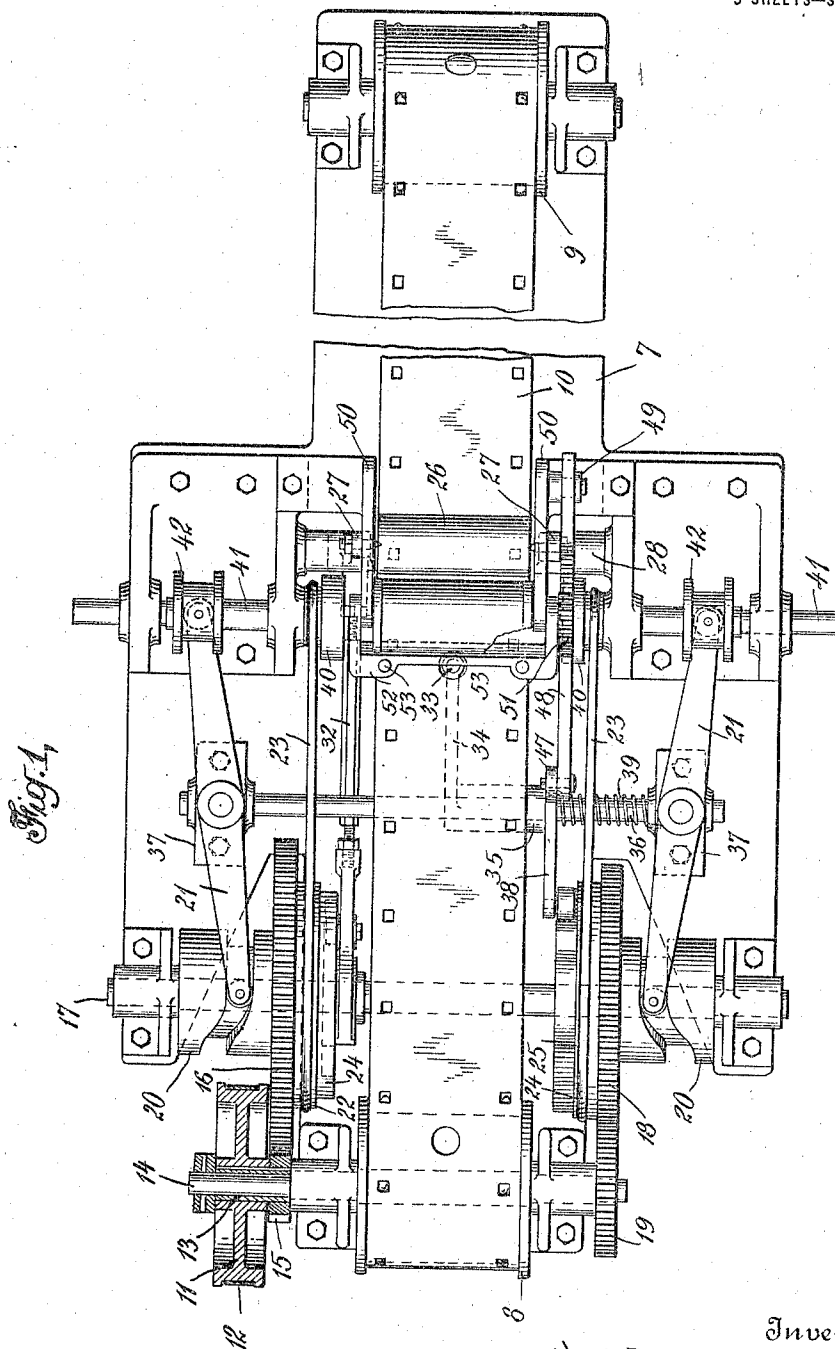


1,295,016.

H. K. EASTMAN & C. GENTEL.
 LABEL AFFIXING MACHINE.
 APPLICATION FILED MAY 18, 1918.

Patented Feb. 18, 1919.
 3 SHEETS—SHEET 1.



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 3 SHEETS—SHEET 2.

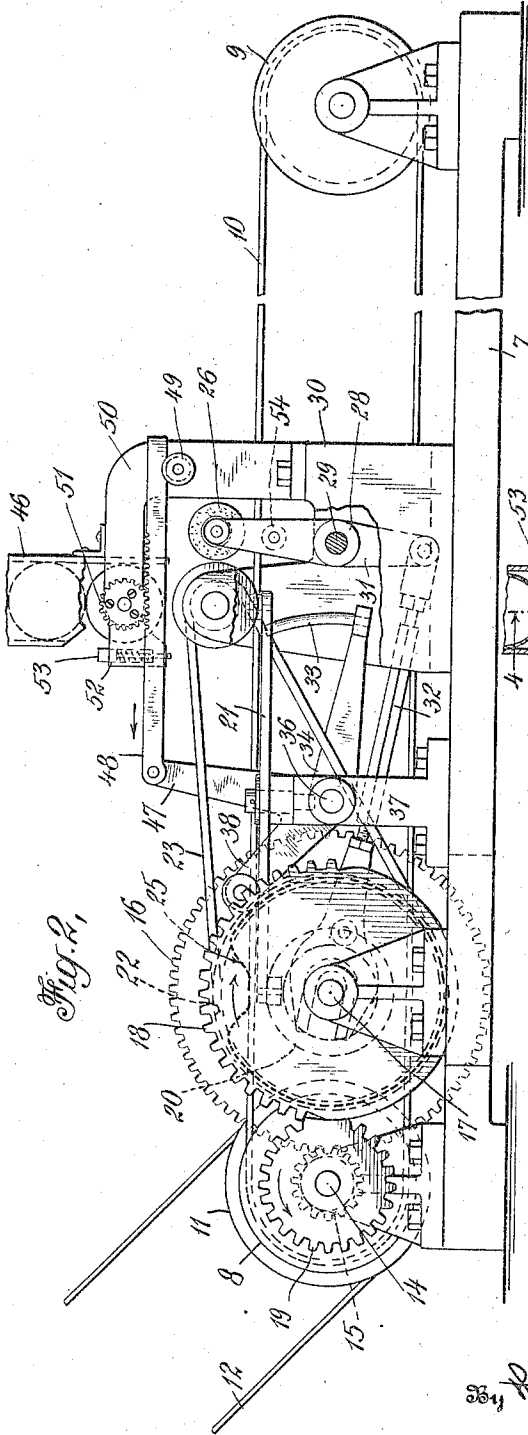


Fig. 2.

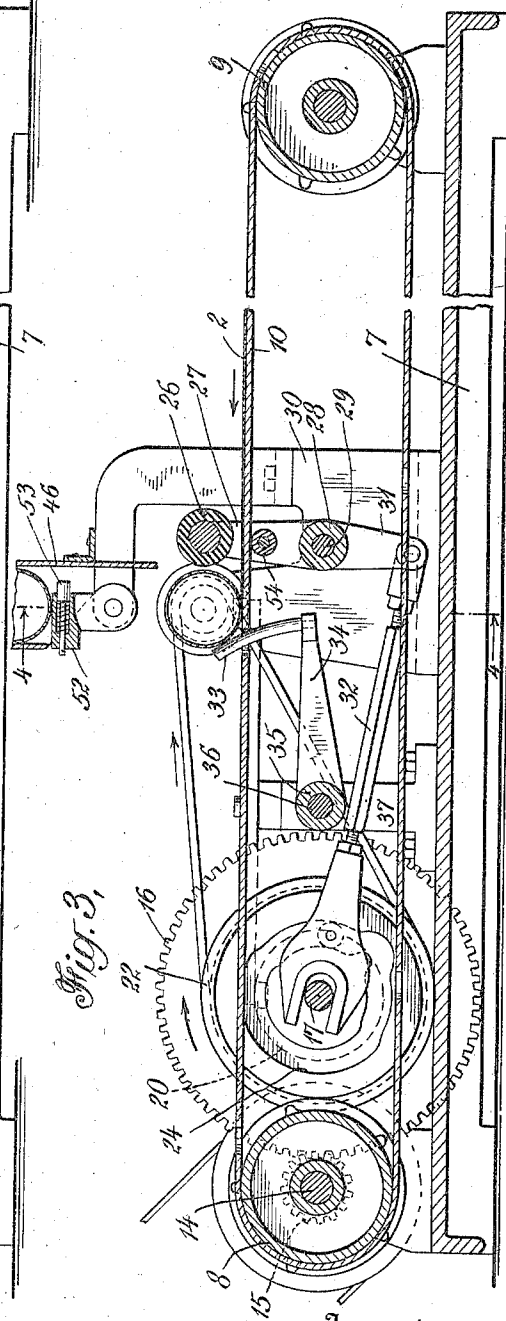


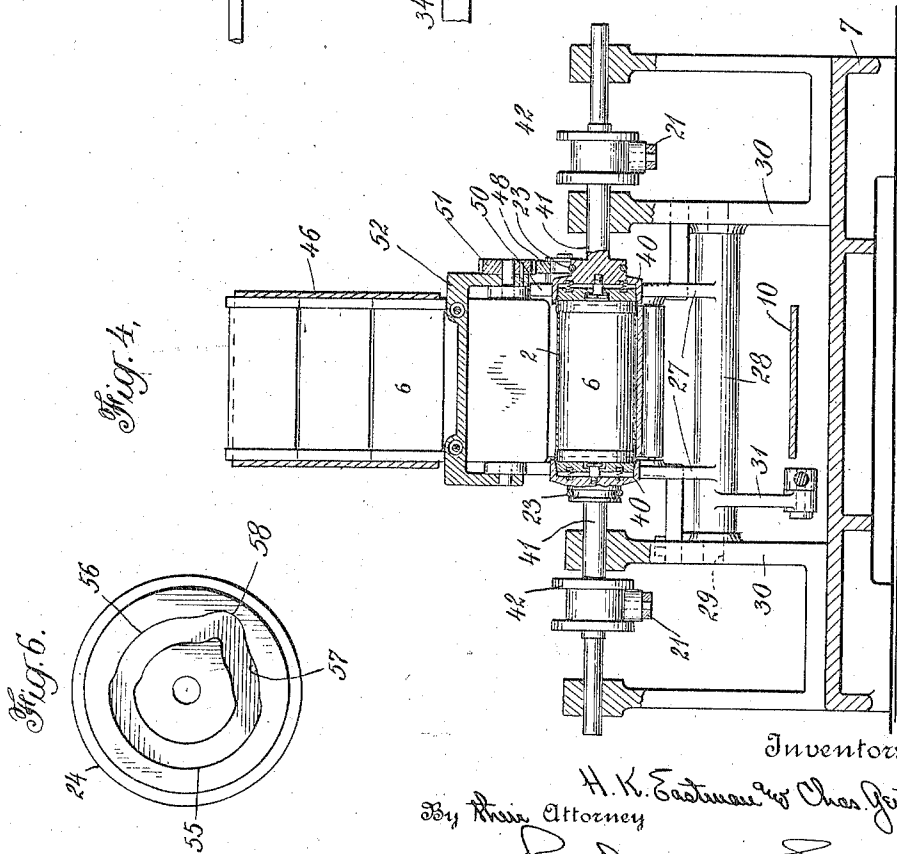
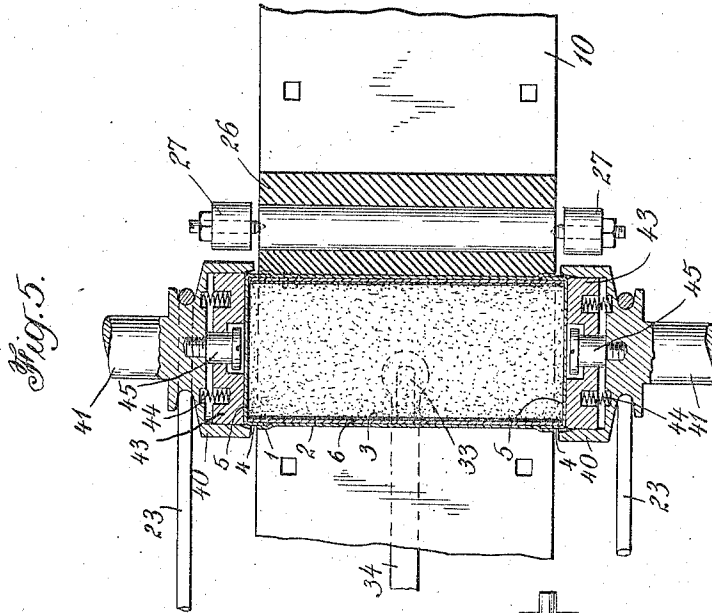
Fig. 3.

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 3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY KEYES EASTMAN AND CHARLES GENTEL, OF BROOKLYN, NEW YORK, ASSIGN-
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LABEL-AFFIXING MACHINE.

1,295,016.

Specification of Letters Patent.

Patented Feb. 18, 1919.

Application filed May 18, 1918. Serial No. 235,229.

To all whom it may concern:

Be it known that we, HENRY KEYES EAST-
MAN and CHARLES GENTEL, citizens of the
United States, residing in the borough of
5 Brooklyn, city and State of New York, have
invented certain new and useful Improve-
ments in Label-Affixing Machines; and we
do hereby declare the following to be a full,
clear, and exact description of the invention,
10 such as will enable others skilled in the art
to which it appertains to make and use the
same.

This invention relates to label affixers
and is directed particularly to the provision
15 of apparatus for affixing labels about the
curved surfaces of containers which are of
a generally cylindrical form.

Various forms of label affixing machines
have been in common use for many years
20 past in affixing labels to the peripheries of
cylindrical containers, as for instance, the
affixing of labels to cylindrical cans con-
taining vegetables. A common form of
such a machine involves a traveling belt
25 upon which the labels are carried, paste-
applying apparatus for applying paste
to more or less of the surface of the
label and means for rolling a can over
the pasted label to pick up the label and
30 apply it about the cylindrical surface of the
can.

A form of container which for some few
years past has been in very general use con-
sists of a tube of cardboard and circular end
35 caps provided with integral flanges adapted
to take over the ends of the cardboard tube.
When a label is applied to such a container
completely encircling the cylindrical sur-
face of the container and overlapping at
40 its edges the flanges of the end caps, the con-
tainer is sufficiently air and moisture-proof
to maintain a food or other product in
proper condition for a considerable period of
time. The advantages of this form of con-
45 tainer have led to its use on a large scale
but its use has always been accompanied by
difficulty and relatively high expense in the
application of the labels to the containers.
The forms of labeling machines heretofore
50 commonly employed in applying labels to
tin cans are not suitable for this use for the
reason that the flanges on the end caps of
the container project slightly beyond the
surface of the cylindrical tube, this slight
55 projection of the flanges being sufficient to
prevent proper application of the label to

the container over the entire width of the
label by the forms of apparatus heretofore
commonly employed for similar purposes.
Accordingly, the affixing of labels to the 60
cylindrical surfaces of paper containers of
the type above referred to has heretofore
been a manual operation involving exces-
sive cost.

The present invention is directed to the 65
provision of a label affixing apparatus
adapted particularly for affixing labels to
cylindrical containers whose cylindrical sur-
face is not entirely free from ridges or
flanges over the area to be covered by the 70
label.

The invention involves the provision of
feeding devices for feeding the containers
into the label-affixing position successively,
means for gripping each container while it 75
is in this position at its ends by gripping
devices which do not overlap the area to
be covered by the label, means for rotating
the container while it is so held by the grip-
ping devices to pick up a pasted label and 80
wind the label about the container, and a
pressure roller held in contact with the con-
tainer to press the label against the sur-
face of the container, the roller being made
of a soft material which yields sufficiently 85
to assure proper application of the label to
the surface of the container both over the
portion thereof which is of cylindrical form
and also over the flanges of the end caps.
Preferably the labels are carried to the grip- 90
ping devices by a belt upon which they are
laid successively and which may be em-
ployed to carry the labels into co-action
with a suitable paste-applying mechanism.
The belt carrying the labels is preferably 95
fed forward in conjunction with the rotation
of the container to which the label is to be
applied and at a speed corresponding to the
rotation of the container, and the relation of
the parts may be such as to cause the belt 100
to assist in pressing the label upon the
cylindrical surface of the container. Also,
after the label has been applied to the con-
tainer the movement of the belt may carry
the labeled container away from the affix- 105
ing position, or if desired some other or ad-
ditional means for effecting the discharge of
the labeled containers may be employed.

Label affixing apparatus embodying the
principles of the invention and employing 110
gripping devices for gripping the ends of
the containers successively and rotating the

containers while they are so gripped, and a pressure roller pressing the label upon the container over portions of the container lying in different planes, may be constructed in various ways differing considerably one from another. One form in which the invention may be embodied will now be described in connection with the accompanying drawings, but we wish it understood that for the reason above noted, the invention is not limited with respect to the construction of the apparatus employed.

In the drawings Figure 1 is a plan view of the machine broken away in part;

Fig. 2 is an elevation;

Fig. 3 is a longitudinal section;

Fig. 4 is a transverse section on line 4—4 of Fig. 3;

Fig. 5 is a horizontal section through the container and pressure roller; and

Fig. 6 is a detail view of one of the cams employed.

The form of container upon which the invention is designed to operate is one which is of cylindrical form and whose cylindrical surface has slight rises therein formed by the flanges of end caps which extend over the ends of the tube forming the body of the container. Such a container is indicated in certain of the figures of the drawings, more particularly Fig. 5. Referring to that figure, the body of the container consists of a tube 6 of cardboard which may be formed from a strip wound spirally. To close the joints between adjacent spirals a lining of light paper may be provided as is shown at 3. The ends of the tube consisting of the parts 6 and 3 are closed by end caps 5 which are circular pieces of paper having integral flanges 4 which fit snugly over the ends of the tube 6. It will be noted that the cylindrical surface of the container rises from that of the tube 6 at the ends of the container where the flanges 4 of the end caps overlap the ends of the tube. The label which is applied to the container by the machine constituting this invention, is shown at 2. It will be noted that at its lateral edges this label overlaps the flanges 4 of the end caps 5 as is indicated at 1, and it is essential that the labels do so overlap the flanges of the end caps to adequately protect the contents of the container.

Referring now to the construction illustrated, the machine includes a base 7 upon which rollers 8 and 9 are mounted to receive and guide an endless belt 10. The belt is preferably provided with two series of spaced holes adapted to co-act with teeth on the rollers 8 and 9 as shown in Fig. 3. The belt is advanced intermittently by power which may be transmitted to a driving pulley 11 by belt 12. This pulley is shown as secured to a sleeve 13 which is loose upon the shaft 14 of the roller 8. The sleeve 13 carries

a pinion 15 which meshes with a gear 16 mounted on a shaft 17 extending across the machine and mounted in bearings secured upon the base plate 7. The shaft 17 also carries a gear 18 meshing with pinion 19 on the shaft 14, the gear and pinion 18 and 19 being of the Geneva type as indicated in Fig. 2. By this mechanism, the shaft 17 is driven continuously by the pulley 11 through the gears 15 and 16, and through the gears 18 and 19 imparts an intermittent rotational movement to the shaft 14 carrying the roller 8, thereby giving the belt 10 a step by step movement, the steps occurring at regular intervals and being of the same length.

Secured on the shaft 17 adjacent to the gears 16 and 18 are two cams 20 each of which receives a roller mounted on the end of a lever 21 which is pivotally mounted in a standard 37 rising from the base 7. The shaft 17 also carries two pulleys 22 on which belts 23 run. Adjacent to these pulleys the shaft 17 carries two cams 24 and 25, the outlines of these cams being shown in Figs. 2 and 3 and the cam 24 being shown separately in Fig. 6. The cam 24 is employed for positioning the pressure roller. This roller is shown at 26 and its peripheral portion is of a soft material which will readily yield. The roller 26 is carried by arms 27 (Fig. 4) formed integral with a tubular shaft 28 adapted to rock upon a supporting shaft 29 which extends between standards 30 rising from the base 7. The tubular shaft 28 has a depending arm 31 to which a rod 32, adjustable as to its length, is pivotally connected as shown in Fig. 3. The end of this rod is bifurcated and straddles the shaft 17. Also the rod carries a roller which is adapted to travel in the cam groove of the cam 24.

The containers are fed successively into a position immediately in front of the pressure roller 26 and they should be retained in this position until they have been gripped by the devices by which they are held and rotated during the label-applying operation. A retaining device is therefore provided and this is operated by the cam 25. The retainer is shown at 33; it consists of an arc-shaped arm which is adapted to be projected and withdrawn through any one of a series of holes in the endless belt 10. One of these holes is in position to receive the retainer 33 at the end of each step movement of the belt 10. The retainer 33 is carried by an arm 34 on a sleeve 35 which is adapted to rock upon a shaft 36 supported by standards 37 on the base 7 at opposite sides of the belt. On the sleeve 35 is an arm 38 carrying a roller which bears against the periphery of the cam 25. The roller is held constantly in contact with the cam by a spring 39 coiled on the rod 36.

When a container has been supplied in the position shown in Fig. 3, it is gripped at its ends by a pair of chucks. The construction of these chucks is indicated in Fig.

5. Each consists of a cup-shaped member 40 carried upon the end of a short shaft 41 which is adapted to rotate in bearings formed in one of the standards 30. On each shaft 41 is a disk 42 having a circumferential groove adapted to receive a roller on the end of one of the levers 21 pivoted on standards 37. Each of the cups 40 is also provided with a circumferential groove forming a pulley to receive one of the belts 23 by which the chuck is rotated. Within each one of the cups 40 is a disk 43 which is pressed outwardly within the cup by springs 44, its outward movement being limited by a headed stud 45.

20 The containers are supplied successively from a chute or box 46 located above the machine. The feed of the containers from this chute successively is effected automatically. For this purpose the arm 38 actuated by the cam 25 is provided with an upwardly extending arm 47 (Fig. 2) pivotally connected to one end of a rod 48 whose opposite end is supported by a roller 49 pivoted on a supporting frame 50 rising from the standards 30. This rod has rack teeth formed thereon as shown meshing with the teeth of a gear 51 which is secured to one end of a feeder 52. This feeder is pivotally mounted upon the frame 50 and is adapted to be rocked back and forth between the positions in which it is shown in Figs. 2 and 3. The feeder 52 may be provided with a pair of yielding spring-pressed buffers 53 as shown in Fig. 3. As is shown in the drawings, the inner surface of the feeder is curved to correspond with the curvature of the containers, and when the feeder is in the position in which it is shown in Fig. 2 it holds the containers in the chute 46 by the co-action of this curved surface with the lowest one of the containers. When the feeder moves from the position shown in Fig. 2 to that shown in Fig. 3, the container held by the feeder is dropped and the feeder moves under the one directly above; as the feeder moves back, the container shown as resting upon the feeder in Fig. 3 passes down to the position formerly occupied by the container which was dropped.

55 The arms 27 by which the pressure roller 26 is carried may have a roller 54 mounted thereon for supporting the belt 10 close to the point at which the belt co-acts with the container held by the gripping chucks.

60 The operation of the mechanism constructed as above described will now be indicated.

The driving mechanism of the machine operates to move the endless belt or carrier 10 step by step. This carrier, particularly

the portion in advance of the pressure roller 26, may be of considerable length and may pass in coaction with various other mechanisms not illustrated in the drawing.

An automatic sheet feeding mechanism 70 may be employed for feeding the labels successively and positioning them properly upon the belt 10. Also the belt may carry the labels into coaction with a suitable paste-applying mechanism by which an adhesive 75 is applied over the surface of the label. When the belt comes to rest at the end of each step movement the forward edge of one of the labels project under the pressure roller 26 and is closely adjacent to a container in the label-applying position.

With the parts in the positions illustrated in Fig. 2, the sleeve 35 with its arms 38, 34 and 47 is operated by the cam 25 on the power shaft to raise the detent 33 and at the same time release a container and allow it to drop upon the belt 10. It will be noted that as the detent 33 moves up, the rod 48 attached to the arm 47 moves to the left in Fig. 3, thereby effecting the release of the container which had been held by the escapement device 52 and at the same time holding the other containers in the receptacle from downward movement. The detent 33 passes through a hole in the belt 10, such holes being provided to receive the detent in all of the positions of rest of the belt. This condition of the parts is illustrated in Fig. 3. Immediately after the container has been deposited on the belt in this way and is held thereon between the pressure roller 26 and the detent 33, the two chucks are moved toward each other by the levers 21 actuated by the cams 20 on the shaft 17. These chucks move to engage the ends of the container, the disks 43 of the chucks yielding somewhat against the tension of their springs so that the ends of the container are received within the cups of the chucks as is indicated in Fig. 5. Immediately thereafter the sleeve 35 with its attached arms is moved by spring 39 and cam 25 to retract the detent 33 to its lower position and at the same time move the escapement 52 from the Fig. 3 to the Fig. 2 position; the detent 33 is no longer needed because of the fact that the container is held by the chucks. At the same time or immediately thereafter, the pressure roller 26 is moved into contact with the container held by the chucks. It will be noted, particularly from Fig. 6, that the cam 24 which positions the pressure roller, has a portion 55 which is curved about the axis of the cam, two other portions 56 and 57 curved about that axis but of less radius and a projection 58. The portion 56 of the cam is in coaction with the roller on the rod 32 when the container is dropped by the escapement and gripped by the chucks. Immediately after the container is so gripped,

the portion 55 of the cam comes into coaction with the roller on the rod 32 thereby causing the pressure roller to be moved slightly about the axis of its supporting shaft 29 in a direction to carry the roller into contact with the container held by the chucks. The surface of the pressure roller is made of some yielding material so that when the pressure roller is moved up in this way it is pressed into contact with the container hard enough to cause the material of the pressure roller to make contact with portions of the container lying between slight projections thereof. It will be noted that the chucks are continuously rotated by the belts 23 running on the pulleys 22 on shaft 17 and the pulleys formed on the chucks. Therefore, as soon as the chucks grip the ends of the container, the latter is rotated. Also, immediately after the rotation of the container begins, the belt or carrier 10 is moved along one step by the intermittent driving mechanism. This movement of the belt carries the label thereon into contact with the container and the belt moves at a speed equal to the peripheral speed of rotation of the container held by the chucks. The pasted side of the label being uppermost, the label is taken up from the belt or carrier by the container and is wound upon the container. The provision of the supporting roller 54 immediately under the belt 10 and adjacent to the container held by the chucks, assists in applying the label to the container. This roller 54 prevents the belt from yielding to any substantial extent; it may even be so positioned as to raise the belt 10 slightly at a point immediately to the right of the container held by the chucks. After the label is carried around the major portion of the surface of the container, it comes into contact with the pressure roller and the latter presses the label upon the surface of the container. Since the soft surface of the pressure roller assumes a shape corresponding to the shape presented by the container, the label is pressed into contact with the container over the whole surface thereof, including the flanges of the end caps and also the cylindrical surface of the tube lying between the end caps. After the label has been applied to the container in this manner, the pressure roller is withdrawn from hard contact with the container by the portion 57 of cam 24 coming into coaction with the roller on rod 32, thus retracting the pressure roller slightly. Then the chucks are moved apart releasing the container. An automatic discharging device of any suitable character is then brought into action to remove the labeled container. The pressure roller 26 may be employed for this purpose by providing the projection 58 upon the cam 24. Immediately after the container has been released

by the chucks this projection on the cam gives the pressure roller 26 a quick forward and return movement causing it to deliver a blow upon the labeled container which forces the container from the labeling position. The operation above described is then repeated, the complete cycle consisting of moving the escapement 52 to release a container, raising the detent 33, moving the rotating chucks to grip a container, lowering the detent 33, returning the escapement 52, moving the pressure roller 26 into engagement with the container held by the chucks, moving the belt resulting in the application of the pasted label to the container, retracting the pressure roller, moving the chucks apart to release the container and discharging the labeled container by a quick movement of the pressure roller.

We claim:

1. Label affixing apparatus comprising the combination of a movable carrier for pasted labels, a pair of grippers mounted close to the carrier at a point intermediate the ends thereof, means for supplying containers successively to the grippers and causing the grippers to grip each container, means for rotating the grippers and the container held thereby with the container in contact with the carrier and for simultaneously advancing the carrier at a speed corresponding to the surface speed of the container so that the container takes up a pasted label from the carrier, and a pressure roller which is held in contact with the container as the latter is rotated by the rotating grippers.

2. Label affixing apparatus comprising the combination of a movable carrier for pasted labels, a pair of grippers mounted close to the carrier at a point intermediate the ends thereof, means for supplying containers successively to the grippers and causing them to grip each container, means for rotating the grippers and the container held thereby and for simultaneously advancing the carrier at a speed corresponding to the surface speed of the container, means for sustaining the carrier as it is advanced to insure contact of the container rotated by the grippers with a pasted label on the carrier, and a pressure roller which is held in contact with the container rotated by the grippers as it is rotated.

3. Label affixing apparatus comprising the combination of a movable carrier for pasted labels, a pair of grippers mounted close to the carrier at a point intermediate the ends thereof, means for supplying containers successively to the grippers, means for causing said grippers to grip each container, means for advancing the carrier periodically, means for rotating the grippers and the container held thereby with the container in contact with the carrier as the latter is advanced so that the container takes up a

pasted label from the carrier, a pressure roller having a yielding surface and means for moving the pressure roller toward and away from the container held by the grippers.

4. Label affixing apparatus comprising the combination of a movable carrier for pasted labels disposed substantially horizontal, a receptacle for containers located above the carrier, feeding means for discharging containers successively from the receptacle and allowing them to drop by gravity upon the carrier, a pair of grippers located close to the carrier and intermediate of the length thereof, means for moving the grippers to cause them to grip a container dropped upon the carrier, means for rotating the grippers and the container held thereby with the container in contact with the carrier and for simultaneously advancing the carrier at a speed corresponding to the surface speed of the container, and a pressure roller having a yielding surface which is held in contact with the container as the latter is rotated by the grippers.

5. Label affixing apparatus comprising the combination of an endless carrier for pasted labels disposed substantially horizontal, a pressing member mounted above the carrier intermediate the ends of the length thereof, a detent device movable into and out of a position above the carrier opposite the pressing member, means for delivering containers successively to a position upon the carrier between the pressing member and the detent device, a pair of grippers movable to grip a container so fed, means for moving the carrier and means for rotating the grippers and the container held thereby with the container in contact with the carrier so that the container takes up a pasted label from the carrier and the label is pressed upon the container by said pressing member.

6. Label affixing apparatus comprising the combination of a movable carrier for pasted labels, a pair of grippers for gripping a container, means for supplying containers successively to the grippers and causing them to grip each container, means for rotating the grippers and the container held thereby with the container in contact with a pasted label on the carrier so that the container takes up the label from the carrier, a pressing member opposite the container held by the grippers, means for moving the pressing member toward and away from the container and means for causing the grippers to release the container and for simultaneously moving the pressing member to deliver a blow upon the container to discharge it from the label affixing position.

7. Label affixing apparatus comprising the combination of a carrier for pasted labels, a pressing member mounted above the carrier, a detent device movable into and out of a position above the carrier opposite the pressing member, means for delivering containers successively to a position upon the carrier between the pressing member and the detent device, a pair of grippers movable to grip a container so fed, means for rotating the grippers and the container held thereby and means for simultaneously moving the carrier so that the container rotated by the grippers takes up a pasted label from the carrier.

8. Label affixing apparatus comprising the combination of means for gripping the ends of a container and rotating the container, means for supplying a pasted label to the container, a pressure roller having a yielding surface, means for holding the pressure roller in contact with a container to press a label upon the container, means for releasing the container, and means for operating the pressure roller to deliver a blow upon the container and thereby effect its discharge when it is released by the gripping means.

9. Label affixing apparatus comprising the combination of a movable carrier for labels, a receptacle for containers, means for dropping containers successively upon the carrier, a detent for positioning the containers so dropped, means for moving the detent into and out of its operative position, means for gripping a container which has been dropped upon the carrier and rotating that container in correspondence with the movement of the carrier, a pressure roller and means for holding the pressure roller in contact with a container while the container is being rotated to press a label upon the surface of the container.

10. Label affixing apparatus comprising the combination of an endless carrier, means for moving the carrier step by step, automatic feeding mechanism for feeding containers successively to a position on the carrier, a detent movable into and out of a position for retaining a container in position upon the carrier, a pair of chucks movable toward and away from each other to grip a container lying upon the carrier, means for rotating the chucks, and a pressure roller having a yielding surface movable into and out of engagement with a container held by the chucks to press a label upon the surface of the container.

In testimony whereof, we affix our signatures.

HENRY KEYES EASTMAN.
CHARLES GENTEL.