ABSTRACT: Device for feeding labels fully coated with glue on one face to a dispensing turret, said device being interposed between a glue-free label-transfer cylinder, a gumming roller and said turret, and being characterized in that it consists of a rotary cylinder associated with a cylinder rod; with parallel axes, said rod being adapted to revolve freely about its axis, said rotary cylinder and rod being operatively interconnected through a plurality of small endless parallel belts, said rotary cylinder being provided with a plurality of circular peripheral grooves each engaged by one of said belts, the cross-sectional contour of said grooves and that of said belts being such that the rotating surface formed by the external surfaces of said rotary cylinder and said belts be substantially continuous and plain.
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LABEL-FEEDING DEVICE FOR BOTTLE-LABELLING INSTALLATION

It is known that in industrial installations for handling bottles containing liquid foods, the belt conveyors carrying these bottles move past a rotary apparatus usually referred to as the "turret." The function of this turret is to apply a label to each passing bottle, this label being temporarily retained on the pointed side against the outer surface of the turret, usually by a vacuum effect, the other side to be applied to the bottle surface being coated with glue.

Flake labels can be coated with glue only on one portion of their surface; but if the labels are relatively stiff and if consequently a relatively thick glue is applied thereto, the gummed face must be coated completely in order to ensure a continuous, bubble-free adherence to the bottle surface.

This complete gluing, during the automatic transfer of labels from their dispensing magazine through the so-called transfer cylinder and gluing or gumming station to the aforementioned turret, is attended by multiple problems, from the practical standpoint, and solving these problems is rendered more difficult when using thick glue as mentioned hereinabove in the case of relatively stiff labels delivered at a relatively high rate.

It is the essential scope of this invention to provide means adapted, after the complete gluing or gumming of these labels, to deliver them to said turret without risk of rumping or otherwise damage them.

It is therefore the primary object of this invention to provide a device for delivering fully coated or gummed labels to a dispensing turret, this device being interposed between a glue-free label transfer cylinder, a gumming roller and said turret, and being characterized in that it consists of a rotary cylinder associated with a cylindrical rod, with parallel axes, said rod being adapted to revolve freely about its axis, said rotary cylinder and rod being operatively interconnected through a plurality of small endless parallel belts, said rotary cylinder being provided with a plurality of circular peripheral grooves each engaged by one of said belts, the cross-sectional contour of said grooves and that of said belts being such that the rotating surface formed by the external surface of said rotary cylinder and the outer surface of said belts substantially continuous and plain.

The detailed structure of this device and its mode of operation will now be described with reference to the accompanying drawing illustrating diagrammatically by way of example a typical form of embodiment of this device. In the drawing:

FIG. 1 is a perspective view of the device with the members interconnected thereby, and

FIG. 2 is a fragmentary perspective view of a typical form of embodiment of complementary means for stiffening the gummed labels and assisting in transferring them regularly to the turret.

Referring first to FIG. 1 the reference numeral 10 designates the so-called transfer cylinder consisting essentially of a rotary cylinder adapted to retain on its outer surface, notably by vacuum or suction effect, a gum-free label, with the printed side adhering to the cylinder surface. These labels are delivered from a dispensing magazine (not shown) where the labels are picked up one by one by reciprocating rotary means also not shown but of a well-known type, so as to be subsequently delivered to the transfer cylinder 10.

The reference numeral 11 designates the gumming or glue-applying roller coated with glue by means of an intermediate roller 12 revolving in a glue-filled box (not shown). This gumming station may consist for example of the arrangement shown and described in the French Pat. application filed on Sept. 26, 1969, N° 69.32.884.

Finally, the reference numeral 13 designates the rotary turret for delivering the labels gummed completely on the proper side to bottles (not shown) travelling past this turret on a belt conveyor.

All these members are mentioned to facilitate the understanding of this invention but are no part thereof.

The device according to the present invention comprises a rotary cylinder 14 engaging both the transfer cylinder 10 and the gumming roller 11, this rotary cylinder 14 comprises a number of circular, preferably regularly spaced grooves 15; these are three in number in the example illustrated, but it is obvious that a greater number of grooves 15 may be provided; somewhat spaced from this cylinder 14 and adjacent the turret 13 is a cylindrical rod 16 of relatively small diameter, adapted to revolve freely about its axis. The cylinder 14 and rod 16 are interconnected through a number of small endless belts 17, such as nylon belts, engaging each a groove 15. These belts are so shaped and dimensioned as to fit completely into the grooves 15 without projecting from the surface of cylinder 14; thus, this surface is continuous and substantially plain throughout its height in front of the companion cylinders 10 and 11.

The above-described device operates as follows:

Firstly, it will be noted that both the gumming roller 11 and the transfer cylinder 10 revolve with a very small clearance in front of the portions of grooves 15 which are engaged completely by the belts 17.

Assuming the rollers 11 and 12 to rotate in the direction of the arrows, the surface of roller 11 is coated with glue; the transfer cylinder 10, rotary cylinder 14 and turret 13 are also started for rotation in the direction shown by the arrows; the surface of cylinder 14 and also the outer surface of belts 17 are coated in turn with glue.

When a label 18 retained by suction on the surface of transfer cylinder 10 (with the printed side engaging this surface) registers with the cylinder 14, the vacuum or suction effect is discontinued automatically; thus, the label will adhere to the cylinder 14 and belts 17, so that the whole of its unprinted surface is coated with glue, and the label is carried along by the cylinder position 18A. As the belts move out from the cylinder grooves, the label is detached from the cylinder surface but is still adhering to the belt surface.

These belts subsequently pass over the small-diameter cylindrical rod 16, but since the stiffness of the label exceeds the retaining force due to the stickiness of the glue, this label continues its travel at 186 along a nearly rectilinear path. Thus, it leaves the belts and is picked up by the vacuum or suction produced at this point in the turret 13 so as to be snappily pressed thereagain, with the fully coated or gummed surface directed outwards. Thus, this label moves to position 18C and later on, at 18D, it is applied uniformly to the surface of a bottle (not shown), the suction effect being discontinued at this time.

The same cycle as described hereinabove is repeated for all the labels delivered by the transfer cylinder 10.

If necessary, the label stiffness may be reinforced at the level of rod 16 by using the means illustrated in FIG. 2 and described hereinafter.

This system comprises a pivotedly mounted rod 19 somewhat spaced upstream from and thinner than rod 16 and parallel thereto; this rod 19 is disposed outside the belts 17 and carries a number of teeth 20 parallel to, and disposed between, the belts 17, so as to constitute a kind of comb the teeth of which are urged by a weak torsion spring (not shown) so as to exert a reducible pressure on the printed side of any passing label; preferably the number of teeth 20 will be in excess of one unit to that of the belts 17 and each belt will travel between a pair of adjacent teeth. Under these conditions it is clear that the labels will assume a somewhat corrugated or like configuration, as shown in FIG. 2; thus, the label stiffness is reinforced and the removal thereof from the belts is further facilitated.

However, the use of this device is not strictly limited to a teethlike embodiment illustrated for the teeth may be replaced if desired by small rollers producing the same stiffening effect on the label by more or less corrugating same.

The device according to this invention is applicable essentially to bottle handling lines as used in the food industry. However, it is also applicable whenever it is required to apply labels to packings or other objects or articles travelling past a
turret adapted to deliver labels glued or gummed completely on one face.

1. Apparatus for removing successive labels from a rotating transfer cylinder, applying glue to one side of the removed label and transferring said label with glue applied thereto to a rotary turret, comprising a glue-receiving cylinder mounted for rotation about an axis parallel with the axis of a transfer cylinder, the peripheral surface of the glue-receiving cylinder being positioned to receive glue from an adjacent gumming roller, a cylindrical rod having a diameter considerably less than that of the glue receiving cylinder mounted spaced from the glue-receiving cylinder for rotation adjacent the surface of a rotary turret and about an axis parallel with the axis of rotation of said turret, said glue-receiving cylinder being provided with a plurality of annular axially spaced grooves in the peripheral surface thereof, and a plurality of endless belts connected between said glue receiving cylinder and said rod, said belts being received within said annular grooves and having a cross-sectional configuration such that the outer surfaces of the belts when disposed in the grooves are in alignment with and form a continuation of the surface adjacent the sides of the grooves.

2. Apparatus according to claim 1, wherein said gumming roller is arranged to apply glue to the peripheral surface of the glue-receiving cylinder and the outer surfaces of the belts disposed in the grooves, and the transfer cylinder is arranged to transfer labels to the glue-receiving cylinder and the outer surfaces of the belts after the glue is applied.

3. Apparatus according to claim 2, wherein the peripheral surface of said cylindrical rod is closely spaced from the surface of said turret.

4. Apparatus according to claim 3, wherein said apparatus includes means for increasing the stiffness of a label with respect to its direction of movement prior to the approach of a label to said cylindrical rod.

5. Apparatus according to claim 4, wherein said means for increasing the stiffness of a label comprises a set of elements disposed between said belts to engage a label to impart a slightly corrugated cross-sectional configuration to each label.

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