

Jan. 5, 1954

S. T. CARTER

2,665,025

MULTIPLE-WIPER MECHANISM FOR LABELING MACHINES

Filed Aug. 7, 1951

5 Sheets-Sheet 1

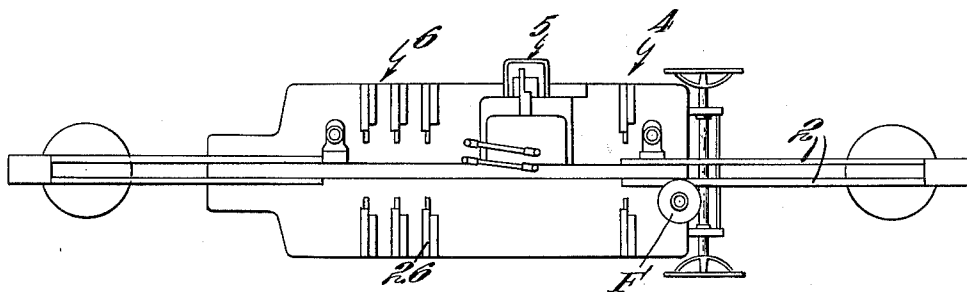


Fig. 1

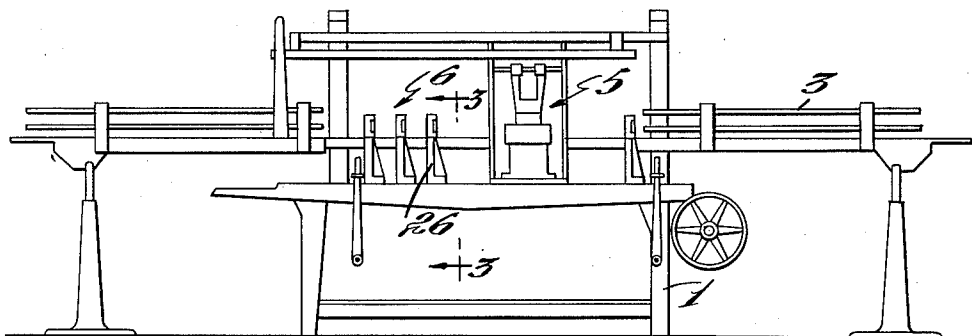


Fig. 2

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5 Sheets-Sheet 2

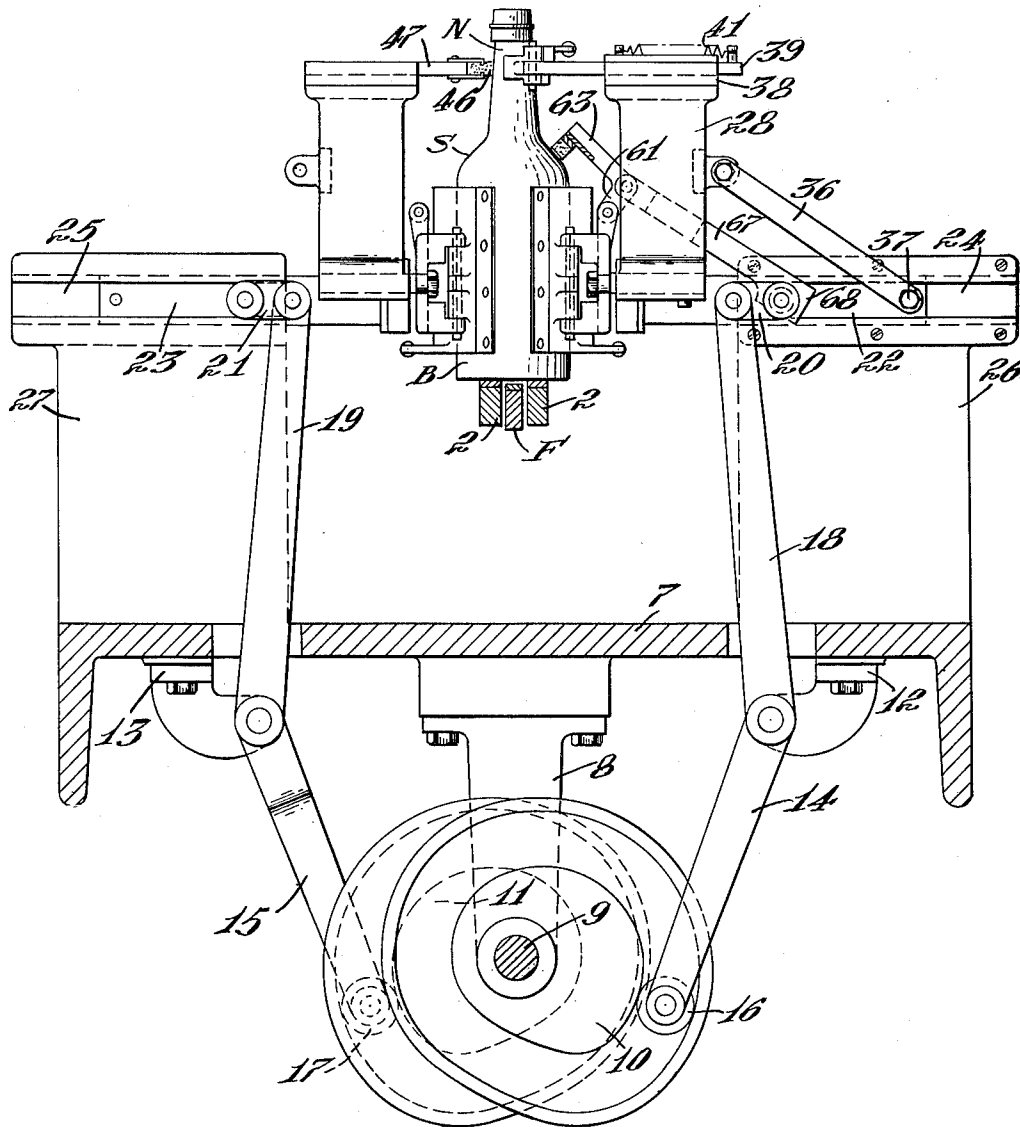


Fig. 3

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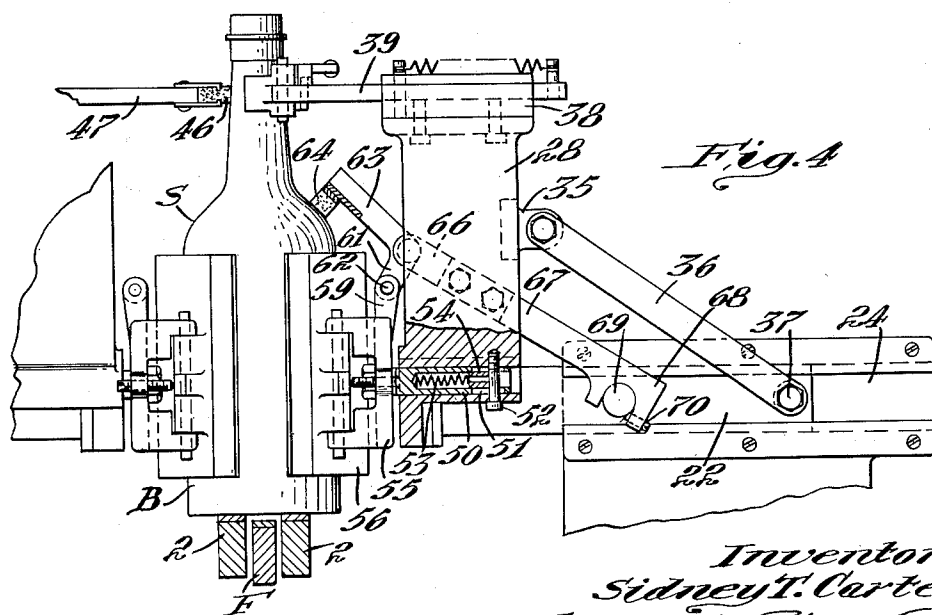
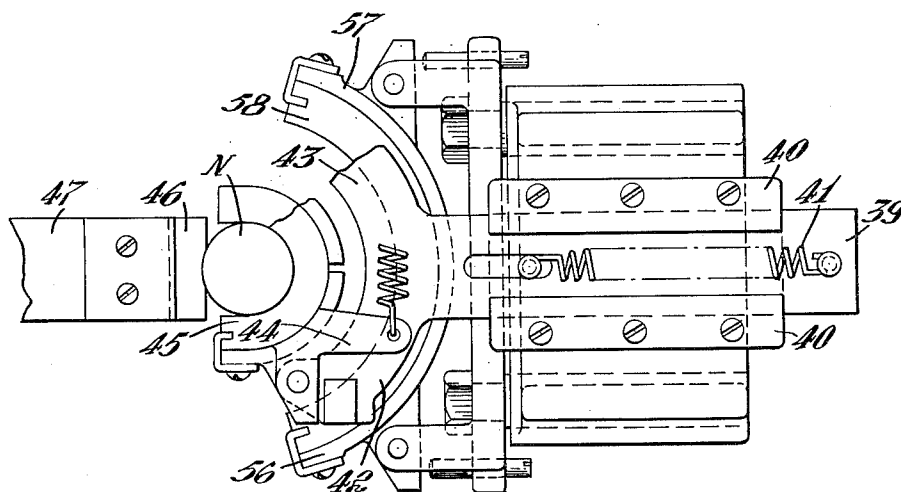
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5 Sheets-Sheet 3



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5 Sheets-Sheet 4

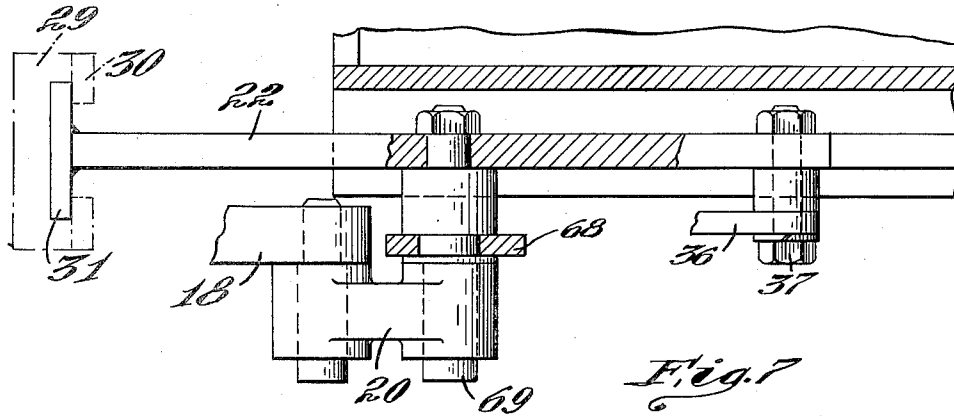


Fig. 7

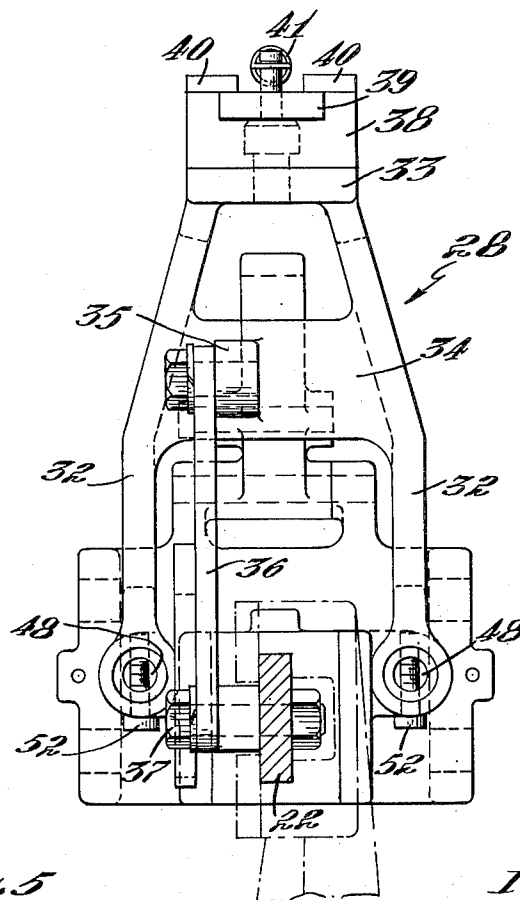


Fig. 5

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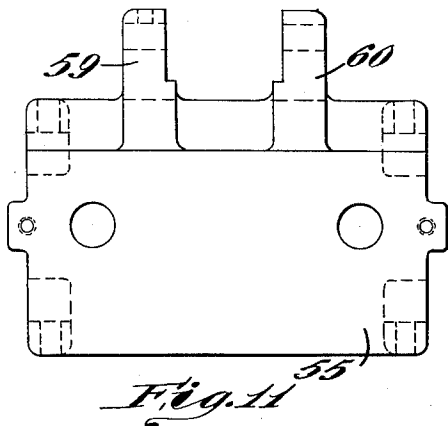
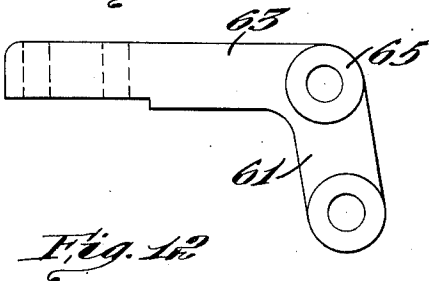
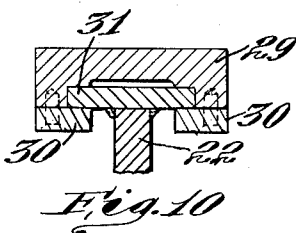
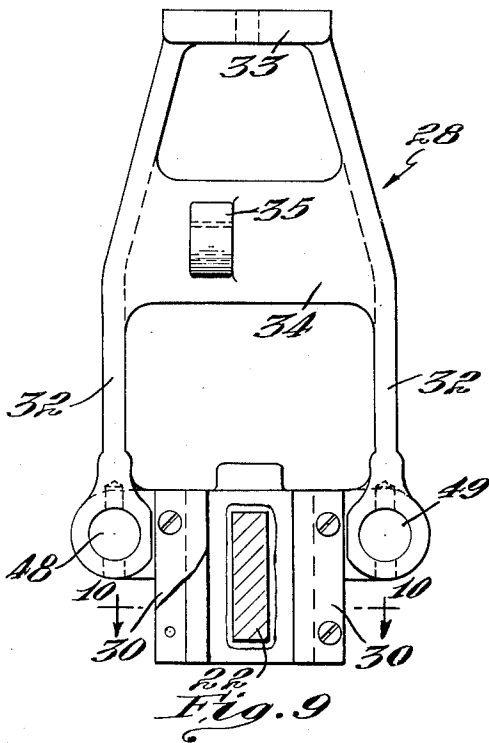
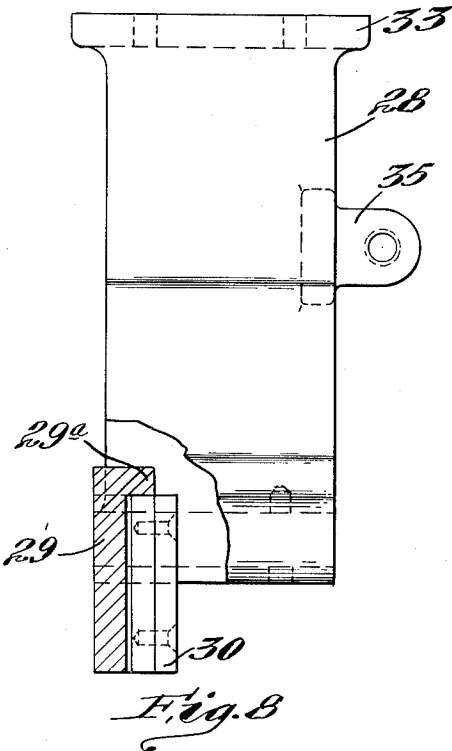
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5 Sheets-Sheet 5



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MULTIPLE-WIPER MECHANISM FOR LABELING MACHINES

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11 Claims. (Cl. 216—13)

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This invention pertains to labeling machines and more especially to novel wiper mechanism for pressing and affixing a label previously gummed and engaged with the article to be labeled into firm contact with said article. More particularly it concerns wiping and pressing means operative simultaneously to affix a body label, a shoulder label and a neck label to a bottle. In its broader aspects the invention contemplates the employment of mechanism capable of simultaneously affixing body labels, shoulder labels and neck labels to diametrically opposite sides, respectively, of a bottle.

In machines of the straightaway type (a machine of this general type being shown merely by way of example in the patent to Holm No. 2,026,172, dated December 31, 1935), the article to be labeled hereinafter referred to as a "bottle" is moved intermittently by a conveyor along a substantially straight path, dwelling at each of a plurality of stations at which various operations involved in the label application are performed; for instance at one station the gummed label is engaged with the bottle by a picker device and at a later station a wiper or presser applies pressure to the entire area of the label, smoothing it and causing its entire area to adhere to the bottle. When labels are to be applied to diametrically opposite sides of the bottle the wiping station is provided with wiper and presser elements located at opposite sides of the conveyor path and with means for simultaneously actuating both sets of wiper and presser elements.

It is not particularly difficult to apply a label to the body or neck of a bottle of usual type (these portions of the bottle usually being approximately cylindrical) but it is not so easy to apply a label to the shoulder portion of a bottle which is of a curvature approaching the spherical, so that a wiper, moving in a horizontal path (perpendicular to the axis of the bottle) cannot apply force in a direction normal to the surface of the shoulder as is requisite for adequate affixation of the label.

Among the objects of the present invention is to provide label-wiping and pressing mechanism, readily applicable to existing straightaway machines of commercial type, capable of wiping body, shoulder and neck labels all at the same time while the bottle dwells at the wiping station. A further object is to provide wiping and pressing mechanism capable of duplication at opposite sides of the conveyor path, if it be desired to apply body, shoulder and neck labels

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at opposite sides of the same bottle. A further object is to provide wiping and pressing means so designed as to permit disconnection and removal of one or more of the wiper devices without affecting the operation of those remaining if, in a given case, less than three labels are to be applied at once.

A further object is to provide wiper and presser means of simple yet reliable type capable of applying wiping pressure of all requisite intensity and uniformity, and which is adequate to wipe shoulder labels as well as body and neck labels. A further object is to provide wiping and pressing means which is adjustable for use with articles of different sizes. Other and further objects and advantages of the invention will be pointed out in the following, more detailed description and by reference to the accompanying drawings wherein

Fig. 1 is a diagrammatic plan view, to small scale, of a straightaway machine of the type to which the present invention more particularly relates, showing two sets of wipers in accordance with the present invention arranged at opposite sides respectively of the conveyor path;

Fig. 2 is a diagrammatic side elevation of the parts illustrated in Fig. 1;

Fig. 3 is a fragmentary section, with parts broken away and to much larger scale, substantially on the line 3—3 of Fig. 2;

Fig. 4 is a vertical section in the same plane as Fig. 3, to larger scale, with parts broken away to show details of the wiping and pressing mechanism;

Fig. 5 is an elevation to larger scale than Fig. 4 (partly in vertical section), looking from the right-hand side of Fig. 4;

Fig. 6 is a fragmentary plan view, to larger scale, of a portion of the mechanism shown in Fig. 4;

Fig. 7 is a fragmentary, horizontal section, to the same scale as Fig. 5, showing the wiper actuating slide and portions of the slide actuating mechanism;

Fig. 8 is a side elevation, partly in vertical section, of the removable support carried by the wiper actuating slide;

Fig. 9 is an elevation looking from the right-hand side of Fig. 8 showing a part of the actuating slide in vertical section;

Fig. 10 is a section on the line 10—10 of Fig. 9;

Fig. 11 is a front elevation of a frame for supporting the body label wipers; and

Fig. 12 is a side elevation of a rocker for supporting the shoulder label wiper.

Referring to the drawings, the numeral 1 designates the frame of a straightaway labeling machine of a generally conventional type. The articles to be labeled, hereinafter referred to as "bottles," are advanced intermittently along rectilinear guide rails 2 (Figs. 1 and 3) between guard rails 3 by a feed member F (Fig. 3), dwelling for a suitable interval of time at a spotting station 4, then at the labeling station 5 and then at the wiping station 6, after which they continue along the guide rails to a delivery point. In machines of this type it is customary first to bring the gummed label into adhering contact with the article by means of a picker or the like at the labeling station, and then, at the wiping station, to apply wiping pressure to the label so as to smooth it and firmly affix it to the article. As illustrated in Fig. 1, such a machine may be arranged to apply labels simultaneously to diametrically opposite sides of the bottle, and in that event the wiping mechanism of the present invention will be duplicated at opposite sides of the conveyor path defined by the guide tracks 2.

The improved wiping mechanism of the present invention is intended to be substituted for wiping means commonly employed in such machines and is so designed that it may be operated by the usual mechanism for actuating the wiper slides. Thus, as illustrated in Fig. 3, the frame of the machine comprises the usual table 7 from which bearing brackets 8 depend. The longitudinally extending drive shaft 9 is mounted in these brackets, being driven by usual means (not shown). The machine shown is of the duplex type (designed to apply labels to either or both sides of a bottle) and two like cams 10 and 11 are fixed to this shaft to operate the opposed wiper slides.

Brackets 12 and 13, fixed to the underside of the table 7 at opposite sides provide pivotal supports for levers comprising the lower arms 14 and 15 respectively carrying cam follower rolls 16 and 17 respectively, which engage the cams 10 and 11. These levers also comprise the upwardly directed arms 18 and 19 respectively, which extend up through slots in the table and which are connected by links 20 and 21 to the wiper slides 22 and 23 respectively. These slides are guided for reciprocating motion in a horizontal plane in guideways 24 and 25 respectively, formed in rigid stands 26 and 27 respectively mounted on the table 7. If, in any instance, duplicate or triplicate wipers are to be provided at one or both sides at the wiping station, there will be a corresponding number of stands 26 and 27 carrying corresponding wiper slides and mechanism actuated thereby.

As thus far described, the machine is designed for actuating wipers at diametrically opposite sides of the bottle, but since the wiping mechanisms at opposite sides of the tracks 2 are duplicated, it suffices hereinafter to describe but one of these mechanisms in detail.

Referring to Figs. 3 to 5 and 7 to 9, the numeral 28 designates a rigid upright support, here shown as a casting, comprising a base portion 29 which is provided with a vertical slot (defined by the gibs 30) (Fig. 10) which receives (with a snug, sliding fit) a rectangular head 31 (Figs. 7 and 10) at the inner end of the slide 22. The upper end of this head 31 underlies a lug 29^a at the upper end of the slot so that when the support 28 is fitted onto the head 31, the support is firmly held in position and supported by the

slide. This provides a very rigid but readily disconnectable union between the slide and support.

The support 28 is preferably shaped as shown in Fig. 9, so as to reduce weight, having the laterally spaced leg portions 32 integrally connected at their upper ends to the table 33 and at their lower ends to the base 29, and united at an intermediate point by the web 34. An ear 35 projects from the outer side of the web 34 and a rigid brace leg 36 (Figs. 3 and 4) connects this ear with a bolt 37 projecting from the side of the slide 22. Thus the support 28 is so securely connected to the slide that it is capable of exerting very substantial pressure against the bottle (through the wiper pads hereinafter described) without any possibility of yield.

The table portion 33 of the support 28 has a horizontal upper surface on which is removably mounted a block 38 (Fig. 5) having a guide channel in its upper surface which receives the auxiliary or neck wiper slide 39, this auxiliary slide being confined by gibs 40 and being urged inwardly or toward the article to be labeled by a tension spring 41. The slide 39 is bifurcated (Fig. 6) at its inner end to provide the curved arms 42 and 43 which support conventional neck wiper means, here shown as including a yieldable pad 45, for example, of sponge rubber, supported by bell crank levers, one of which is indicated at 44. This pad 45 is operative partially to embrace the neck portion N of the bottle in conventional manner so as to wipe the adhesively coated end portions of the label firmly about the neck. As illustrated in Figs. 4 and 6 the machine is set up to apply a label to one side only of the bottle neck, the pad 45 extending more than 180° about the neck. To prevent the bottle from tipping in response to pressure of the neck-wiping pad, an abutment element 46, which may be a pad of hard rubber or the like, is arranged to engage the neck N diametrically opposite to the wiper 45. This abutment 46 may be mounted on a slide 47 corresponding to the slide 39 and supported and actuated in the same way. If the neck of the bottle is to receive labels at diametrically opposite sides, then the wiper pads, such as the pad 45, must be of such dimensions circumferentially that the pads at opposite sides do not interfere with each other.

The support 28 (Figs. 4, 5 and 9) is provided at opposite sides near its base with parallel, horizontal bores 48 and 49. In each of these bores a rigid stud 50 (Fig. 4) is arranged to slide. Each stud is provided with an axial bore extending inwardly from its outer end and has an elongate slot 51 near its outer end which receives a limiting pin 52 fixed to the support 28. A compression spring 53 within the axial bore in the stud bears at its outer end against an abutment sleeve 54 within the bore in the stud and which engages the pin 52, the springs urging the studs 50 outwardly or to the left (Fig. 4). The studs 50 project to the left of the support 28 and to their left-hand ends a body wiper frame 55 (Figs. 4 and 11) is rigidly bolted. To this body wiper frame the wiper wings 56 and 57 (Fig. 6) are hinged. These wiper wings support the body label wiper pad 58 in conventional manner. This pad is of resilient material such as sponge rubber and is designed to press the adhesively coated end portions of the label against the body portion B of the bottle.

The frame 55 is provided with spaced, up-standing lugs 59 and 60 (Fig. 11) between which is arranged the lower arm 61 (Fig. 12) of a

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rocker which carries the shoulder wiping pad. This rocker is here shown as L-shaped, having its arm 61 pivoted between the lugs 59 and 60 on a pin 62 (Fig. 4). This rocker has a second arm 63 which carries the shoulder wiper pad 64, of yieldable material such as sponge rubber and of conventional shape for pressing the entire label into contact with the shoulder S of the bottle. The angle 65 of this L-shaped rocker is pivotally connected to the inner end of an extensible link comprising relatively adjustable parts 66 and 67 (Fig. 4). The part 67 has a saddle portion 68 at its outer end which normally straddles a stud 69 (Fig. 7) which connects the link 20 with the slide 22. A set screw 70 (Fig. 4) normally keeps the saddle from lifting from the stud. By relative adjustment of the parts 66 and 67 the effective length of the connecting link may be varied, thus varying the pressure which will be exerted by the pad 64 against the shoulder label.

In the operation of the machine the cam 19 moves the slide 22 outwardly, as the feed member F (Fig. 3) advances the bottle into the wiping station 6. As the bottle comes to rest, the slide 22 moves inwardly or to the left (Fig. 4) carrying the support 28 and the body wiper frame 56 toward the body of the bottle. When the body wiping pad 58 contacts the bottle, the inward motion of the frame 55 is thereby terminated, but the slide 22 and support 28 continue to move inwardly, as permitted by the yielding of the springs 53, and the link 66, 67 swings the lever arm 63 counterclockwise, thus pressing the pad 64 against the shoulder label. During the inward motion of the support 28, the auxiliary or neck wiper slide 39 is moved toward the bottle, eventually bringing the pad 45 into wiping contact with the neck label, the spring 41 yielding to prevent undue pressure. When the wiping action is completed, the slide 22 moves outwardly and the several wiper pads are returned to the initial inoperative position.

With the above arrangement it is possible to wipe a body label, a neck label and a shoulder label simultaneously and with assurance of providing the desired pressure in each instance. The mechanism employed is very simple and is readily substituted for the usual wiping mechanism commonly employed in machines of this general type, the slide 22 taking the place of the usual slide employed in such prior devices for actuating the body wiper.

It may be noted that although the slide 22 moves horizontally in the customary way, the shoulder presser pad is moved in an arcuate path whose terminal portion, at least, is normal to the shoulder surface of the bottle, so that the label-contacting face of the pad is positioned to apply direct, normal pressure to that surface of the bottle against which the label is to be pressed. It is further obvious that the shoulder wiping pad will be shaped, in accordance with the more or less spherical contour of the shoulder portion of the bottle, so as to insure a uniform smoothing action upon the shoulder label.

It is also evident that if it is not desired to apply the shoulder label, in any given case, the link 66, 67 may be disconnected, for example, merely by lifting its saddle portion from the stud 69, so that the rocker carrying the shoulder label pad will not be swung toward the bottle. It is likewise obvious that if the neck label is to be dispensed with, the slide 38 may be removed, together with the neck wiper pad, without dis-

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turbing the operation of the body and shoulder wiping devices.

One desirable embodiment of the invention has been illustrated herein by way of example, but 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. In combination in a labeling machine having means for supporting a bottle at a label-wiping station and wherein a horizontally movable slide carries a frame on which a body wiper pad is mounted, an L-shaped rocker one leg of which is pivotally connected to said frame, a pad for wiping a shoulder label, attached to the other leg of the rocker, and a link of variable length for transmitting motion from the slide to the rocker thereby to turn the latter and apply its pad to a label adherent to the shoulder of the bottle.

2. In a labeling machine wherein labels previously adhered to the body, neck and shoulder portions of a bottle are firmly pressed against the bottle by wiper pads, a slide movable toward and from the bottle in a horizontal path perpendicular to the axis of the bottle, the slide having a substantially rectangular head, a rigid upright support having a socket which receives said head and which is thereby rigidly but removably attached to the slide, a yieldable part carried by the support and which is resiliently biased away from the support and toward the bottle, a rocker pivotally mounted on said yieldable part to swing in a vertical plane radial to the bottle, a shoulder wiper pad carried by the rocker, and a link connecting the rocker to the slide, the parts being so constructed and arranged that as the slide continues to move toward the bottle, after motion of the yieldable part has terminated, the rocker is thereby swung to apply its pad to a shoulder label adherent to the bottle.

3. In a labeling machine of the kind wherein a bottle is moved to a label-wiping station where it dwells while wiping pressure is applied to a label or labels previously adhered to the bottle and wherein a slide moves toward and from the bottle in a path substantially perpendicular to the axis of the bottle, a support fixed to the slide, a body wiping frame, means connecting the body wiping frame and the slide with provision for relative motion in the direction of movement of the slide, a spring tending to move the frame away from the support, a rocker pivotally mounted on the frame, a shoulder label wiper pad carried by the rocker, and a link connecting the rocker to the slide, the parts being so constructed and arranged that when motion of the body wiper frame is limited by engagement of the body wiper pad with the bottle, continued motion of the slide, as permitted by said spring, actuates the rocker to bring the shoulder wiping pad into contact with a shoulder label adherent to the bottle.

4. In a labeling machine of the kind wherein a bottle is moved to a label-wiping station where it dwells while wiping pressure is applied to a label or labels previously adhered to the bottle and wherein a slide moves toward and from the bottle in a path substantially perpendicular to the axis of the bottle, a support fixed to the slide, an auxiliary slide mounted on the support, a neck label wiper pad carried by said auxiliary slide, a spring urging the latter slide toward the bottle, a body wiper frame, means connecting said frame to the first-named slide with provision for relative motion in the direction of movement of the slide, a spring tending to move said frame away

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from the support, a rocker pivotally mounted on the frame, a shoulder label wiper pad carried by the rocker, and means connecting the rocker to the slide whereby inward motion of the slide relatively to the frame swings the rocker to engage its pad with a shoulder label adherent to the bottle.

5. In a labeling machine of the kind wherein a bottle is moved to a label-wiping station where it dwells while wiping pressure is applied to a label or labels previously adhered to the bottle and wherein a slide moves toward and from the bottle in a path substantially perpendicular to the axis of the bottle, in combination, a support fixed to the slide, the support having guide means at its top for a movable part which carries a neck label wiper pad, the support having a guide bore near its bottom, a rigid stud slidable in said bore, a spring urging the sleeve, toward the bottle and relatively to the slide, a body label wiper frame fixed to the forward end of the stud, means limiting motion of the frame away from the support, a body label wiper pad carried by the frame, a rocker pivotally mounted on the frame, a shoulder label wiper pad carried by the rocker, and a link connecting the rocker to the slide, the parts being so constructed and arranged that when motion of the body label wiper pad is terminated by contact with the bottle, further motion of the slide, while stressing said spring, swings the rocker thereby to press the shoulder label pad against a label adherent to the shoulder of the bottle.

6. In a labeling machine of the kind wherein a bottle is moved to a label-wiping station where it dwells while wiping pressure is applied to a label or labels previously adhered to the bottle and wherein a slide moves toward and from the bottle in a path substantially perpendicular to the axis of the bottle, the slide having a head at its inner end, a vertically elongate support having a socket which receives said head with a snug fit thereby removably but rigidly attaching the support to the slide, a diagonal brace which connects the upper part of the support to the slide, the support having a guideway at its top for guiding an auxiliary slide which carries a neck label wiping pad, the support having spaced, horizontal bores at its lower part, a body label wiper frame having rigid parallel studs which slide in said bores respectively, springs reacting against said studs and urging the frame toward the bottle and away from the support, means limiting such motion of the frame, a rocker pivotally mounted on the frame, a shoulder label wiper pad carried by the rocker, and a link connecting the rocker to the slide, the link being of such length that continued motion of the slide, after the body label wiper pad has contacted the bottle, swings the rocker thereby to press the shoulder wiping pad against a shoulder label adherent to the bottle.

7. In combination, in a labeling machine according to claim 3, means pivotally connecting one end of the link to the rocker, the opposite end of the link having a saddle portion which removably straddles a stud projecting from the slide, whereby at will the operation of the shoulder wiping pad may be suspended without interfering with the operation of the body wiping pad.

8. In combination, in a labeling machine according to claim 3, wherein the support for the

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body wiping frame is vertically elongate and is normally rigidly but detachably united at its lower end to the inner end of the slide, and a diagonal brace extending upwardly and forwardly from the outer end portion of the slide to said support to which it is connected at a point spaced above the lower end of the support.

9. In combination, in a labeling machine according to claim 3, wherein the support which carries the body wiping frame is vertically elongate, means at the top of said support for guiding an auxiliary slide, an auxiliary slide movable within said guide means in a path parallel to that of the first-named slide, a neck wiping pad carried by the auxiliary slide, and spring means urging the auxiliary slide toward a bottle dwelling at the wiping station.

10. In combination, in a labeling machine according to claim 3, wherein the link is of adjustable length, means pivotally connecting one end of the link to the rocker, and means pivotally but removably connecting the other end of the link to the slide.

11. In combination, in a labeling machine of the straightaway type having provision for advancing bottles intermittently along a rectilinear path and for causing the bottles to dwell successively at a station at which a gummed label is engaged with the bottle by a picker device and then at a station at which a wiper applies pressure to the entire area of the label thereby to cause it to adhere firmly to the bottle, and wherein, at the latter station, a wiper-supporting slide is moved toward the bottle along a rectilinear path, perpendicular to the path along which the bottles move from station-to-station, said slide carrying a rigid, vertically elongate support, a body wiper frame connected to but movable relatively to the lower part of the support, spring means urging the bottle wiper frame toward the bottle path and away from the support, whereby, after movement of the body wiper frame is terminated by contact of the body wiper pad with the bottle, the slide may continue to move toward the bottle, an auxiliary slide carrying a neck wiping pad, said auxiliary slide being arranged at the upper end of the support, guide means on the support for the auxiliary slide, a rocker pivotally connected to the body wiper frame, a shoulder wiping pad mounted on the rocker, means for transmitting motion from the slide to the rocker after the advance of the body wiper frame has been terminated, thereby to turn the rocker to position its pad for contact with a label adherent to the bottle shoulder, and means for moving the slide toward the bottle while the latter dwells at the wiping station.

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