Dec. 9, 1969 H. A. BAINES ET AL 3,483,063

APPARATUS FOR APPLYING INDICIA TO ARTICLES

Filed Nov. 1, 1966 2 Sheets-Sheet 1

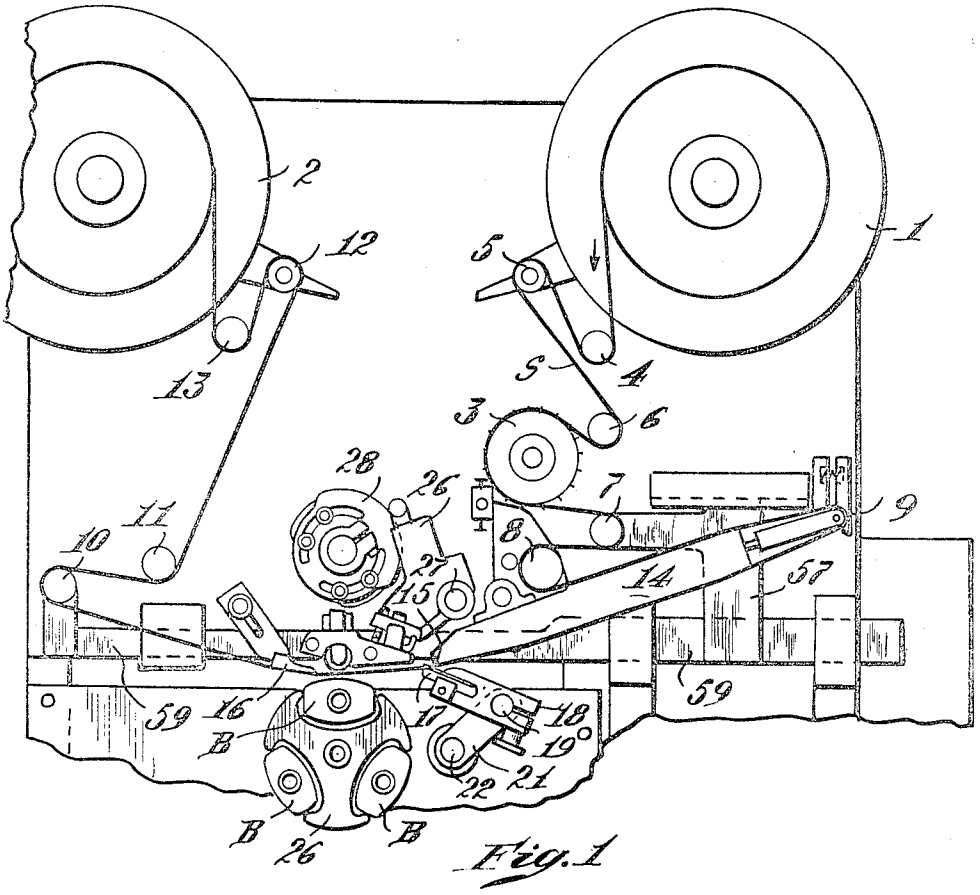


Fig. 1

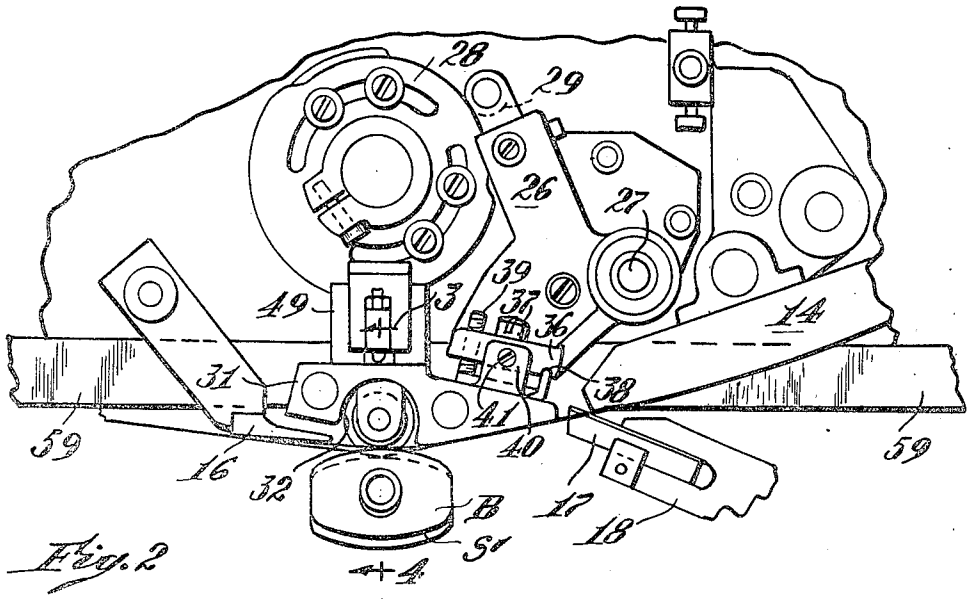


Fig. 2

Dec. 9, 1969 H. A. BAINES ET AL 3,483,063

APPARATUS FOR APPLYING INDICIA TO ARTICLES

Filed Nov. 1, 1966 2 Sheets-Sheet 2

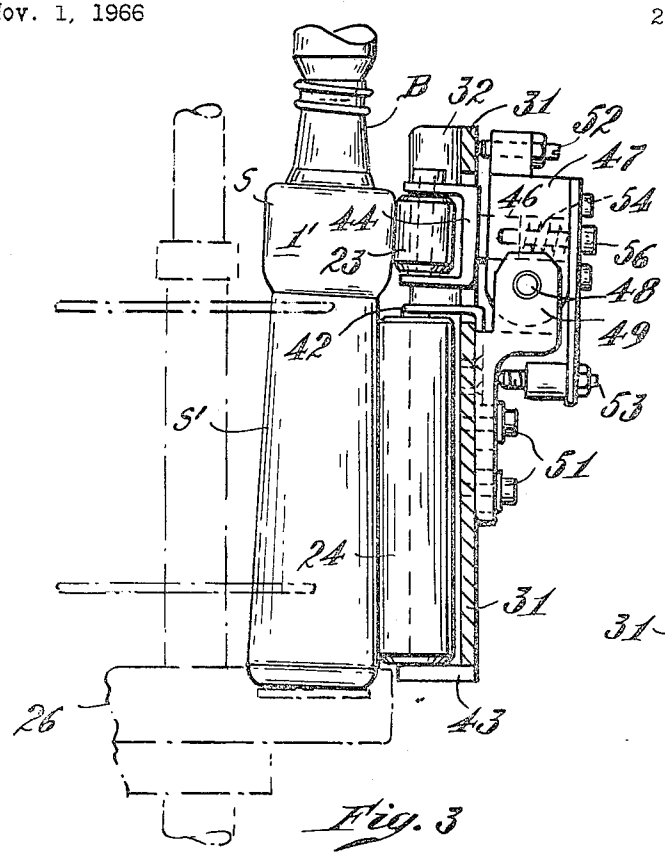


Fig. 3

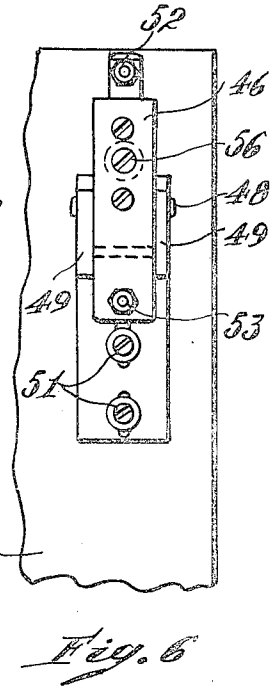


Fig. 6

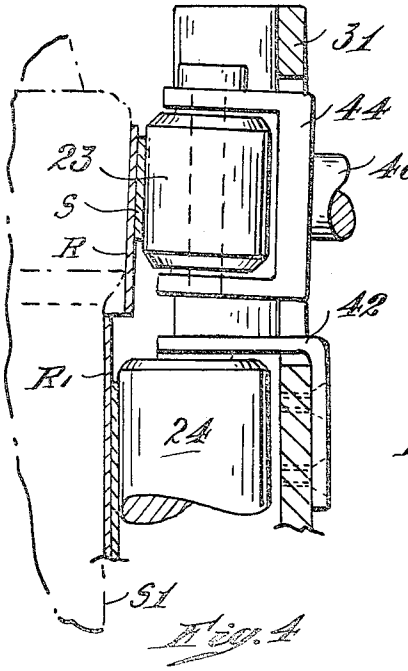


Fig. 4

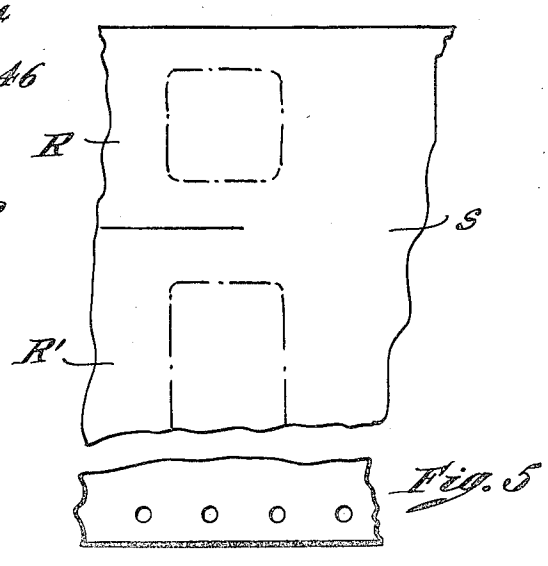


Fig. 5

United States Patent Office

3,483,063

Patented Dec. 9, 1969

3,483,063

APPARATUS FOR APPLYING INDICIA TO ARTICLES

Harry A. Baines and Carl A. Flood, Framingham, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass., a corporation of Nevada

Filed Nov. 1, 1966, Ser. No. 591,282
Int. Cl. B65d 9/26; B32b 31/04
U.S. Cl. 156—517 10 Claims

This invention relates to apparatus for labeling bottles and other articles such as disclosed for example in the patent to Flood 3,231,448 granted Jan. 25, 1966, the apparatus comprising means for applying indicia to the articles from a strip of paper or the like upon which the indicia is printed with heat-transfer ink or otherwise. The apparatus comprises means for feeding the strip past a transfer station and an applicator at the station for transferring the indicia from the strip to the articles. When the indicia is in the form of heat-transfer ink the applicator may comprise a heated roller and the strip is preferably heated before it reaches the transfer station to soften the ink.

In some cases the bottles have different diameters at different locations throughout their length so that their different peripheral surfaces are offset different distances from their axes, and sometimes one surface may be inclined to the other surface as when one surface is cylindrical and the other is conical.

Objects of the present invention are to apply indicia to both of said surfaces concomitantly from a single strip and to provide apparatus for the purpose which is simple and economical to produce, easy to service, readily adaptable to articles of different shapes and reliable in use.

According to this invention the apparatus involves the use of a strip of material carrying two rows of indicia and means in advance of the transfer station for splitting the strip between said rows into two or more ribbons, the applicator having parts offset from each other transversely of the strip for pressing the ribbons against the aforesaid surfaces respectively. Preferably the apparatus comprises means beyond the transfer station for guiding the ribbons back into edge-to-edge relationship, means for varying the aforesaid offset, the aforesaid applicator parts are rollers the axes of which are inclined to each other at an angle to press the ribbons against article surfaces which are inclined to each other, adjusting means for varying the aforesaid angle, adjusting means for varying the aforesaid offset, and both of the aforesaid adjusting means are preferably associated with the same roller.

In the preferred embodiment the apparatus comprises a guide for the strip on each side of the applicator, the guides being disposed on the side of the strip opposite the article, and the applicator is movable transversely of the strip from an operative position in which it presses the ribbons against the article to a retracted position in which the ribbons may travel in substantially straight paths from one of said guides to the other. Preferably the apparatus comprises a carriage for the applicator and a heater on the carriage for preheating the ribbons before they reach the aforesaid parts, the heater being out of contact with the ribbons in the retracted position, and the aforesaid parts are also out of contact with the ribbons in the retracted position so as not to overheat the strip during pauses between intermittent advances of the strip.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawings in which

FIG. 1 is a plan view of the portion of the apparatus of the aforesaid patent to which the present invention relates, showing the parts in retracted position;

FIG. 2 is a similar view showing the parts in operative position;

FIG. 3 is a section on line 3–4 of FIG. 2 with no strip material;

FIG. 4 is a similar section, somewhat enlarged, with strip material in place;

FIG. 5 is a rear view of a portion of a label strip; and

FIG. 6 is a rear view from the right of FIG. 3.

The particular embodiment of the invention chosen for the purpose of illustration is designed for labeling bottle B having upper surfaces S and lower surfaces S'. As shown in FIGS. 1 and 2 the horizontal shape of the bottle is approximately oval and as shown in FIGS. 3 and 4 the vertical outline of the upper surfaces S is parallel to the axis of the bottle and the lower surface S' tapers from bottom to top.

The illustrated apparatus comprises a feed reel **1** for the strip material S, a take-up reel **2** and a sprocket wheel **3** meshing with sprocket holes in the strip for feeding the strip from the feed reel to the take up reel over rollers **4** to **13**. In passing from roller **8** to roller **9** the strip slides over the upper surface of a heater **14** and after leaving the roller **9** the strip slides along the lower surface of the heater to soften the transfer ink on the strip, the ink being on the side of the strip facing away from the heater. After sliding off the lower end **15** of the heater, which serves as a guide, the strip slides over an adjustable guide **16** before reaching the roller **10**. Just beyond the end **15** of the heater is a knife **17** mounted on a bracket **18** adjustable about a pivot **19** on an arm **21** adjustable about pivot **22**, the knife serving to split the strip into two ribbons R and R' (FIGS. 4 and 5) which are applied to said two surfaces S and S' respectively.

Between the guides **15** and **16** is an applicator comprising two rollers **23** and **24** for transferring indicia from the ribbons R to R' to the two surfaces S and S' respectively of the bottles, the actuator being movable from the retracted position shown in FIG. 1 to the operative position shown in FIGS. 2, 3 and 4. In the retracted position of the applicator the ribbons extend in straight paths from guide **15** to guide **16** out of contact with both applicator and bottle.

As disclosed in the aforesaid patent the bottles are presented to the applicator by a turret **25** rotatable in a counter-clockwise direction (FIG. 1) to move the bottles past the applicator with the surfaces S and S' concentric with the axis of the turret so that the surfaces move tangentially of the applicator rollers **23** and **24**.

The applicator comprises a carriage **26** which is oscillated back and forth on shaft **27** between the aforesaid retracted and operative positions by means of a cam **28** and cam follower **29**. At the forward end of the carriage is a shoe-shaped block **31** having a cylindrical recess **32** in its front side to accommodate the aforesaid rollers **23** and **24** and having two bores **33** and **34** for electric heaters to heat the block. At its forward end the carriage has an upstanding flange **36** to which the block **31** is secured by means of a screw **37** extending through a loose opening in the flange. On one side of the screw is a pivot **38** and on the other side is a screw **39** for adjusting the angular position of the block about the pivot. The block **31** has a lug **40** overhanging the flange **36** and threaded through this lug is a screw **41** bearing on flange **36** for adjusting the block **31** vertically. The roller **24** is rotatably journaled in the block **31** by means of journals **42** and **43** at its upper and lower ends (FIG. 3). The rollers **23** is journaled in a U-shaped bracket **44** extending through and opening in the back of the block recess **32**. Extending rearwardly from bracket **44** is a lug **46** which slides in a socket in a support **47** pivotally supported at **48** on a U-shaped bracket **49** fast to the back

of block **31** by means of screws **51** extending through vertical slots in the bracket and threading into the block. The support **47** is adjustable about pivot **48** by means of screws **52** and **53**. A spring **54** yieldingly urges the roller forwardly and a screw **56** limits the forward movement of the roller. The roller **23** may be adjusted vertically by loosening screws **51**.

The rollers **7** and **10** are mounted on arms **57** and **58** fast to a bar **59** which is oscillated lengthwise by mechanism described and claimed in the aforesaid patent. While a new bottle is being fed to the applicator station the bar moves to the right (FIG. 1) to slow the portion of the strip between rollers **7** and **10** and as each bottle passes the applicator station the bar moves to the left to cause said portion of the strip to advance at the same velocity as the bottle so that when the strip is pressed against the bottle there is no slippage between strip and bottle, it being understood that the sprocket wheel **3** rotates at a constant speed equal to the average velocity of said portion.

From the foregoing it will be understood that the block **31** is first adjusted on the carriage **26** relatively to the paths of the ribbons R and R′ and the applicator rollers are then adjusted relatively to the surfaces S and S′ of the bottle. While a new bottle is moved by the turret to the applicator station the applicator is in retracted position with the rollers R and R′ and the block **31** out of contact with the ribbons R and R′ so as not to overheat the ribbons while they are slowed as aforesaid. As each bottle reaches the applicator station the applicator moves to operating position with the block **31** in heat transfer contact with the ribbons and with the rollers pressing the ribbons against the surfaces S and S′, it being understood that the turret and applicator operate in synchronism as in the aforesaid patent. Thus the strip is warmed to some extent by the heater **14**, more by the block **31** and still more by the rollers **23** and **24**.

We claim:

1. For transferring indicia from a strip of flexible material carrying two rows of indicia to an article having a longitudinal axis and peripheral surfaces at different locations lengthwise of the article and offset from each other transversely of said axis, apparatus comprising means for feeding the strip past a transfer station, an applicator at said station for transferring said rows of indicia to said surfaces respectively, and means in advance of said station for splitting said strip between said rows into two or more ribbons, said applicator having parts offset from each other transversely of the strip for pressing the ribbons against said surfaces respectively.

2. Apparatus according to claim **1** further characterized by means beyond said station for guiding the ribbons in edge-to-edge relationship.

3. Apparatus according to claim **1** further characterized by adjusting means for varying said offset.

4. Apparatus according to claim **1** wherein said applicator parts are rollers the axes of which are inclined to each other at an angle to press said ribbons against article surfaces which are inclined to each other.

5. Apparatus according to claim **4** further characterized by adjusting means for varying said angle.

6. Apparatus according to claim **5** further characterized by adjusting means for varying said offset.

7. Apparatus according to claim **6** wherein both of said adjusting means are associated with the same roller.

8. Apparatus according to claim **1** further characterized by a guide for said strip on each side of said applicator, the guides being disposed on the side of the strip opposite the article, the applicator being movable transversely of the strip from an operative position in which it presses the ribbons against the article to a retracted position in which the ribbons may travel in substantially straight paths from one of said guides to the other.

9. Apparatus according to claim **8** further characterized by a carriage for said applicator and a heater on the carriage for preheating said ribbons before they reach said parts, said heater being out of contact with the ribbons in said retracted position.

10. Apparatus according to claim **9** wherein said parts are also out of contact with the ribbons in said retracted position.

References Cited

UNITED STATES PATENTS

3,208,897 9/1965 Flood ---------- 156—542 X

BENJAMIN A. BORCHELT, Primary Examiner

STEPHEN C. BENTLEY, Assistant Examiner

U.S. Cl. X.R.

156—542