

April 25, 1950

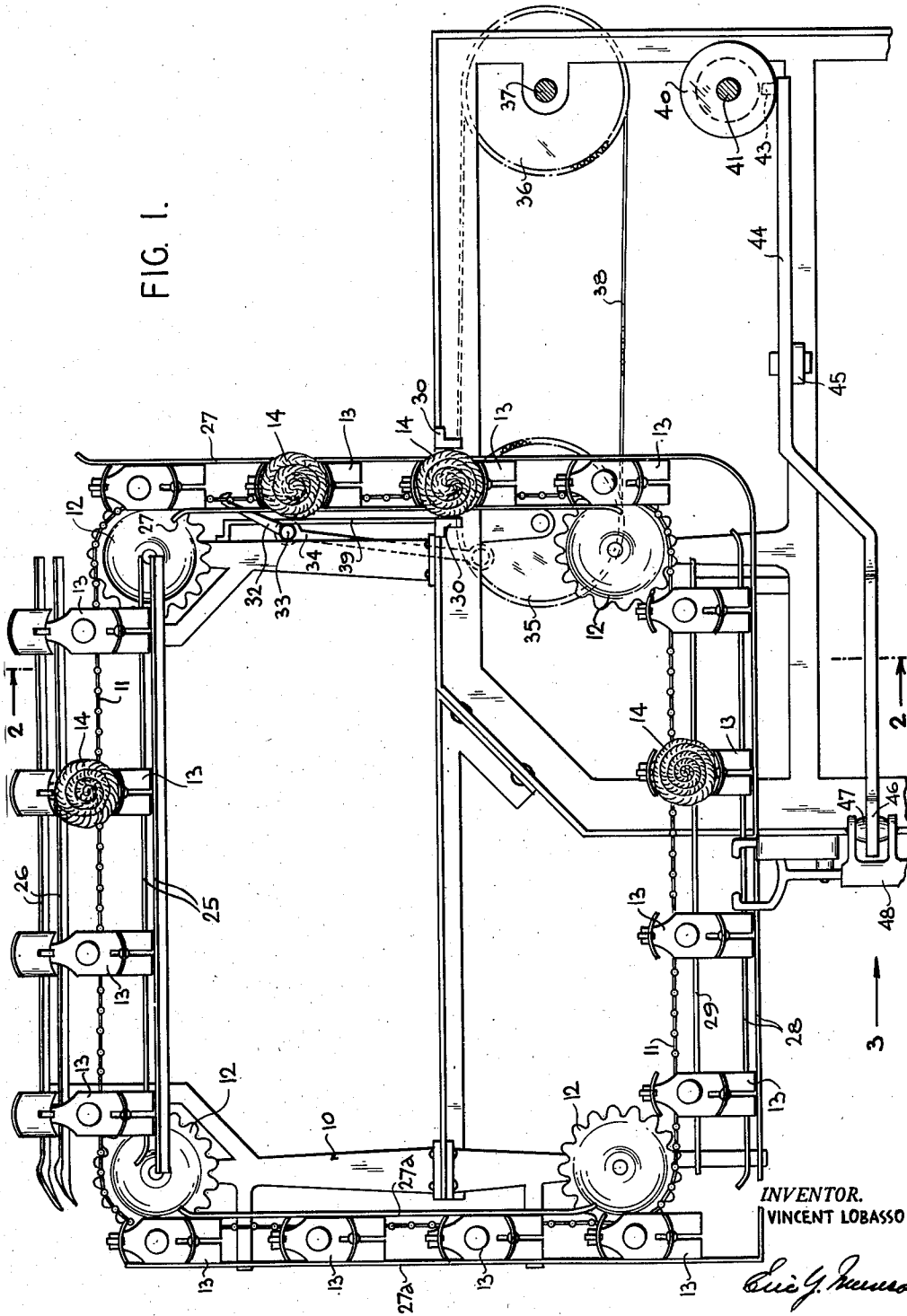
V. LOBASSO
MACHINE FOR APPLYING LABELS ABOUT DEFORMABLE
ARTICLES SUCH AS BALLS OF YARN

2,504,993

Filed June 19, 1948

3 Sheets-Sheet 1

FIG. 1.



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FIG. 2.

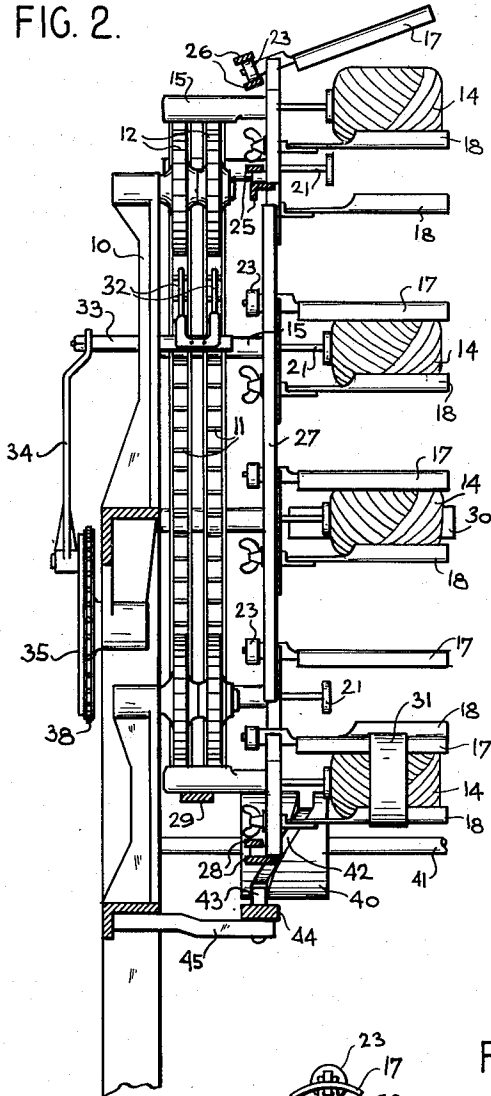


FIG. 3.

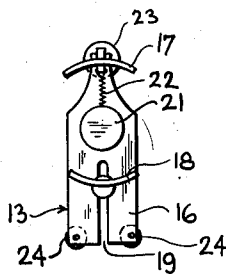
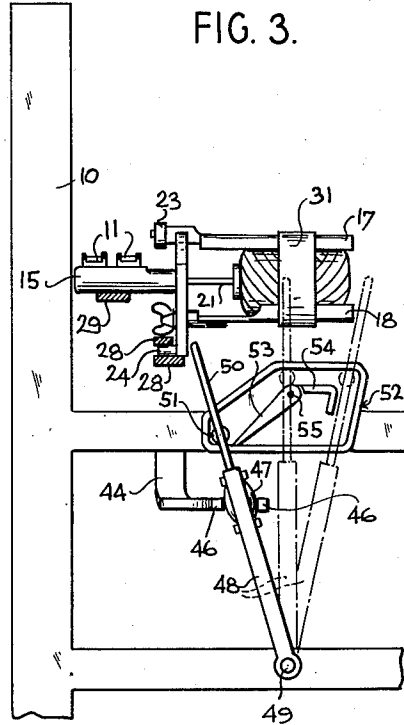
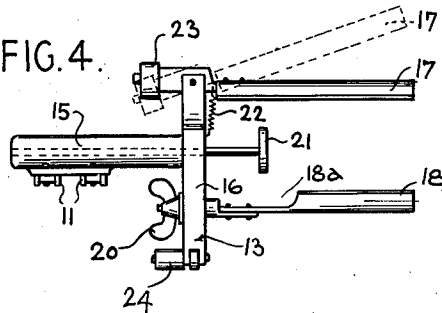


FIG. 5.

FIG. 4.



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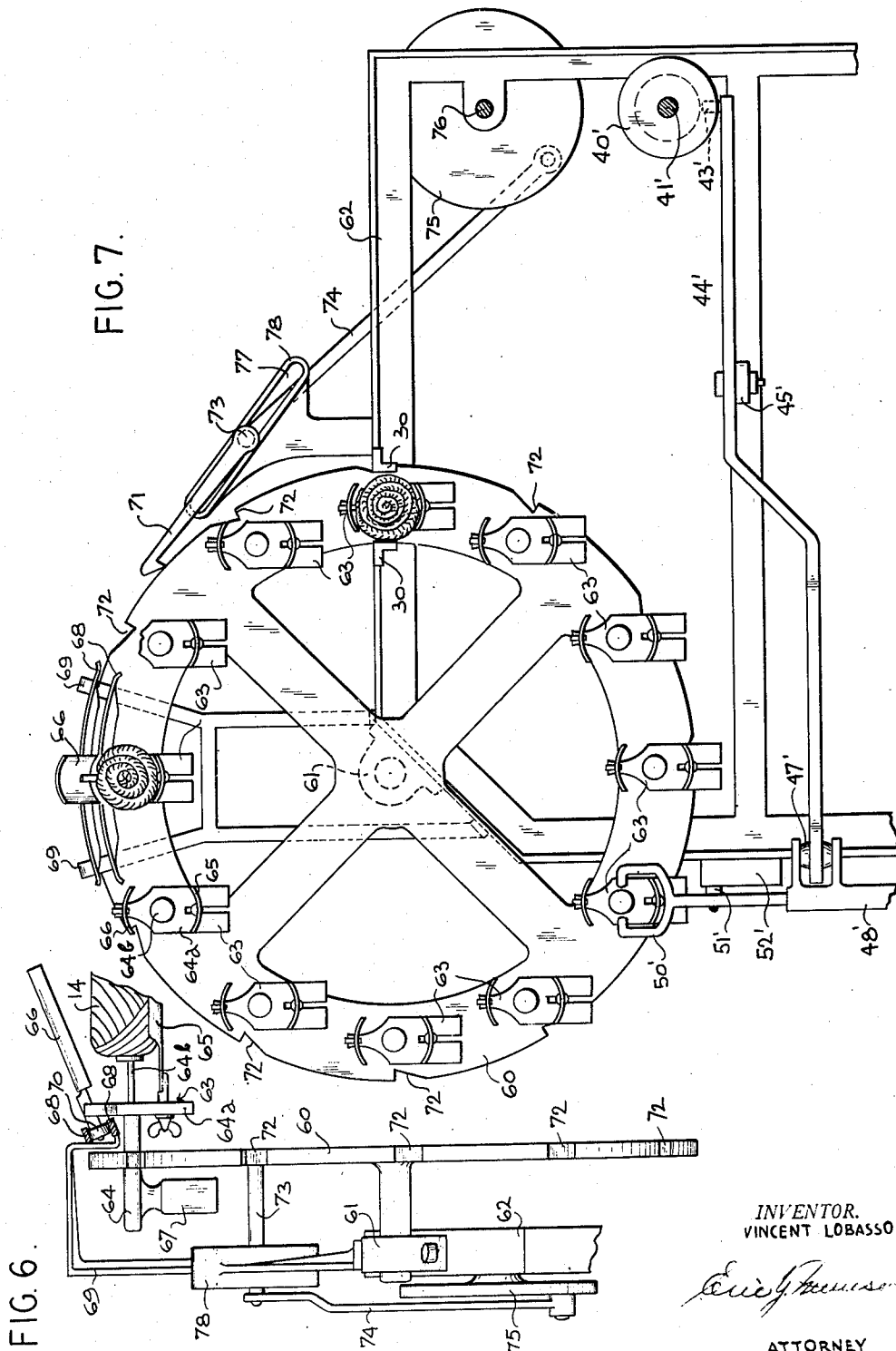
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2,504,993

MACHINE FOR APPLYING LABELS ABOUT
DEFORMABLE ARTICLES SUCH AS BALLS
OF YARN

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8 Claims. (Cl. 216—57)

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This invention relates to improvements in label affixing machines and, more especially, to a machine for applying labels circumferentially about the body of articles such as balls of yarn, twine and the like.

The application of labels to deformable articles such as wound balls of yarn presents special problems and difficulties which are not encountered with relatively rigid and shape-sustaining articles since the former are readily distorted and do not ordinarily retain a fixed, predetermined shape allowing a label to be extended thereabout and to be retained thereon.

Accordingly, it is a primary object of the invention to provide a machine for applying labels to articles of the character indicated wherein the articles may be supported on specially designed holder elements preventing deformation of the article during the label affixing operation.

Another object of the invention is the provision of a label affixing machine wherein the articles are successively conveyed to a label affixing station where a label may be extended about both the article and the holder element upon which it is supported, the labeled article being subsequently ejected from its holder element by a throwout or ejection mechanism.

A further object of the invention is the provision of a machine wherein the holder elements are constructed and arranged in such a manner as to be readily accessible for the reception of articles thereon in the preliminary loading phase of the operation of the machine and which are automatically retained in closed, operative condition during the subsequent labeling and ejection operations.

The foregoing objects as well as additional objects and advantages of the invention will readily appear in the course of the following detailed description taken in connection with the accompanying drawings which illustrate preferred embodiments of the invention, and wherein:

Fig. 1 is a front elevation of the machine embodying the features of the invention;

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is an end view illustrating the action of the throwout or ejection mechanism as seen from the direction of the arrow in Fig. 1;

Fig. 4 is an enlarged side elevation of one of the holder elements;

Fig. 5 is an enlarged front elevation of the holder element;

Fig. 6 is a fragmentary side elevation of a modified form of the invention; and

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Fig. 7 is a front elevation of the modification of Fig. 6.

Considered broadly and in general terms, the invention comprises an intermittently operated conveyor system including a plurality of individual holder elements upon which the articles may be supported. Each holder element includes an upper and lower arm between which the article is mounted. The upper arm is preferably tiltable and is elevated during the loading phase by being engaged against a pair of inclined guide rails whereupon the article to be labeled is conveniently placed upon the lower arm of the holder element. Each article supported upon its holder element is successively conveyed to a label affixing station where a label is extended about both the article and the holder arms during the rest period of the conveyor. The mechanism for extending, overlapping and securing the label is described in my Patent No. 2,179,264, issued November 7th, 1939, and will not be detailed here since it does not form the subject matter of the present invention. After the label has been affixed circumferentially about each article and the holder arms, the articles are conveyed to a subsequent station to be ejected from the holder elements as labeled articles by the action of a throwout mechanism actuated during the conveyor rest period. The upper and lower holder arms contact minimum portions of the periphery of each article, such as a ball of yarn, so as to effectively support the article and prevent deformation and distortion as the label is applied about the article and holder arms, and yet to facilitate subsequent ejection of the labeled article by the throwout mechanism.

Referring first to the embodiment of the invention illustrated in Figs. 1-5 of the drawings, the machine is shown as including a frame indicated generally by numeral 10 and supporting a conveyor in the form of a pair of endless chains 11 mounted on sprocket wheels 12 which are journaled on said frame. A plurality of holder elements 13 are uniformly spaced along conveyor chains 11 for supporting the articles to be labeled, such as the yarn balls 14.

As clearly shown in Figs. 4 and 5 each holder element 13 preferably comprises a mounting arm 15, which is fixed to chains 11 as by riveting or welding, a main plate 16 and upper and lower arms 17 and 18 secured to said main plate. In order to accommodate articles of varying sizes lower arm 18 is slidable within a slot 19 of plate 16 and may be secured in a given adjusted position as by means of a wing nut 20 to vary the

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height of the holder element. Further, the effective depth of the holder may be varied by means of an adjustable spacer or piston 21 slidable within mounting arm 15. Upper arm 17 is tiltable, being pivotally mounted on plate 16 and being normally urged to closed, horizontal position by means of a spring 22. A roller 23 is carried by a rearward extension of upper arm 17 and a pair of rollers 24 are carried at the lower end of plate 16 adjacent the sides thereof. Plate 16 is rotatably supported on mounting arm 15 in order to maintain each holder 13 in upright position throughout the cycle of movement of conveyor chains 11. Rollers 23 and 24 engage against suitably disposed guide rails attached to frame 10, as will be more fully described, and serve combinedly with the rotatability of plate 16 to maintain the holder elements 13 in upright position. Upper and lower arms 17 and 18 are preferably transversely curved as indicated to conform to the contour of the yarn ball 14 or other article.

As has been previously mentioned, guide rails are fixed to the frame of the machine at the top, bottom and sides thereof to maintain holder elements 13 in upright position during the movement of conveyor chains 11. Thus a pair of horizontal upper guide rails 25 engage the rollers 24 attached to main plate 16 of each holder element. A pair of inclined upper guide rails 26 engage the rollers 23 in order to tilt each of the upper arms 17 upwardly to open position and facilitate loading the holder elements with articles to be labeled, as clearly shown in Figs. 1, 2 and 4. As loaded holder elements 13 pass from the loading zone and clear inclined guide rails 26 to pass downwardly in a vertical path on the right side of the machine, the upper arm 17 of each holder element is urged to closed horizontal position by the action of spring 22. The holder elements 13 are maintained in upright position during their downward motion by a pair of vertical guide rails 27 which engage rollers 24 of main plate 16. A pair of horizontal lower rails 28 engage lower rollers 24 and an auxiliary horizontal rail 29 engages mounting arm 15 of each holder element during the movement of the holder elements 13 across the bottom of the machine. Said holder elements are guided in their upward travel on the left side of the machine by vertical guide rails 27a acting against lower rollers 24 in the same manner as vertical guide rails 27 on the right side of the machine. The holder elements are then conveyed to the loading zone at the top of the machine to be reloaded and to repeat the cycle of operations.

Holder elements 13 loaded with yarn balls 14 or other articles are successively conveyed to the label affixing station defined by cooperating guides 30 by imparting intermittent movement to conveyor chains 11 so that a loaded holder element will be disposed in label affixing position between said guides during the rest period of the conveyor. A label 31 (see Figs. 2 and 3) is extended circumferentially about the article 14 and the holder arms 17 and 18, overlapped and the ends of the label secured together at the label affixing station. The application of the label may be accomplished substantially in the manner disclosed in my Patent No. 2,179,264. Intermittent movement may be imparted to the conveyor chains 11 in any desired manner. Figs. 1 and 2 illustrate means for accomplishing this effect comprising a pair of hooks 32 engageable between the links of chains 11 and carried by a rod 33

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secured to a crank arm 34 carried by a gearwheel 35 mounted on the frame of the machine. A driving gear 36 carried on a shaft 37 and actuated intermittently from any suitable power source (not shown) is connected to gearwheel 35 by a chain 38. Rod 33 and hooks 32 are maintained in a vertically reciprocating path by a vertical guide member 39 (see Fig. 1) secured to the frame of the machine.

A throwout or ejection mechanism is provided for removing labeled articles from holder elements 13 after labels have been applied at the label affixing station of the machine. The operation of this mechanism is controlled by a cam 40 mounted on a shaft 41 which preferably operates with a helical groove 42 which receives a follower 43 carried at the end of a rocking lever 44 fulcrumed on a bracket 45 secured to the frame of the machine. The free end of lever 44 is preferably forked, as shown at 46 in Fig. 3, to receive a roller 47 carried by a holder 48 pivoted at its lower end to the frame of the machine, as shown at 49. An ejector fork 50 is slidable within holder 48 and carries a roller 51 movable in a fixed path within a guide box or frame 52 secured to the frame of the machine. As clearly shown in Fig. 3, ejector fork 50 is actuated by rocking lever 44 to move upwardly and forwardly against a yarn ball or other suitable article supported in a holder element 13 with a label 31 extending about the article and the upper and lower holder arms 17 and 18, thereby ejecting the labeled article from the holder element. In order to accomplish this purpose guide box 52 is provided with an inclined guide rail 53 and an angular guide-piece 54. Thus as lever 44 carries holder 48 forwardly (or to the right as seen in Fig. 3), roller 51 rides on guide rail 53 to elevated ejector fork 50 to the proper level for ejecting of the labeled article 14. Lower holder arm 18 may be cut away, posteriorly as shown at 18a, to provide clearance for ejector fork 50. At the forward limit of its travel roller 51 clears angular guide-piece 54 whereupon ejector fork 50 drops by gravity within holder 48 and is carried rearwardly by lever 44 to its initial rest position preparatory to the ejection of the next article. In order to permit the restoration of the ejector fork to its initial rest position, inclined guide rail 53 is pivoted at its upper end as shown at 55 and may be urged downwardly to the operative position of Fig. 3 by a light tension spring (not shown).

Figs. 6 and 7 illustrate a modified form of the invention wherein a wheel or conveyor 60 is rotatably mounted on a bearing 61 secured to a frame 62. A plurality of holder elements 63 are rotatably mounted on the rim of wheel 60. Each holder element comprises a mounting arm 64, a main plate 64a fixed to said mounting arm, a lower adjustable arm 65 and a tiltable upper arm 66 fixed to said main plate. Mounting arm 64 is provided with a slidable spacer or piston 64b to vary the effective depth of each holder element and in order to accommodate articles of varying size. The holder elements 63 are maintained in upright position as the wheel is caused to rotate by means of a counterweight 67 secured to the rear end of each mounting arm.

In order to provide for loading the holder elements 63 with yarn balls 14 or other articles, a pair of inclined, curved guide rails 68 are disposed at the top of the machine on a frame bracket 69. Said guide rails engage a roller 70 carried by a rearward extension of each upper

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arm 66 and tilt said arm to the open position of Fig. 6 for the reception of a yarn ball 14 on the lower arm 65 of each holder element 63.

Loaded holder elements 63 are successively conveyed to the label affixing station of the machine defined by cooperating guides 30 by imparting intermittent or stepwise motion to the wheel 60. The stepwise rotation of wheel or conveyor 60 may be accomplished through the agency of a reciprocating hook 71 successively engageable with one of a plurality of notches 72 uniformly spaced about the periphery of wheel 30. Hook 71 is mounted on a rod 73 secured to a crank arm 74 carried by a crank-wheel 75 mounted on a drive-shaft 76. Rod 73 extends through a slot 77 in a guide member 78 supported on the frame of the machine in order to impart reciprocating motion to hook 71 and advance the holder elements 63 in a stepwise manner to the label affixing station defined by cooperating guides 30.

The ejection mechanism for removing labeled articles from the holder elements 63 after the labels have been affixed is similar in structure and operation to that described for the initial embodiment of the invention. Accordingly, the component elements of the ejection mechanism have been indicated in Figs. 6 and 7 with primed numerals corresponding to those of the initial embodiment. Ejector fork 50' is actuated by the rocking lever 44' and helically grooved cam 40' to eject a labeled article from each holder element 63 during the rest period of the wheel or conveyor 60, as has been previously described.

Since certain additional modifications may be made in the label affixing machine of the present invention without departing from the scope thereof, it is intended that all matter contained in the foregoing description and shown in the accompanying drawing be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

1. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, a conveyor having a plurality of holder elements for retaining articles to be labeled, each holder element comprising a pair of opposed arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label-applying means, and ejection means operable to remove a labeled article from its supported position on a holder element at a point in the movement of said conveyor remote from said label-applying means.

2. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated conveyor having a plurality of holder elements for retaining articles to be labeled, each holder element comprising a pair of opposed arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label-applying means and ejection means including a swingable forked member operable during the rest period of the conveyor to remove a labeled article from its supported position on a holder element at a point in the movement of the conveyor remote from said label-applying means.

3. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, a conveyor having a plurality of holder elements for retaining articles to be labeled, each holder element comprising a

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pair of opposed upper and lower arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, the upper arm of each holder element being tiltable upwardly to open position and normally urged downwardly to closed operative position, guide means engageable against said upper arm during a portion of the movement of the conveyor to hold said arm in tilted position for loading each holder element with an article, and ejection means operable to remove a labeled article from its supported position on a holder element at a point in the movement of said conveyor remote from said label applying means.

4. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated conveyor having a plurality of holder elements for retaining articles to be labeled, each holder element comprising a pair of opposed upper and lower arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, the upper arm of each holder element being tiltable upwardly to open position and normally urged downwardly to closed operative position, guide means engageable against said upper arm during a portion of the movement of the conveyor to hold said arm in tilted position for loading each holder element with an article, and ejection means including a swingable forked member operable during the rest period of the conveyor to remove a labeled article from its supported position on a holder element at a point in the movement of said conveyor remote from said label applying means.

5. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated endless chain conveyor, a plurality of holder elements uniformly spaced along said chain conveyor for retaining articles to be labeled, each holder element comprising a mounting arm fixed to said chain conveyor, a vertical member rotatable on said mounting arm and a pair of upper and lower horizontal holder arms secured to said vertical member for contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, ejection means including a swingable forked member operable during the rest period of the chain conveyor to remove a labeled article from its supported position on a holder element at a point in the movement of the conveyor remote from said label applying means and a crank actuated, reciprocating hook member alternately engageable within and disengageable from the links of said chain conveyor, whereby to advance said holder elements towards said label applying means and said ejection means in a stepwise manner.

6. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated endless chain conveyor, a plurality of holder elements uniformly spaced along said chain conveyor for retaining articles to be labeled, each holder element comprising a mounting arm fixed to said chain conveyor, a vertical member rotatably on said mounting arm and a pair of upper and lower horizontal arms secured to said vertical member for contacting portions of the

peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, the upper arm of each holder element being tiltable upwardly to open position and normally urged downwardly to closed horizontal position, guide means engageable against said upper arm during a portion of the movement of the conveyor to hold said arm in tilted position for loading each holder element with an article and ejection means including a swingable forked member operable during the rest period of the chain conveyor to remove a labeled article from its supported position on a holder element at a point in the movement of the conveyor remote from said label applying means.

7. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated conveyor comprising a rotary member and a plurality of holder elements rotatably mounted thereon for retaining articles to be labeled, each holder element being counterweighted for being maintained in upright position during the movement of said rotary member, each holder element comprising a pair of opposed upper and lower arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, ejection means including a swingable forked member operable during the rest period of said rotary member to remove a labeled article from its supported position on a holder element at a point in the movement of the conveyor remote from said label-applying means, said rotary member having a plurality of notches spaced along the periphery thereof and a crank-actuated, reciprocating hook member successively engageable within each of said notches, whereby to advance said holder elements toward said label applying means and said ejection means in a step-wise manner.

8. In a label affixing machine of the type having means for applying labels circumferentially about the body of an article, an intermittently operated conveyor comprising a rotary member and a plurality of holder elements rotatably mounted thereon for retaining articles to be labeled, each holder element being counterweighted for being maintained in upright position during the movement of said rotary member, each holder element comprising a pair of opposed upper and lower arms contacting portions of the peripheral surface of the article to prevent deformation thereof while a label is being extended about the article and said holder arms by said label applying means, ejection means including a swingable forked member operable during the rest period of said rotary member to remove a labeled article from its supported position on a holder element at a point in the movement of the conveyor remote from said label applying means, said rotary member having a plurality of notches spaced along the periphery thereof and a crank-actuated, reciprocating hook member successively engageable within each of said notches, whereby to advance said holder elements toward said label applying means and said ejection means in a step-wise manner, the upper arm of each holder element being tiltable upwardly to open position and normally urged downwardly to closed, operative position, and guide means engageable against said upper arm during a portion of the movement of said rotary member to hold said arm in tilted position for loading each holder element with an article.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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