Feb. 9, 1971 T. STELLAMANNS ETAL 3,562,072

DEVICE FOR LABELING CONICAL AND CYLINDRICAL OBJECTS, ESPECIALLY CONTAINERS, PREFERABLY BOTTLES

Filed Dec. 10, 1968 2 Sheets-Sheet 1

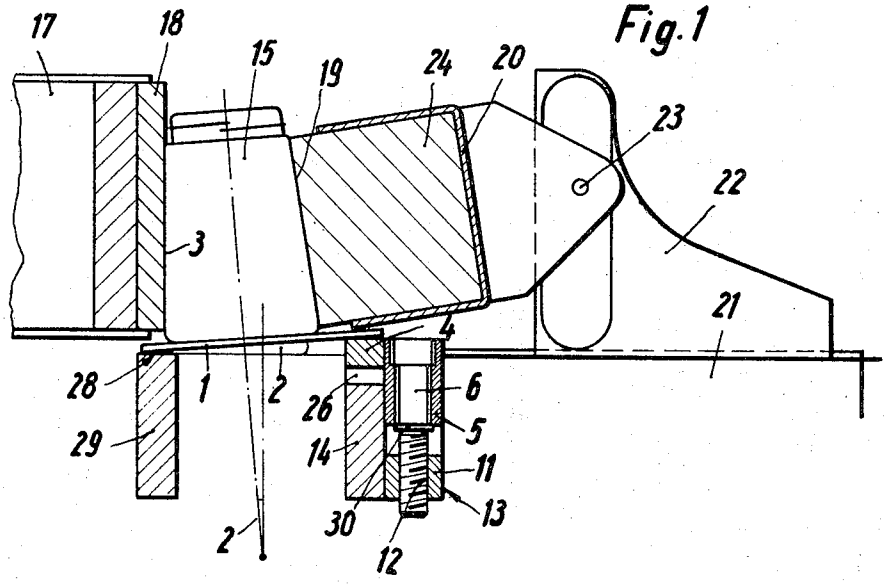


Fig. 1

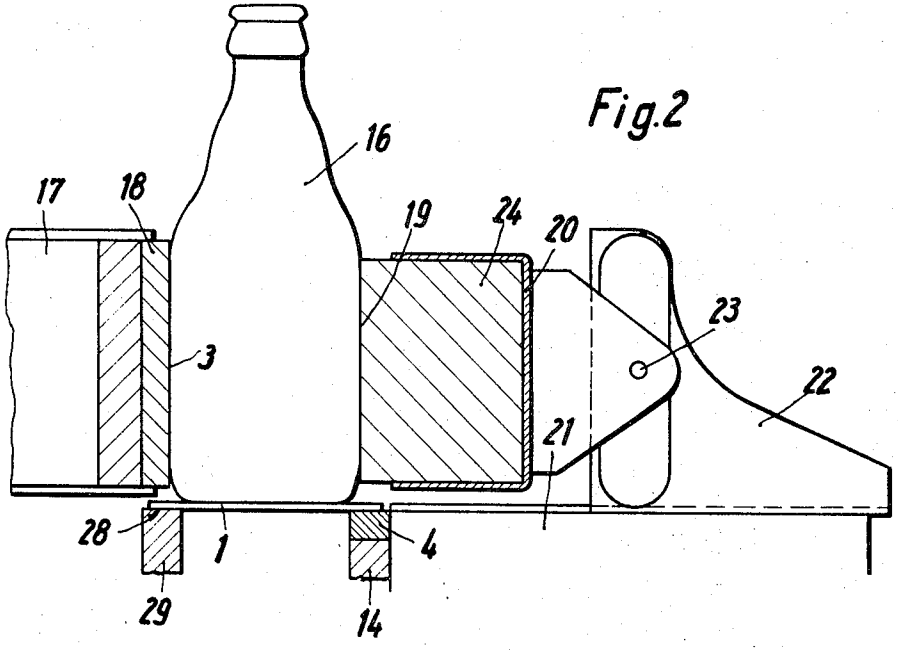


Fig. 2

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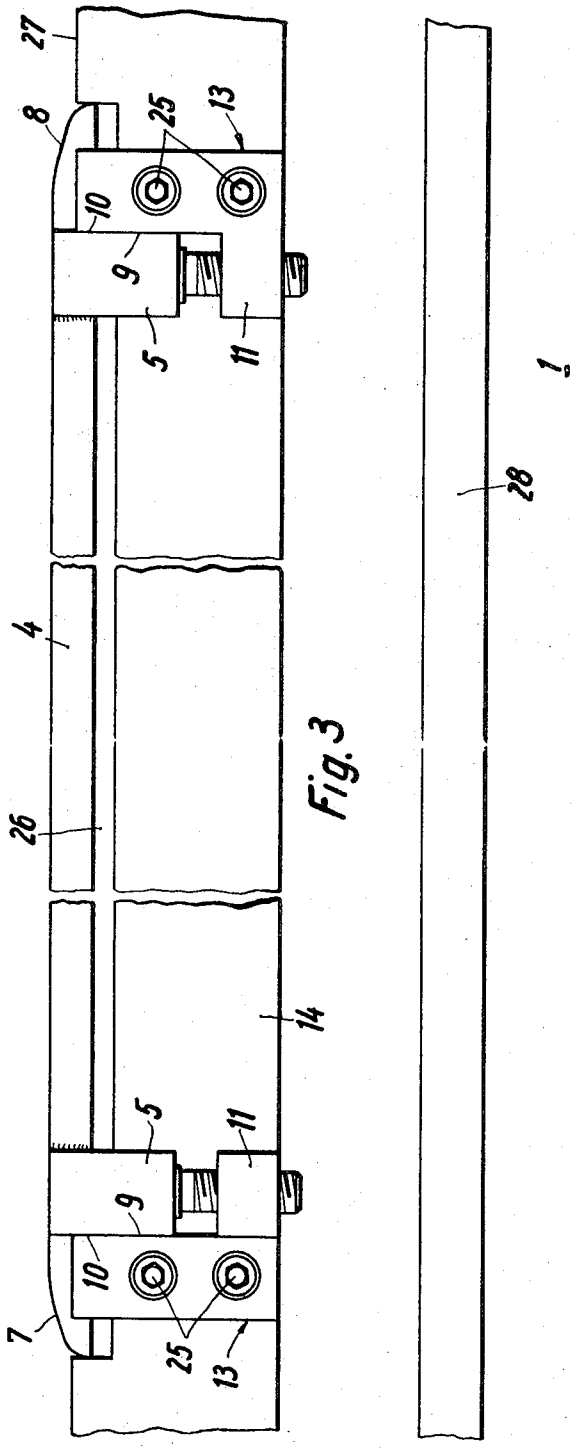


Fig. 3

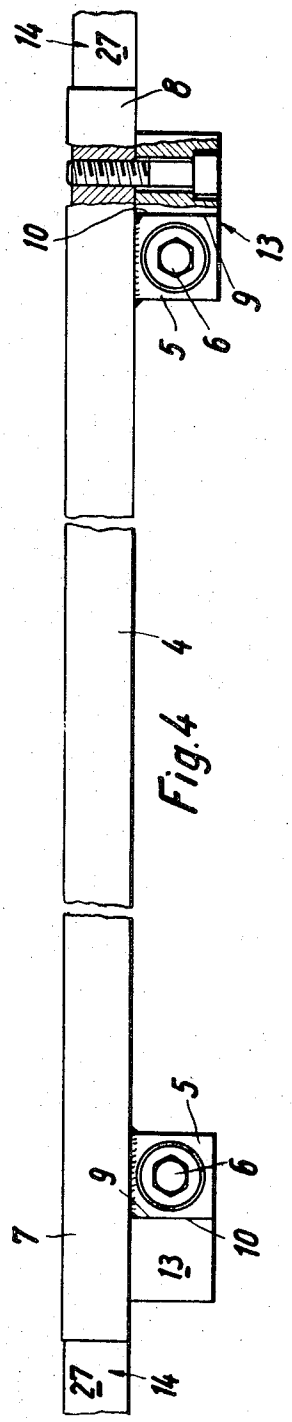


Fig. 4

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DEVICE FOR LABELING CONICAL AND CYLINDRICAL OBJECTS, ESPECIALLY CONTAINERS, PREFERABLY BOTTLES

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U.S. Cl. 156—566 6 Claims

ABSTRACT OF THE DISCLOSURE

A labeling device having a plane pressing surface which is tiltable into a plane passing through the generatrix of the circumferential surface of the object to be labeled.

The present invention relates to a device for labeling conical and cylindrical objects, especially containers, preferably bottles. More specifically, the invention relates to such a device having a plane pressing surface which is tiltable into a plane passing through the generatrix of the circumferential surface of the object to be labeled, and which is located opposite the labeling cylinder and on the opposite side of a conveyor belt transporting the objects to the label.

Heretofore known devices of this type have a so-called labeling cylinder which receives the labels from a supply vial. The circumferential surface of the labeling cylinder has arranged therein flaps carrying the label receiving surfaces. These flaps are brought into such an inclined position by a corresponding mechanism, for placing the label onto the circumferential surface of the conical object to be labeled in such a way that the labels are located in a plane which is parallel to the generatrix of the conical surface of the object. Incidentally, the label is held on the flaps by suction prior to being attached to the object. These well known devices are very cumbersome and expensive in view of the fact that they require tiltable flaps carried by the labeling cylinder and since the mechanism for the tilting of the flaps has to be provided within the area where the labels are applied.

Also other well known labeling devices serving the same purpose have the same or similar features and properties. In such devices instead of tiltable flaps inserts are provided which are displaceable in radial direction within the labeling cylnder. These inserts have outer surfaces which in their normal or basic position are located in the circumferential surface of the labeling cylinder and carry the labels on trapezoidal cutouts which, during the outward movement of the inserts by means of a corresponding mechanism, adapt themselves to the circumferential shape of the objects to be labeled. The lateral edges of the inserts bring about the pressing of the labels onto the conical object while simultaneously tensioning the label across the cutout into which a portion of the circumferential surface of the object penetrates. Also with these well known labeling devices, the structure of the labeling cylinder becomes complicated in view of the necessary provision of the radially movable inserts and the mechanism for its reciprocation.

It is, therefore, an object of the present invention to provide a labeling device for the above-identified purposes, which will overcome the drawbacks of the heretofore known labeling devices.

It is a more specific object of the present invention, to provide a labeling device in which a simple labeling

cylinder without flaps or cutouts or inserts can be employed. In other words, the labeling cylinder is provided with yieldable cylindrical label receiving outer surfaces with suction openings for holding the labels.

Still another object of the present invention consists in the provision of a labeling device in which, in spite of the use of a cylindrical labeling cylinder, not only cylindrical but also conical containers such as bottles or jars, or cans can be labeled.

Further objects and advantages of the invention will be set forth in part in the following specification and in part will be obvious therefrom without being specifically referred to, the same being realized and attained as pointed out in the claims hereof.

The above-mentioned objects have been realized, in accordance with the present invention, by a labeling device having a guiding means for the conveyor belt, which is passed over by the conveyor belt and is adapted to tilt the conveyor belt at the labeling location by an angle corresponding to the generatrix of the circumferential surface of the object to be labeled.

In the labeling device according to the present invention, a tilting of the device to be labeled at the labeling location is effected to such an extent that the circumferential portion of the object which faces the labeling cylinder extends parallel to the cylindrical surface of the labeling cylinder carrying the label. Surprisingly, it has been found that the rolling of the circumference of the object to be labeled on the cylindrical surface of the labeling cylinder accompanied by a minor sliding movement permits an orderly placement of the label provided with glue on the conical surface of the object, without folds or creases, while permitting a high working speed of the labeling device. Experience has also shown that the tilting of the objects to be labeled by means of the tiltable guiding means according to the present invention can be carried out without interruption and disturbance also at very high working speeds of the conveyor belt.

In a preferred embodiment, the labeling device may be designed in a simple manner in such a way that the guiding means consists of a slide rail made of wear resistant material such as, tempered steel, and adjustable and displaceable in vertical direction.

The invention is illustrated by way of example in the annexed drawings, in which:

FIG. 1 is a fragmentary vertical sectional view of the labeling station of a labeling device, showing a position in which a label is applied to a glass container with a frustoconical circumference surface;

FIG. 2 is a fragmentary sectional view, similar to FIG. 1 in which, however, a label is applied to a cylindrical object, such as a beer bottle;

FIG. 3 is a fragmentary side elevational view of a portion of the labeling device according to the present invention; and

FIG. 4 is a plan view of the portion of the labeling device shown in FIG. 3.

The labeling device according to the present invention comprises a labeling cylinder **17** with elastic label receiving surfaces **18** which are provided with suction openings (not shown in FIGS. 1 and 2) leading into the surfaces **18** for holding the labels supplied to the surface **18** by label supply containers (not shown). The labels have been provided with glue prior to being transferred to the surfaces **18**. During the labeling process, the surfaces **18** press against the frustoconical circumference of an object **15** to be labeled which object **15** carries out a rolling movement during the application of the label which rolling movement is superimposed by a minor sliding movement. During the application of the label, the object **15** is supported by a plane elastic and fixedly arranged pressing surface **19** arranged opposite the labeling cylinder **17**.

Surface **19** is provided on an insert **24** made of a plastic sponge and located in a profiled member **20**. Pressing surface **19** is supported by a console **22** in machine frame **21** and is tiltable about a horizontal axis **23** parallel to the direction of extension of the transporting conveyor **1**.

The labeling device also comprises a sliding rail **4** consisting of a wear resisting material, such as, tempered steel. This rail **4** is adjustable in vertical direction by means of adjusting screws relative to the machine frame **21** of the labeling machine and the guiding elements **14** for the objects **15**, **16** to be labeled and transported by the conveyor belt **1**. The surface **19** is tiltable and adjustable in such a way that it can be made to extend parallel to the generatrix **3** of an object **15** tilted sideways from its normal vertical position by the inclination of the conveyor belt **1** at the labeling station, the tilting of the belt **1** being caused in accordance with the present invention by passing of the conveyor belt **1** over the slide rail **4**.

In accordance with further features of the present invention, the slide rail may be provided at its ends with curved portions for facilitating the movement of the objects thereover, and the slide rail may be provided with sleeves adjacent its ends, which may receive adjusting screws.

A very simple structure of the device may be obtained by providing the sleeves with plane lateral surfaces by means of which they may slide on likewise plane guiding surfaces of angular guiding pieces which have their horizontal leg provided with a threaded bore for receiving the adjusting screw. These angular guiding pieces are connected to those portions of the machine frame which carry or guide the conveyor belt.

With specific reference to FIGS. 1, 3 and 4, the slide rail **4** is provided at its ends with curved portions **7**, **8** in order to permit the conveyor **1** to be lifted and lowered without shock. The slide rail **4** is also provided adjacent its ends with sleeves **5** connected thereto which are penetrated by adjusting screws **6**. The sleeves **5** have at least one plane guiding surface **9** each by means of which they can slide in vertical direction along the plane guiding surfaces **10** of angular guiding pieces **13** when the adjusting screws **6** are turned. These screws turn in threaded bores **12** in a horizontal leg **11** of the guiding member or piece **13** and are axially displaced at the sliding rail **4** while taking along the sleeves **5** which are glassed between the head of the screw and a safety ring **30** clamped around the shaft of the screw. The guiding pieces **13** are connected to the machine frame or to supporting rails **14** of the conveyor belt **1** by means of screws **25**.

The supporting rails **14** are provided with a recess **26** corresponding in length to the length of the guide rail **4** for purposes of receiving the latter. The depth of the recess **26** being substantially such that the guiding rail **4** can be made flush with the effective surface of the guiding surface **27** of the rail **14** when the labeling machine is to be used for the labeling of cylindrical objects **16** as shown in FIG. 2, by completely placing the guide rail **4** into the recess **26**. In this instance, the effective surface of the guide rail **4** is at the same level as the continuous guiding surface **28** of the supporting rail **29** for the belt **1**, which latter supporting rail is designed in usual manner and not effected by the features of the present invention. Therefore, a tilting of the belt **1** and thereby a tilting of the cylindrical object **16** (FIG. 2) to be labeled is not necessary while, of course, the pressing surface **19** is brought into a vertical position as shown in FIG. 2 by a corresponding tilting of the profiled member **20** about the axis **23** at console **22**. If, on the other hand, conical of frustoconical objects **15** as shown in FIG. 1, are to be labeled, it is merely to lift the guide rail **4** and to tilt the pressing surface **19** into the position shown in FIG. 1.

The arrangement just described makes it possible to arrange the essential parts of the device in a very space saving manner in the recess on the top surface of the supporting rail **4** for the conveyor **1** in the range of the labeling station, while permitting at any time with a few manipulations the adjustment of the device for the labeling of cylindrical to the labeling of the conical objects and vice versa.

We wish it to be understood that we do not desired to be limited to the exact details of construction shown and described, for abvious modifications will occur to a person skilled in the art.

Having thus described the invention, what we claim as new and desire to be secured by Letters Patent, is as follows:

1. A device for labeling concical and cylindrical objects, such as containers, bottles, and the like, comprising a labeling cylinder operable to be driven to rotate and adapted to receive and support on its circumference labels to be attached to the objects, a fixedly arranged pressing body with a plane resilient surface portion opposite said labeling cylinder and tiltable so as to engage a circumferential portion of an object between said portion and said cylinder and to press the same against said cylinder, a conveyor belt operable for transporting said object between said cylinder and said surface portion, and guiding means actuatable for guiding and tilting said belt in the vicinity of said cylinder and surface portion for an angle corresponding to the angle of inclination of the generatrix of the circumferential surface of the object to be labeled.

2. A device according to claim **1**, wherein said guiding means comprises a slide rail made of wear resistant material and adjustable in an upright direction.

3. A device according to claim **2**, wherein said slide rail has end parts provided with curved portions for facilitating the movement of the conveyor belt onto, and from, said rail.

4. A device according to claim **2**, wherein said slide rail is provided adjacent its end parts with sleeves connected to said rail, and adjusting screws engaging said sleeves.

5. A device according to claim **4**, wherein said sleeves have plane lateral surfaces, and angular guiding pieces cooperating with said plane lateral guiding surfaces, said guiding pieces being fixedly connected to said device, each guiding piece including a horizontal leg, the horizontal legs of said guiding pieces defining threaded bores receiving said adjusting screws.

6. A device according to claim **2**, a supporting rail for said slide rail, said supporting rail being provided with a recess having a length substantially corresponding to the length of said slide rail and having a depth such that the slide rail may be completely received therein so that the top surface of said slide rail is flush with the top surface of said supporting rail.

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