Dec. 30, 1930. A. P. EKVALL 1,786,939

BOTTLE STRAIGHTENING DEVICE

Filed Feb. 27, 1928 2 Sheets-Sheet 1

Fig. 1.

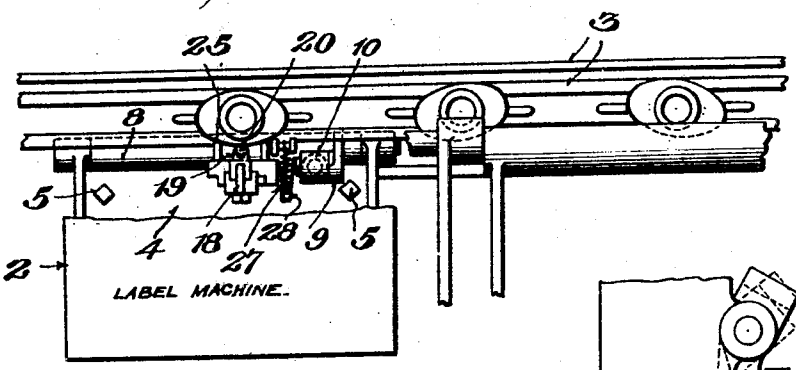


Fig. 2.

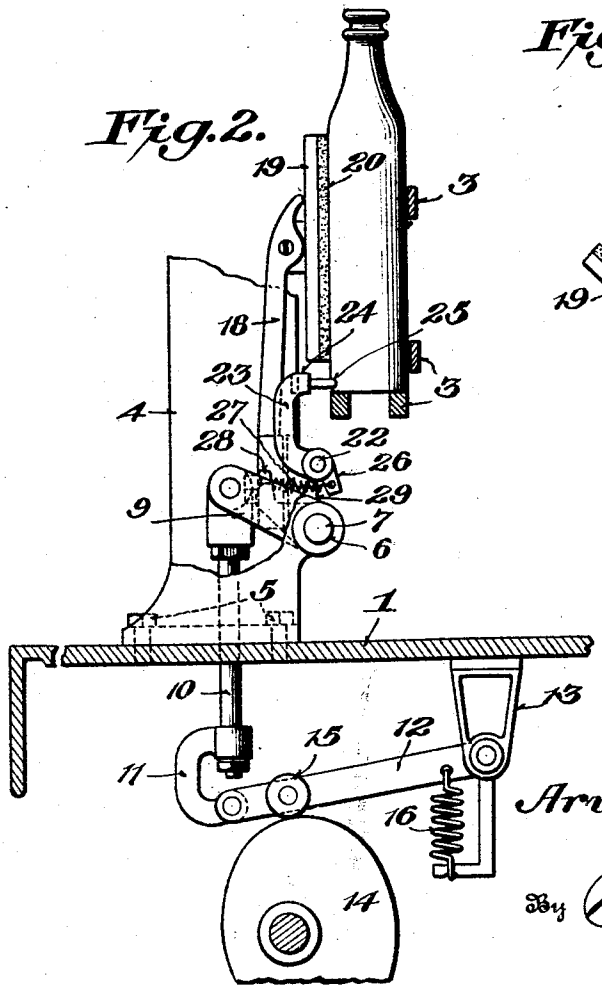
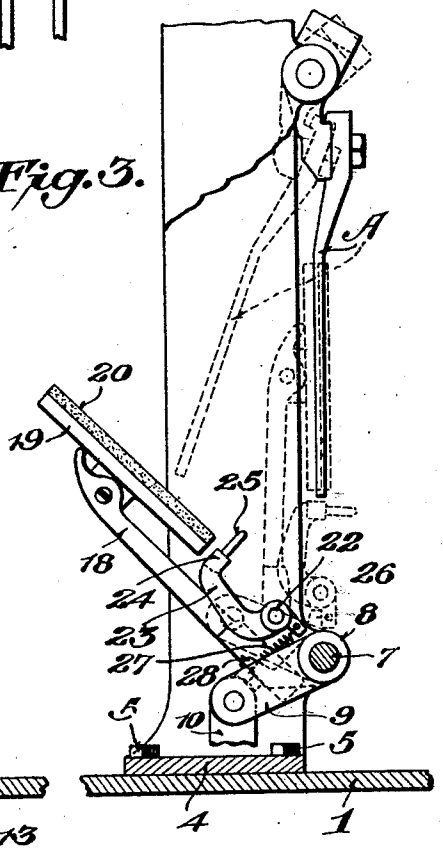


Fig. 3.



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Fig. 4.

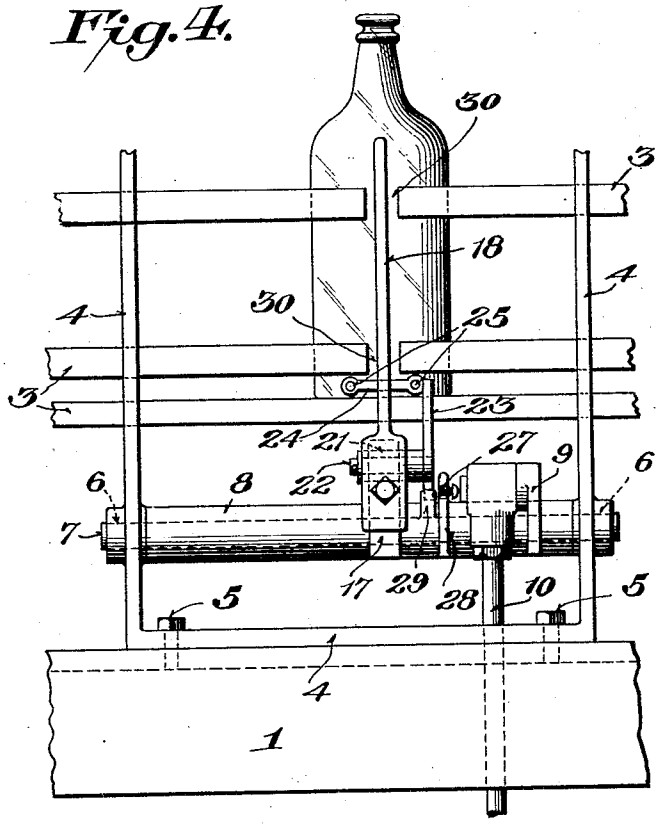
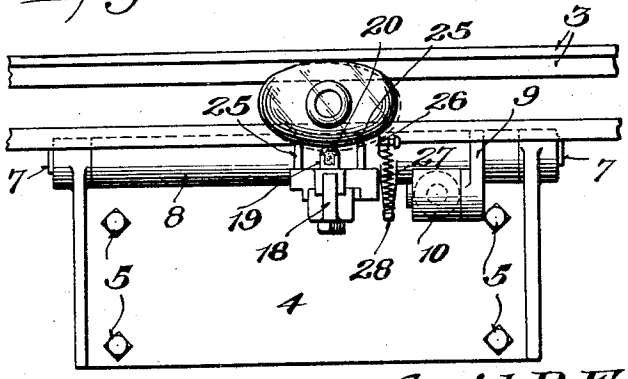


Fig. 5.



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UNITED STATES PATENT OFFICE

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BOTTLE-STRAIGHTENING DEVICE

Application filed February 27, 1928. Serial No. 257,314.

This invention relates to certain new and useful improvements in a bottle positioning means which is especially adapted for use in connection with label applying mechanisms. Heretofore in machines of this general character, the bottles or articles have been transferred along a restricted path or guideway from one position to another and it has been found that the articles or bottles become slightly canted or displaced from their correct position prior to the application of a label thereon. Subsequently the label will be incorrectly attached to the body of the bottle or article. This canting or twisting operation of the article arises from the action of the feed means, also from slight irregularities in the conveyor track or is probably due to the vibrations set up in the machine.

It is, therefore, the main object of the present invention to provide a device which is adapted to coact with the body of the article, prior to the application of the label thereon, so that it will be in the proper position to correctly receive the label.

Another object of the present invention resides in the novel manner of positively engaging the bottle or article at equi-distant separated points from the vertical axis thereof, by which means the bottle or article is caused to assume a true axial position within the feed or guide trough.

It will be apparent that these and other objects will appear to those skilled in this particular art upon reading the following description taken in connection with the accompanying drawings, wherein the preferred embodiment of the invention is disclosed. It is to be further understood that certain changes or variations in construction may be resorted to without departing from the spirit of the present invention. The shape of the article or bottle under treatment need not be oval as shown in the drawings as it will be readily understood that articles or bottles of other shapes may be handled in the same efficient manner.

In the accompanying drawings, the similar letters of reference indicate like parts throughout the several views wherein

Figure 1 is a plan view of a portion of a labelling machine showing the bottle straightening device associated with the track or guideway at the label applying station in the machine.

Figure 2 is an enlarged view in side elevation of the straightening device.

Figure 3 is a view similar to Figure 2 but showing the retracted position of the device in full lines and the forward position in dotted lines and further showing the position of label carrying fingers which transport the label into a position adjacent the bottle in the trough or guideway.

Figure 4 is a front elevation of the straightening device, and

Figure 5 is a plan view of the structure shown in Figure 4.

Referring more in detail to the accompanying drawings, 1 indicates generally the bed plate of a machine and upon which the operative mechanisms of the label applying structure is supported. Upon this bed plate 1 I have shown in diagram a label affixing station generally indicated as at 2, and it is to be understood that any type of label affixer may be employed, but for the sake of clearness I have illustrated in Figure 3 the label applying fingers which are used in connection with my prior Patent No. 1,630,235, issued May 24, 1927. The reference character 3 indicates the track or guideway over which the bottles are moved from the inlet end of the machine to the outlet end thereof. Any conventional type of transporting means may be employed for carrying the bottles or articles through the guideway 3, so long as said transporting means has a step by step effect. This feed may take the form as exemplified in my prior Patent No. 1,630,235, but, of course, other types of step feeds may also be used. The idea of using a step by step feed is to bring the bottles or articles to a position of rest at the several stations in the machine and at one of these arrested positions I arrange a structure which is adapted to coact with the arrested bottle or article to correct the canted or twisted position of the same.

Mounted upon the bed plate 1 is a frame casting 4 which is secured to the bed plate by bolts 5—5. The vertical legs of this casting

4 has openings 6—6 in which is fixedly mounted a cross shaft 7. Rotatably mounted upon the shaft 7 is a sleeve 8 which has a rigidly extending arm 9 pivotally secured at its free end to a rod 10, the latter having a pivotal connection 11 with the lever 12. The lever 12 is pivotally supported to the bracket 13 secured to the under surface of the base plate 1. The power shaft of the machine is provided with a cam 14 which operatively engages with a roller 15 arranged on the pivoted lever 12. If necessary a tension spring 16 may be used to effectively hold the roller 15 in engagement with the cam 14. The sleeve 8 has another rigid projection indicated at 17 to which is rigidly secured an elongated arm or finger 18. To the upper end of this arm is pivotally secured a label gripping finger designated 19, this gripping finger being provided with a suitable yielding face 20 adapted for engagement with a label that has been transferred into close proximity to the body of the bottle or article by the label carrying fingers A. The operation of the label carrying fingers is clearly shown and described in my prior patent and it is, therefore, deemed unnecessary to enter into a further discussion of this structure in this present case.

Extending forwardly from the projection 17 is a boss or enlargement having a bearing 21 extending therethrough. This bearing 21 is adapted to receive a stub shaft 22 extending laterally from an arm 23. The upper end of this arm has a right angularly projecting extension 24 which is provided with article engaging pins 25—25. The opposite end of the arm 23 is provided with a laterally extending pin 26 to which is secured one end of a coil spring 27 and the opposite end of said spring being fixed to an arm 28, which arm is rigidly attached to the sleeve 8.

In order to permit the label gripping finger 19 to move into contact with and hold the label against the bottle or article, the side walls of the guideway 3 are cut away as indicated at 30—30.

The action of the coil spring 27 causes the bottle engaging fingers 25—25 to normally assume a position slightly in advance of the face of the label gripping fingers and a suitable stop or lug 29 is provided on the sleeve 8 which lug coacts with the lower portion of the pivoted arm 23 to limit the forward or advanced position of said arm.

While the bottles or articles are being transported along the track or guideway, there is a tendency for them to cant or twist out of that true axial position and upon arriving at the label affixing station in the machine but prior to the application of the label thereon, the pins 25—25 will initially be moved into contact with the bottle or article and will effectively hold the bottle against the opposite wall of the guideway. As will be noted these pins engage the bottle on opposite sides of the vertical axis which results in the straightening of the bottle in the trough or guideway. Just as the bottle reaches the labelling station the label carrying fingers A are in their lowered position with a label thereon in close proximity to the face of the bottle. Prior to the pressure of the label gripping finger the bottle has been correctly positioned within the trough or guideway so that the label gripping finger will then apply the label at a central point along the body of the bottle. The label carrying fingers are then withdrawn from the lowered position leaving the label affixed to the face of the bottle. During the retracting movement of said straightening device the gripping finger will initially leave its contacting position with the article while the bottle engaging pins still remain in contact until the pivotal action of the arm 20 is stopped by its engagement with the lug 29. The device then assumes the retracted position shown in full lines in Figure 3 until the next bottle in the machine arrives at the labelling station when a similar action then takes place.

What I claim is:

1. In combination with a conveying trough or guideway having article conveying means therein, an article straightening device comprising a pair of relatively separated fingers, and means to bring said fingers into engagement with the article within the trough or guideway when the article is released by the conveying means to correctly align said article therein.

2. In an article handling machine, the combination with a conveying trough or guideway having an article delivery means therein and an article engaging means associated with the trough or guideway and relatively movable with respect to the delivery means to correctly align said article in said trough or guideway.

3. In an article labelling machine, having a label affixing station therein, feeding means for singly presenting and then releasing an article at the station, and means for aligning the released article prior to the application of a label thereon and to hold said article in aligned position during the application of a label thereon.

4. In a bottle labelling machine having a label affixing station therein, a feed trough having a bottle conveying means therein for singly presenting and then releasing a bottle at the labelling station, and means relatively movable to said bottle conveying means to properly align the bottle released in said trough at the labelling station.

5. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting and then releasing a bottle at the labelling station, and means

transversely movable with respect to the conveying mechanism to align the released bottle at the labelling station.

6. A bottle labelling machine having a label affixing station therein, conveying means for presenting a bottle to the labelling station and releasing the same thereat and means relatively movable with respect to the conveyor to align the bottle when released by the conveyor at the labelling station.

7. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle and subsequently releasing the same at the labelling station, and means relatively movable with respect to the conveying mechanism at the labelling station for engaging a vertical face of the released bottle to straighten and hold the same during the application of a label thereon.

8. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle to the labelling station, and means relatively movable with respect to the conveying mechanism for engaging the bottle at relatively separated points to straighten and hold the same at the labelling station during the application of a label thereon.

9. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle to the labelling station, and means relatively movable with respect to the conveying mechanism for engaging the bottle on opposite sides of its axis to straighten and hold the same at the labelling station during the application of a label thereon.

10. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle to the labelling station and a yieldable means relatively movable with respect to the conveying mechanism for engaging the face of the bottle to straighten and hold the same at the labelling station during the application of a label thereon.

11. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle to the labelling station, and means relatively movable with respect to the conveying mechanism comprising a pair of relatively spaced fingers adapted for engagement with the face of the bottle on opposite sides of a central point to hold the bottle at the labelling station during the application of a label thereon.

12. A bottle labelling machine having a label affixing station therein, conveying mechanism for presenting a bottle to the labelling station and subsequently releasing the same thereat and means transversely movable with respect to the conveying mechanism for engaging the released bottle at the labelling station to hold the same in a straightened position during the application of a label thereon.

In testimony whereof I hereunto affix my signature.

ARVID P. EKVALL.