will be understood that as the cans move past the gum applier 7, a small quantity of adhesive is applied lengthwise of the surface of the can and in extent corresponding to the width of the label used, and upon the next revolution of the can this adhesive is brought into contact with the front end of the foremost label in label magazine 8 which is thereby picked off the label supply and wrapped around the can as the can continues to move past the label magazine. Lap end paste is applied to the rear end of this label by the pasting mechanism 9, which causes this end of the label to adhere to the can or more commonly to the front end of the label which it overlaps.

The cans are supplied to the left hand or entrance end of the machine by means of a positively driven conveyor comprising, for example, a pair of conveyor chains 14 which are driven preferably from the labeling machine. The incoming cans are carried on these chains and guided by means of side guides 15. At the delivery end of the machine a similar pair of conveyor chains 16 is provided preferably operated from the labeling machine and provided with suitable side guides forming a conveyor, by means of which the labeled cans may be carried to the next operation in the line, for example, to a case-packing machine.

The can guides referred to above are made up of several different elements at different portions of the can trackway. At the entrance end of the machine these guides comprise upper and lower parallel rails or bars 17 against which the beads of the cans roll (Fig. 12). The front end of the upper rail 17 is substantially opposite the front end of the timing mechanism 6 (Fig. 1) while the front end of lower rail 17 is substantially opposite the rear end of this mechanism (Fig. 2).

These two rails are supported at their front ends by brackets which will be described later on and extend at their rear or right-hand ends to the label magazine 8. Their support at this end comprises a slotted vertical bar 20 (Fig. 1) which in turn is supported at its lower end by two spaced rods 21. These two rods are supported on the side of the label magazine 8 one above the other (Fig. 2).

The can guide rails 17 deliver the beads of the cans onto a pair of vertically spaced magazine rails 22 and 23, one positioned at the top edges of the labels and the other positioned at the bottom edges of the labels. From the rear of the label magazine 8 until the cans are delivered to the outgoing conveyor chain 16, the can guide consists of a flat metal plate 24 on the surface of which a roll-down pad 18 of soft resilient material such as sponge rubber is mounted. The bodies of the cans roll over this pad and by it the labels are smoothed out flat on the can surface.

Referring now more particularly to Fig. 3, the carrier belts 12 and 13 are of the V-type and are supported by pulleys at opposite ends of the machine. The pulleys for lower belt 12 are indicated at 25 and 26 and those for upper belt 13 at 27 and 28. Pulleys 25 and 27 are mounted on a vertical rotary post 29 at the right hand end of the machine, and pulleys 26 and 28 are mounted on a similar post 30 at the left hand end of the machine. These pulleys are slidably keyed to the posts upon which they are mounted so as to rotate with the posts but to be vertically movable thereon to permit the adjustment of the carrier belts as is to be described.

These vertical posts 29 and 30 serve not only as shafts for supporting the carrier belt pulleys, but also as structural members to support all of the mechanism which is above the shelf portion

4 of the machine frame including the idler pulleys for keeping the carrier belts in contact with the cans and the structure for maintaining the upper ends of the posts 29 and 30 in appropriately spaced relation. Hence posts 29 and 30 are of substantial diameter so as to give rigidity to the structure.

These posts 29 and 30 are mounted in the machine frame at their lower ends only, these ends being reduced in diameter to form a shoulder 31 (see right hand of Fig. 3) which supports the posts on a washer 32 which rests on the upper surface of shelf 4. The reduced lower end portion of each of the posts is received in a bearing bushing within bosses 33 and 34, respectively, formed on the lower side of shelf 4. Washers 32 are preferably of the horse shoe type fitting into grooves 35 formed in the posts 29 and 30 just below shoulders 31, these washers serving thereby to prevent the posts from vertical movement in their bearings during the adjustment of the carrier belts.

In order to maintain the upper ends of rotary posts 29 and 30 in axial alinement with their respective bearing bushings at their lower ends against the tension of carrier belts 12 and 13, a spacing frame structure is provided comprising a longitudinal or connecting member 36 which is bolted at its ends to end members 37 and 38. Each of these end members has a vertical bore 39 closed at the top and forming a hood over the upper ends of the rotary posts 29 and 30, both concealing the upper ends of these posts and forming a bearing surface for the upper ends of these posts. Preferably the bores 39 do not fit the upper ends of the posts but are made somewhat larger, and each post is provided at its upper end with an enlarged head 40 which fits the bore 39. For lubricating the bearing surfaces between these parts, a stem 41 is secured in the upper end of the head 40 and suitable grease passageways are provided between the bearing surfaces and the upper end of this stem, at which point a pressure grease connection is placed.

The carrier belt pulleys 27 and 28 for the upper carrier belt are move vertically on their respective posts 29 and 30 for the vertical adjustment of this belt by moving the frame structure just described including the end members 37 and 38 and the connecting member 36, this frame structure being indicated generally by numeral 42. In order to cause the movement of this frame structure to shift the pulleys, each of the end members 37 and 38 has a bracket member 43 (Fig. 12) the upper portion of which is bolted to a boss on the rear side of the end member and the lower portion of which has a face which bears against the lower surface of the pulley and positions the pulley against the lower end of the end member.

The spacing frame structure 42 is adjusted vertically by means of a pair of stationary screws 44, each having a sprocket nut member 45 threaded upon it, these nuts closely fitting within recesses 46 in the end members. The sprocket nuts 45 are simultaneously rotated by means of a chain 47 which passes over both sprockets and then around two idler sprockets 48 at the center of frame 42 and around an adjusting sprocket 49 which is secured upon a sleeve 50, at the upper end of which there is an operating handle 51.

The idler pulleys 52 for the upper carrier belt 13 are mounted in suitable housings containing springs (not shown) which yieldably urge the idler pulleys against the back of the carrier belt. The housings for these idler pulleys 52 are mounted in spaced relation along a bar 53 which extends between the end members 37 and 38 below frame member 36 and is suitably attached to the end members as by means of bolts.

The lower carrier belt 12 and its idler pulleys 54 are mounted for vertical adjustment in a somewhat similar way. The idler pulley housings which are similar to the housings for idler pulleys 52 for the upper belt are mounted in spaced relation along lower supporting bar 55 and at each end this bar is bolted to an adjustable end member 56. These end members are provided with plates 57 which serve the same function as the brackets 43 of the upper end members 37 and 38, namely, that of maintaining the pulleys 25 and 26 in engagement with the surfaces of the respective end members 56 at all positions of the adjustment of these members. Plates 57 are bolted at their inner portions to their respective end members through spacing blocks 58.

The simultaneous vertical adjustment of the two lower carrier belt pulleys 25 and 26 is accomplished by means of two sprocket nuts 59 threaded upon the fixed screws 44 near their lower ends, these nuts being placed within closely fitting recesses in a similar manner to sprocket nuts 45. Screws 44 are mounted at their lower ends in bosses 60 projecting from beneath the shelf portion 4 of the machine frame and are bolted in fixed position within these bosses.

To turn the two sprocket nuts 59 simultaneously so as to adjust the lower carrier belt 12, a chain 61 passes over these sprockets and then over a pair of idler sprockets 62 near the center of the machine and thence over an adjusting sprocket 63. These three sprockets are vertically beneath the corresponding sprockets for the upper adjusting chain 47 (Fig. 3). Adjust sprocket 63 is secured to the lower end of an operating shaft 64 which passes through sleeve 50 and which is squared as shown at 65 at its upper end to receive an adjusting handle or wrench.

The supporting track 10 (Fig. 13) although fixed in position vertically, is mounted so as to be adjustable horizontally. It is carried on a pair of brackets 66 located towards each end of the machine. The inner end of each of these brackets is bolted to an upward projecting part of a nut member 67, one of which is threaded upon a horizontally rotatable shaft 68 and the other on a similar shaft 69 (Fig. 2). These two shafts are mounted for rotation in the vertical walls of the machine frame 1 just below the horizontal shelf 4 (Figs. 4 and 13) and are simultaneously rotated by means of sprockets on each shaft and a chain 70 (Fig. 2) at the back of the machine. The operation of this chain will be described below.

The top guide 11 for guiding the tops of the articles and maintaining them in proper position in the trackway with their bottoms against the bottom supporting track 10 and the beads of the cans opposite the centers of the carrier belts is a composite structure comprising a rigid bar 71 and a thin, flat, somewhat flexible can contacting rail 72, the latter being supported beneath the former and mounted to be yieldable in the upward direction by means of helical springs 73 (Figs. 10 and 14). This top guide 11 is supported so as to be simultaneously adjustable with the upper carrier belt 13 and in addition can be lifted from contact with the cans and swung upward and backward so as to permit quick access to the can trackway, if necessary. Top guide 11 is therefore supported on connecting member 36 of

the frame structure 42 for the upper carrier belt and is carried upon two pivoted mountings 74 pivoted at the rear of frame member 36 near its opposite end. When the guide 11 is in operating position, these mountings 74 rest upon the top edge of member 36 and the mountings swing backwardly about their pivots whenever it is desired to lift the guide out of operating position.

In order to permit both vertical and horizontal adjustment of the top guide 11 to accommodate different size cans, the rigid bar member 71 of the guide is apertured to receive a horizontal rod 75 and this rod is supported at its inner end by a vertical bar 76 which is secured to the mounting 74 by a releasable clamp 77. When it is desired to raise or lower the guide 11, this releasable clamp 77 is operated and bar 76 is shifted to the desired elevation. In order to change the horizontal location of top guide 11 for cans of different diameter, the bar 71 is shifted along the supporting rods 75 and then reclamped in the desired position.

The mechanism for supporting the horizontal plate 5, upon which the timer 6, gummer 7, label magazine 8 and lap end pasting mechanism 9 are mounted, together with the can guides comprising rails 17 and 19, magazine rails 22 and plate 24, will now be described. This mechanism supports all of these machine parts in fixed position vertically but in adjustable position horizontally so that their horizontal adjustment can be accomplished at one operation.

Plate 5 is supported and adjusted by two horizontal rotatable threaded shafts 78 and 79 extending crosswise of the machine near each end (Figs. 4, 8 and 1). The plate is connected to these two shafts by means of two members 80. These members have bracket portions which extend upwardly through transverse slots 81 in the flat top portion 3 of the machine frame and are bolted to the lower side of plate 5. Members 80 also have elongated sleeve portions 82 which at their opposite ends have bearing surfaces closely fitting the transverse shafts 78 and 79, and at the front of these sleeve portions removable nuts 83 cooperating with the threaded portions of rods 78 and 79 are provided.

These two shafts 78 and 79 are connected at the back of the machine for simultaneous rotation by means of sprockets 84, one on each shaft, and chain 70 (Figs. 2 and 4). A handle 85 is placed on the front end of shaft 78 and by turning this handle the two shafts are rotated simultaneously to move plate 5 horizontally. Since chain 70 also passes around the sprockets on shafts 68 and 69 of the bottom supporting track 10, the lateral or horizontal adjustment of this track is accomplished simultaneously with the adjustment of plate 5 and the different mechanisms carried thereby. The pitch of the threads on shafts 68 and 69 is one-half that of the threads on shafts 78 and 79 so that the supporting track is always kept at the center of the trackway.

The adjustment of the label machine to accommodate cans of different diameter is accomplished entirely by turning this single crank which moves all of the parts mentioned above either closer to or farther away from the carrier belts 12 and 13 which are, so far as vertical adjustment is concerned, fixed in their position. It will be understood, however, that after the general adjustment of plate 5 and bottom track 10 to accommodate cans of larger or smaller diameter, the top guide 11 is similarly adjusted as previously described and illustrated in Figs. 14 and 15. It will also be understood that the lateral adjustment of the individual parts mounted on plate 5, such as the gum-applier 7, label magazine 8 and lap end paste mechanism 9 to obtain the proper operation of these individual parts may be desirable after the general readjustment of plate 5 for a different diameter can. This is provided for in the construction of these individual parts to be described further on.

The labeling machine, the supply conveyor chains 14 and the delivery conveyor chain 16 are driven by an electric motor mounted within the lower portion of the right hand end of the frame of the machine. This motor is connected through a belt 87 and suitable pulleys to drive a main shaft 88 extending throughout the length of the machine and journaled in suitable brackets secured to the frame 1.

The drive of incoming conveyor chains 14 is accomplished through worm gearing 89 at the extreme left hand end of shaft 88 and through a vertical chain 90 connecting this gearing with the sprocket shaft 91 of chains 14. The delivery conveyor chains 16 are similarly driven at the opposite end of the machine by means of worm gearing 92 and chain 93.

In order to drive or operate the timing mechanism 6, the gum applier 7 and the lap end pasting mechanism 9, and at the same time permit the desired adjustment of these parts on their adjustable supporting plate 5, a common drive shaft 94 is mounted in suitable bearing brackets located on the upper surface of plate 5 and extends throughout the length of this plate. This shaft is driven from a stub shaft 95 located above the driving motor 86 (Figs. 1 and 4).

In order that the drive of shaft 94 may be independent of the adjustment of plate 5 laterally, the particular driving arrangement illustrated in Fig. 8 is provided. This comprises a chain 96 passing around a sprocket 97 on shaft 95, thence upwardly around two swingably mounted idler pulleys or sprockets 98 and 99 and thence over a sprocket 100 on shaft 94 and back to sprocket 97. Idler sprockets 98 and 99 are mounted on the opposite ends of a pair of equal length arms 101 which are pivoted at their centers on a shaft 102. A helical spring 103 wound around this shaft urges the two idler pulleys in a direction to take up the slack in chain 96 as plate 5 carrying shaft 94 is shifted to the right from the position of Fig. 8, which is the position for operating on the largest diameter can for which the machine is intended.

The carrier belts 12 and 13 are also driven from stub shaft 95 by means of a driving connection between this shaft and the right hand rotary post 29. This connection comprises a short vertical shaft 104 (Figs. 3, 4 and 1) the upper end of which projects into a hole drilled in the lower end of post 29 and is keyed thereto by means of key 105. Shaft 104 is driven from stub shaft 95 by means of the beveled gearing 106.

The timing mechanism 6 by which the cans are admitted to the labeling mechanism in properly spaced relation comprises a small belt 107, preferably of the V-type, the outer surface of which engages the can body above the bottom bead (Fig. 12). This belt is carried on three pulleys, two idler pulleys 108 and 109 and a driving pulley 110. These pulleys are mounted for rotation on vertical axes on the arms of a three-armed bracket 111 which, by means of a clamp 112 (Fig. 2) is secured in adjustable position on an upright rod 113. This rod also carries above bracket 111,

a bracket 114 (Fig. 12) which supports the front end of upper can guide rail 17 in vertically adjustable position on the rod. On rod 113 below bracket 11 there is another bracket 115 which supports lower can guide rail 17.

The upr ght rod 113 is itself vertically adjustable so as to simultaneously vertically adjust both of rails 17 and the timer belt 107. This is accomplished by means of a threaded bushing 116 which is rotatively secured to the lower end of rod 113 and is threaded into a base 117 mounted upon the top of plate 5. Bushing 116 is locked in adjusted position by means of a lock nut 118.

The driving pulley 110 of timer belt 107 is slidably keyed at 119 to an upright shaft 120 parallel with upright rod 113 and driven by helical gearing 121 at its lower end from shaft 94.

The operation of the timer 6 to accomplish the separation or spacing of the cans is as follows: The driving connections described above are such as to drive the incoming conveyor chains 14 and the delivery conveyor chain 16 at substantially the same speed, and the carrier belts 12 and 13 at a higher speed. This is necessary in order to pass the cans through the labeling machine at the same rate per minute at which they are fed to the machine by the incoming conveyor, since the cans on this conveyor are in close formation, as indicated in Fig. 2, and the cans pass through the labeling machine in open formation. In maintaining the cans in close formation the incoming conveyor may slide beneath them.

The timer belt 107 moves the cans forward toward the right from position A (Fig. 2) where the can is first engaged by the timing belt and also wholly supported by the bottom track 10, to point B, where the can first contacts the carrier belts 12 and 13 and then to position C where the can leaves the timer belt. The cans are advanced along the incoming conveyor in a movement of translation, that is, they move forward bodily without rotation. At the point A where a can first contacts the timer belt 107, the can commences to turn about a vertical axis rolling along the surface of side guide 15. Timer belt 107 moves in the same direction as carrier belts 12 and 13 but at a slower speed. Hence the rotation of the cans is counterclockwise, in the direction of the dotted arrow. This rotation continues from point A to point B where the can contacts the carrier belts 12 and 13. Between position A and point B the cans move forward at half the speed of timer belt 107. From point B to position C, that is, during the time the can contacts both timer belt 107 and carrier belts 12 and 13, the can moves forward at half the sum of the speeds of the timer belt and the carrier belts. Since both timer and carrier belts are moving in the same direction the can must move forward at a greater speed than between the points A and B. Hence the distance between the can at position C and the next preceding can, or, in other words, the spacing of the cans as they move through the labeling machine, is determined by the distance between points B and C (which is fixed) and the speeds of timer belt 107 and belts 12 and 13. The cans attain their maximum speed between the points B and C and thus move away from cans traveling between points A and B. At point C the cans leave timer belt 107 and roll forward through the labeling machine in the clockwise direction as shown by the dotted arrows at one half the speed of the carrier belts.

The spacing between cans required in the labeling machine is not very great, being of the order of 4 to 5 inches and such spacing can be obtained by making the distance between points B and C comparatively short and without operating the timer belt 107 at a speed faster than the carrier belts. That is to say, the desired spacing can be obtained by operating the timer belt at a speed above that of the incoming conveyor chains 14 but below that of the carrier belts 12 and 13. This speed can be varied by changing the size of the driving pulley 110 or in any other desired manner.

The gum applier 7 is shown in detail in Figs. 5, 6 and 7 and also in Figs. 1 and 2. This mechanism is mounted on a gum or adhesive receptacle 122 which has a base 123 arranged to slide upon the upper surface of lateral adjusting plate 5. This base has members 124 at the bottom which engage both the side edges and the bottom margins of the plate and support the base and adhesive-applying mechanism in longitudinally slidable relation on the plate.

It will be understood that since the can makes one complete revolution between the gum applier 7 and the front end of the label magazine 8, it is necessary to readjust the longitudinal position of gum applier 7 on its supporting plate 5 whenever there is a change in the diameter of the cans to be labeled. To accomplish this adjustment a long screw 125 having a crank 126 at its left hand end is arranged in threaded engagement with the slidable base 123 of the gum pot 122. This screw is journaled in a bracket on plate 5 which prevents longitudinal movement of the screw.

The gum pot has a gum pump 127 mounted within it, the shaft of the pump being indicated at 128. In order to drive the pump shaft and at the same time permit longitudinal adjustment of the gum applier, a short shaft 129 is journaled at the left hand end in a bracket on plate 5 and driven from shaft 94 by means of a chain 130 and suitable sprockets. These two shafts are parallel and shaft 129 is connected with pump shaft 128 by an extensible connection formed by means of a slotted sleeve 131 which telescopes over the right hand end of shaft 129 and is coupled to shaft 128. A pin 132 fixed in shaft 129 engages the slot in slotted sleeve 131.

The gum or adhesive 133 in the gum pot 122 is maintained in melted condition and at a suitable temperature by means of an automatically controlled electric heater (not shown) mounted in the base of gum pot 122. This liquid adhesive is drawn into the pump through passageway 134 and delivered through passageway 135 to a vertical gum head 136 which is provided with a series of adhesive-applying nozzles 137 by which the adhesive is applied to the can in a vertical row of spots.

Gum head 136 has a vertical gum distributing passageway 138 extending from top to bottom and at the bottom this passageway is enlarged and arranged to fit tightly over a nipple 139 which is secured to the base of pump 127 over the discharge end of passageway 135. By means of this connection with nipple 139 the gum head may be pivotally adjusted to swing nozzles 137 into the proper position with relation to the path of the cans so as to cause the gum to be deposited on their surface in proper amount without causing movement of the nozzles 137 which are spring mounted in order to enable them to be quickly cut in and out of operation for cans of different height, as will be presently described. Nozzles 137 are adjusted in and out in relation to the path of the cans not only to obtain proper deposit of

adhesive but also to enable the trackway to accommodate cans of different diameters. The connection with nipple 139 is also slidable vertically so that the gum head may be adjusted to center the nipples between the beads of the can as shown in Fig. 5.

To accomplish both of these adjustments the gum head is provided with an arm 140 projecting laterally from its side, and this arm is provided with a curved slot 141 which receives a vertical post 142 which is mounted in fixed position on the top of pump 127. Threaded onto this post above and below arm 140 is a pair of knurled lock nuts 143. By manipulating these nuts the gum head can be pivoted about nipple 139 to properly adjust the nozzles 137 with relation to the surface of the cans, and the gum head can also be shifted vertically and then locked again in its readjusted position.

As may be seen best in Fig. 6, the nozzles 137 are positioned at one side of the gum distributing passageway 138. They each comprise a slender rod 144 which closely fits a hole 145 drilled through the gum head, this rod being tapered at its left hand end (Fig. 6) to form a nozzle, and provided with a knurled handle 146 at its opposite end. The gum is conveyed from the distributing passage 138 to each of the nozzle-positioning holes 145 by a transverse passage 147.

To enable the nozzles to be thrown out of action to accommodate shorter cans than shown in Fig. 5, for example, or in case it is desired to place fewer spots of adhesive upon the cans, or place more adhesive near the ends of the can than at the center, the nozzle rods 144 are shiftable in their holes 145 so as to withdraw the nozzle tips 137 from operative postion, the top nozzle of Fig. 5 being shown in such withdrawn position. It is desirable to automatically cut off the supply of adhesive to the nozzle tip simultaneously with this withdrawal of the nozzle. To accomplish this and to convey the adhesive from the cross passages 147 to the nozzle tips, each of the nozzle rods 144 is reduced in diameter as shown at 148 forming a space for the adhesive to pass from passage 147 to a transverse hole 149 in rod 144 which connects with a longitudinal bore 150 that conveys the gum to the tip of the nozzle.

In reducing the diameter of rod 144 at 148, shoulder 151 is formed which, as the rod 144 is shifted outwardly, closes passage 147 and cuts off the supply of gum.

The nozzle rods 144 are each held in operative position by means of a helical spring 152, one end of which engages a collar 153 on the rod, and the other end of which engages a stationary slotted bar 154 which is secured in fixed parallel relation to gum head 136. Each of the nozzle rods 144 has a pair of projecting lugs 155 which, when the nozzle rod is pulled outwardly and turned 90° by means of knurled handle 146, will engage the margins of the slot in slotted bar 154, as shown in Figs. 7 and 5, and hold the nozzle rod in its outward or inoperative position.

In a vertical labeling machine it is difficult to apply the adhesive uniformly throughout the height of the can on account of the variation in hydrostatic pressure of the adhesive between the bottom and top of the can. To overcome this difficulty, each of the individual nozzle passages 147 at the point where it communicates with the vertical distributing passage 138 is provided with an adjustable needle valve 156. Hence by correctly setting each of these individual needle valves from the bottom to the top of the gum head 136 to cause the nozzles to deposit spots of gum of equal size, the adhesive applier will always produce a uniform distribution. When these valves are once correctly set, they do not have to be adjusted thereafter when changing from one height can to another, inasmuch as the nozzle cut off is independent of these needle valves.

Another consideration of importance in labeling machines is the maintenance of uniform temperature in the adhesive spots from one end of the can to the other. If the temperature of the top spots of adhesive, for example, is lower than that of the bottom spots, the top spots of adhesive will have a lower viscosity than the bottom spots and will not spread out as thin when the label is wiped onto the can, but will form decided lumps underneath the label.

To overcome this, the adhesive 133 which is maintained at a constant appropriate temperature is circulated by pump 127 through the distributing passageway 138 at a much greater rate than that at which the gum is withdrawn through the nozzle passages 147. That is to say, the adhesive is continuously recirculated through the passageway 138 and thence out at the top of the gum head through a conduit 157, the lower end of which 158 delivers the gum substantially at the level of the body of gum 133 in the receptacle 122. By constantly recirculating the gum in this way, the gum head 136 throughout its length and nozzles 137 are maintained at a substantially uniform temperature.

The label magazine 8 and the lap end pasting mechanism 9 is illustrated in Figs. 1, 2, 8, 9 and 10 and they are both supported on plate 5 and adjustable horizontally therewith. In addition the label magazine is adjustable vertically with respect to plate 5 so as to permit the centering of labels which are substantially narrower in width than the height of the can. The lap end pasting mechanism is not adjustable vertically but is adjustable horizontally on plate 5 and relative to the label magazine in order to accommodate labels of different length.

The labels are carried in a pack or stack 158 in edgewise position on a smooth supporting plate 159. This plate is pivoted at its left hand end at 160 (Fig. 8) to a frame member 161 and at its right hand end by the upper end of an adjusting screw 162. This enables the labels to be tilted so as to cause a proper meeting of the lap end with the pick-up end when the label is wrapped about the can. Also can labels vary greatly in many respects and not infrequently their opposite side edges are not quite parallel. By the means just described, the labels can be tilted slightly with respect to the can-supporting track 10, if necessary, to correct such defects.

Frame 161 is fixed to the upper end of a plunger 163 which is vertically slidable in a bracket member 164 (Figs. 10 and 8) which is bolted or otherwise fixed to elongated plate 5. Plunger 163 is recessed from below, and internally threaded and engaged with these threads is an adjusting screw 165 which has a handle 166 at its lower end by means of which the label stack may be bodily raised or lowered according to the width of the labels and for the purpose of properly centering them on the can. Screw 165 has collars 167 on each side of the aperture where the screw passes through plate 5 so as to hold the screw against longitudinal movement. In order to prevent frame member 161 and plunger 163 from rotating, and thereby maintain the front edge of label supporting plate 159 parallel with the can track-

way, a vertical rod 168 (Fig. 8) projects downwardly from frame 161 and is arranged to slide in an aperture in an arm 169 projecting from bracket member 164.

The labels are urged and fed forwardly toward the can trackway by means of a label follower 170 which is mounted on the end of a horizontally movable bar 171. This bar is arranged to slide in a guide 172 (Fig. 9) which is secured to label supporting plate 169. The label follower is caused to press against the stack of labels with a constant pressure by means of the weight and chain mechanism shown in Fig. 8. Rack teeth 193 on the lower face of bar 171 engage a pinion 174 on a horizontal shaft 175 which is mounted for rotation on the under side of guide 172. On the end of this shaft there is a sprocket 176 over which a chain 177 passes, and on the inner end of this chain, as shown in Fig. 8, there is a weight 178, while the opposite end of the chain is connected to a foot lever 179. The weight therefore urges the follower 170 continuously against the label stack 158 and when it is desired to replenish this stack, lever 179 is pushed downwardly by the foot which causes the label follower to be withdrawn so that a new stack of labels may be inserted on plate 159.

In order to properly control the label stack, label follower 170 is provided with a plate 180 pivoted at 181 (Fig. 9) to the label follower head and provided with an adjusting screw 182 at its opposite end. A helical spring 183 surrounding this screw biases the plate outwardly from the follower head and by turning screw 182 plate 180 is rocked about its pivot 181 in one direction or the other so as to cant this plate with respect to the can trackway. The reason for this is that some labels, such, for example, as embossed labels, may be thicker at one end than at the other, and in order to maintain the foremost label of the stack parallel with the trackway, the rear end of the label stack may have to be positioned at an angle to the trackway.

On account of still other variable characteristics of labels, it may be difficult to cause the corners of the labels to make proper contact with the surface of the can sufficient to cause them to adhere. For this reason the label head 170 is provided with a thin, resilient plate 184 which is positioned in front of pivoted plate 180. Adjusting screws 185 are threaded into plate 180 near each of its four corners, and by turning up these screws, the corners of plate 184 may be bent inwardly so as to exert a greater pressure at one or more corners of the label stack than at its central portion.

The labels of the label stack 158 are fed forward by follower head 170 between the upper and lower label magazine rails 22 and 23. These rails are provided with small knives 186 (Figs. 8 and 9) which project very slightly from the label engaging surfaces of these rails. These knives retain the front portion of the label stack within the label magazine, the pressure exerted by follower head 170 being insufficient to force the edges of the labels past these knives. Each individual foremost label is pulled past the knives by the pick-up gum on the can as it rolls past the magazine along the tracks 22 and 23.

Due to the fact that labels are almost never cut true in their width dimensions, different batches of labels of the same kind differing slightly in width, and inasmuch as the label which is being wrapped about the can must be positively guided at its edges in order to be properly positioned on the can, the top guide rail 22 is made to "float," that is, to be at least partially supported by the top of the stack of labels 158. For this reason top guide rail 22 is secured at its ends to a pair of pivoted arms 187. These two arms are pivoted on the outer ends of a shaft 188 which is also rotatable to adjust the height of the rail 22. Shaft 188 rotates in two slide blocks 189 which are arranged to slide vertically each in a pair of parallel ways 190. Ways 190 are formed in the upper rectangular ends 191 of two bracket members which are bolted to elongated plate 5.

In order to vertically adjust the blocks 189 and thereby top rail 22, shaft 188 has two pinions 192, one near each end, the teeth of which engage rack teeth 193 placed adjacent the slideways 190.

To rotate shaft 188 it is provided at its right hand end (Fig. 9) with a knurled adjusting handle 194 and a locking nut 195.

In order to support arms 187 and top magazine rail 22 when no labels are in the magazine, two fingers 196 are provided, one secured to the outside of each of the slide blocks 189. An adjustable screw 197 is threaded into each of the arms 187 and the lower end of this screw engages one of the stop fingers 196.

As the rear end of the outermost label is withdrawn from the stack by the rotation of a can, it is drawn past the edge of a curling bar 198, as shown in Fig. 9. This curves or curls the rear end of the label slightly so that it will more readily adapt itself to the curvature of the can. This curling bar also assists the knives 186 in holding the stack of labels against the pressure of follower 170.

With the style of curling bar heretofore in use there was a tendency for paste from the lap end pasting mechanism to collect on the rear edge of the curling bar, and in a vertical labeling machine this paste would run down to the bottom of the label stack. A surplus of paste would soon collect and there would be a tendency for this paste to be carried by the outermost label onto the bottom magazine rail 23. A collection of paste at this point would in turn cause paste to get onto the outside of the label as it is wrapped about the can and this is very undesirable.

In our present machine this difficulty has been overcome by the use of a hollow curling bar, that is to say, by placing in the curling bar 198 a groove 199 at its inner surface, preferably near the rear edge of the bar and operating the paste-applying belt 200 within this groove in contact with the lap end of the label, as illustrated in Figs. 9, 10 and 11b. In addition, the paste applying belt 200 is arranged to travel in the upward direction across the width of the label and through groove 199 in the curling bar. By placing the paste belt on the inside of the hollow curling bar and operating it in the upward direction over the face of the label, the excess paste is continuously "pumped," so to speak, upwardly through the curling bar groove and carried away by the paste belt.

The paste belt 200 of the lap end pasting mechanism 9 operates from paste receptacle 201 (Fig. 10) where the belt is driven by means of a continuously rotating pulley 202 which dips into the paste within the receptacle. The surplus paste carried upwardly by the belt is removed by an adjustable scraping device 203, and the belt, preferably a closely wound helical wire spring, passes from pulley 202 over an idler pulley 204, thence upwardly through the hollow curling bar 198, around idler pulley 205 above the curling bar and

idler pulley 206 back to the paste receptacle pulley 202.

These three idler pulleys together with curling bar 198 are supported on the base 207 of the lap end pasting mechanism 9 so as to be adjustable therewith longitudinally of the supporting plate 5. For this purpose a bracket 208 is bolted to base 207 at the left, which extends upwardly to idler pulley 206. This bracket has two horizontal arms 209 and 210 which respectively support idler pulleys 204 and 205. These arms are braced by means of a spacing rod 211 on which curling bar 198 is supported in a manner presently to be described.

In order to permit curling bar 198 and paste belt 200 to bear against the surface of the foremost label, the top and bottom magazine rails 22 and 23 are provided with wide, elongated slots 212 (Fig. 9) which also permit the adjustment of the curling bar and paste belt longitudinally of the label stack when it is desired to use labels of a shorter length than those illustrated.

In order to effect this adjustment, the base 207 is arranged to be moved longitudinally on plate 5 by means of a long adjusting screw 213 having a handle 214 at its right hand end (Fig. 9). By turning this handle the position of curling bar 198 and paste belt 200 in slot 212 may be adjusted for labels of different length.

The driving pulley 202 in the paste receptacle 201 is mounted on a horizontal shaft 215 which is driven by miter gearing 216 from a short shaft 217 parallel with shaft 94 and journaled in bearings supported by base 207. Short shaft 217 is driven from shaft 94 by two spur gears 218 and 219, gear 219 being connected to shaft 94 by means of a slidable keyway 220 and arranged to be slid along this shaft by the adjustment movement of base 207.

On account of the varying characteristics of labels it is frequently desired to impart a greater curl to some types of labels than to others and this is also accomplished by our improved curling bar mechanism which provides for regulating or adjusting the pressure of the curling bar against the outermost label in the magazine. This mechanism is illustrated in Figs. 11, 11a, 11b, 11c, 9 and 10 and by its means not only is the amount of curl adjustable, but a better curling action is produced, and in addition the lap end of the label stack is properly held in position against the pressure of label follower 170.

To produce this improved and regulatable action of the curling bar, it is pivotally mounted so that it is permitted to turn under the pull of the label as it is wrapped about the can, as shown in Fig. 9. This turning movement is opposed by means of a yieldable or spring mounting which biases the edge of the bar against the surface of the label. In this way the label is drawn across the edge of the curling bar and under an adjustable yielding pressure which may be changed to suit labels of different character.

For this reason the curling bar 198 (Fig. 11c) is provided at its upper end with a rod-like extension 230 which is arranged to pivot in a curling bar supporting member 231, the length of the bar between these parts being sufficient to properly control the operation of the curling bar. At the top of support 231 the curling bar extension 230 has a finger 232 clamped to it for the attachment of a helical spring 233. This spring is fixed at its opposite or right hand end to an adjustable screw 234 which is threaded into a post 235 extending upwardly from the top of supporting member 231. Hence spring 233 biases the front or operating edge of the curling bar 198 against the surface of the outermost label of the stack as indicated in Fig. 11b, and the tension of this spring can be adjusted or regulated to produce greater or less pressure against the surface of the label.

The supporting member 231 has a vertical portion 236 which closely fits the slot 237 in the upper magazine rail 22 but is freely slidable therein. This member also has a horizontal or cap portion 238 which rests on the upper surface of rail 22 and thereby supports the member 231 and the curling bar.

Supporting member 231 is provided with a second vertical aperture at the rear of the curling bar shaft extension 230 through which the vertical spacing rod 211 of the lap end pasting mechanism passes and by means of which the longitudinal adjustment of the supporting member and curling bar in slot 237 is effected. The shaft extension 230 of the curling bar is provided with an axial bore in alinement with the groove 199 for the paste belt 200 and this belt, after leaving the upper end of groove 199 passes through this bore and out of the top of shaft extension 230.

The curling bar support 231 is also provided with a member 239 for engaging the lap end of the label stack and supporting the stack against the pressure of the label follower 170. Member 239 extends downwardly from the bottom of horizontal portion 236 and is of a length sufficient to pass across the face of the stack of the widest labels for which the machine is intended. This member 239 extends into or through the slot in the lower magazine rail 23 as is indicated in Fig. 11a. The surface of member 239, however, is slightly offset from the surface of vertical portion 236 as indicated in Fig. 11c and also in Fig. 11 so as to permit the face of the label stack to extend close to the curling bar.

In a vertical labeling machine, when the lap end of the label leaves the curling bar, and before it has been wrapped onto the can, it has a tendency to drop down, or sag, due to its weight, which would result in the label being crooked on the can. To overcome this, we have provided a label wiper 221 which maintains the label pressed in continuous contact with the can on the carrier belt side, or in other words, on the opposite side of the can from the label magazine. This results in causing the labels to be maintained continuously in their correct position on the can at a point 222 which is not more than 90° from the point 223 where the label first makes contact with the can as it is drawn beneath the curling bar.

This wiper 221 (Figs. 9 and 14) comprises a flat, resilient, or resiliently mounted, member whose width is comparable with the width of the label, and which is positioned in the path of the travel of the cans and so placed that when a can contacts this wiper it moves it out of its way, and by so doing, causes the wiper to exert a wiping pressure against the label being applied. This wiper is so positioned that when the rear end of the label leaves the curling bar, it is wiped onto the can before it has an opportunity to sag or whip, due to the centrifugal force.

As shown in Figs. 9 and 14, this wiper is made of a sheet of spring material such as steel, and is fixed at its rear end to a head 224 which is se-

cured to the end of a horizontal rod 225. This rod is adjustable horizontally and vertically in a double clamp 226. By loosening a screw 227, this clamp can be adjusted vertically on its supporting rod 228 which is mounted on shelf 4 of the machine frame. By loosening a nut 229, rod 225 and wiper 221 can be adjusted horizontally or the wiper may be pointed upward or downward. These adjustments provide not only for cans of different diameter and height, but also the pointing of the wiping face to wipe the label up or down, depending upon operating conditions, enables the wiper to cause the labels to properly adhere to the cans under widely differing labeling conditions.

By means of the present invention, we have provided a vertical labeling machine which has proved to be unusually successful commercially both in its speed of operation (the number of cans labeled per minute), in its adaptability to the labeling of cans of different types, with or without beads at both ends, and bottles of different types, and to the labeling of bottles or cans differing widely in size, that is, both diameter and height.

The machine lends itself to unusually rapid adjustment for operation on articles of different size, and the adjustments to obtain proper operating conditions on any particular size of article can also be obtained quickly. The machine also is of rugged construction and operates successfully at high speed with a minimum of attention.

It will be understood that the machine illustrated and described above has been chosen to exemplify our invention rather than to define or limit it, and that the scope thereof is set forth in the appended claims, and that changes may be made in the construction of the machine without departing from the spirit of such invention. It will be further understood that the term "can" as used in the appended claims is intended to include not only metal cans within the ordinary meaning of the term, but also bottles and other round objects capable of being labeled in the machine.

We claim:

1. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, an elongated carriage mounted for horizontal adjustment with respect to said trackway, a label magazine mounted on said carriage for supplying labels in upright position to said trackway, means for adjusting said magazine vertically with respect to said carriage, a gum-applying device mounted on said carriage for applying pick-up gum to the cans before they reach the label magazine, means for adjusting said device longitudinally of said carriage, a timing device mounted on said carriage for admitting cans to said trackway one at a time in spaced relation and means for adjusting said timing device longitudinally of said carriage.

2. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, a carriage mounted for horizontal adjustment with respect to said trackway and a label magazine mounted on said carriage for supplying labels in upright position to said trackway and means for adjusting said label magazine vertically with respect to said carriage.

3. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, a carriage mounted for horizontal adjustment with respect to said trackway, a power operated timing device including rotary can impelling means mounted on said carriage for admitting cans to said trackway one at a time in spaced relation, a power-operated gum-applying device mounted on said carriage for applying pick-up gum to the cans in said trackway before they reach the label magazine, a label magazine mounted on said carriage for supplying labels in upright position to said trackway, a power operated lap end pasting mechanism mounted on said carriage for applying paste to the lap end of the outermost label and a power driven shaft mounted for rotation on said carriage and extending lengthwise thereof and means operatively connecting said shaft to operate said timing device, gum applying device and lap end pasting mechanism.

4. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, a carriage mounted for horizontal adjustment with respect to said trackway, a timing device for admitting cans to said trackway one at a time in spaced relation and means for supporting said timing device on said carriage for vertical adjustment thereof with respect to said carriage.

5. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, a carriage mounted for horizontal adjustment with respect to said trackway, a gumming device for applying pick-up gum to the cans on said trackway mounted on said carriage and means on said carriage for adjusting said gumming device in a direction lengthwise of said trackway.

6. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position laterally, a label magazine for supplying labels in upright position to said trackway, lap end pasting mechanism for applying paste to the lap end of the outermost label, a gum-applying device for applying pick-up gum to the cans before they reach the label magazine, a timing device for admitting cans to said trackway one at a time in spaced relation, an elongated carriage mounted for horizontal adjustment alongside said trackway for supporting

said label magazine, lap end pasting mechanism, gum applying device and timing device, means for adjusting said label magazine vertically on said carriage and means independent of one another for adjusting said lap end pasting mechanism, gum applying device and timing device longitudinally on said carriage.

7. In a labeling machine, a trackway for cans in substantially upright position, a label magazine at the side of said trackway having a horizontal support for supporting a stack of labels edgewise, a guide to cooperate with said support in guiding the labels as they are removed one by one and means for supporting said guide so as to permit it to rest upon the upper surface of the label stack and adapt its position to varying width of labels in said stack.

8. In a labeling machine, a trackway for cans, a gumming device and a label magazine arranged in operative position along said trackway, a carrier belt for conveying the cans along the trackway and causing the outermost label in the magazine to be wrapped about successive cans, and a curling bar associated with the label magazine, said curling bar being pivotally and yieldingly positioned against the outermost label and adapted to be turned about its pivot by said label as it is withdrawn from beneath the curling bar by the rotation of the can.

9. In a labeling machine, a trackway for cans in substantially upright position, a label magazine for maintaining a supply of labels with the face of the foremost label in upright position adjacent the can trackway, a curling bar maintained against the face of the foremost label having a groove therein, and a paste applying belt arranged to travel upwardly through said groove in contact with the label whereby excess paste is carried upwardly through the groove and removed by the belt.

10. In a vertical labeling machine, a trackway for cans in substantially upright position, a label magazine for supporting a stack of labels with the foremost label adjacent said trackway, a curling bar maintained against the outer surface of the foremost label, a carrier belt for propelling the cans along the trackway so as to cause the foremost label in the stack to be successively withdrawn from beneath the curling bar and wrapped about the cans, and a wiping device on the opposite side of the can from the curling bar arranged to yieldably urge the label against the surface of the can so as to prevent the sagging of the label after leaving the curling bar.

11. In a vertical labeling machine, a trackway for cans in substantially upright position, a carrier belt and cooperating can rails for rotating and conveying the cans along said trackway, a supply conveyor having a side guide terminating adjacent the front end of said carrier belt and a conveying element operated at a linear speed below that of the carrier belt, a timer belt on the opposite side of the trackway from the carrier belt and operated at a speed predetermined with respect to that of the carrier belt, said can trackway including a stationary bottom supporting track for the cans the front end of which is in advance of the carrier belt, the timer belt engaging the cans from the beginning of said bottom track support to a point beyond the front end of the carrier belt.

12. In a vertical labeling machine, a trackway for cans in substantially upright position, said trackway including a bottom supporting track, a pair of carrier belts and cooperating can guides for rotating and conveying the cans along said track, said carrier belts being relatively adjustable vertically but fixed in position horizontally, a carriage mounted for horizontal adjustment with respect to said trackway, and a lap end pasting mechanism mounted on the carriage for lengthwise adjustment with respect thereto.

13. In a labeling machine, a trackway for cans, a gumming device and a label magazine arranged in operative position along said trackway, a carrier belt for carrying the cans along the trackway and causing the outermost label in the magazine to be wrapped about successive cans, a curling bar mounted for pivotal movement substantially on its axis, and means tending to rotate the curling bar about its pivot so as to force the edge thereof against the outermost label, the edge of the curling bar moving somewhat with the label as the label is withdrawn from beneath the curling bar by the rotation of the can.

14. In a labeling machine, a trackway for cans in substantially upright position, a label magazine for maintaining a supply of labels with the face of the foremost label in upright position adjacent the can trackway, a stationary grooved member positioned in contact with the face of the foremost label, and a paste-applying belt arranged to travel upwardly through said groove in contact with the label whereby excess paste is carried upwardly through the groove and removed by the belt.

15. In a vertical labeling machine, a trackway for cans in substantially upright position, a label magazine for supporting a stack of labels with the foremost label adjacent said trackway, a curling bar maintained against the outer surface of the foremost label, a carrier belt for propelling the cans along the trackway so as to cause the foremost label in the stack to be successively withdrawn from beneath the curling bar and wrapped about the cans, a resilient blade, a support therefor, and means for adjustably mounting said support on the opposite side of the can trackway from the curling bar to permit said blade to be positioned yieldably to urge the label against the surface of the can so as to prevent the sagging of the label after leaving the curling bar.

16. In a vertical labeling machine, a trackway for cans in substantially upright position, a carrier belt and cooperating can rails for rotating and conveying the cans along said trackway, a supply conveyor having a conveying element operated at a linear speed below that of the carrier belt, a side guide adjacent the front end of the carrier belt, and a timer belt on the opposite side of the trackway from the carrier belt and arranged to overlap the end of said side guide and the front end of the carrier belt, said timer belt being operated at a speed predetermined with respect to that of the carrier belt, said can trackway including a stationary bottom supporting track for the cans the front end of which overlaps the said side guide, the timer belt engaging the cans from the beginning of said bottom track support to a point beyond the front end of the carrier belt.

17. In a labeling machine, a trackway for cans and a label magazine arranged in operative position along said trackway, a carrier belt for carrying the cans along the trackway and causing the outermost label in the magazine to be wrapped about successive cans, a paste-applying belt arranged to travel across the face of the outermost label near its lap end, a curling bar, means for mounting said bar for pivotal movement about

an axis extending longitudinally thereof and substantially coincident with the center of that portion of said belt which travels across the label face and means for yieldingly rocking said bar to bias one edge thereof against the label, said bar being turned about its pivotal mounting by the label as the label is withdrawn.

18. In a labeling machine, a trackway for cans, and a label magazine arranged in operative position along said trackway, a carrier belt for carrying the cans along the trackway and causing the outermost label in the magazine to be wrapped about successive cans, a paste applying belt arranged to travel across the face of the outermost label near its lap end, a curling bar, means for mounting said bar for pivotal movement about an axis extending longitudinally thereof and means for yieldingly rocking said bar to bias one edge thereof against the outermost label, said bar being turned about its pivotal mounting by the label as the label is withdrawn.

19. In a labeling machine, a trackway for cans and a label magazine arranged in operative position along said trackway, a carrier belt for carrying the cans along the trackway and cause the outermost label in the magazine to be wrapped about successive cans, a curling bar associated with the label magazine, means for mounting said curling bar for yielding movement, and adjustable tension means for yieldingly urging said bar against the outermost label, said bar being moved by the label as the label is withdrawn from beneath it.

20. In a labeling machine, a trackway for cans in substantially upright position, a label magazine at the side of said trackway having a horizontal support for supporting a stack of labels edgewise and a label feed plunger adapted to engage the back of the label stack, means for feeding said plunger toward said trackway to cause the outermost label of the stack to be presented to be wrapped around a can moving along the trackway and to feed the label stack across said support as the labels are removed one by one, said feed plunger having a label engaging plate pivoted thereto at one end, means for adjusting said plate about its pivot, and said label plate having a screw adjacent each corner thereof for adjustably engaging the corner portions of the label stack to facilitate the adjustment of a stack of warped labels to level the outermost label thereof with respect to the can trackway.

21. In a vertical labeling machine, a trackway for supporting cans in substantially upright position, a carrier belt and cooperating can rails for rotating and conveying the cans along said trackway, a positively driven timer belt on the opposite side of the trackway from the carrier belt, said timer belt overlapping the carrier belt for a predetermined distance and extending forward of the front end of the carrier belt, a can guide on the same side of the trackway as the carrier belt and extending forward thereof opposite the timer belt, and means for feeding cans in close formation between the front end of the timer belt and said guide.

22. In a vertical labeling machine, a trackway for supporting cans in substantially upright position, a carrier belt and cooperating can rails for rotating and conveying the cans along said trackway, a timer belt on the opposite side of the trackway from the carrier belt overlapping the carrier belt for a predetermined distance and extending forward of the front end of said belt, said timer belt being positively driven at a speed predetermined with respect to that of carrier belt, a can guide on the same side of the trackway as the carrier belt and extending forward thereof opposite the timer belt, and means for feeding cans in close formation between the front end of the timer belt and said guide.

23. In a vertical labeling machine, a trackway for supporting cans in substantially upright position, a carrier belt and cooperating can rails for rotating and conveying the cans along said trackway, a timer belt on the opposite side of the trackway from the carrier belt overlapping the carrier belt for a predetermined distance and extending forward of the front end of said belt for a predetermined distance, a can guide on the same side of the trackway as the carrier belt and extending forward thereof opposite the timer belt, means for feeding cans between the front end of the timer belt and said guide at a speed lower than that of the carrier belt, said timer belt being positively driven at a speed below that of the carrier belt and not less than that of said can feeding means.

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