Jan. 13, 1959 R. J. MATTINGLY ET AL 2,868,403

CAN LABELER

Filed Jan. 20, 1955

2 Sheets-Sheet 1

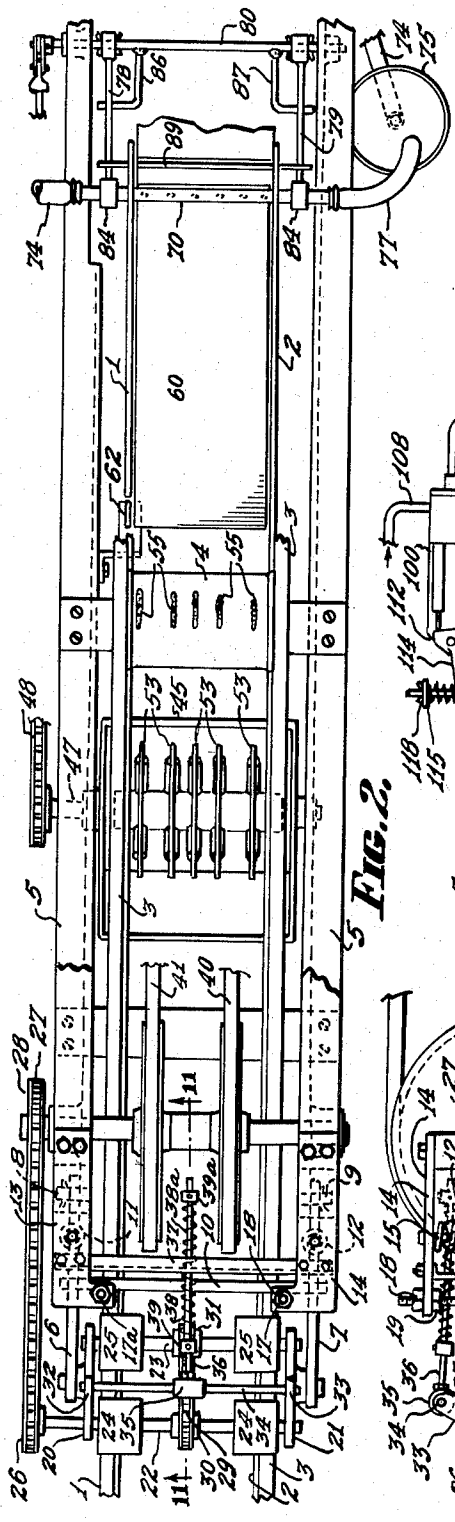


FIG. 2.

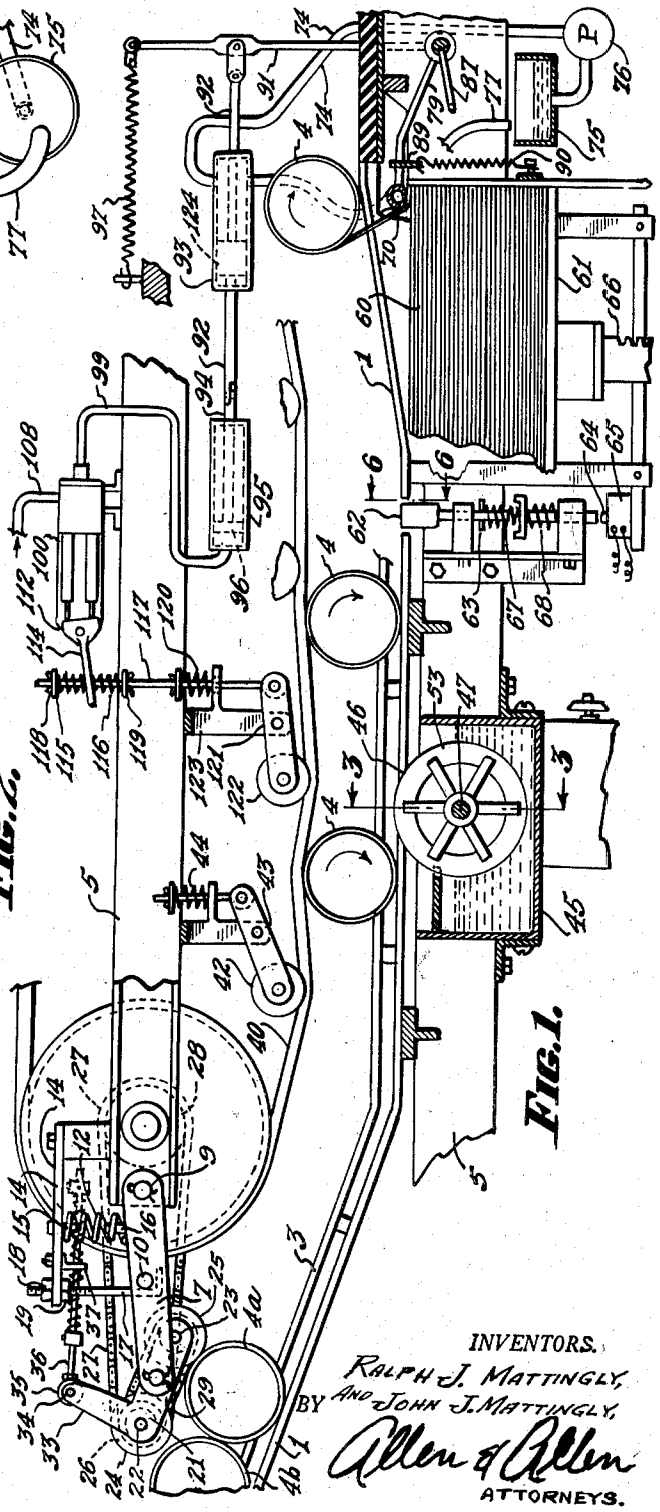


FIG. 1.

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Filed Jan. 20, 1955 2 Sheets-Sheet 2

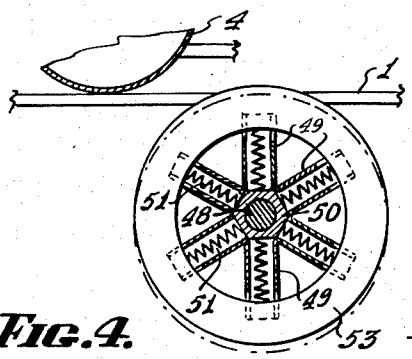


FIG. 4.

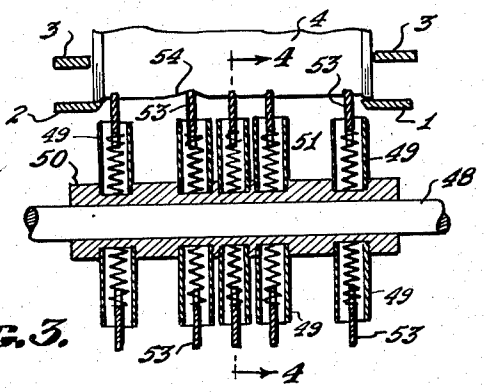


FIG. 3.

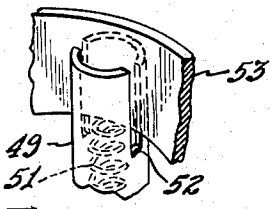


FIG. 5.

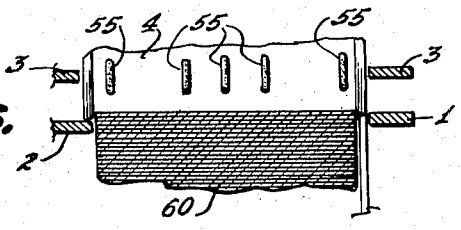


FIG. 6.

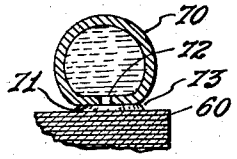


FIG. 10.

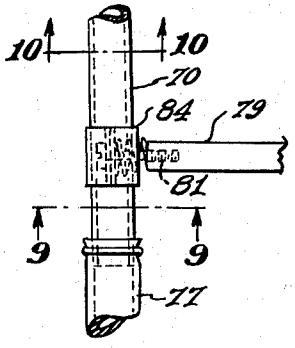


FIG. 8.

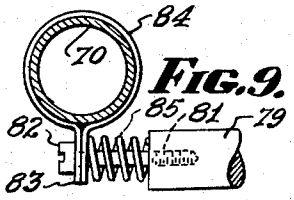


FIG. 9.

FIG. 7.

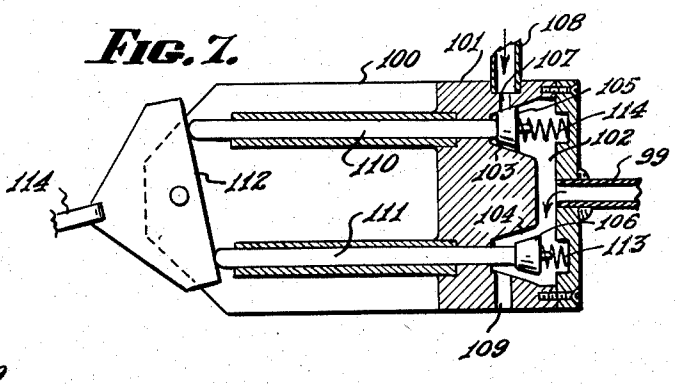
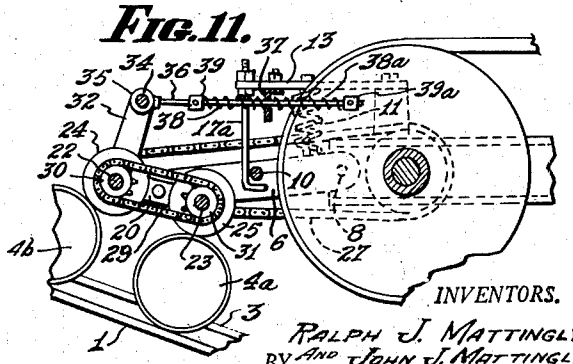


FIG. 11.



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United States Patent Office 2,868,403 Patented Jan. 13, 1959

2,868,403

CAN LABELER

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Application January 20, 1955, Serial No. 483,074

7 Claims. (Cl. 216—58)

Our invention relates to labelers and more particularly to a labeler for applying labels to cylindrical cans of the type employed in the canning industry.

It is a general object of our invention to provide a labeling device into which cans are continuously fed, the device acting to space apart the cans in the desired spaced relation, apply spaced apart spots of adhesive to the cans and then pass them over a stack of labels in such fashion that the uppermost label in the stack will be wrapped about the can.

It is a principal object of our invention to provide a device of the general character described incorporating improved means for metering the cans into the device in the proper spaced relation.

It is a principal object of our invention to provide a labeler incorporating improved means for applying spots of adhesive to the cans at spaced apart intervals.

Yet a further object of our invention is the provision of a labeler including means for positioning a stack of labels for contact by the cans and of improved means for maintaining the stack in the proper position relative to the passing cans.

Still a further object of our invention is the provision of improved means for applying a longitudinal glue seam to each label as it is withdrawn from the stack of labels, such means including means effective automatically upon stoppage of movement of cans through the machine for any purpose to prevent sticking of the labels to the glue applying means.

These as well as other objects of our invention which shall be described hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, we accomplish by that construction and arrangement of parts of which we shall now describe an exemplary embodiment.

Reference is now made to the drawings wherein:

Figure 1 is a side elevational view with parts in section of a labeler constructed in accordance with my invention.

Figure 2 is a plan view of the device illustrated in Figure 1.

Figure 3 is a sectional view of the adhesive applying means taken along the line 3—3 of Figure 1.

Figure 4 is a sectional view taken along the line 4—4 of Figure 3.

Figure 5 is an enlarged perspective view with parts shown in dotted line of a portion of one of the glue wheels.

Figure 6 is a sectional view taken along the line 6—6 of Figure 1.

Figure 7 is a side elevational view with parts in section of valve mechanism for operating the paste bar.

Figure 8 is an enlarged fragmentary plan view with parts in dotted line illustrating an end portion of the paste bar.

Figure 9 is a sectional view taken along the line 9—9 of Figure 8.

Figure 10 is a sectional view taken along the line 10—10 of Figure 8.

Figure 11 is an enlarged side elevational view taken along the line 11—11 of Figure 2.

Referring now to Figures 1 and 2 of the drawings, we have therein illustrated spaced apart tracks 1 and 2 provided with side guides 3 along which end edges of cans 4 are adapted to travel, the cans being fed onto the tracks 1 and 2 in any suitable manner. In a canning factory, for example, the cans may be fed directly from the can sealing means.

Can metering means

Mounted on the machine frame 5 is a pair of arms 6 and 7, the arms being pivoted to the frame adjacent their rear ends by means of pins 8 and 9. The arms 6 and 7 are joined together intermediate their ends by a cross bar 10; and the arms are urged downwardly in a counterclockwise direction by means of springs 11 and 12 which are compressed between the arms and the bracket members 13 and 14 which are connected to the machine frame. Suitable studs, such as the studs 15 and 16 (Figure 1), are provided to maintain the springs in proper position between the arms and the bracket members. The bracket members 13 and 14 also carry depending fingers 17 and 17*a*, the lower ends of which are inturned and adapted to engage beneath the cross bar 10. The fingers are threaded and axially adjustable by means of nuts 18 and 19, the fingers thus serving as stops limiting the counterclockwise movement of the arms 6 and 7.

At their outer ends the arms 6 and 7 carry rocker arms 20 and 21 which are mounted to rock relative to the arms 6 and 7. Rotatable shafts 22 and 23 extend between the ends of the arms and pairs of rollers 24 and 25 are mounted on the shafts. The pairs of rollers are fixed to the shafts and are adapted to be rotated thereby, the shaft 22 being driven from sprocket 26, chain 27, the chain passing around a sprocket 28 operatively connected to the drive mechanism for the machine. A chain 29 passing around sprockets 30 and 31 (Figure 11) serves to drive the shaft 23. The rocker arms 20 and 21 are provided with angular extensions 32 and 33 between which a shaft 34 extends. This shaft mounts a collar 35 to which one end of a shaft 36 is connected, the opposite end of the shaft extending freely beyond a bracket 37 through which the shaft passes. The springs 38 and 38*a* surround the shaft on each side of the bracket 37 and the springs are compressed between the bracket and the collars 39 and 39*a*, thereby balancing the rocker arms and rollers in an intermediate position.

In operation, the metering means will normally assume a position in which the rocker arms and rollers lie substantially parallel to the tracks 1 and 2, and in the path of the advancing cans, as seen in Figure 1. As the can 4*a* rolls down the tracks it will first contact the rollers 24 and the momentum of the can will be sufficient to move these rollers upwardly, thereby causing the rocker arms 20 and 21 to rock in a clockwise direction against the compression of spring 38. The upward movement of the rollers 24 permits the can 4*a* to pass therebeneath, whereupon it contacts the lowered rollers 25 which momentarily arrest its forward movement. The can will, however, rock the rollers 25 upwardly, this time against the compression of the spring 38*a*, and the can will then pass beneath the rollers 25 and on down the tracks. At the same time the rollers 24 are rocked downwardly into the path of the next adjacent can 4*b*, the rollers 24 assuming the position illustrated in Figure 11, thereby momentarily arresting the forward movement of the can 4*b*. Once the can 4*a* has passed beyond the rollers 25, these rollers will be free to move downwardly under the influence of the can 4*b* urging the rollers 24 upwardly, whereupon the cycle is repeated. In this way the cans are evenly metered in their forward

movement through the machine. Adjustment of the position of the rollers may be made by means of the arms 6 and 7 which may be raised and lowered by means of the adjustable fingers 17 and 17*a*.

Glue applicator

After the cans pass the metering means they are contacted by moving belts 40 and 41 which move the cans forwardly along the tracks 1 and 2. Suitable hold down means in the form of rollers 42 are provided to maintain the lower flights of the belts in contact with the cans, the rollers being mounted on arms, such as the arm 43, and urged into engagement with the belts by means of springs, such as the spring 44. As the cans move along they pass over a glue pot 45 in which is positioned a glue applicator comprising a plurality of glue wheels 46 mounted on a rotatable shaft 47 driven by means of a chain 48 operatively connected to the machine drive. The glue wheels 46 are positioned in spaced apart relation and are adapted to apply a plurality of spaced apart spots of glue to the cans.

Since the cans are not ordinarily truly cylindrical and may have irregularities in their surfaces, the individual glue wheels are resiliently mounted so that they will contact the periphery of the cans irrespective of irregularities therein, the wheels individually compensating for any irregularities encountered in the surfaces of the cans.

Referring now to Figures 3, 4 and 5 of the drawings, the glue wheels each comprise a plurality of radially disposed hollow spokes 49 mounted on an elongated hub 50. Spring members 51 are housed in the hollow spokes 49 which are slotted at their outer ends, as at 52, to receive the glue disc 53. The glue disc is supported by the springs 51 and yet it may be deflected relative to the spokes, the disc sliding in the slots 52 against the compression of one or more of the springs.

Normally, the glue wheels will be mounted with the discs 53 extending somewhat above the tracks 1 and 2, as illustrated in Figure 4. As the cans pass over the glue wheels, they will depress the glue discs, thereby effecting a positive contact between the glue discs and the cans. Should there be a depression in the can, such as the depression 54 shown in Figure 3, the disc underlying it will not be depressed but rather will ride in the depression, thereby compensating for the depression. By the same token, any projection on the surface of the can will simply serve to depress or deflect the underlying glue disc by an amount sufficient to compensate for the projection.

The glue discs will, of course, dip into the adhesive in the glue pot 45 and, as the glue wheels rotate, will serve to apply the adhesive to the cans, the spots of adhesive being indicated at 55 in Figures 1 and 6.

Label feeding means

Subsequent to the application of the glue spots 55, the cans pass over a stack of labels 60 extending upwardly between the tracks 1 and 2 and supported on a liftable platform 61 (Figure 1). The stack 60 is so arranged that the uppermost label in the stack will lie in a position to be contacted by a can passing over it and the glue spots on the can will engage the label and stick it to the can. Continued forward movement of the can serves to wrap the label about its cylindrical surface.

In order to assure proper contact between the cans and the stack of labels, we provide automatically acting means to raise the stack as the labels are removed. To this end, an opening is provided in the track 1 adjacent the leading edge of the stack and a depressible bar 62 is fitted in this opening. When the stack is in can contacting position the end edge of the can will not contact the bar 62 since the stack will lift the can just slightly above the track 1. However, as the stack is depleted, its level will reach a point such that the cans will contact the bar 62 and cause it to be depressed. Depression of the bar 62 causes the rod 63 secured thereto to move downwardly for contact with the button 64 of an actuating switch 65. This switch will serve to actuate mechanism (not shown) serving to lift the rack or plunger 66 which controls the movement of the liftable platform 61, thereby moving the platform upwardly a distance sufficient to raise the upper surface of the stack above the level of the tracks 1 and 2 and into can contacting position. Suitable spring means, indicated at 67 and 68, are provided to normally bias the depressible bar 62 and rod 63 to the uppermost position in which the upper surface of the bar coincides with the upper surface of the rail 1.

With this arrangement, the stack of labels is automatically maintained at the proper heighth and the mechanism is immediately responsive to a reduction in the heighth of the stack sufficient to permit the cans to contact the depressible bar.

Glue bar mechanism

Intermediate the leading and trailing ends of the stack of labels, the tracks 1 and 2 are inclined upwardly so as to raise the cans above the rear portion of the stack so as to pass over the glue bar 70 which rests on the rear edge of the stack and acts to apply a transverse band of adhesive to the trailing edge of each label. As best seen in Figure 10, the glue bar is hollow and has a flattened undersurface 71 for contact with the labels, the undersurface having a plurality of perforations 72 extending along its length to deposit adhesive 73 on the labels. The adhesive is continuously circulated through the glue bar, being pumped through the tube 74 from reservoir 75 by pump 76 and returning to the reservoir through the tube 77. The band of adhesive formed by the glue bar serves to connect the leading and trailing edges of the labels, the labels being of a length such that upon being wrapped around the cans their leading and trailing edges will overlap sufficiently to form a glue seam. In addition to applying glue to the trailing edge of the labels, the glue bar acts to hold each label in taut condition as it is being wrapped about the can. The label will be pulled from beneath the glue bar as the forward movement of the can continues, thereby permitting the glue bar to contact and apply adhesive to the next adjacent label.

There are, during the operation of the machine, times when the cans are not fed through the machine at regular intervals and when this occurs there is a tendency for the uppermost label to stick to the glue bar with a result that it will be either torn apart or else stick in the machine. Even if the label tears free, the residue adhering to the glue bar acts to foul the glue bar and subsequent labels do not receive the proper amount of adhesive. To remedy this situation, we have provided means which act to automatically raise the glue bar from contact with the stack of labels should the flow of cans through the machine be interrupted for any reason.

A pair of arms 78 and 79 is rotatively connected to a cross bar 80 journaled on the machine frame, and at their ends the arms are provided with outwardly extending pins 81 having heads 82. Slidably supported on these pins are the depending ears 83 of the collars 84 which surround the ends of the glue bar 70. Springs 85 are interposed between the ends of the arms and the depending ears, thereby resiliently mounting the glue bar relative to the arms. Curved fingers 86 and 87 are fixed to the cross bar 80 for contact with the undersurfaces of the arms 78 and 79; and a bar 89 also extends between the arms and has a spring 90 secured thereto for urging the arms and the glue bar carried thereby downwardly into contact with the stack of labels.

A rocker arm 91 is connected to an end of the cross bar 80, the arrangement being such that movement of the rocker arm in one direction will rotate the cross bar so as to bring the curved fingers 86 and 87 into contact with the arm 78 and 79, thereby causing them to lift the

glue bar upwardly away from the stack of labels against the tension of the spring 90.

Movement of the rocker arm 91 is controlled by a plunger 92 which passes through a control cylinder 93 and is connected at its free end to the piston rod 94 of air cylinder 95 having a piston 96. The rocker arm 91 is normally urged away from the glue bar lifting position by a spring 97. During the normal operation of the machine, the glue bar is maintained in contact with the stack of labels by the spring 90 and the spring 97 serves to hold the arm 91 in an inoperative position. However, should the normal flow of cans be interrupted, then compressed air will be introduced into the air cylinder 95 through the conduit 99 thereby moving the piston rod 94 and plunger 92 against the tension of the spring 97. This will cause the rocker arm 91 to move in a clockwise direction, thereby raising the curved fingers 86 and 87 and causing the glue bar to be lifted from the stack of labels.

The supply of compressed air fed to the air cylinder through the conduit 99 is controlled by a valve means 100 which, in turn, is responsive to the passage of the cans through the machine.

Referring now to Figure 7 of the drawings, the valve means 100 comprises a body 101 having an air chamber 102 including valve seats 103 and 104 adapted to receive the valves 105 and 106, respectively. A passageway 107 opens into the valve seat 103 through which compressed air enters the air chamber, being supplied from a source of air under pressure (not shown) and entering the passageway through conduit 108. Similarly, the valve seat 104 is provided with a vent passageway 109.

The valves 105 and 106 are adapted to be opened by means of stems 110 and 111, respectively, which are alternately contacted by the pivot plate 112. When the pivot plate contacts the stem 111, the valve 106 will be opened, thereby venting the air chamber 102 through the vent passageway 109. Conversely, when the pivot plate is rocked to actuate stem 110, the valve 106 will be closed by spring 113 and the valve 105 will be opened against the tension of spring 114, thereby connecting the air chamber to the intake passageway 107.

Movement of the pivot plate 112 is controlled by an arm 114 which is engaged between opposed springs 115 and 116 surrounding a rod 117, the springs being engaged between stops 118 and 119. A spring 120 urges the rod 117 to the uppermost position in which position the valve 105 is open to thereby supply air under pressure to the air chamber.

The rod 117 is, however, normally held in its lowermost position against the compression of spring 120 by means of the arm 121 connected at one end to the rod 117 and carrying on its opposite end a roller 122, the arm being pivoted intermediate its ends to a brace 123. The roller 122 is adapted to contact the traveling belt 40, and the arrangement is such that the cans, as they move through the machine maintain the lower flight of the belt 40 in sufficiently taut condition to support the roller 122 and the adjacent end of the arm 121 in a raised position, thereby lowering the opposite end of the arm and the rod 117.

Referring now to the control cylinder 93, it will be noted that the glue bar feed tube 74 is connected to one end of the cylinder in such fashion that the piston 124 will effectively close the tube when moved to the rightmost end of the cylinder. Thus, at such times as the plunger 92 acts to move the rocker arm 91 to lift the glue bar from the stack of labels, the control cylinder will shut off the flow of adhesive to the glue bar.

In the operation of this portion of our machine, the cans as they move along the tracks in the normal operation of the machine will maintain the roller 122 in its elevated position, thereby holding the rod 117 in its lowermost position and maintaining the valve means 100 in the vent position. The rocker arm 91 is thus urged in a counter-clockwise direction by the spring 97, thereby maintaining the fingers 86 and 87 out of contact with the arms 78 and 79 of the glue bar, the glue bar being held in contact with the stack of labels by means of the spring 90. However, should the normal feeding cycle of the cans be interrupted and a gap occur between adjacent cans, the belt 40 will sag sufficiently to permit the roller 122 to move downwardly, being urged by the spring 120 which also acts to urge the rod 117 upwardly, thereby moving the plate 112 to its alternate position. This movement opens the valve 105 and causes air under pressure to flow through the air chamber 102 and into the cylinder 95 so as to drive the piston 96 to the right, as seen in Figure 1, thereby moving the rocker arm in a clockwise direction against the tension of spring 97. Movement of the rocker arm in turn raises the fingers 86 and 87, thereby lifting the arms 78 and 79 which raise the glue bar away from the stack of labels. Air pressure will be applied so long as the flow of cans is interrupted, but once the normal flow is resumed the belt 40 will be tightened, the roller 122 lifted and the rod 117 moved downwardly, thereby closing valve 105 and opening valve 106, the opening of the latter valve acting to vent the cylinder 95 through the conduit 99, air chamber 102 and vent 109. This action releases the rocker arm 91 for return movement under the influence of spring 97, thereby releasing the glue bar for downward movement under the influence of spring 90.

Modifications may, of course, be made in our invention without departing from the spirit of it. Having, however, described our invention in an exemplary embodiment, what we desire to secure and protect by Letters Patent is:

1. In a labeling machine wherein the cans are moved through the machine with their axes transverse their direction of motion, spaced apart tracks along which the end edges of the cans are adapted to be rolled, metering means positioned to contact the cans as they enter the machine, said metering means being arranged to retard the forward movement of the cans and advance them into the machine in predetermined spaced apart relation, means for advancing the spaced cans along the tracks, means for applying an adhesive to the outer cylindrical surfaces of the advancing cans, means for supporting a stack of labels in the path of the advancing cans, a glue bar for contact with the rear edge of the uppermost label in the stack, said glue bar being movable from an operative position in contact with said label to an inoperative position out of contact with said label, and glue bar moving means disposed in the path of said can advancing means to be actuated thereby when the spacing between successive cans exceeds a predetermined amount for moving said glue bar from said operative position to said inoperative position.

2. In a labeling machine wherein the cans are moved through the machine with their axes transverse their direction of motion, spaced apart tracks along which the end edges of the cans are adapted to roll, an initial portion of said tracks being inclined downwardly so as to feed cans into the machine by gravity, metering means positioned to contact the cans as they move down the inclined portion of the tracks, said metering means being arranged to retard the forward movement of the cans and advance them into the machine in a predetermined spaced apart relation, means for advancing the spaced cans along the tracks, means for applying an adhesive to the outer cylindrical surfaces of the advancing cans, means for supporting a stack of labels in the path of the advancing cans, and a glue bar for contact with the rear edge of the uppermost label in the stack, said glue bar being movable from an operative position in contact with said label to an inoperative position out of contact with said label, and fluid pressure means actuated by said can advancing means when the spacing between successive cans exceeds a predetermined amount for mov-

ing said glue bar from said operative position to said inoperative position.

3. In a labeling machine wherein cans are moved through the machine with their axes transverse their direction of motion, spaced apart tracks along which the end edges of the cans are adapted to be rolled, metering means positioned to contact the cans as they enter the machine, said metering means being arranged to retard the forward movement of the cans and advance them in a predetermined spaced apart relation, means for applying an adhesive to the outer cylindrical surfaces of the advancing cans, means for supporting a stack of labels in the path of the advancing cans, a hollow glue bar having perforations therein for contact with the rear edge of the uppermost label in the stack, means for continuously circulating liquid adhesive through said hollow glue bar, said glue bar being movable from an operative to an inoperative position, glue bar moving means arranged to be actuated when the spacing between successive cans advancing through the machine exceeds a predetermined amount for moving said glue bar from said operative position to said inoperative position, and means effective upon movement of said glue bar to the inoperative position for cutting off the flow of liquid adhesive through said glue bar.

4. In a device of the character described, glue applying means comprising a glue wheel having a plurality of radially disposed hollow spokes, aligned slots in the free ends of said spokes, a circular glue disc mounted in said slots, and spring means contained in said hollow spokes for engagement with said glue disc, said spring means acting to resiliently mount said glue disc for movement relative to said spokes, whereby said glue disc may be deflected relative to said spokes upon contact of said disc with a surface to which adhesive is to be applied.

5. In a labeling machine wherein cans to be labeled are moved through the machine on a pair of spaced apart tracks, a glue applying means mounted beneath said tracks, said glue applying means including a rotatable shaft transversely disposed with respect to said tracks, a plurality of glue wheels mounted on said shaft and extending upwardly between said tracks, each of said glue wheels comprising a plurality of radially disposed hollow spokes having slots at their outer ends, a circular glue disc slidably supported in said slots, and a compression spring contained in each of said hollow spokes and extending between said shaft and said circular glue disc, said compression springs serving to resiliently support said glue disc so that it may be temporarily deflected relative to said spoke upon contact of said disc with a surface of a can moving along said tracks.

6. In a can labeling machine, glue applying means for

applying spaced apart spots of glue lengthwise along the cylindrical surface of the can, said glue applying means comprising a plurality of spaced apart glue wheels each having a plurality of radially disposed hollow spokes, aligned slots in the free ends of said spokes, a circular glue disc slidably mounted in said slots, and a compression spring contained in each of said hollow spokes for engagement with said glue disc, said springs acting to resiliently mount said glue disc for sliding movement in said slots, whereby said glue disc may be temporarily deflected axially with respect to said spokes and automatically returned to its initial position upon removal of the deflecting force.

7. A labelling machine comprising means for advancing cans along a predetermined path with their axes disposed transversely to their direction of travel, means for contacting the advancing cans and for arranging them in a predetermined spaced apart relation, means disposed along said path for applying an adhesive to the outer cylindrical surfaces of the advancing cans, means for supporting a stack of labels with the uppermost label of the stack in the path of the advancing cans, whereby successive uppermost labels of the stack are removed by and adhere to the outer cylindrical surfaces of successively advancing cans to be wrapped thereupon as the cans continue to advance, a glue applicator for contacting successively the rear edges of the uppermost labels in the stack to apply glue thereto so that the labels successively wrapped upon the cylindrical surfaces of the continuously advancing cans are formed with a glue seam connection between the front and rear edges of the respective labels, said glue applicator being movable from an operative label contacting position to an inoperative position out of contact with said labels, and glue applicator moving means actuated by said can advancing means when the spacing between successive cans exceeds a predetermined amount for moving said glue applicator from said operative position to said inoperative position.

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