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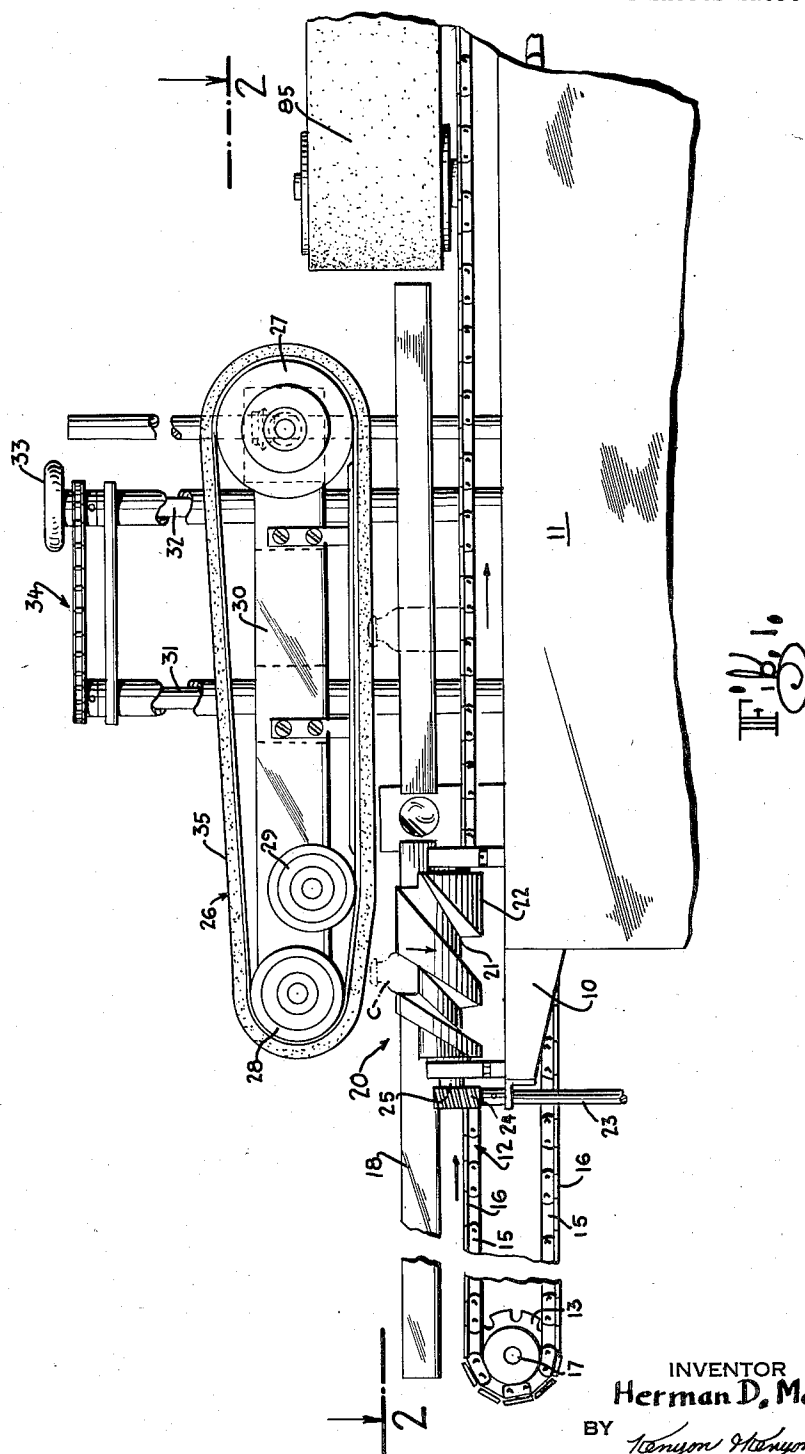
H. D. MANAS

2,873,040

LABEL APPLYING MEANS

Filed April 5, 1957

4 Sheets-Sheet 1



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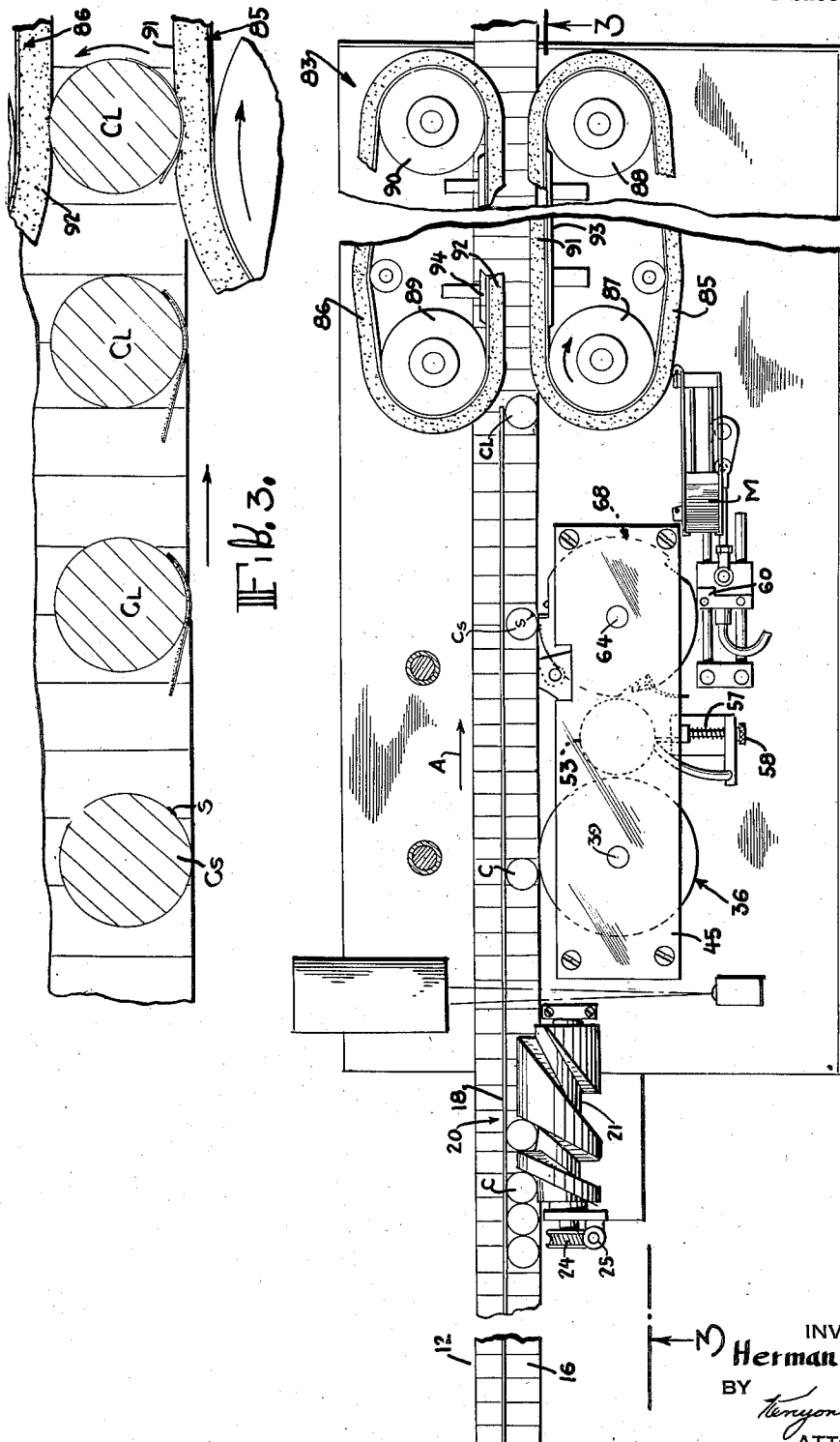
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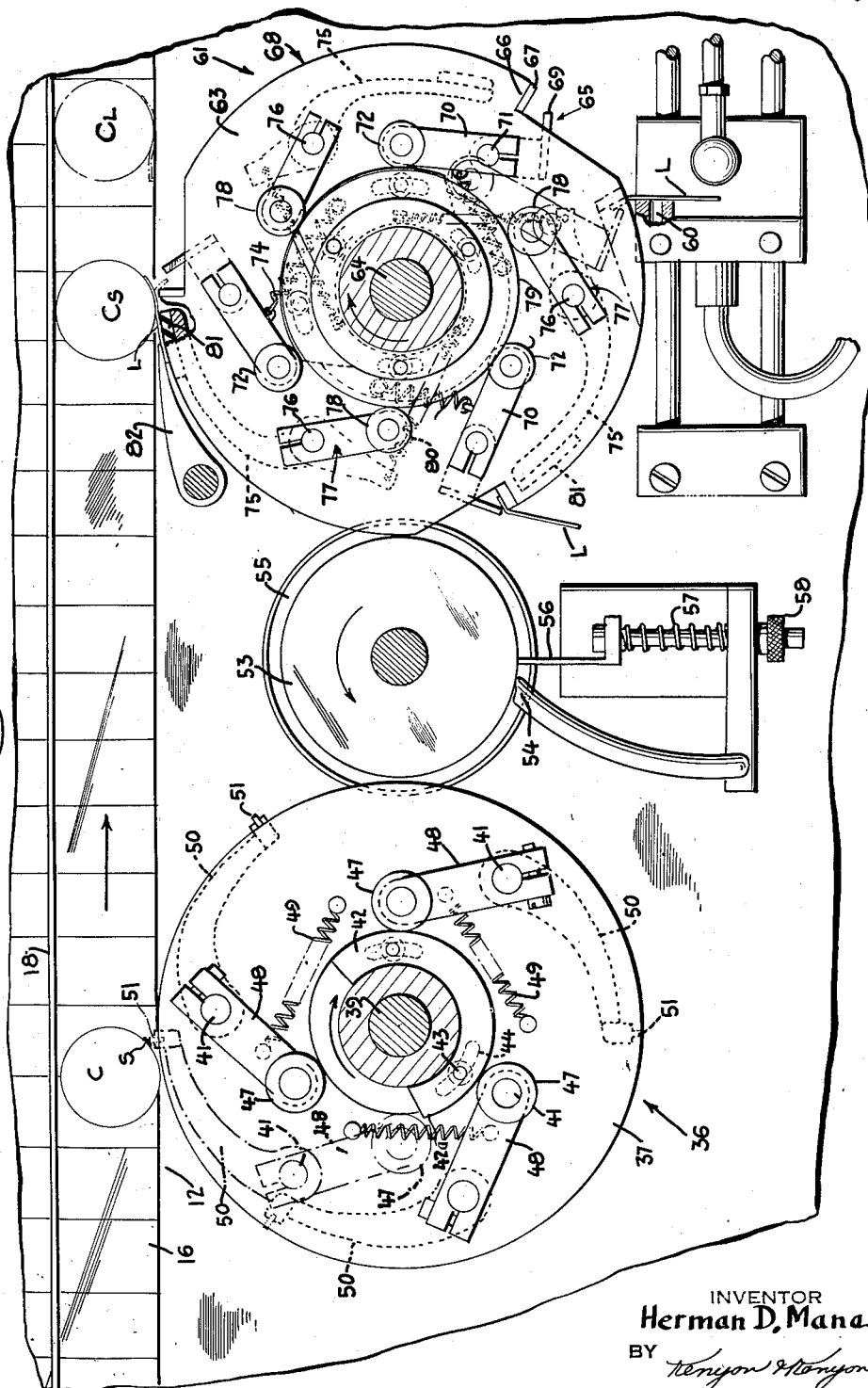
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FIG. 4



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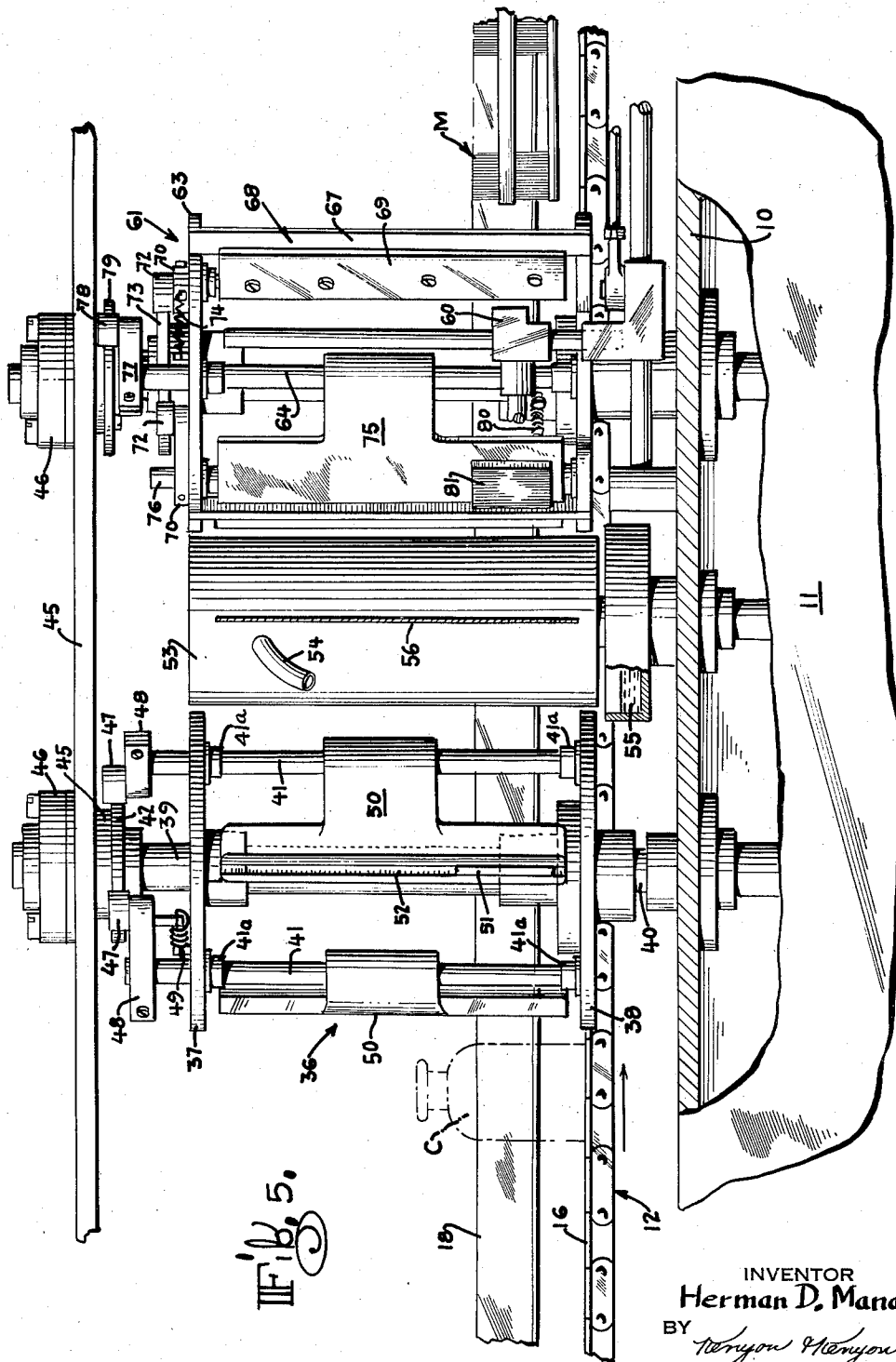
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Filed April 5, 1957

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2,873,040

LABEL APPLYING MEANS

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Application April 5, 1957, Serial No. 650,968

4 Claims. (Cl. 216—55)

This invention relates to labeling machines and more particularly to mechanism for insuring adhesion of the entire label to the container to which it is applied.

It is conventional in labeling machines to transfer labels individually from a label magazine for application to a container. In such machines, the individual label is withdrawn from the magazine and picked up by transferring mechanism which grips the label along a narrow edge strip and carries the gripped label first past an adhesive applying roller and then to a label applying station whereat the label is applied to a container arriving simultaneously at the station. The narrow strip of label engaged by the gripping jaws of the transfer mechanism does not receive adhesive as the label is swept past the adhesive applying roller. In consequence, this narrow strip of the label does not adhere to the container.

It is important in many circumstances that all portions of the label be adhered firmly to the container to eliminate packaging difficulties particularly in high speed packaging machines. Principal features and objects of this invention are provision of an arrangement to insure complete adhesion of the label to the container to which it is applied.

In practicing the invention auxiliary mechanism is provided which applies a stripe of glue to each succeeding container in advance of its arrival at the label applying station in a position on the container corresponding to that portion on which the non-adhesive bearing narrow strip of the otherwise gummed label will lie. Thus when the label is pressed against the container, adhesive will be present in all areas of the label and container and thus insure complete adhesion of the entire label to the container.

Other objects and features of the invention are the provision of auxiliary mechanism of the type described that may be adjusted for use with labels of differing dimensions, that is easy to install and operate and which also may be used in conjunction with existing labeling machines.

Further objects and features of this invention are the provision of extremely simple mechanism for the intended purposes.

Other objects and features of the invention will become apparent from the following description and the accompanying drawings wherein:

Figure 1 is an elevational view of a machine embodying the labeling means of this invention;

Figure 2 is a plan view taken along the plane of line 2—2 of Figure 1 and viewed in the direction of the arrows;

Figure 3 is a diagrammatic plan view illustrating a manner of completing the application of labels to a container.

Figure 4 is an enlarged plan view of a portion of the machine of Figure 2; and

Figure 5 is an elevational view of the mechanism shown in Figure 2.

Referring to the drawing and first to Figure 1, the

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various mechanisms of the machine in assembly are arranged with reference to a table 10. These mechanisms include generally, conveyor means for containers, means for spacing the containers on the conveyor means, means for clamping the containers on the conveyor in spaced condition, a label magazine, means for withdrawing the labels individually from the label magazine, means for transferring labels from the withdrawing means for application to the containers, means for applying adhesive to the labels during transfer, means for applying adhesive to a selected area of the container in advance of adhesion thereto of the adhesive bearing label, and means for completely pressing the adhesive bearing label to the container. All these means are appropriately positioned relative to each other above the surface of the table 10 and driven portions thereof are operated by appropriate driving means (not shown) preferably located below the table is enclosed by a protective apron or casing 11.

A conveyor comprising an endless chain 12 is supported horizontally above the table top as by sprockets 13 at opposite ends of the table. The individual links 15 of the chain 12 have flat outer plates 16 secured thereto so that as the chain 12 is moved by the sprockets, the upper horizontal flight of the chain 12 consists of a substantially horizontal surface defined by the plates 16. The shaft 17 of the sprocket 13 is driven preferably in a continuous manner by any conventional driving mechanism (not shown) so that the upper flight of the conveyor chain 12 moves continuously from left to right in the direction of the arrow A as indicated in Figure 2.

A rear guide rail 18 is positioned above the upper flight of conveyor chain 12 and extends parallelly therewith. This guide rail 18 is adjustable transversely of the direction of motion of conveyor chain 12 to accommodate containers C of different dimensions to which it may be desired to apply labels. The containers C to be labeled are placed either manually or mechanically in any desired way on the upper flight of the conveyor at its extreme left with their bottoms resting on the plates 16 and with their rear surfaces slidably engaging the guide rail 18. Friction causes these containers to move forwardly with the conveyor to a worm spacer mechanism 20.

The spacer mechanism 20 is of conventional type comprising, for example, a worm groove 21 in a spacer shaft 22, the latter being driven by mechanical means (not shown) that rotates a drive shaft 23 and its worm wheel 24 which meshes with worm gear 25 coupled to spacer shaft 22. The worm groove 21 engages the containers C arriving at its starting end and acts to separate the containers C uniform distances apart on the conveyor after they leave contact with said groove 21.

Positive means to maintain the containers in their spaced apart condition on the conveyor is provided by the vertically adjustable endless band means 26 which is trained around the guide pulleys 27, 28 and 29 carried on a horizontal, vertically movable support bar 30. Vertical adjustment of support bar 30 is by the coupled screws 31 and 32 operable in common by the hand wheel 33 and gear and chain coupling 34.

The outer surface 35 of band 26 is of cushion like rubber or the like so that it will press resiliently against the upper end of the containers C as they pass under the lower flight of said band just after leaving the spacer mechanism 20. The pressure of the lower flight of band 26 on the containers provides a resilient clamping action which maintains the containers in a clamped condition on conveyor plates 16 until the containers C move out from under the lower flight of said band 26. Adjustment of the height of this flight may be effected by rotating hand wheel 33 in proper direction to lower or elevate support bar 30. The band 26 is freely rotatable around its pulleys 27, 28 and 29 and moves at the same speed as

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conveyor chain 12 when containers C are clamped between the two.

While the containers C are maintained in clamped condition, each just after it leaves the spacer means 20 has a stripe S of adhesive applied to its wall surface. In the embodiment shown each stripe S extends vertically and is of a selected width and length. These stripes S are applied to the same relative surface position of each of the containers C by an adhesive stripe applying mechanism 36 in their clamped traverse with the conveyor 12.

The adhesive stripe applying mechanism 36 is shown in detail in Figures 4 and 5. This mechanism in the embodiment shown comprises a pair of spaced apart plates 37, 38 secured to a driven vertically supported shaft 39. This shaft extends downwardly at 40 through table 10 and drive means (not shown) for rotating the shaft are supported below the table 10. Parallel cross bars 41 located at equi-spaced positions span the distance between plates 37 and 38 and are swivelly supported, for example, in bearing sockets 41a provided on said plates. A plate cam 42 is adjustably secured as by pin and slot connection 43, 44 to a fixed plate 45 carried by brackets 46 above the upper end of shaft 39. Cam followers 47 secured to cranks 48 which respectively are fixed to the cross bars 41 are biased by springs 49 into contact with the plate cam 42 so that rotation of shaft 39 will oscillate the cross bars 41 as directed by said cam 42. An applicator carrying arm 50 is secured to each cross bar so as to oscillate with it. An applicator member 51 is removably secured to the slotted outer end of each arm 50. These removable applicator members 51 essentially have the shape of the adhesive stripe S which is to be applied to the container. In the embodiment shown, each is a long thin resilient strip 51 of rubber or the like protruding from slot 52 in the arm 50 to whose outer surface adhesive is applied as will be described and which deposits this adhesive on the container as a thin stripe S when pressed against it. The cam 42 is so disposed that when the cam followers ride on its high portions the outer surfaces of applicators 51 lie within the cylindrical envelope defined by the discs 37 and 38. The followers 47 are adapted to ride on the low portions of cam 42 during the major portion of rotation of shaft 39. Just in advance of the arrival of each applicator strip 51 at an engaging position with the surface of a clamped container C as illustrated in Figure 4 its particular follower 47 rides onto a high point 42a of the cam and just as the applicator 51 reaches desired application position relative to a particular container C its follower 47 rides off this high point 42a and the applicator 51 is snapped by its spring 49 so that the adhesive borne by the said applicator 51 is applied by pressure as a stripe S to the container. Immediately thereafter, the particular applicator 51 moves away from the container to which it has applied the adhesive stripe S.

Adhesive is conveniently applied to the applicator 51 successively by vertically supporting an adhesive distributing driven roller 53 which is rotated about a vertical axis. The applicators 51 sweep past and in contact with the roller 53 during rotation of both and on making such contact pick up a requisite film of adhesive on their outer surfaces for application as stripes to successive containers C.

This adhesive is distributed to the surface of roller 53 as by a nozzle 54 positioned near the upper end of the roller to which the adhesive is conveniently pumped by means (not shown) from a reservoir (not shown). A sump 55 below the roller serves to collect excessive adhesive dripping from the surface of roller 53. A doctor blade 56 biased by a spring 57 whose pressure is adjustable as by bolt 58 regulates the thickness of the adhesive film carried by the surface of roller 53.

The adhesive stripe bearing containers C, still in clamped condition are moved along by the conveyor 12

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to a label applying station at which labels are adhered successively to these containers.

Labels L intended for application to the containers at this station may be transferred individually thereto from a label magazine M (Figure 2) of conventional type. The individual labels L are withdrawn from the magazine M as by a reciprocating suction head 60 which moves each individual label to a position as seen in Figure 4 for seizure by rotary label pick-off and transfer mechanism 61.

The rotary label pick-off transfer mechanism may be similar to that of my issued U. S. Patent 2,725,156 dated November 29, 1955 or of my co-pending application Serial No. 501,277 filed April 14, 1955, now Patent 2,830,724, issued April 15, 1958, either modified as required for the particular purposes herein involved. As disclosed herein the pick-off and transfer mechanism 61 includes a pair of spaced apart discs 62 and 63 secured to a rotatable vertically supported shaft 64 extending upwardly from table 10 and driven by means (not shown) below table 10.

The outer peripheries of the discs 62 and 63 are provided with equi-spaced aligned recesses or notches 65. These notches 65 have radially directed portions 66. Transverse jaw members 67 span the space between the discs 62 and 63 and are secured to the radially directed portions 66 of the notches. These jaw members 67 and discs 62 and 63 provide a rotary turret frame 68 which is rotated by shaft 64 when the latter is driven.

Gripping means including movable jaws 69 are provided. These jaws 69 are each supported by one end of a rock lever or crank 70 each of which is pivoted intermediate its ends on a transverse shaft 71 extending between discs 62 and 63. Cam followers 72 on the crank 70 ride on a stationary cam 73 positioned about shaft 64, said cam being secured against rotation in any conventional way. Biasing springs 74 maintain contact between cam followers 72 and said cam 73 so that during rotation of turret frame 68, the jaws 69 are oscillated or swivelled into and out of closing relationship with the fixed jaws formed by cross bars 67. The position of cam 73 is such that moving jaws 69 are in open position as the stationary jaws arrive at the pick-off point for individual labels L as seen in Figure 4. At that instant, the upper edge of a label L held by suction head 60 is engaged by a stationary jaw 67. At that moment, the cam follower 72 rides off the high portion of the cam 73 and in consequence the movable jaw 69 snaps closed against its associated stationary jaw 67 clamping the upper edge of the label between the jaws 67 and 69 with sufficient force to draw the label L from the suction head and carry it along with further rotation of turret frame 68.

A presser foot 75 is provided for operation in conjunction with each pair of jaws 67 and 69. These presser feet 75 respectively are supported on transverse rotatable shafts 76 extending between discs 62 and 63. Bell cranks 77 are secured to each shaft 76 and are provided with cam followers 78 riding on a stationary cam 79 against which they are pressed by a biasing spring 80. The cam 79 is so shaped that each presser foot 75 normally lies retracted within the cylindrical envelope defined by the peripheries of discs 62 and 63 when the cam followers ride on low portions of cam 79 and is swivelled radially outwardly as its cam follower 78 rides onto higher portions of the said cam. The presser feet 75 have circular outer arcuate surfaces whose center are the same as those of discs 62 and 63. The arcuate surfaces may be covered with a resilient pad 81 of rubber or the like.

The high portions of cam 79 are so disposed that as the turret frame 68 carrying a gripped label L rotates from the pick-off position toward the adhesive applying roller 53 the particular presser foot 75 is swivelled outwardly to form a back up for the gripped label so that as it is sweep past the adhesive applying roller 53, the

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outer surface of the label is coated with adhesive from the roller except in the narrow edge strip which lies between the closed jaws 69 and 67.

The adhesive bearing label L is then moved beyond roller 53 toward a label applying station at which position an adhesive stripe bearing container C_s arrives at the precise moment the closed jaws of an adhesive bearing label arrive. At this instant the movable jaw 69 moves away from its associated fixed jaw 67 and the ungummed label strip that was lying between the two jaws snaps against the adhesive bearing stripe S on said container C_s. Further rotation of turrent frame 68 whose surface speed approximates the linear speed of conveyor 12 causes the rubber cushion or pad 81 of associated presser foot 75 to press a portion of the adhesive bearing label against the ungummed surface of the container C_s causing an initial wide band of adhesion.

The trailing end of the label during this operation is smoothed and guided by the fixed smoother 82 located adjacent said label applying station.

As the label bearing containers C_L are moved by conveyor 12 beyond the label applying station, they carry the partially adhered label L therewith as seen in Figure 3 to a label application completing mechanism 83.

This mechanism in the embodiment shown comprises a pair of spaced apart endless belts 85 and 86 respectively trained about the pairs of pulleys 87, 88 and 89, 90. These belts have outer resilient surfaces 91 and 92 of sponge rubber or the like and the facing flights are backed by appropriate guide plates 93 and 94. Both belts may be driven in synchronism by appropriate means (not shown) and the belt 86 in addition may be locked against movement if desired.

If containers C_s as shown have round cross sections only belt 91 is driven at a higher linear speed than that of conveyor 12. In consequence as each label bearing container C_L moves between the facing flights or belts 85 and 86 their resilient surfaces 91 and 92 yield and moving belt 85 rolls the containers C_L in counterclockwise direction as shown in Figure 3 causing the unadhered portions of label L to be wrapped around the container and pressed into smooth adherence therewith. If containers C_s are rectangular both belts 85 and 86 are driven.

It is understood, of course, that the containers C_L become unclamped in advance of their arrival between belts 85 and 86 by moving out from under the lower flight of clamping belt 26 as seen in Figure 1.

Operation

Operation of the labeling machine equipped with this invention in general is as follows:

Labels L are removed one by one from the label magazine as by the suction head 60 and their upper edges brought into position for engagement between a pair of jaws 69, 67 of the turret 68. The jaw 69 closes on jaw 67 gripping the upper edge of label L therebetween and carrying it around with rotation of turret 68 sweeping it past the adhesive applying roller 53. At the time of such sweep, the presser foot 75 is oscillated outwardly to provide a back rest for the label as it engages roller 53 thus insuring uniform spread of adhesive onto all surface portions of the label except the narrow strip gripped between jaws 69 and 67.

In the meantime, containers C fed to the conveyor 12 at the left end of the machine are spaced thereon by the spacing means 20 and clamped in spaced condition on the conveyor 12 by the belt 26. The clamped spaced containers C are moved forwardly toward the right by conveyor 12 and as each moves past the adhesive stripe applying station one of the stripe applicator members 51 on the stripe applying mechanism 36 previously gummed by rotary contact with glue applying roller 53 meets the container C and applies a narrow stripe S of adhesive to it.

The stripe bearing container C_s still clamped to the conveyor by the belt 26 moves forwardly with it to the

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label applying station and a container C_s is timed to arrive at said station at the same time as a glue bearing label L is brought thereto by the transfer turret 68. At the moment of arrival, the jaw 69 releases the gripped strip of the label which snaps into position for engagement with the narrow glue stripe S on the container C_s. Further movement of conveyor 12 which is at the same speed as the surface speed of turret 68 presses a partial portion of the label onto the container C_s by reason of the back-up and cushioning action of the pad 81 on presser foot 75. After leaving the label applying station, the container C_L carrying a partially adhered label becomes unclamped as it rides out from under belt 26 but almost immediately thereafter enters the space between the flights of belts 85 and 86 which, if the container is round as shown, rotate the container C_L about its vertical axis and in such rotation wrap the unadhered portion of the label smoothly into adhering engagement therewith. To effect this the rear belt 86 is held stationary. If the containers are other than circular in section, both belts 85 and 86 are driven and they iron or press the unadhered portion of the label onto the container without rotating the latter.

The labeled containers with labels completely adhered thereto arrive at the delivery end of the machine in this instance at the extreme right whence they are removed for packaging or other disposition.

The machine is readily adaptable for use with labels of varying heights. It is necessary to use a stripe applicator 51 whose length is the same as the height of the label to be applied and to position it at proper elevation in slot 52 at the end of arm 50, and to change this applicator each time to one of appropriate length when a differently sized label is used. This is readily done since the applicators 51 are removably and slidably mounted in the slots 52 of their arms 50 as by friction or the like.

Also, containers of different diameters or dimensions may be utilized and in such event the guide rail 18 is adjusted to the width of the container while the elevation of the clamping belt 26 is adjusted by turning wheel 33 as required.

It is, of course, necessary to provide appropriate speed synchronism between the moving elements of the machine by regulation of the couplings or gearing connecting the driving motor with the driven parts. The selection and arrangement of synchronizing mechanism is well within the compass of the persons skilled in the art to which this invention relates.

While a specific embodiment of the invention has been described and shown, variations within the scope of the claims are possible and are contemplated. There is no intention therefore of limitation to the exact disclosure herein made.

What is claimed is:

1. In a labeling machine, means for completely adhering a label to a container including an adhesive distributing member, a rotary member, an adhesive stripe applying member carried by the rotary member to swivel relative thereto, means for swiveling said adhesive stripe applying member relative to said rotary member, said stripe applying member being movable by movement of said rotary member into contact with said distributing member to receive adhesive therefrom and then being movable with said rotary member and by said swiveling means into contact with said container to apply an adhesive stripe thereto, and means for positioning an adhesive bearing label having a non-adhesive area so that the latter and said stripe are aligned and adhered and means for effecting complete adhesion of the label and container.

2. In a labeling machine, means for completely adhering a label to a container including an adhesive distributing member, a rotary member, an arm swivelly mounted on said rotary member, a stripe applying member secured to said arm, cam means for swiveling said arm member on said rotary member during its rotation to effect transfer of adhesive contact between said stripe

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applying member and said distributing member and also to effect adhesive stripe transferring contact between said stripe applying member and said container in a selected area of the latter, and means for thereafter applying a label to which adhesive has been applied in all but a limited area to the container so that the adhesive stripe and said limited area are aligned and adhered together.

3. In a labeling machine, means for completely adhering a label to a container including an adhesive distributing roller, a pair of axially aligned spaced apart rotary discs, an arm swivelly mounted between said discs, a stripe applying member secured to said arm, a cam, cam follower means secured to said arm and movable over said cam for swiveling said arm radially relative to said discs during their rotation first to effect transfer of adhesive contact between said stripe applying member and said roller and thereafter effect adhesive stripe transferring contact between said stripe applying member and said container in a selected area of the latter, means for thereafter applying a label to which adhesive has been applied in all but a limited area by contact with said roller to the container so that the adhesive stripe and said limited area are aligned and adhered together and means for then completely pressing all unadhered portions of the label into adhesive contact with said container.

4. In a labeling machine having means for moving spaced containers along a selected path of travel, an ad-

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hesive distributing roller, adhesive stripe applying mechanism for applying a stripe of adhesive to a selected area of each succeeding clamped container, said last-named means comprising a pair of spaced apart plates, a driven rotary shaft on which said plates are carried, means for swivelly supporting a plurality of arms from the plates, an applicator member removably secured to each arm and including a narrow strip of resilient material, cam means to swivel the applicator members during rotation of said plates to move said resilient strips successively during rotation of said plates into adhesive receiving contact with said roller and thereafter into adhesive applying contact with successive containers to apply a stripe of adhesive to a selected area of each container, means for thereafter applying labels bearing adhesive except in an area corresponding to the stripe bearing area of the containers to the latter with the two areas aligned, and means for pressing the label to the container to effect complete adhesion of all areas of the label thereto.

References Cited in the file of this patent

UNITED STATES PATENTS

2,195,111	Kagley	Mar. 26, 1940
2,725,156	Manas	Nov. 29, 1955
2,727,647	Luthi	Dec. 20, 1955
2,748,971	Flynn	June 5, 1956