

Oct. 16, 1962

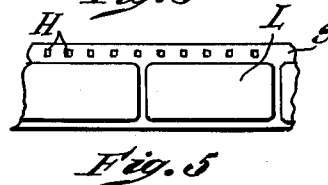
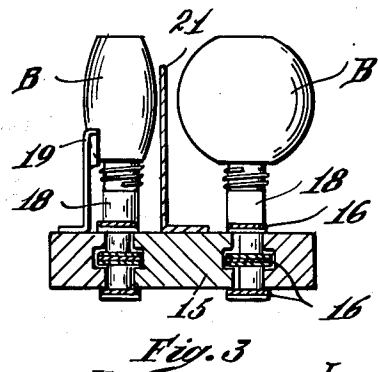
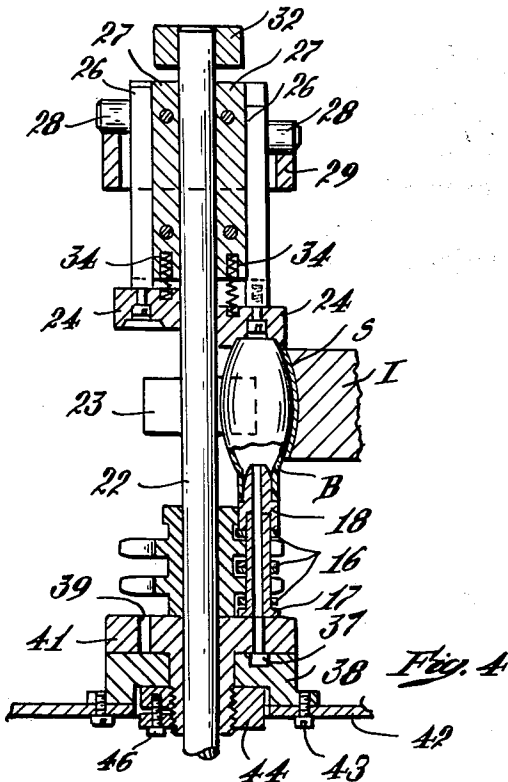
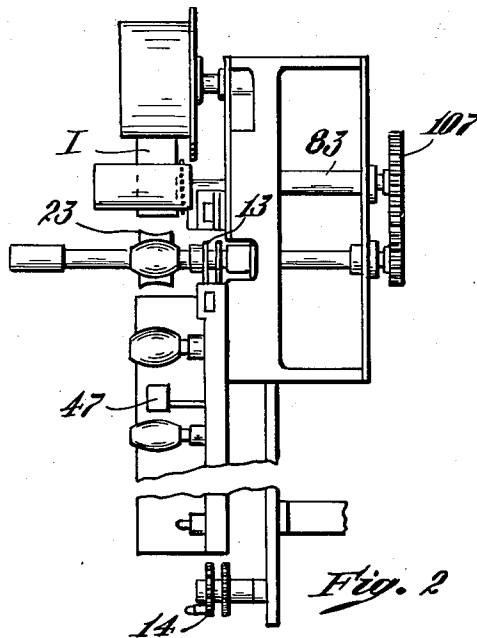
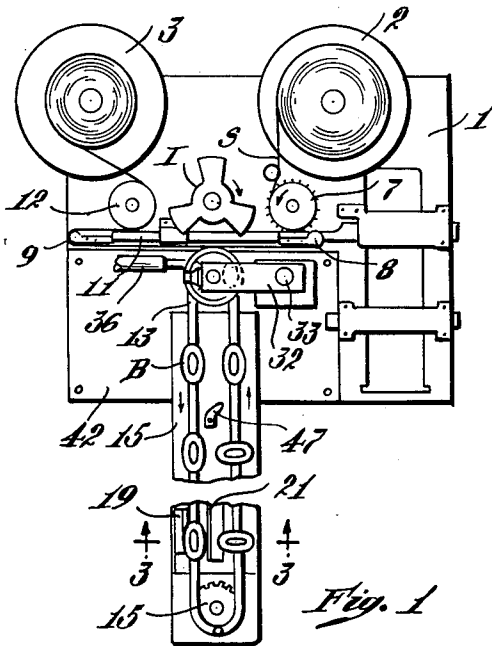
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3,058,514

BOTTLE LABELING MACHINE

Filed Nov. 18, 1959

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

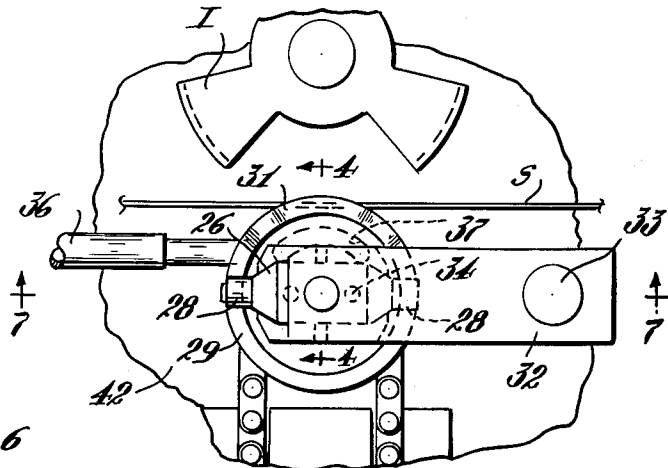


Fig. 6

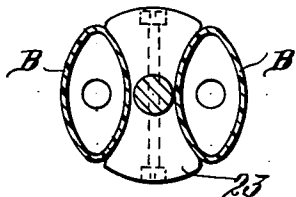
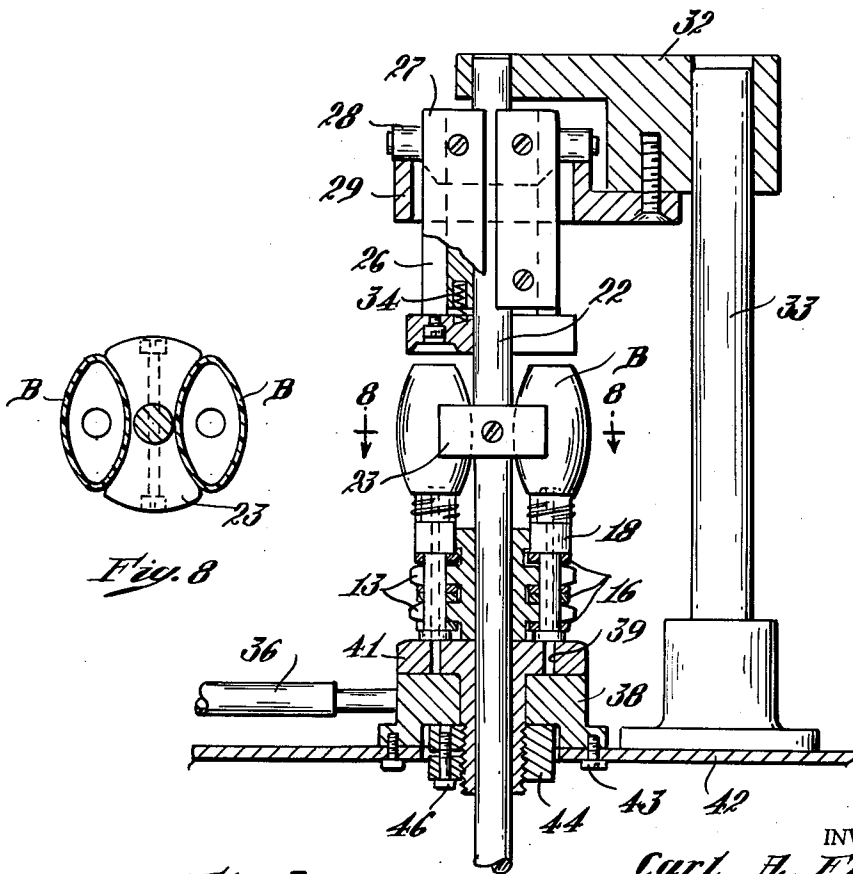


Fig. 8

Fig. 7

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3,058,514

BOTTLE LABELING MACHINE

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Filed Nov. 18, 1959, Ser. No. 853,810

4 Claims. (Cl. 156—542)

While this invention is useful in labeling articles of various kinds, it is especially useful in labeling bottles.

Objects of the invention are to provide labeling apparatus which is readily adaptable to articles of different shapes, which will label hollow articles of plastic or other flexible material, which is simple and economical in construction, which is convenient and rapid in operation and which is durable and reliable in use.

In one aspect the invention involves a machine comprising a conveyor, means for guiding the conveyor along a predetermined path past a label-applying station, at intervals along the conveyor holders telescopically fitting the mouths of the bottles so that the bottles may be rotated about their axes, means for rotating the bottles on said holders to orient the bottles, and means at said station for applying labels to the bottles while thus oriented.

In a more specific aspect the apparatus comprises a conveyor, means for guiding the conveyor along a predetermined path past a label-applying station, at intervals along the conveyor projecting pins shaped to fit into bottle mouths, and means at the aforesaid station for applying labels to bottles impaled on the aforesaid pins. The conveyor preferably comprises a chain having links pivotally interconnected by pins which have projecting ends shaped to fit into bottle mouths, the chains being trained around a pair of spaced pulleys one of which is located at the label-applying station. In the preferred embodiment the aforesaid pins are hollow and the bottles are inflated through the pins while being labeled. In a more specific aspect the machine has a heated ironer or other applicator rotatable about an axis parallel to the axes of the bottles and having its periphery curved to fit bottles which have curved surfaces.

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;

FIG. 2 is a side elevation viewed from the right of FIG. 1;

FIG. 3 is a section on line 3—3 of FIG. 1;

FIG. 4 is a section on line 4—4 of FIG. 6;

FIG. 5 is a side view of a label strip;

FIG. 6 is a plan view in the region of the label-applying station;

FIG. 7 is a section on line 7—7 of FIG. 6; and

FIG. 8 is a section on line 8—8 of FIG. 7.

The particular embodiment of the invention illustrated in the drawings is especially adapted to transfer labels from a strip S to bottles B. While any heat-transfer label strip may be employed, the strip is preferably made as disclosed in application Ser. No. 558,129 filed January 9, 1956, now Patent No. 2,862,832, and as illustrated in FIG. 5 where the label strip comprises a paper backing having a marginal row of sprocket holes H, the backing being coated with oxidized wax adhesively to hold the labels L printed on the wax coating with ink which is heat activatable so that when a label is pressed against a bottle or other article by means of a hot iron engaging the back of the strip S the label is transferred from the strip to the article.

As illustrated the machine comprises a main frame 1 carrying the mechanism for feeding the label strip from a feed roll 2 to a take-up reel 3 past an applicator I.

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The label strip feeds over a feed roll 7, thence over two rolls 8 and 9 at opposite ends of a reciprocating carriage 11 and thence over an idler roll 12 to the take-up reel, the carriage being reciprocated back and forth to synchronize the speed of the portion of the strip S between the rolls 8 and 9 with the speed of the iron I and the speed of the bottles passing the label-applying station. This mechanism is described and claimed in my copending application Ser. No. 729,216 filed April 17, 1958, now Patent No. 2,981,432, and the description need not be repeated for a full understanding of the present invention.

The bottles are fed to the label-applying station by means of a chain trained over two sprocket wheels 13 and 14 and traveling in the direction of the arrows in FIG. 1. The chain comprises links 16 pivotally interconnected by means of pins 17. Intermediate the two sprocket wheels the chain runs in a guide 15. As shown best in FIG. 4 the upper ends of pins 17 project beyond the links 16 and fast to the projecting ends are tips 18 shaped to fit the mouths of the bottles snugly, the tips having upwardly facing shoulders around their peripheries against which the mouths of the bottles seat (FIGS. 3, 4 and 7). The bottles are impaled on the pins as they move along the right-hand stretch of the conveyor and are removed from the conveyor on the left-hand side (FIG. 1). If desired the bottles may be lifted from the pins automatically by means of a cam 19 engaging the shoulders of the bottles adjacent their necks. Mounted on the guide 15 opposite the cam 19 is a plate 21 to keep the cam 19 from tipping the bottles as it lifts them off the pins (FIGS. 1 and 3).

The sprocket wheel 13 at the label-applying station is mounted on a shaft 22 which also carries a turret 23 opposite the ironer I. As shown in FIG. 8 the turret is recessed to fit the bottles, thereby to hold them accurately in position while passing the label-applying station.

As the bottles pass the label-applying station they are preferably pressed down tightly on the pins 18 by means of presser feet 24 mounted on the lower ends of slides 26 which slide vertically in dove-tail guides 27 fast to the upper end of the shaft 22 and are pressed downwardly by springs 34. Mounted on the outer sides of the slides are cam followers 28 bearing on a cam 29 having a depressed portion 31 to permit the slides to drop as they pass the label-applying station, the cam 29 being fast to a bracket 32 mounted on the upper end of a post 33. Thus as a bottle approaches the label-applying station one of the two pressers 24 is pressed downwardly by its spring 34 to hold the bottles snugly on its pin 18 while the bottle passes the label-applying station and as soon as the bottle has passed this station the presser foot 24 is lifted by the cam 29 throughout the remainder of the revolution of the shaft 22.

When labeling bottles made of plastic or other resilient material they are preferably inflated while passing the label-applying station so as to resist the pressure of the ironer I. For this purpose air is introduced through a tube 36, thence through an arcuate recess 37 in the base (FIGS. 4 and 6), the recess extending through approximately 90° at the label-applying station as shown in FIG. 6, and thence through openings 39 in the collar 41 and thence through the hollow pins 17. The base 38 is fast to the stationary support 42 by means of screws 43 and the collar 41 is fast to the shaft 22 by means of a nut 44 and clamping screw 46. Thus as a bottle reaches the label-applying station air is admitted through the arcuate recess 37 at approximately the same time as the presser foot 24 engages the bottle to hold it snugly on its pin 18, and after the bottle has passed the label-applying station

ing station air to the bottle is shut off when the bottle reaches the end of the arcuate recess 37.

If desired a bottle aligning means may be provided to make sure that the bottles are properly oriented as they approach the label-applying station. Any suitable means may be employed for this purpose, for example as shown at 47 in FIGS. 1 and 2, member 47 being engageable with passing bottles to rotate them around the axes of their supporting pins 17.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A label applying machine of the kind in which a bottle surface, a label-carrying strip and a heated rotary applicator move in synchronism past a line of transfer at which the label is transferred from the strip to the bottle surface, the machine comprising a rotatable turret disposed opposite to the applicator, an endless flexible conveyor leading to the turret, then around the axis of the turret and then away from the turret, and pins carried by and projecting from the conveyor at regular intervals and shaped to fit into the mouths of bottles so as to establish a predetermined spaced relation between bottles carried to and around the turret and to present side surfaces of the bottles to the action of the applicator.

2. A label applying machine of the kind in which a bottle surface, a label-carrying strip and a heated rotary applicator move in synchronism past a line of transfer at which the label is transferred from the strip to the bottle surface, the machine comprising a rotatable turret disposed opposite to the applicator, an endless flexible conveyor leading to the turret, then around the axis of the turret and then away from the turret, and pins carried by and projecting from the conveyor at regular intervals and shaped to fit into the mouths of bottles so as to establish a predetermined spaced relation between bottles carried to and around the turret and to present side surfaces of the bottles to the action of the applicator, the conveyor and a bottle carried by one of its pins traveling in an arcuate path about the turret axis during the transfer.

3. A label applying machine of the kind in which a bottle surface, a label-carrying strip and a heated rotary

applicator move in synchronism past a line of transfer at which the label is transferred from the strip to the bottle surface, the machine comprising a rotatable turret disposed opposite to the applicator, an endless flexible conveyor leading to the turret, then around the axis of the turret and then away from the turret, pins carried by and projecting from the conveyor at regular intervals and shaped to fit into the mouths of bottles so as to establish a predetermined spaced relation between bottles carried to and around the turret and to present side surfaces of the bottles to the action of the applicator, and means engageable with a bottle of non-circular cross section for rotating the bottle around the axis of the pin which carries the bottle toward the turret.

4. A label applying machine of the kind in which a bottle surface, a label-carrying strip and a heated rotary applicator move in synchronism past a line of transfer at which the label is transferred from the strip to the bottle surface, the machine comprising a rotatable turret disposed opposite to the applicator, an endless flexible conveyor leading to the turret, then around the axis of the turret and then away from the turret, and pins carried by and projecting from the conveyor at regular intervals and shaped to fit into the mouths of bottles so as to establish a predetermined spaced relation between bottles carried to and around the turret and to present side surfaces of the bottles to the action of the applicator, the conveyor comprising a chain comprising links, and the pins comprising connections between links of the chain.

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