No. 868,741. PATENTED OCT. 22, 1907.

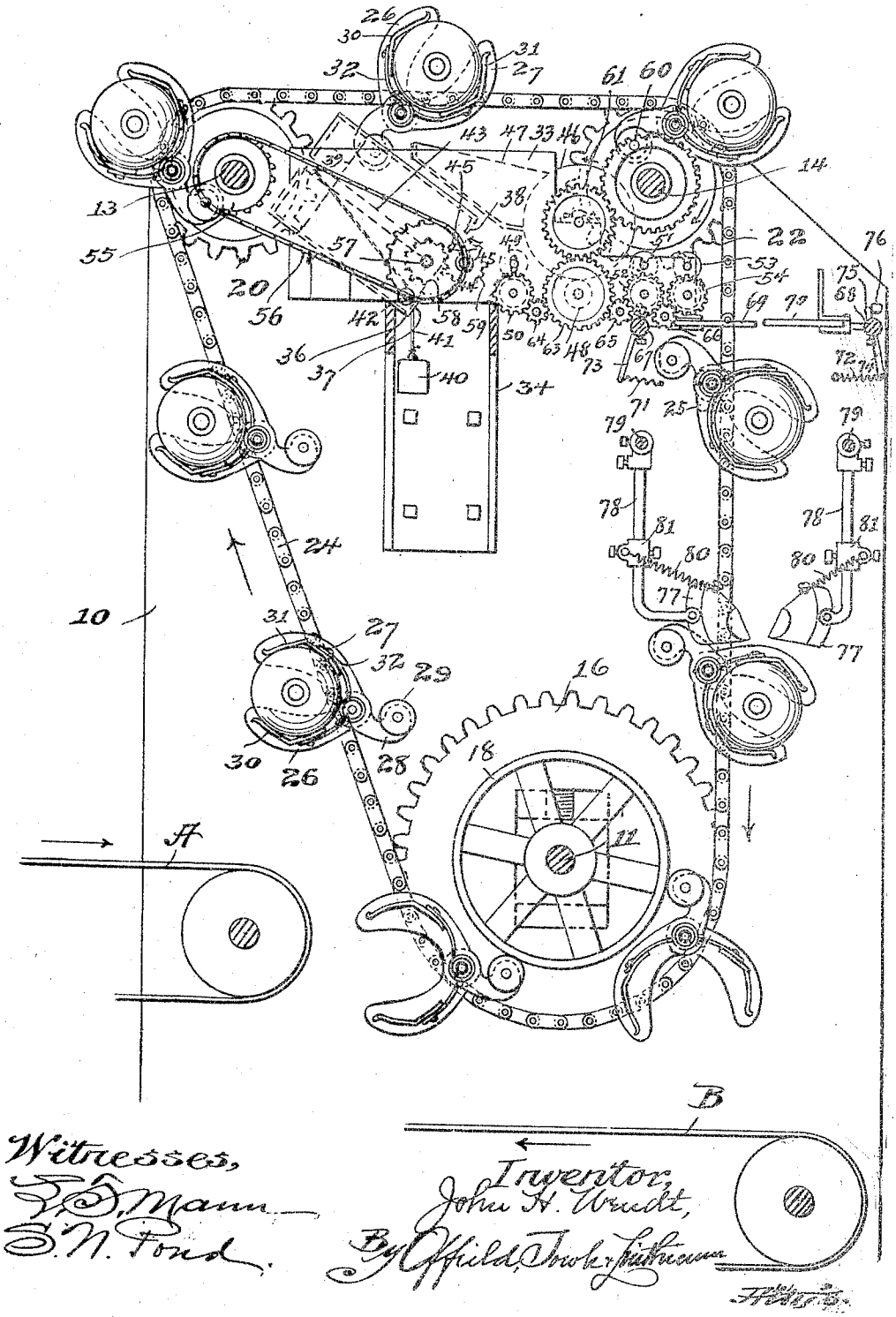
J. H. WENDT.

BOTTLE LABELING MACHINE.

APPLICATION FILED MAR. 26, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses,
F. D. Mann
S. N. Ford.

Inventor,
John H. Wendt,
By Offield, Towle & Linthicum
Attys.

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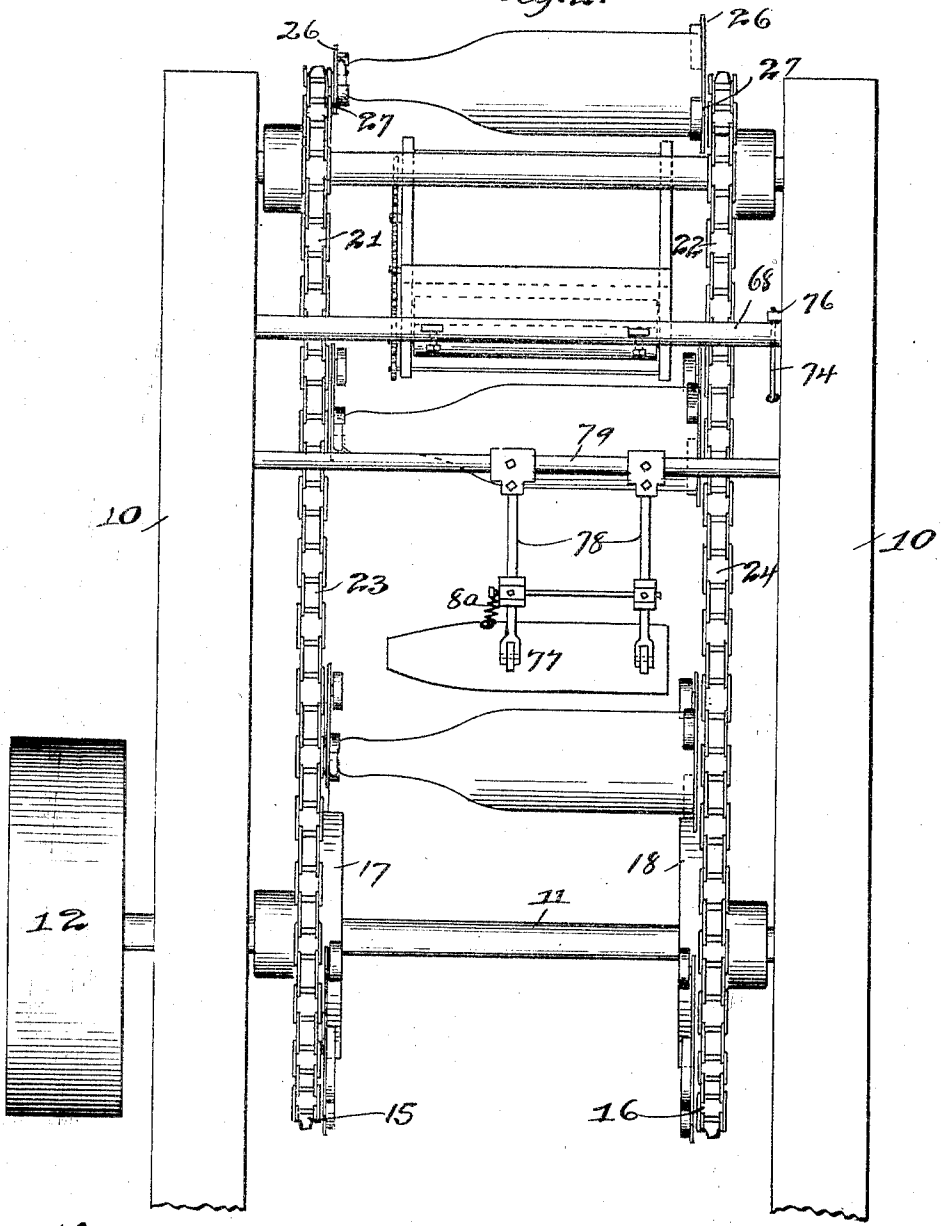
3 SHEETS—SHEET 2.

Fig. 2.



Witnesses,
F. D. Mann,
S. N. Pond

Inventor,
John H. Wendt,
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Attys.

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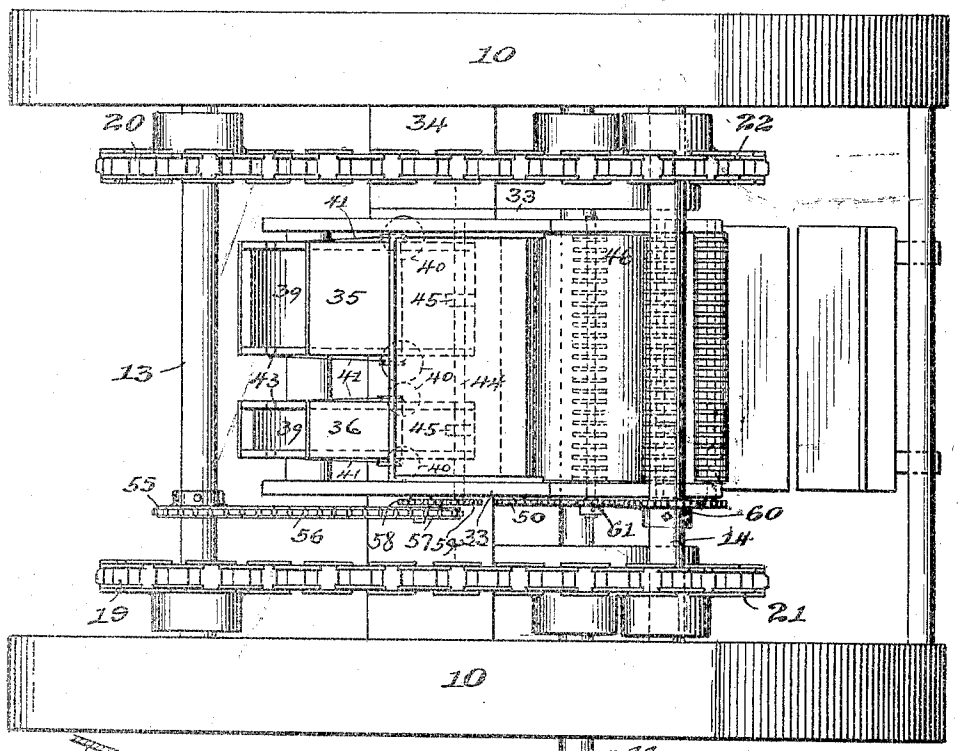
3 SHEETS—SHEET 3.

Fig. 3.



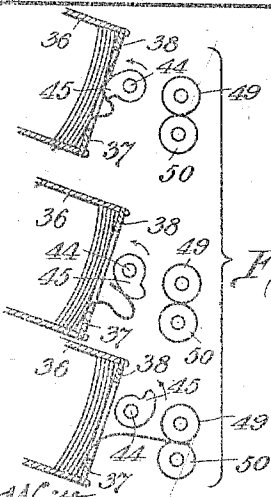


Fig. 5.

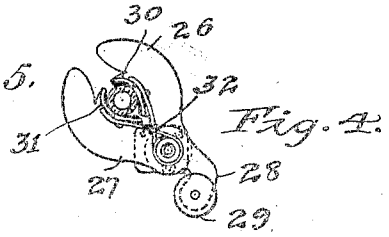


Fig. 4.

Witnesses,
L. E. Mann,
S. N. Ford.

Inventor,
John H. Wendt,
By Offield, Towle & Linthicum
Attys.

UNITED STATES PATENT OFFICE.

JOHN H. WENDT, OF CHICAGO, ILLINOIS.

BOTTLE-LABELING MACHINE.

No. 868,741. Specification of Letters Patent. Patented Oct. 22, 1907.

Application filed March 26, 1906. Serial No. 308,119.

To all whom it may concern:

Be it known that I, JOHN H. WENDT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Labeling Machines, of which the following is a specification.

This invention relates to machines for applying labels to bottles, and has for its main object to provide a simple, reliable, and efficient machine of the continuously operating type, in which the labels are supplied with paste, then brought into contact with the bottles at the proper location or locations thereon for the display of the labels, and are finally neatly pressed upon the surface of the bottles so as to secure a thorough and complete adhesion and an effective display of the labels.

In its general aspects the machine of the present invention comprises an endless bottle-carrier provided with a plurality of suitably spaced bottle gripping and holding devices to receive the bottles from a feeding conveyer or other suitable source of supply; a mechanism which introduces the pasted labels successively across the path of travel of successive bottles; and a label smoothing and compressing mechanism which wipes over the outer surface of the label or labels on the bottles and effects their smooth and complete adhesion to the bottles.

A machine embodying the operative principle of my present invention is illustrated in the accompanying drawings, in which,

Figure 1 is a vertical section of the machine; Fig. 2 is a rear elevational view; Fig. 3 is a top plan view with the bottle-clamping devices omitted for the sake of clearness; Fig. 4 is a detail view of one of the series of bottle-clamps or grippers which engages the neck-portion of the bottle; and Fig. 5 is a detail group view of the label hopper and the means for feeding the same forward into the path of the bottles.

Referring to the drawings, 10 designates each of a pair of main parallel side frame members, in and between which the main operative parts of the machine are mounted. In the lower portion of these frames and transversely thereof is journaled a drive-shaft 11, on one overhanging end of which is a driving pulley 12. In and between the upper ends of the side frame members near the front and rear ends thereof are journaled a pair of shafts 13 and 14. On the shaft 11, inside the side frame members are a pair of relatively large sprocket-wheels 15 and 16, on the inner sides of which are formed circular flanges 17 and 18, respectively, the purpose of which will appear hereinafter. Keyed on the shaft 13 are a pair of smaller sprockets 19 and 20 (Fig. 3); and similarly keyed on the shaft 14 are a pair of similar sprockets 21 and 22. The sprockets 19 and 21 are in the same vertical plane with the sprocket 15 on one side of the machine, and the sprockets 20 and 22 are in the same vertical plane with the lower sprocket 16 on the opposite side of the machine. Encircling the sprockets 15, 19 and 21, is a carrier chain 23, and similarly encircling the sprockets 16, 20 and 22, is a companion carrier-chain 24.

Rigidly secured to the inner sides of the chains 23 and 24, at uniformly spaced intervals, are a series of small plates indicated at 25, on which are mounted the bottle gripping and clamping devices. These devices on one of the chains are adapted to grip the base of the bottle, and the similar devices on the other chain are adapted to grip the neck of the bottle; the bottle being supported horizontally by and between said gripping devices. As the devices of the two series are substantially alike, differing only in the degree or extent to which they open to receive the bottle, a description of one will suffice for all. Each device comprises essentially a fixed jaw 26 rigidly secured to the plate 25, and projecting outwardly of the carrier chain, and a movable jaw 27 pivoted on the plate 25, said movable jaw having an inwardly extending tail-piece 28 carrying an antifriction roller 29. The inner sides of the jaws have laterally projecting flanges 30 and 31, respectively, curved to conform to the portions of the surface of the bottle which they respectively engage. The jaws are normally forced together into gripping or clamping engagement upon the bottle by a suitable spring, a torsion spring 32 (Fig. 4) located at the pivotal center of the jaws sufficing for this purpose.

Referring now to the label-feeding and pasting mechanism, 33 designates each of a pair of parallel inner side frame members disposed between and parallel with the main side frame members 10 (Fig. 3) and suitably spaced apart; which side frame members may be conveniently supported upon an arched cross-tie 34 connecting the main side frames 10. In and between the side frames 33 are suitably mounted side by side, a pair of larger and smaller label hoppers 35 and 36, respectively, which hoppers are open at their upper ends for the insertion of a stack of labels, and are likewise open at their lower ends with the exception of inwardly projecting ledges 37 and 38 on opposite sides, which support opposite edges of the labels. Each hopper is provided with a follower 39 that may be drawn downwardly so as to maintain a uniform pressure upon the stack of labels by means of weights 40 suspended by cords 41 passing over guide-pulleys 42 and connected at their upper ends to the followers, as indicated in Fig. 1; the side walls of the hoppers being slotted, as shown at 43, to permit the attachment of the cords to the followers. Mounted on the shaft 44 journaled in and between the side frames 33 are a pair of rubber-tipped fingers 45, which are caused to rotate in the direction of the arrow shown in Fig. 1, the tips of said fingers sweeping through the openings in the lower ends of the label hoppers.

Also mounted in and between the side frames 33 is a paste roll 46 served by a paste box 47, said paste roll coöperating with a directly underlying auxiliary paste roll 48. Between the fingers and the paste rolls are mounted a pair of feed rolls 49 and 50; and on the other side of the paste rolls are two additional pairs of rolls 51, 52 and 53, 54. The finger shaft 44 is herein shown as driven from the shaft 13 by a sprocket 55 (Fig. 3) on said shaft 13, a sprocket chain 56, a second sprocket 57, and intermeshing gears 58 and 59 on the shaft of said second sprocket and the finger shaft 44, respectively. The paste roll 46 is driven from the shaft 14 by intermeshing gears 60 and 61, and the auxiliary paste roll 48 is driven from the main paste roll by coöperating gears 61 and 63. An idler gear 64 between the auxiliary paste roll 48 and the feed roll 50 drives the latter from the former; an idler gear 65 between the auxiliary paste roll and the feed roll 52 drives the latter from the former; and another idler gear 66 between the feed roll 52 and delivery roll 54 drives the latter from the former.

Fast on a pair of hinge shafts 67 and 68 are a pair of oppositely projecting shutters 69 and 70, which are normally held in a common horizontal plane just beneath and beyond the discharge rolls 53 and 54 by springs 71 and 72 engaging the lower ends of arms 73 and 74, respectively, secured to said hinge shaft, the upward spring of said shutters being limited by suitable coöperating stops such as 75 and 76, shown as coöperating with shutter 70. These shutters, when in their raised or horizontal position, receive the pasted labels successively, pasted side up, between the passage therethrough of the successive bottles, as hereinafter more particularly described.

Beneath the label-supporting shutters is located the smoothing and pressing mechanism, which comprises essentially a pair of shoes 77 of similar form but inversely disposed, these shoes having their inner surfaces shaped to conform to the contour of a longitudinal section of the surface of the bottle. These shoes are pivoted substantially centrally of their backs to the lower ends of a pair of hanger-arms 78, that are pivoted on transverse rods 79 extending between the main side frames. It will be observed by reference to Fig. 1 that the shoes and their suspending means are so positioned as to cause the shoes to lie slightly separated and on opposite sides of a vertical plane coinciding with the longitudinal axes of the bottles on the descending section of the conveyer. The upper edges of the shoes are connected by tension springs 80 to collars 81 adjustably mounted on the hangers 78, whereby, by adjusting the position of said collars, the tension of said springs can be nicely regulated. The springs normally act to hold the shoes with their inner surfaces upwardly divergent to readily receive between them the lower surface of the descending bottle; but said shoes are capable of rocking on their pivotal connections with the hangers 78 as the bottle passes between them, whereby the inner or bottle-engaging surfaces of the shoes press smoothly upon and wipe over the labels previously applied to the bottles by the shutters 69 and 70.

The operation of the individual mechanisms of the machine has been to a considerable extent described; but its connected operation as a whole may be briefly explained as follows. The carrier travels continuously in the direction indicated by the arrows in Fig. 1. The bottles to be labeled are supplied to the clamps on the left-hand or ascending section of the carrier manually or by a suitable conveyer mechanism such as is indicated at A in Fig. 1, the bottles entering the jaws of the clamps while said jaws are distended or separated due to the engagement of the rollers 29 carried by the tail-pieces 28 with the flanges 17 and 18. As soon as the clamps pass beyond said flanges, the jaws of the clamps are automatically closed upon the bottles, whereby the latter, securely supported, are carried by and over the top section of the machine. During this operation, the label-feeding and pasting devices are at work preparing and presenting the labels across the path of travel of the bottles; the fingers 45 operating at each rotation to draw out the upper end of the uppermost labels of the stacks, and throw the extracted ends into the nip of the feed-rolls 49 and 50, by which latter the labels are passed on between the pasting rolls 46 and 48, by which a coat of paste is applied to the upper surfaces of the labels, whence the labels are further advanced through the feeding rolls 51 and 52, and are then discharged by the rolls 53, 54 flat upon the hinged shutters 69 and 70 just prior to the passage of a bottle between said shutters. As the bottle descends upon and between the shutters 69 and 70, it contacts the upper or pasted sides of the labels; and during the descent between and through the shutters, said labels are roughly spread upon the lower side of the bottle in their proper relative positions, adhering thereto as the bottle descends further into contact with the compressing and smoothing shoes 77. The inner surfaces of these latter, having substantially the form and contour of sections of the bottle, snugly wipe over the label-covered surface of the bottle during its descent, and, by virtue of the rocking action of the shoes on their pivots, neatly smooth and press the labels upon the bottle throughout their entire extent. After each bottle has passed between said shoes, the springs 80 of the latter automatically return the shoes to a position favorable for the reception of the next succeeding bottle. Shortly after the labeled bottle has passed between the shoes 77, the rollers 29 of the tail-pieces 28 of the movable jaws contact the flanges 17 and 18, thereby opening the jaws and permitting the labeled bottle to drop onto a suitable discharging conveyer, such as is indicated conventionally at B.

From the foregoing it will be seen that the machine is continuously acting and entirely automatic, it being necessary only to maintain the supply of labels to the label hoppers, to keep the paste box supplied, and to maintain a supply of unlabeled bottles to the feeding-in conveyer A.

In order to render the description and illustration of the machine complete and operative, specific details of the mechanism for feeding the labels forward into the path of the bottles and for pasting them as they are fed forward have been shown and described herein, but the specific details of such mechanism form no part of the present invention.

It will be evident to those skilled in this art that numerous modifications and variations might be made in the machine shown and described within the spirit and principle of the invention. Hence I do not limit the

invention to the exact mechanism shown, except to the extent indicated in specific claims.

I claim:

1. In a bottle-labeling machine, the combination with an endless carrier provided with a bottle-clamping device, of a yieldable support for a pasted label disposed across the path of travel of the bottle, substantially as described.

2. In a bottle-labeling machine, the combination with an endless carrier provided with a bottle-clamping device, of a yieldable support for a pasted label disposed across the path of travel of the bottle, and a wiping mechanism for smoothing and pressing the label on the bottle also disposed across the path of travel of the bottle, substantially as described.

3. In a bottle-labeling machine, the combination with an endless carrier provided with a bottle-clamping device, of a yieldable support for a pasted label disposed across the path of travel of the bottle, a wiping mechanism for smoothing and pressing the label on the bottle also disposed across the path of travel of the bottle, and means for automatically releasing the bottle from the clamping device, substantially as described.

4. In a bottle-labeling machine, the combination with a carrier comprising a pair of parallel endless chains, of two series of bottle-clamping devices mounted opposite each other on said chains, respectively, one of said series serving to clamp the bottles at their bases and the other series clamping the bottles at their necks, substantially as described.

5. In a bottle-labeling machine, the combination with an endless carrier having a series of bottle-clamping devices, of a yieldable support for a pasted label disposed across the path of travel of the bottle, a label hopper, mechanism for transferring the labels successively from said hopper to said support, and means for applying paste to said labels in transit, substantially as described.

6. In a bottle-labeling machine, the combination with an endless carrier having a series of bottle-clamping devices, of a yieldable support for a pasted label comprising a pair of pivoted yieldable shutters disposed opposite each other across the path of travel of a bottle, and means normally tending to maintain said shutters in a common horizontal plane, substantially as described.

7. In a bottle-labeling machine, the combination with an endless carrier having a series of bottle-clamping devices, and means for presenting a pasted label across the path of the bottles on said carrier, of a pair of oppositely facing pivoted shoes disposed across the path of the bottles, said shoes having wiping surfaces shaped to the contour of the bottles and adapted to smooth down the labels thereon, and springs normally holding said shoes in bottle-receiving position, but permitting them to rock on their pivots as the bottle passes therethrough, substantially as described.

JOHN H. WENDT.

Witnesses:
SAMUEL N. POND,
FREDERICK C. GOODWIN.