Sept. 26, 1961 S. T. CARTER 3,001,660

LABEL-WIPING MEANS FOR LABELING MACHINES

Filed Jan. 24, 1958 4 Sheets-Sheet 1

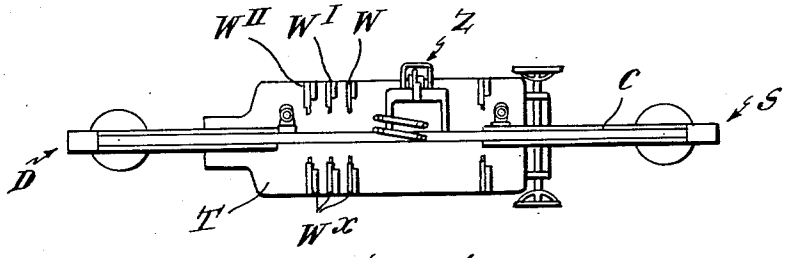


Fig. 1

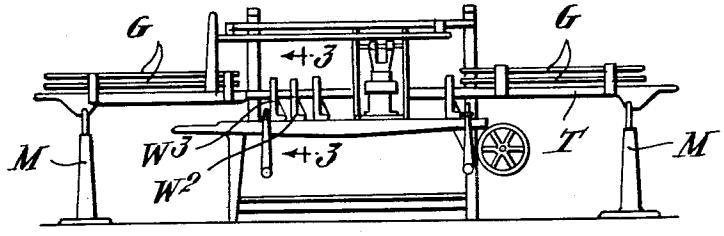


Fig. 2

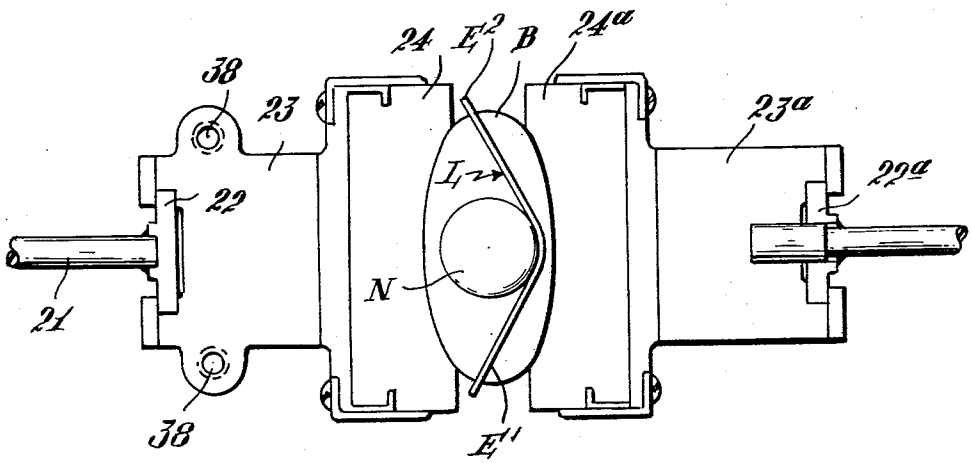


Fig. 5

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LABEL-WIPING MEANS FOR LABELING MACHINES

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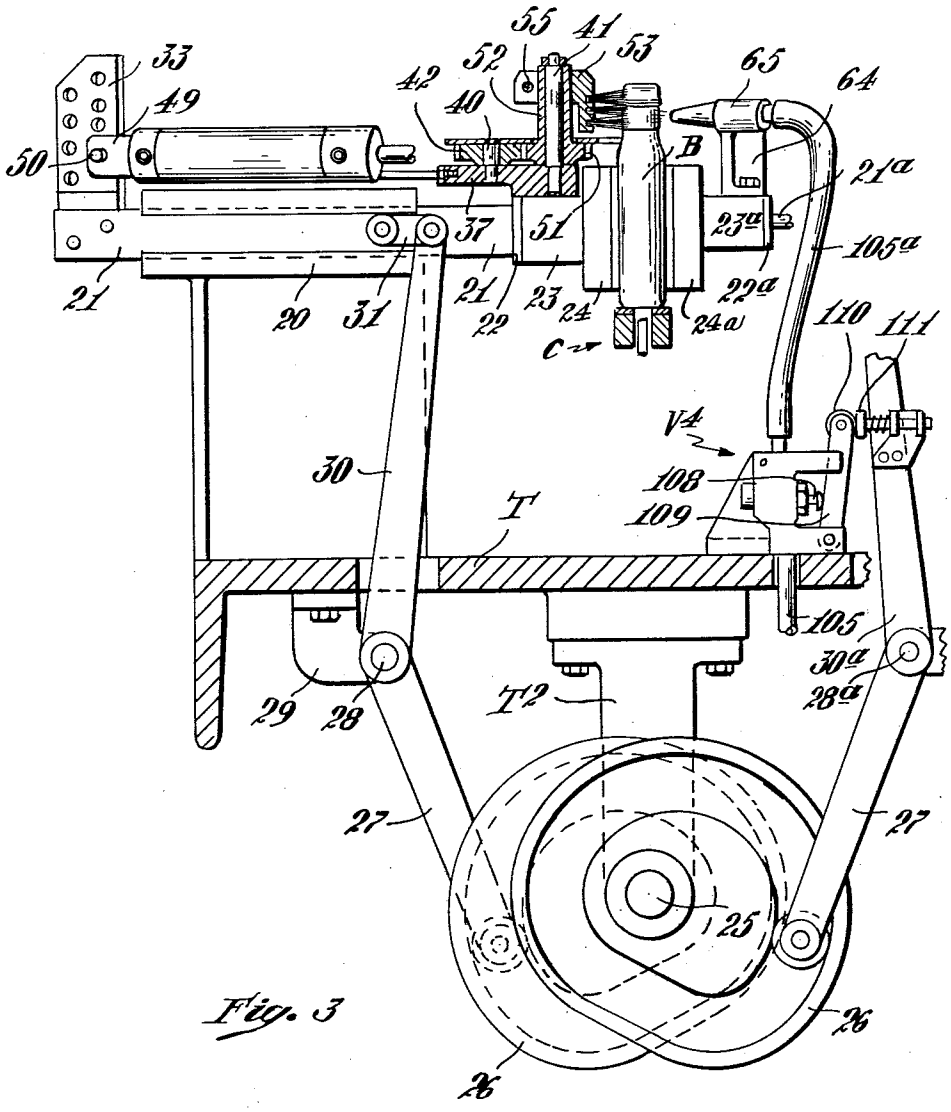


Fig. 3

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LABEL-WIPING MEANS FOR LABELING MACHINES

Filed Jan. 24, 1958 4 Sheets-Sheet 3

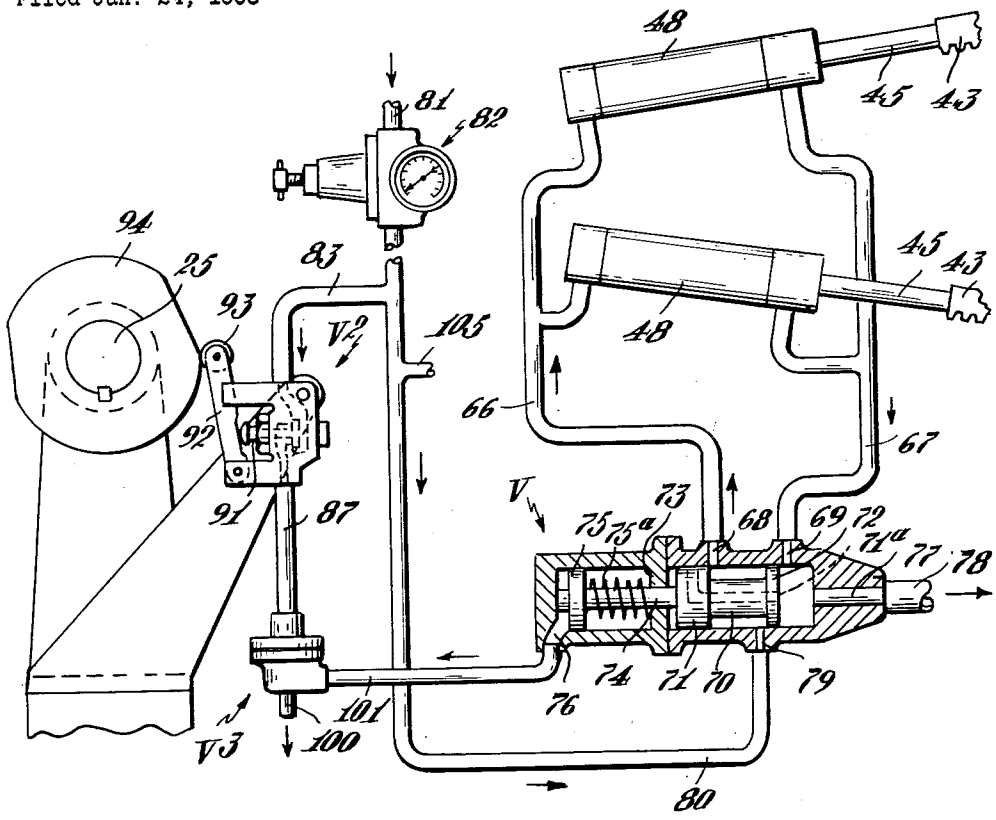


Fig. 8

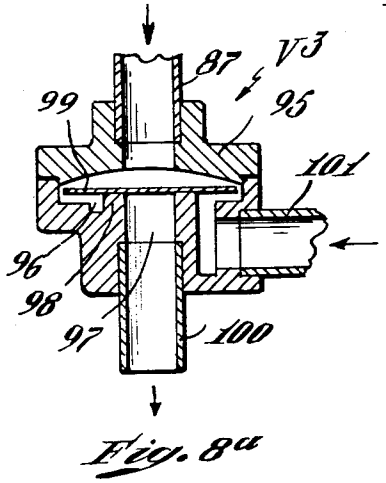


Fig. 8a

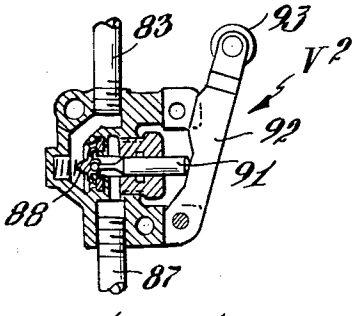


Fig. 8b

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LABEL-WIPING MEANS FOR LABELING MACHINES

Filed Jan. 24, 1958 4 Sheets-Sheet 4

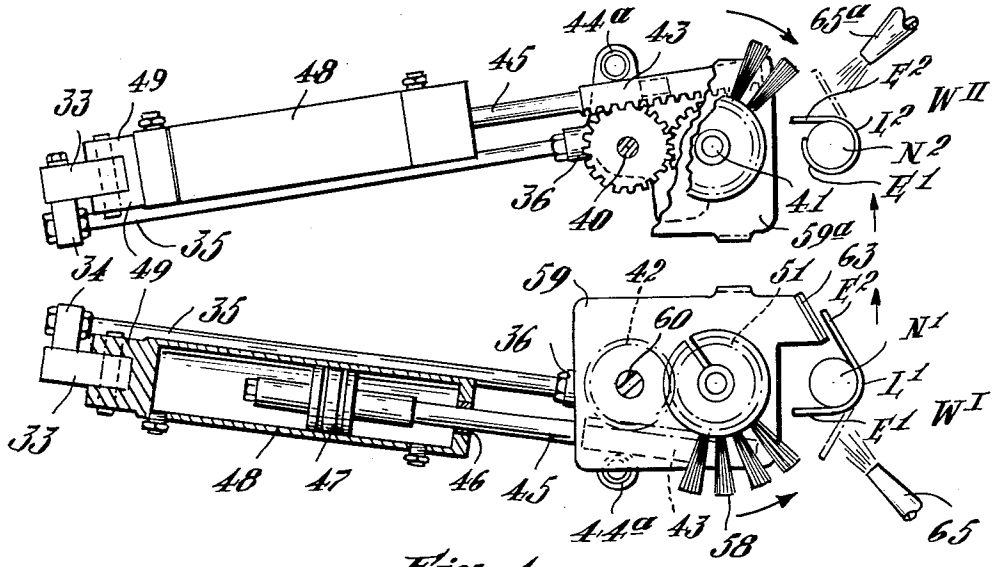


Fig. 4

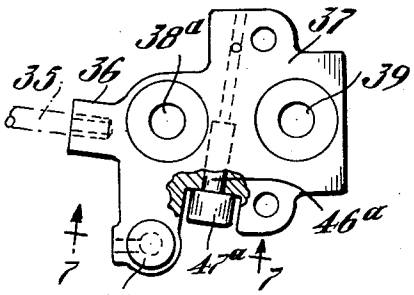


Fig. 6

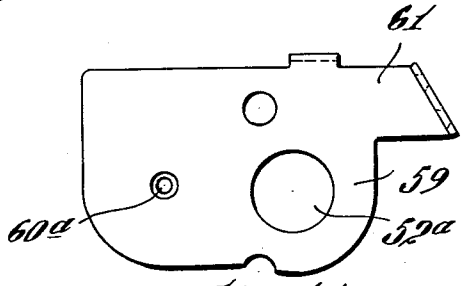


Fig. 11

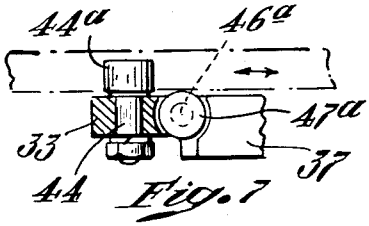


Fig. 7

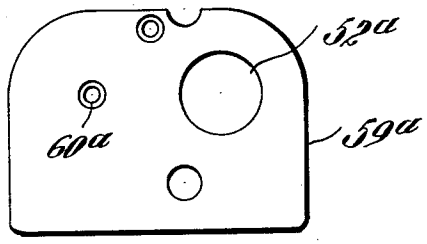


Fig. 12

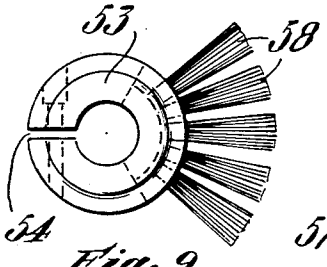


Fig. 9

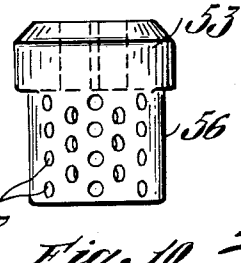


Fig. 10

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United States Patent Office 3,001,660 Patented Sept. 26, 1961

3,001,660
LABEL-WIPING MEANS FOR LABELING MACHINES

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Filed Jan. 24, 1958, Ser. No. 710,958
12 Claims. (Cl. 156—440)

This invention pertains to labeling machines and, more especially, to apparatus for wiping down the opposite ends of a label of the wrap-around type, that is to say, a label which extends more than one-half the way around the article which is being labeled, and including labels which extend all the way around the article. Labels of this type are commonly applied to bottle necks, for instance to the neck portions of ketchup bottles.

While certain features of the invention are of broader utility, the invention is herein described by way of example as embodied in a machine designed simultaneously to apply an ordinary label and a wrap-around label. Hereinafter, for convenience, but without limitation, the article to which the label is to be applied will be referred to as a bottle. The labeling machine to which the wiping mechanism is applied is herein shown by way of example, but without limitation, as of the type wherein the bottles are moved along a predetermined path, for instance a rectilinear path, by suitable conveyor means. Such a machine is illustrated, for example, in the patent to Holm, No. 2,026,172, dated December 31, 1935, or, for further example, in the patent to Sidney T. Carter, No. 2,665,025, dated January 5, 1954.

It is a common practice, in applying labels to articles, first to contact the mid-portion of the adhesively-coated label with the article at one dwell point, by means of a transfer device, for example, a conventional suction grip finger, and then to apply pressure, for instance, by means of a yieldable pressure-type wiper pad, at a successive dwell point, for bringing the entire label into adhesive contact with the bottle. However, this usual pressure-type wiper, which moves radially with reference to the bottle, does not suffice to carry the end portions of a wrap around label into contact with what here may be termed the "rear" side" of the bottle, and especially when such end portions must be overlapped. To accomplish this operation, it is necessary to employ wiper means in addition to or in substitution for the pressure-type wiper, for example wiper elements movable in opposite directions about the bottle and which, in succession, engage and wipe down the opposite end portions of the label.

The present invention has for a general object the provision of novel wiper means for applying wrap-around labels to bottles.

Another object of the present invention is to provide label-wiping means which is of simple construction but which accurately places the end portions of the labels without smearing the bottle. A further object is to provide improved wiping means in an embodiment such that it may be installed without substantial difficulty in existing labeling machines and without requiring substantial modification of the latter.

For the attainment of the objects of the invention, the labeling machine here disclosed is of the kind which is designed to apply a body label or labels to a bottle and also to apply to the neck portion of the bottle a label which embraces the neck portion through an arc substantially exceeding 180°, including situations where the ends of the label are required to overlap and wherein the bottles to be labeled stand upright in spaced relation upon a moving conveyor which advances the bottles intermittently along a predetermined rectilinear path from one label wiping station to another, at each of which the bottle dwells, and wherein, at each of two successive label wiping stations, horizontally movable carriers, each supporting a pressure-type wiper-pad operative to press a body label into adhering contact with the body of the bottle, are arranged at opposite sides respectively of the conveyor path, and wherein mechanical devices move the wiper-pad carriers at opposite sides of the conveyor path, at each respective wiper station toward the conveyor path, while the bottle dwells at said station, so as to clamp the bottle between them and hold it stationary during the wiping operation, and wherein, before a bottle reaches the first one of said stations, a label-affixing element, located at one side of said path, functions to contact the central portion only of an adhesively coated neck label with the neck portion of the bottle, leaving the opposite ends of the neck label projecting in widely divergent relation toward the opposite side of the conveyor path, and wherein, at the opposite side of said conveyor path from said label affixing element, two rotary wiper brushes are located, one at each, respectively, of said two successive wiper stations, and wherein power driven mechanism turns the two brushes in opposite directions so that one brush is effective to wipe one end portion of a neck label about a bottle neck while the bottle dwells at the first of said wiper stations, and the other wiper brush is effective to wipe the other end of the same neck label about the bottle while the latter dwells at the next wiping station. In accordance with the present invention, the wiper pad carrier at one side of the conveyor path at each of said stations, respectively, supports one of the wiper brushes, while the wiper pad carrier at the opposite side of the conveyor path at each of said stations, respectively, supports a nozzle, both nozzles being at the same side of said path as the label affixing element, and both brushes being at the opposite side of said path from said affixing element, each nozzle being arranged to deliver a jet of air in a direction to initiate the curling of the corresponding end of the neck label about the bottle neck prior to its contact by the wiper brush.

The invention will be pointed out in detail in the following more detailed description and by reference to the accompanying drawing wherein

FIG. 1 is a diagrammatic plan view, to small scale, showing a labeling machine of a type in which the improved neck-wiping means of the present invention is useful;

FIG. 2 is a diagrammatic front elevation of the machine shown in FIG. 1;

FIG. 3 is a vertical section, to larger scale, substantially on the line 3—3 of FIG. 2, showing the location of the improved wiping means in relation to the other parts of the labeling machine and showing a pair of conventional pressure-type, body label wipers, and means for transmitting motion from the main shaft to the several wiping devices;

FIG. 4 is a fragmentary plan view partly in horizontal section, showing the improved neck-wiping means of the present invention, this view showing the initial and final wiping devices as located at two successive wiping stations of the machine;

FIG. 5 is a fragmentary plan view illustrating a pair of body label wipers of conventional pressure type disposed in wiping position and showing the central portion of a neck label as having been adhered to the front side of the bottle neck;

FIG. 6 is a plan view, partly in horizontal section, showing the support for one of the brush wipers and its actuating gears;

FIG. 7 is a fragmentary vertical section on the line 7—7 of FIG. 6;

FIG. 8 is a fragmentary elevation, partly in vertical section, showing the means for turning the brush wipers;

FIG. 8*a* is a fragmentary vertical section showing details of a valve forming part of the mechanism of FIG. 8;

FIG. 8*b* is a fragmentary vertical section showing another valve embodied in the mechanism of FIG. 8;

FIG. 9 is a plan view of one of the wiper brushes;

FIG. 10 is an elevation showing the hub portion of one of the wiper brushes but without the bristles;

FIG. 11 is a plan view of a cover plate for the gears of the brush wiper at the first wiping station; and

FIG. 12 is a plan view of the cover plate for the gears of the brush wiper of the second wiping station.

While the apparatus herein disclosed is described as a matter of convenience, with particular reference to its utility for applying wrap-around neck labels to bottles, and although bottles are the only articles specifically referred to as those to which labels are applied by the mechanism, it is to be understood that the apparatus disclosed is useful in applying wrap-around labels to articles other than bottles and that wherever herein reference is made to bottles, it is to be understood that the term "bottle" is not to be regarded as a limitation upon the scope of the invention.

Since the apparatus of the present invention relates specifically to improved means for applying wrap-around labels, it has not been deemed necessary to describe the labeling machine itself in detail, it being understood that the machine will comprise the usual devices, for example magazines for the labels, gum-applying means, pickers, hold-down devices for the bottle tops, and, so far as the body labels are concerned, wiper means of the generally conventional type, and that all of these various operative parts will be actuated in properly timed relation by conventional motion-transmitting means driven by a main shaft which turns once for each cycle of operation. Such a machine is disclosed by way of example in United States Letters Patent No. 2,665,025, dated January 5, 1954. Moreover, while herein the invention is shown as embodied in a machine of the so-called "straight-away" type, the invention in its broader aspects may be applicable to other types of labeling machines.

In FIGS. 1 and 2 of the drawings, there is diagrammatically illustrated a straight-away labeling machine of the general type, more fully described in the patent to Carter, Patent No. 2,665,025, January 5, 1954. This machine, as shown in FIGS. 1 and 2, has the table T which is supported upon legs M and which has guides for a rectilinear conveyor C upon which the bottles stand as they are moved from the receiving end S of the machine to the delivery end D. Suitable stationary guard rails G prevent the bottles from tipping as they are moved along by the conveyor, the latter being of a type which moves successive bottles step-by-step intermittently. In FIG. 1, a gumming and label-applying station is indicated at Z and beyond this in the direction of movement of the conveyor, the table of the machine carries a plurality of label wiper stands, those at one side of the article path being indicated generally by the character W^X and those at the other side of the article path being designated W, W^I and W^{II}. The neck label-wiping apparatus of the present invention is associated with the wipers W^I and W^{II}.

Referring to FIG. 3, the numeral **20** designates a stationary, horizontal guide carried by the machine frame in which there is arranged to slide the horizontal wiper carrier **21**. This wiper carrier **21** is provided with a head **22** at its right-hand end, as viewed in FIG. 3, to which there is removably secured the wiper support **23** which carries the pressure-type body label wiper pad **24** (FIG. 5), this wiper being of the pressure type and, as here illustrated, being arranged to contact a label adherent to the rear side of a bottle B as the latter moves along the conveyor path. As illustrated in FIGS. 3 and 5, there is also provided a horizontally movable wiper carrier **21a**, like the carrier **21**, and which has a head **22a** to which is removably secured the wiper support **23a** carrying the pressure-type wiper pad **24a** which is designed to contact a label adhering to the front face of the body of the bottle, it being understood that the arrangement shown is such as to be capable of applying labels both to the front and rear of the bottle body, if desired; or, that, if only one body label be applied, then the idle wiper will act as an abutment to support the bottle during the application of the label to its opposite side. It will be understood that similar carriers and wiper pads are located at each of the stations W, W^I and W^{II}.

The means for actuating the wiper carriers **21** and **21a** at each station is substantially like that shown in the patent to Carter, referred to above. In FIG. 3, the main shaft of the machine is indicated at **25**, the shaft turning in bearings in brackets T^2 depending from table T. On this shaft, two cams **26** are fixed. These cams are arranged to rock two bell crank levers **27** which are pivotally supported at **28** and **28a**, respectively, at the rear and front of the machine upon suitable brackets **29** carried by the table T, these levers having arms **30** and **30a**, respectively, which extend upwardly above the table and to whose upper ends links **31**, only one of which is shown, are pivotally connected, the links also being pivotally connected to the respective carriers **21** and **21a**. Thus, as the shaft **25** turns the presser pads **24** and **24a** are moved simultaneously toward and away from the article path defined by the conveyor C. Obviously the cams are so contoured that the advance of the carriers toward the article path is terminated as the pressure pads **24** and **24a** come into operative relation to the article, so that, although the paths of the carriers **21** and **21a** are here referred to as "transverse" to the article path, the pressure pads and the rotary wipers hereafter described never cross the longitudinal center line of the article path and the axes of the wiper brushes are fixed, in definite relation to the axes of the clamped bottles, while the labels are being wiped.

It will be understood that before the pads **24** and **24a** are moved toward the bottle at station W, the body label or labels will have been taken from the magazine or magazines, their surfaces treated to make them adhesive, and that their center portions, at least, will have been affixed to the body portion of the bottle; likewise, it will be understood that, before the presser pads **24** and **24a** start to move toward each other, a neck label L will likewise have been taken from a suitable magazine, caused to become adhesive, and moved toward the article path until the center portion of its adhesively-coated side has been affixed to the neck N of the bottle at the front side of the neck, leaving the opposite ends E^1 and E^2 (FIG. 5) of the label standing outwardly away from the bottle neck and projects toward the opposite side of the article path, usually at a wide obtuse angle to each other.

In accordance with the present invention, the neck label wiping means is so devised as to wipe one end of the label into contact with the bottle neck while the bottle dwells at the wiping station W^I (FIG. 4) and then to wipe the other end of the same label into contact with the bottle neck while the bottle dwells at the station W^{II}. While the stations W^I and W^{II} at which the successive wiping operations take place are here described and illustrated as being adjacent stations, it will be understood that if, for any reason, a longer period between successive wiping operations be desired, the stations W^I and W^{II} may be spaced further apart. Since the spacing of adjacent wiper stations may be established existing machines, and since the neck-wiping mechanism of the present invention may occupy more space lengthwise of the conveyor than conventional wipers, the carriers for wiper devices at stations W^I and W^{II} may be disposed in divergent relation as shown in FIG. 4, this arrangement, in respect to the specific mechanism here described, also serving to prevent engagement of the driving rack with the gear to which the brush is secured. Since the wiper mechanisms at stations W^I and W^{II} are substantially

alike, it is unnecessary to describe each independently, except as to specific features of difference, it being assumed, as respects FIG. 5, that the body label wipers, there shown, are at the station W, just preceding station W^{I} at which the first neck label-wiping operation takes place, but that a similar set of body label wipers is located at each of stations W^{I} and W^{II}.

Referring to FIG. 3, it may be noted that a vertical plate 33 is fixed to the left-hand end portion of the wiper carrier 21. This plate 33 has an opening which receives a shoulder bolt 34 (FIG. 4) to which there is secured one end of a rod 35 (FIG. 4) whose opposite end has screw-threaded engagement with a nipple 36 forming an integral part of a support 37 (FIG. 6) which rests upon the preser pad support 23 (FIG. 3) and which is secured to the latter by bolts passing through holes 38 (FIG. 5) in the presser pad support, the member 37 having vertical bore holes 38^{a} and 39 (FIG. 6) in which are fixed parallel, vertical, stub shafts 40 and 41 (FIG. 3). A gear 42 (FIG. 3) is mounted to turn on the fixed shaft 40 and this gear meshes with a rack 43 (FIG. 4) on one end of a piston rod 45 which extends through a bushing 46 (FIG. 4) in one head of a cylinder 48, the rod carrying a piston head 47 within the cylinder. At its left-hand end, as viewed in FIG. 4, the cylinder 48 is provided with spaced ears 49 having aligned openings through which a pin 50 passes, the ears 49 being disposed at opposite sides of the plate 33 (FIG. 3) and the pin forming a pivotal connection between the cylinder and the plate whereby the right-hand end of the cylinder may rock vertically to accommodate bottles of different heights. The plate 33 has a series of openings into any one of which the pin 50 may be entered thereby to vary the vertical position of the pivotal axis of the cylinder.

On the fixed vertical shaft 41, a second gear 51 (FIG. 3) is arranged to turn, this gear meshing with the gear 42, the two gears being here shown as of the same pitch diameter. The gear 51 has a long integral sleeve or hub portion 52 to whose upper end there is fixed the hub 53 of one of the neck label-wiping brushes. This hub, as illustrated in FIGS. 9 and 10, is split at 54 and is provided with bolt holes for the reception of a clamping bolt 55 (FIG. 3) by means of which the hub may be adjustably fixed to the sleeve portion 52 of the gear 51. The brush hub, as shown in FIG. 10, comprises a segmental portion 56 provided with holes 57 in which are set the tufts 58 of brush bristles. As here shown, the brush is of an arcuate extent, not substantially exceeding 90°.

FIG. 4 shows in plan, the two wiper brushes, one at the wiping station W^{I} and the other at the wiping station W^{II}. These stations correspond to the positions, respectively, of two successive bottles as they stand at successive dwell points along the article path. In FIG. 4, the necks of two such bottles are indicated at N^{1} and N^{2}, respectively. It will be noted that, as illustrated in FIG. 4, the pressure motors for turning the brushes (that is to say, the cylinders 48 with their pistons) associated with the two brushes, respectively, are arranged in divergent relation. However, such an arrangement is not essential to the invention.

As illustrated in FIGS. 6 and 7, the support 37 is provided with a vertical stub shaft 44 on which there is mounted a roll 44^{a} (FIG. 4) which engages the rear or smooth side of the rack 43. The support 37 is also provided with a horizontal opening in which there is fixed a stub shaft 46^{a} (FIG. 6) upon which is mounted a roll 47^{a} which is disposed beneath the rack 43, thus providing a support for the latter.

A guard plate 59 (FIGS. 4 and 11) is arranged at station W^{I} to overlie the gears 40 and 51, this guard plate being provided with an opening 52^{a} through which the sleeve member of the gear 51 passes, the guard plate being provided with an opening 60^{a} which receives a screw 60 (FIG. 4) which enters a bore in the upper end of the stationary stub shaft 40. This guard plate 59 has

an extension 61 (FIG. 11) upon which is mounted a brush guard 63 (FIG. 4) whose purpose will be described hereafter. Another guard 59^{a} (FIG. 12) is arranged to overlie the gears 40 and 51 of the brush assembly at station W^{II}, this guard 59^{a} having the opening 52^{a} for the passage of the sleeve 52 of the corresponding gear 51 but being without any means for supporting a guard similar to the guard 63 since, at this station, such a guard is not necessary.

Associated with each of the brush assemblies at stations W^{I} and W^{II}, respectively, there is a bracket 64 (FIG. 3) mounted on the forward presser pad support 23^{a}, and upon each of these brackets, there is mounted an air delivery nozzle, these nozzles being indicated at 65 and 65^{a}, FIG. 4. Each nozzle is so arranged as to direct a blast of air in a direction generally tangential to the peripheral surface of the neck of a bottle standing at the stations W^{I} and W^{II}, respectively. Thus, as shown in FIG. 4, wherein one end of the neck label L^{1} at station W^{I} is shown in broken lines (that is to say, in its initial position), this end E^{1} is shown in full lines as having been bent rearwardly about the bottle neck by a blast of air from the nozzle 65. In the same view, the end E^{2} of the neck label L^{1} at station W^{II} is shown in broken lines in its initial position and in full lines in the position which it takes in response to a blast of air delivered from the nozzle 65^{a}.

The two fluid-pressure motors 48 (FIGS. 4 and 8) are provided with ports near their opposite ends and to these ports (FIG. 8) pipes 66 and 67 are connected, these pipes being flexible to permit the pressure motors to move in and out toward and away from the label path as they are carried by the reciprocating pad supports 23. These pipes 66 and 67 are connected to the casing of a control valve V (FIG. 8), this casing being generally cylindrical and having ports at 68 and 69 to which the pipes 66 and 67, respectively, are connected. Within this casing, there is arranged a spool-shaped, balanced-type piston valve 70, having the spaced heads 71 and 72. The interior of this casing of valve V is divided by a septum 73 having a central opening through which passes the stem 74 of the valve 70. A pilot valve or piston 75 is connected to the left-hand end of the stem 74. A spring 75^{a} is arranged to bear against this piston and against the septum 73, thus tending to move the rod 74, the piston head 75 and the balanced valve 70 toward the left as shown in FIG. 8. The valve 70 is provided with a passage 71^{a} which extends from the right-hand side of the head 72 through the central portion of the valve and to the peripheral surface of the valve head 71. The casing of the control valve V has a port 77 leading from its right-hand end and to which is connected an exhaust pipe 78. The casing of the valve V has a port 79 which is always located between the heads 71 and 72 of the balanced valve 70, and a port 76 which opens into the space within the casing of valve V to the left of the pilot valve piston 75. A flexible pipe 80 is connected to the port 79, this pipe being connected to an air supply pipe 81 leading from any suitable source of compressed air, preferably with a pressure-regulating valve 82 interposed between the supply and the pipe 80. A pipe 83 branches from the pipe 80 beyond the delivery end of the valve 82 and supplies air to a timing valve V^{2} from which a pipe 87 leads to a quick relief valve V^{3} (FIG. 8^{a}). From the latter, a flexible pipe 101 leads to the port 76 of the valve V. The valve V^{2} is normally closed but is opened by inward movement of a pin 91 which contacts an actuating lever 92 having a cam roll 93 which engages a cam 94 fixed to the main shaft 25. The valve V^{3} is a conventional valve, comprising a casing 95 having therein a chamber 96 from which a delivery passage 97 leads, the receiving end of this passage being defined by the annular valve seat 98. This passage 97 discharges into an exhaust pipe 100. Within the chamber 96, there is arranged a disc valve 99 which normally rests on the seat 98 and thus closes the entrance to passage 97. The

pipe 101, as referred to above, leads from the chamber 96 in the casing 95 at a point below the valve disc 99 to the port 76 of valve V. It will be observed that this disc 99 is of a diameter less than that of the chamber 96 so that normally air may flow from the supply pipe 87 into the chamber 96, around the edge of the disc 99, and into the pipe 101, and thus into the casing of valve V through the port 76.

As shown in FIG. 3, a pipe 105, which branches from pipe 80 (FIG. 8), leads to a valve V^4 which may be similar to the valve V^2, above described. This valve V^4 is normally closed, but when open supplies air to the nozzles 65 and 65^a through flexible tubes 105^a (FIG. 3). This valve V^4 has an actuating stem 108 which engages a lever 109 having a roll 110 at its upper end, and this roll contacts the head 111 of a yieldable actuator pin mounted in a bracket carried by the arm 30^a which actuates the support for the forward presser pad 24^a. The yielding connection at this point permits the abnormal swing inwardly of arm 30^a if no bottle is in the wiping position.

Valve V^2 is normally closed so that no air is delivered from the supply to the exhaust valve V^3. Under these conditions, spring 75^a holds pilot piston 75 in the position shown in FIG. 8, any air which may have been trapped at the left-hand side of pilot piston 75 having lifted valve disc 99 from its seat and escaped through the pipe 100 as the piston 75 is moved to the left. When balanced valve 70 is positioned as shown in FIG. 8, air from the supply has passed from port 79, around the mid-portion of valve 70 to port 68 and through the pipe 66 to the left-hand ends of both cylinders 48 and has moved the pistons 47 to the right. The two racks 43 have thus been moved to the right and have turned both brush wipers in the reverse or idle direction. While so turning, the brush wipers are in retracted position because of outward movement (that is to say, motion to the left as viewed in FIG. 3) of the wiper supports 33 so that the brushes do not contact any bottle while making their reverse rotation. During the movement of the pistons 47 to the right, the right-hand ends of cylinders 48 were open to exhaust 78 through the pipe 67 and port 69.

Assuming now that bottles B^1 and B^2 are dwelling at the stations I and II and that the cams 26 start to move the wiper supports 23 and 23^a in toward the article path, the plunger 111, carried by the lever arm 30^a, will open the valve V^4 and compressed air from the supply will be delivered by each of the nozzles 65 and 65^a. The blast from nozzle 65 will deflect the end E^1 of label L^1 from the broken line position (FIG. 4) approximately to the full line position; while, the blast from the nozzle 65^a will deflect the end E^2 of the label L^2 from the broken line position approximately to the full line position. As thus positioned, the ends E^1 and E^2 of the two labels are in readiness for the operation of the brush wipers. When the carriers 21 and 21^a reach their innermost positions, the body label wiper pads firmly clamp the bottle between them, holding the bottle with its axis vertical while the end of the neck label is being wiped into place. At this instant or slightly before, a high portion of the cam 94 (FIG. 8) contacts roll 93 and thereby opens the valve V^2, thus allowing compressed air to flow through the pipe 87 and around the edges of the valve disc 99 to the pipe 101 and thence to the port 76. This air forces the pilot piston 75 to the right so that air from the supply may now enter pipe 67, while the left-hand ends of the cylinders 48 are now connected to the exhaust 78 by pipe 66, port 68 and passage 71^a. Pistons 47 of the two pressure motors now move to the left, moving the racks 43 to the left and turning the brush wipers in the operative or wiping direction. Since the wiper supports 23 and 23^a have now been moved to the position shown in FIG. 5, the brush wipers engage the ends E^1 and E^2 of the labels L^1 and L^2, respectively, and wipe said ends snugly about the bottle neck. Since the bottle is now clamped with its axis in a definite fixed position and since the wiper axis occupies a predetermined fixed position while the end of the label is being wiped, the distance between said axes does not vary during the wiper operation. During the wiping of the label L^1 by the wiper brush at station W^I, the guard 63 prevents the brush bristles from contacting the gummed surface of the end portion E^2 of the label L^1. No such guard is necessary in association with the other brush wiper at station W^{II} which, at this time, wipes in the end of the label L^2. As may be appreciated by inspection of FIG. 3, the contact of the pressure pad 24 with the article represents the inward limit of motion of the carriage 21 so that the axis of the wiper brush always remains at the same side of a line tangent to the necks of succesive bottles as they move one after another along the article path.

As the brush wipers complete their wiping operation, the cams 26 begin to retract the supports 23 and 23^a. The valve V^4 closes, cutting off air from the nozzles; the roll 93 drops onto a lower part of the cam 94; the valve V^2 closes; the spring 75^a moves the pilot piston 75 to the left; the pistons 47 of the pressure motors move to the right carrying the racks 43 with them thereby turning the brush wipers in reverse or idle direction and so restoring the parts to the position shown in FIG. 4, thus completing a cycle of operations in which the first end of the label L^1 is wiped onto the neck N^1 of the bottle at station W^I; while, the second end E^2 of the label L^2 is wiped about the neck of the bottle at station W^{II}. The conveyor now advances the bottles so that the bottle which was at station W^I is moved to the station W^{II}; while, another bottle is brought to rest at the station W^I and the above cycle is repeated.

While the motors for turning the wiper brushes are here shown as of pressure-fluid type, it is to be understood that motors of other types, mounted upon the brush carriers, may be employed, if desired, with appropriate means, actuated by the mian shaft, for controlling them; and, although but one embodiment of the invention has herein been disclosed by way of example, it is to be understood that the invention is broadly inclusive of any and all modifications falling within the scope of the appended claims.

I claim:

1. A labeling machine of the kind which is capable of applying to the neck portion of a bottle a label which embraces the neck portion through an arc exceeding 360°, and wherein bottles to be labeled stand upright in spaced relation upon a conveyor which advances the bottles intermittently along a rectilinear path from one operating station to another at each of which a bottle dwells, and wherein neck labels are removed, one after another, from a magazine located at one side of said path and each is coated on one face with adhesive in readiness to be applied to the bottle neck, and wherein, at a dwell station which a bottle reaches before arriving at the first of two lebel wiping stations, a label-applying element, located at one side of said path and which moves substantially horizontally for applying the label, functions to contact the central portion only of the adhesively coated face of a neck label with the neck portion of the bottle, leaving the opposite ends of the neck label projecting in divergent relation toward the other side of the conveyor path, characterized in that, at the last-named side of the conveyor path, that is, at the opposite side from said label-applying element, there are two rotary wipers located, one at each, respectively, of two wiping stations, and power driven mechanism which turns the two wipers in directions such that one wiper is effective to wipe one end portion of the neck label about a bottle neck while the bottle dwells at the first of the wiping stations, and the other wiper is effective to wipe the other end of the same neck label about the bottle while the latter dwells at the other of said wiping stations.

2. A labeling machine according to claim 1, and

which is designed to apply a body label or labels as well as a neck label, and wherein, at each of the aforesaid wiping stations, horizontally movable carriers, each supporting an article-clamping element are arranged at opposite sides respectively, of the conveyor path, and wherein mechanical devices simultaneously move the carriers at opposite sides of the conveyor path, at each respective wiping station, toward the conveyor path while a bottle dwells at said station so as to clamp the bottle and hold it stationary during the wiping operation, further characterized in that at each of said wiping stations each of those carriers which is located at the opposite side of the conveyor path from the label-applying element, supports a rotary wiper brush.

3. A labeling machine according to claim 2, further characterized in that, for turning the wiper brushes, a reversible motor is mounted upon the wiper pad carrier which supports each respective brush.

4. A labeling machine according to claim 3, and wherein the machine has a rotating shaft which turns once during each cycle of the machine, and wherein the mechanism for moving the carriers comprises cams on said shaft, further characterized in that a cam, mounted on said shart, controls the operation of both motors, the several cams being so constructed and arranged that each brush turns in the idle or reverse direction while the respective carrier upon which it is mounted is moving away from the conveyor path, thereby to prevent contact of the reversely rotating brush with the label.

5. A labeling machine according to claim 3, and wherein the machine has a rotating shaft which turns once during each cycle of the machine, further characterized in that each brush-actuating motor is a fluid pressure motor, a flexible conduit, controlled by a valve, is operative to supply pressure fluid to the motors, and a cam of appropriate contour is so mounted upon said rotary shaft as to open said valve thereby to supply pressure fluid to the motors and thereby turn the brushes in label-wiping direction as the wiper-pad carriers, upon which the brushes are mounted, start toward the conveyor path.

6. A labeling machine according to claim 2, further characterized in that each of those wiper-pad carriers which is located at the opposite side of the path from the rotary brushes supports a nozzle, both nozzles being at the same side of said path as the label-applying element, each nozzle being arranged to deliver a jet of air in a direction to initiate the bending of the corresponding end of the neck label about the bottle neck just prior to its contact by the wiper brush.

7. A labeling machine according to claim 6, and wherein a valve controls the supply of compressed air to each respective nozzle, further characterized in that a part, which moves with the wiper-pad carriers and upon which the respective nozzle is mounted, opens said valve as the carrier starts toward the conveyor path.

8. A labeling machine according to claim 2, further characterized in having a guard mounted upon the wiper-pad carrier which supports the rotary wiper brush which first contacts the label, the guard being so arranged as to prevent said brush from contacting the adhesively coated surface of that end of the label which will be wiped by the other brush at the next wiping station.

9. In a labeling machine of the kind wherein articles are moved intermittently and in succession along a predetermined path from one dwell point to another and which includes means located at one side of said path and at one dwell point for applying the central portion only of an adhesively coated label to the article, leaving the end portions of the label projecting from the article toward the other side of said path in divergent relation, in combination, means located at the same side of the article path as the applying means, but at dwell points beyond that at which the label is applied, respectively, for deflecting projecting end portions of the labels in directions

such that they are substantially normal to the article path, and mechanical means, located at the opposite side of the article path from the applying means, capable of wiping said deflected end portions of the label, one after the other, into overlapping contact with the article, said deflecting means comprising a pair of nozzles located at the same side of the path as the label-applying means, means operative, at times, to deliver a blast of air from each of the respective nozzles, the nozzles being so relatively arranged that air blasts delivered by the respective nozzles contact opposite end portions of the label and deflect said end portions toward the article, and means for determining the times at which said blasts of air are delivered.

10. A labeling machine of the kind which is designed to apply a body label or labels to a bottle and which is also capable of applying to the neck portion of the bottle a label which embraces the neck portion through an arc such that the ends of the label are overlapped, and wherein the bottles to be labeled stand upright and in spaced relation while being moved intermittently along a predetermined rectilinear path from one label-wiping station to another, at each of which the bottle dwells, and wherein, at each of two spaced-apart label-wiping stations, bottle-clamping elements are arranged at opposite sides respectively, of the conveyor path, and wherein mechanical devices move the clamping elements at each respective wiping station toward the conveyor path while the bottle dwells at said station, thereby to clamp the bottle between them and hold it stationary during the wiping operation, and wherein applying means, located at one side of the article path, contacts adhesively coated surfaces of bottle and neck labels with the body and neck respectively, before the bottle arrives at the first of said wiping stations, characterized in having means located at the opposite side of the article path from the applying means for wiping the end portions of the neck label, one after the other, into overlapping contact with the bottle neck.

11. In a labeling machine of the kind which is designed to apply a body label or labels to a bottle and also to apply to the neck portion of the bottle a label which embraces the neck portion through an arc substantially exceeding 180°, and wherein the bottles to be labeled stand upright and in spaced relation while being moved intermittently along a predetermined rectilinear path from one label wiping station to another, at each of which the bottle dwells, and wherein at each of two successive label-wiping stations two horizontally movable carriers, each supporting a bottle clamping element, are arranged at opposite sides respectively of the conveyor path, and wherein mechanical devices move the carriers at opposite sides of the conveyor path at each respective wiper station toward the conveyor path while the bottle dwells at said station, thereby to clamp the bottle between them and hold it stationary during the wiping operation, and wherein picker means takes body and neck labels from appropriate magazines, gum-applying means causes one surface of each label to become adhesive, and wherein label-applying means, located at one side of the article path, contacts the adhesive surfaces of the body and neck labels with the body and neck, respectively, of a bottle before the bottle arrives at the first of said wiping stations, and having wiper means, at the same side of the article path as the applying means, operative to exert pressure to a body label to adhere it firmly and smoothly on the bottle, in combination, means located at the opposite side of the article path from the applying means for wiping the end portions of the neck label, one after the other, into smooth contact with the bottle neck, said latter wiping means comprising a pair of rotary wipers spaced apart along the article path, one located respectively, at each of two successive wiping stations, both of said wipers being at the same side of the article path, means for moving the rotary wipers bodily toward and from the article path, transversely of the latter, means for turning the rotary wipers while they are at their nearest aproach to the article path in such direc-

tions that one end of the neck label is contacted and wiped down by one of the rotary wipers and thereafter the opposite end of the neck label is contacted and wiped down by the other of said rotary wipers, and means operative to guard the brush which engages the first end of the label to be wiped from contact with the adhesive coating on the other end of the label.

12. A labeling machine of the kind which is designed to apply a body label or labels to a bottle and which is also capable of applying to the neck portion of the bottle a label which embraces the neck portion through an arc exceeding 360°, and wherein the bottles to be labeled stand upright in spaced relation upon a moving conveyor which advances the bottles intermittently along a predetermined path from one label wiping station to another, at each of which the bottle dwells, and wherein, at each of two successive label wiping stations, horizontally movable carriers, each supporting a pressure-type wiper pad operative to press a body label into adhering contact with the body of the bottle, are arranged at opposite sides respectively of the conveyor path, and wherein mechanical devices move the wiper pad carriers at opposite sides of the conveyor path, at each respective wiper station toward the conveyor path, while the bottle dwells at said station, so as to clamp the bottle between them, and hold it stationary during the wiping operation, and wherein, before a bottle reaches the first one of said stations, a label applying element, located at one side of said path, functions to contact the central portion only of an adhesively coated neck label with the neck portion of the bottle, leaving the opposite ends of the neck label projecting in widely divergent relation toward the opposite side of the conveyor path, and wherein, at the opposite side of said conveyor path from said label applying element, two rotary wiper brushes are located, one at each, respectively, of said two successive wipers stations, and wherein power driven mechanism turns the two brushes in opposite directions so that one brush is effective to wipe one end portion of a neck label about a bottle neck while the bottle dwells at the first of said wiper stations, and the other wiper brush is effective to wipe the other end of the same neck label about the bottle while the latter dwells at the next wiping station, characterized in that at each of said wiping stations the wiper pad carrier at one side of the conveyor path supports one, respectively, of the wiper brushes, while the wiper pad carrier at the opposite side of the conveyor path at each of said stations, respectively, supports a nozzle, both nozzles being at the same side of said path as the label applying element, and both brushes being at the opposite side of said path from said applying element, each nozzle being arranged to deliver a jet of air in a direction to initiate the curling of the corresponding end of the neck label about the bottle neck prior to its contact by the wiper brush.

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