

April 14, 1942.

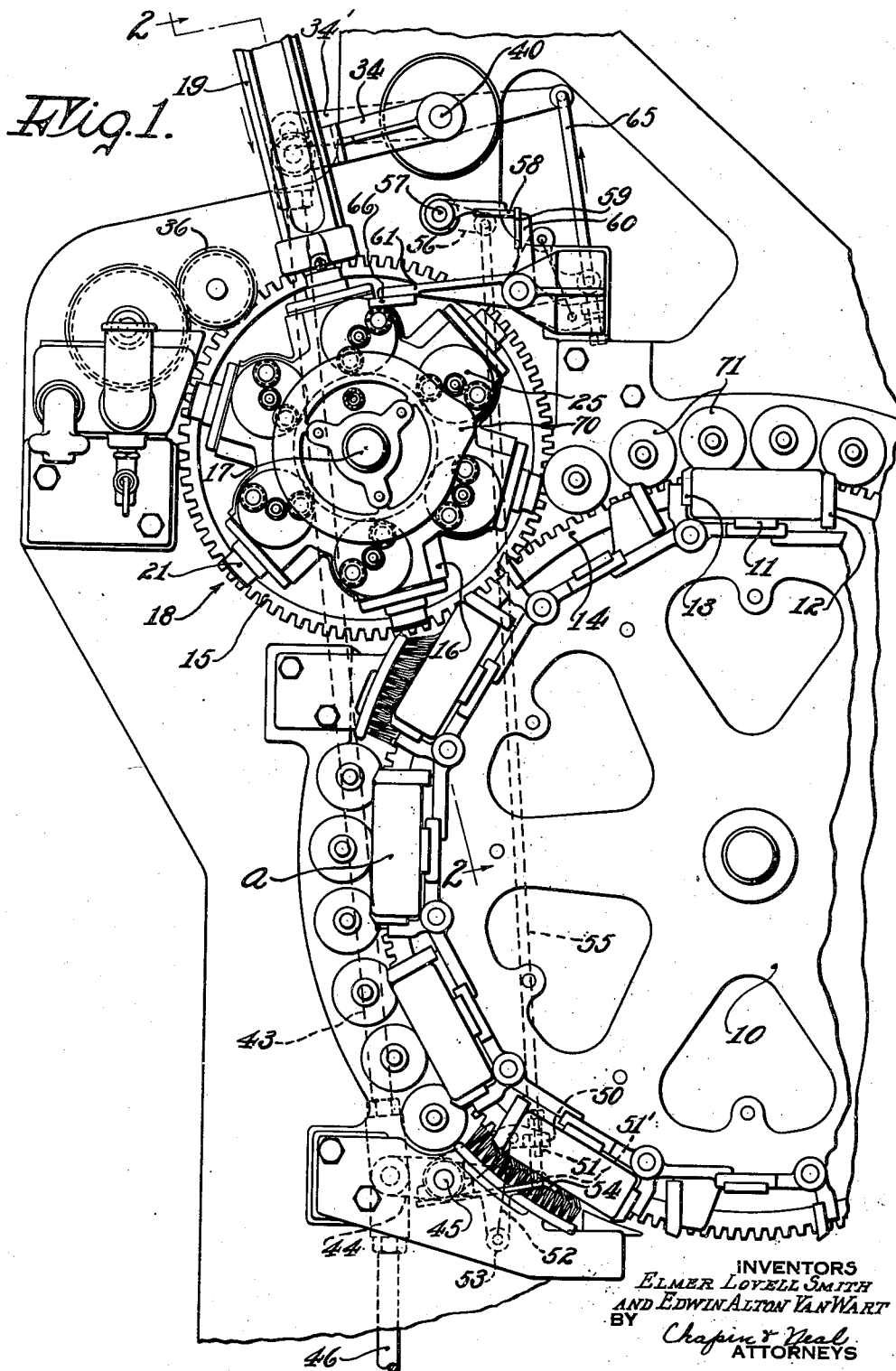
E. L. SMITH ET AL

2,279,844

LABELING DEVICE

Filed June 16, 1941

3 Sheets-Sheet 1



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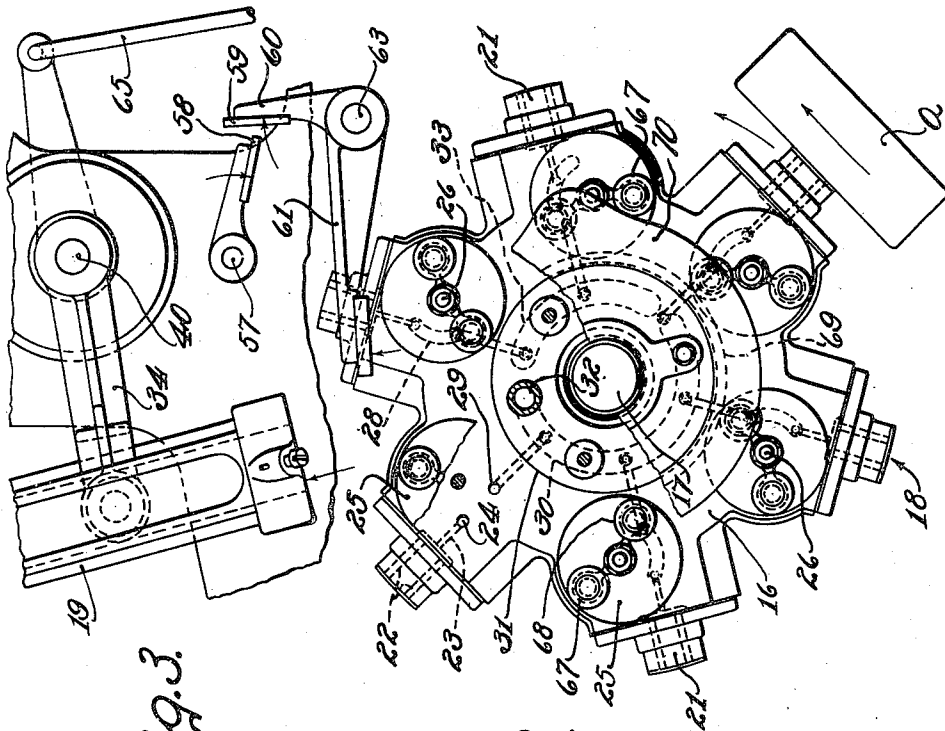


Fig. 3.

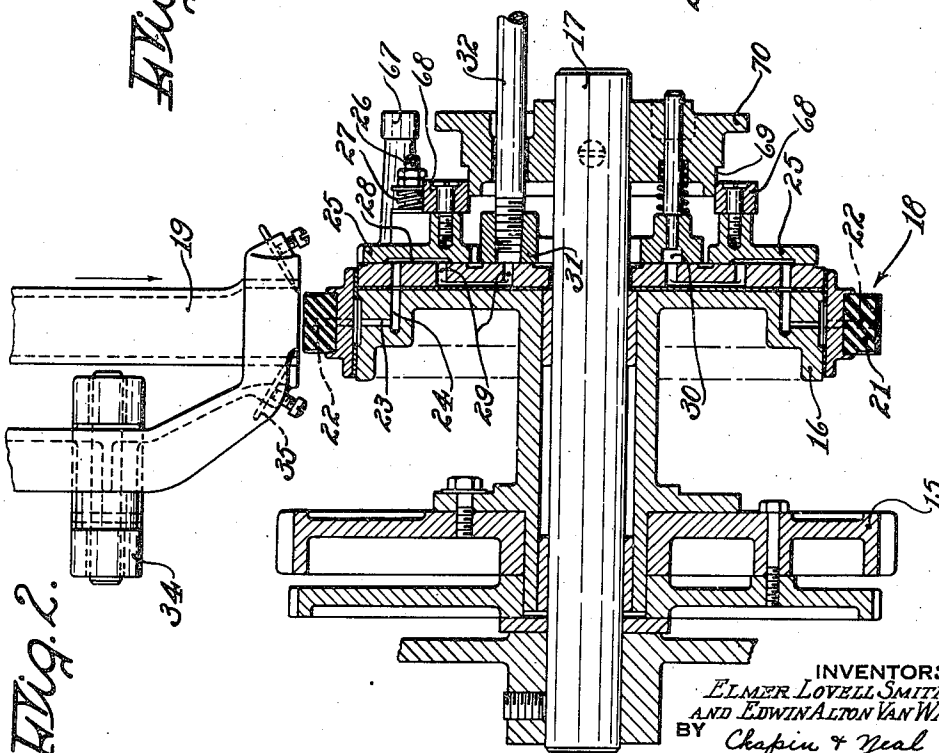


Fig. 2.

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Fig. 4.

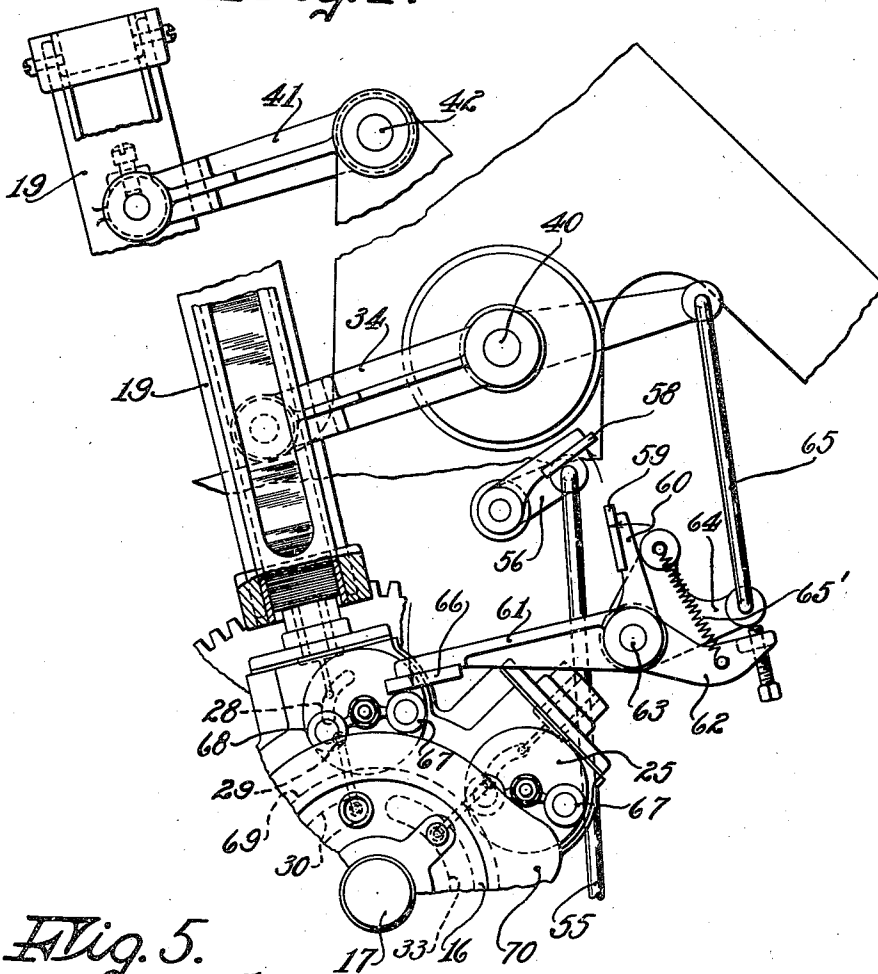
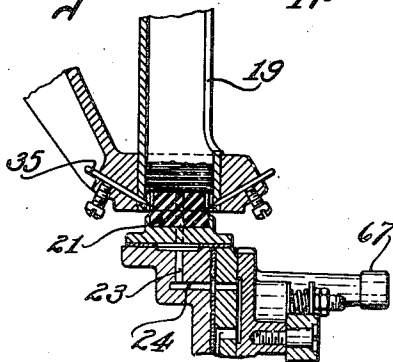


Fig. 5.



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LABELING DEVICE

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Application June 16, 1941, Serial No. 398,222

6 Claims. (Cl. 216—55)

This invention relates to labeling machines, and has particular reference to suction operated mechanism for removing labels successively from a magazine and depositing them on articles. One object of the invention is to improve existing mechanism for cutting off the connection between the label picker and the suction supply. A further object is to provide a labeling device in which a plural-headed label carrier cooperates with a pocketed article carrier to transfer labels from a magazine to successive articles in which the absence of an article from a pocket will prevent the withdrawal of a label by that picker head which will later register with the particular pocket from which an article is absent. A further object is to provide such a mechanism in which individual valve means for each picker head is provided, responsive to the absence of an article, in addition to a second valve means operable in accordance with the rotation of the label carrier. Additional objects will appear from the following description and claims.

Referring to the drawings:

Fig. 1 is a side elevation of the labeling device;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a detail similar to a portion of Fig. 1 but with the parts in different positions;

Fig. 4 is a similar detail with the parts in a still different position; and

Fig. 5 is a detail section illustrating the manner of withdrawing a label from the magazine.

The machine is intended to apply a label to the outer surface of articles *a* held in a wheel 10 (Fig. 1) having pockets formed of a bottom piece 11, a fixed end piece 12, and a movable end piece 13 cam actuated in any desired way. The article may have a circumferential band applied while in the wheel, the details of this operation, as well as the construction of the wheel itself, forming no part of the present invention. The wheel carries a gear 14 meshing with a gear 15 on a label applying drum 16 journaled on a shaft 17 and thus driven in timed relation to the wheel, which is preferably rotated intermittently as is usual. The drum carries a number of label applying heads 18 circumferentially spaced to correspond with the spacing of the wheel pockets, each one picking up a label from a magazine 19 and depositing it upon the article, preferably so as to cover the overlapped ends of the circumferential band.

Each head 18 has a block 21 (Figs. 2 and 3) preferably of rubber, provided with a pair of suction ducts 22 merging into a radial duct 23 in the drum. The latter duct enters a duct 24

extending to the lateral surface of the drum and covered by a plate 25 held in position by a stud 26 secured to the drum and engaging the plate by means of spring 27 as shown. In what may be called the normal position of the plate, an arcuate groove 28 in the surface of the plate connects duct 24 with a duct 29 in the drum connected in certain positions of the drum with an arcuate groove 30 in a stationary plate 31 and joined by a pipe 32 with any suitable source of suction. In other positions of the drum the duct 29 connects with an arcuate groove 33 in the plate, this groove being connected to atmosphere. With the plate 25 in its normal position the head is brought underneath the magazine 19, which is moved towards it by its supporting lever 34 into the position of Fig. 5. The duct 29 having at this time come into register with the groove 30, suction is applied, operating to withdraw a label from the magazine past the usual retaining needles 35 as the magazine is moved away, (Figs. 1 and 5). The label is carried around the drum past the usual moistening or glue applying roll 36, and finally is pressed against the surface of the article as the block 21 and article come into contact. At this time the duct 29 passes into registry with the venting groove 33 so that the suction is relieved and the label is left on the article.

The magazine is supported by the rocking lever 34 fixed to one end of a shaft 40 journaled for rotation in the frame and also by a lever 41 pivoted at 42 in the frame; the frame being broken away in Fig. 4 to condense the view within the limits of the sheet. At its opposite end shaft 40 has fixed thereto a lever 34' which is connected by a link 43 (Fig. 1) to a short rocker 44 pivoted on the frame at 45. A second link 46 extends from this latter rocker to any suitable cam mechanism (not shown) by which the magazine may be lowered and raised once during each dwell period of the drum.

It is desirable that no label be fed from the magazine by any head which will reach the wheel in registry with an empty pocket, and the novel mechanism provided for this purpose will now be described. The rocker 44 previously mentioned has fixed to it an arm 50 having a set screw 51 in its free end and is coupled by a tension spring 52 to one arm of a bifurcated lever 53 swinging on the pivot 45 and bearing a detector 54. The other arm of this lever is provided with a boss 51' which is pressed towards engagement with set screw 51 by spring 52. Since the rocker is oscillated once during each rest

period of the wheel, the detector will feel for a package during the same periods, the spring 52 permitting it to rest against the package if there is one present in the pocket while the rocker continues to the end of its motion, but allowing the detector to enter the pocket if a package is absent. The detector is positioned to feel for an article in that pocket which will register with the head 18 which is about to pick a label from the magazine, see Fig. 1.

The detector bearing arm 53 is joined by a link 55 with an arm 56 fixed to a shaft 57. This shaft carries a stop member 58 adapted when positioned as in Figs. 1 and 3, to interfere with an abutment 59 carried by an arm 60 fixed, together with arms 61 and 62 on a shaft 63, and to prevent counterclockwise rotation of these arms around shaft 63 as a pivot. Arms 60 to 62 form part of a mechanism used to turn off suction from the head 18 approaching the magazine 19 if the detector fails to find an article in the pocket.

The stop member 58 is swung around shaft 57 as a pivot to various positions with relation to abutment 59 as follows. Spring 52 tends to hold screw 51 and boss 51' engaged and when rocker 44 is rocked counter-clockwise to move the magazine 19 downwardly into position to engage the approaching head 18, the arms 50 and 53 will swing on pivot 45 and link 55 will move upwardly rotating stop member 58 counterclockwise from the position shown in Fig. 3. If, as the arm 53 swings, detector 54 finds an article the arm will be arrested as shown in Fig. 1 and the stop member will interfere with arm 60. In this case, as will appear, a label will be picked up by the head 18 at the magazine. If on the other hand, there is no article present in the pocket the arm 53 will follow arm 50 and raise the stop member 58 to the position of Fig. 4, in which position it does not interfere with abutment 59 or arm 60 and the head 18 will not pick a label from the supply.

As the rocker 44 is rocked clockwise to its original position, screw 51 will engage boss 51' and move stop member 58 from the position of either Fig. 1 or Fig. 4 to that of Fig. 3 at the same time carrying detector 54 to its lowest position. At this time, arm 60 will be positioned as shown in Fig. 3 so that abutment 59 will not interfere with this action.

Referring now to shaft 63 and the arms 60 to 62 carried thereby, a rocker 64, freely pivoted on this shaft, is coupled by a link 65 with the magazine moving rocker 34' and to the arm 62 by spring 65' so that as the magazine starts to descend the link 65 will be raised causing the arm 61 to be swung counter-clockwise. An abutment 66 carried by the end of the arm strikes a roller 67 on the plate 25 which is at the time adjacent the magazine. This rocks the plate clockwise as shown by comparison of Figs. 1 and 4, so that as shown in the latter figure, the arcuate duct 28 is shifted out of registry with the duct 29 so as to cut off suction from the head. After the head has passed the labeling position, a stationary cam 70 serves to return the plate to its normal position, contacting the roller 67 as shown at the right in Figs. 1 and 3. A second roll 68 on the plate rides against a stationary ring 69 to avoid overtravel (Figs. 2 and 4).

In operation the plates remain in the positions in which they are shown in Fig. 3 throughout the rotation of the label applying drum as long as the supply of articles in the wheel is uninter-

rupted. Under these conditions the feeler 54 is kept from raising the link 55, and the stop 58 remains in the path of the abutment 59. As shown in Figs. 1 and 3, the abutment 66 is thus prevented from striking roll 67 and the plate 25 is not rotated. The supply of suction to the heads is thus controlled only by the passage of ducts 29 between the two grooves 30 and 33. If an article is missing from one of the pockets the detector raises the rod 55 and moves the stop 58 upwardly as shown in Fig. 4. The arm 61 being unobstructed, moves downwardly at the same time as the magazine, rotating the plate clockwise and cutting off the suction from the head before the magazine is raised. No label will in this case be drawn from the magazine.

Any desired way of pressing the labels into firm contact with the package may be provided, sponge rubber rolls 71 being shown for this purpose in Fig. 1.

We claim:

1. A labeling machine comprising an article carrier having pockets for conveying a succession of articles, a labeling carrier positioned to transfer labels successively to articles in the article carrier, a plurality of suction operated label pickers in the carrier, an article feeler, and suction cut-off devices individual to each picker actuated by the feeler in the absence of an article for shutting off suction to the picker.

2. A labeling machine comprising an article carrier having pockets for conveying a succession of articles, a magazine, a label drum having a plurality of pickers to transfer labels from the magazine to articles in the article carrier, means for admitting suction to each picker adjacent the magazine and cutting it off adjacent the article, an article feeler, and mechanism operated by the feeler for cutting off the suction from a picker independently of said means.

3. A labeling machine comprising an intermittently rotatable pocketed article carrier wheel, a label applying drum geared to rotate with the wheel and having a plurality of picker heads, a label magazine, means for moving the label magazine against a picker during each rest period of the drum, a source of suction, valve means normally operable to connect each picker head with said source adjacent the magazine and to cut it off therefrom adjacent the article, an article feeler, and mechanism operated by the feeler for cutting the connection between a picker head and the source of suction independently of said valve means.

4. A labeling machine comprising an intermittently rotatable pocketed article carrier wheel, a label applying drum geared to rotate with the wheel and having a plurality of picker heads, a label magazine, means for moving the label magazine against a picker during each rest period of the drum, a source of suction, valve means normally operable to connect each picker head with said source adjacent the magazine and to cut it off therefrom adjacent the article, an article feeler, a rotatable valve individual to each picker, and mechanism operated by the feeler to rotate said valve to shut-off position in the absence of an article.

5. A labeling machine comprising an intermittently rotatable pocketed article carrier wheel, a label applying drum geared to rotate with the wheel and having a plurality of picker heads, a label magazine, means for moving the label magazine against a picker during each rest period of the drum, a source of suction, valve means

normally operable to connect each picker head with said source adjacent the magazine and to cut it off therefrom adjacent the article, an article feeler, a rotatable valve individual to each picker, a member movable to shift said valve to shut-off position, means including a spring to shift said member in timed relation to the movement of the magazine, and mechanism operated by the feeler in the presence of an article to prevent the motion of said member.

6. A labeling machine comprising an intermittently rotatable pocketed article carrier wheel, a label applying drum geared to rotate with the wheel and having a plurality of picker heads, a label magazine, means for moving the label magazine against a picker during each rest period

5 of the drum, a source of suction, valve means normally operable to connect each picker head with said source adjacent the magazine and to cut it off therefrom adjacent the article, an article feeler, a rotatable valve individual to each picker, a member movable to shift said valve to shut-off position, means including a spring to shift said member in timed relation to the movement of the magazine, mechanism operated by the feeler in the presence of an article to prevent the motion of said member, and means for resetting said rotatable valve means in its on position.

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