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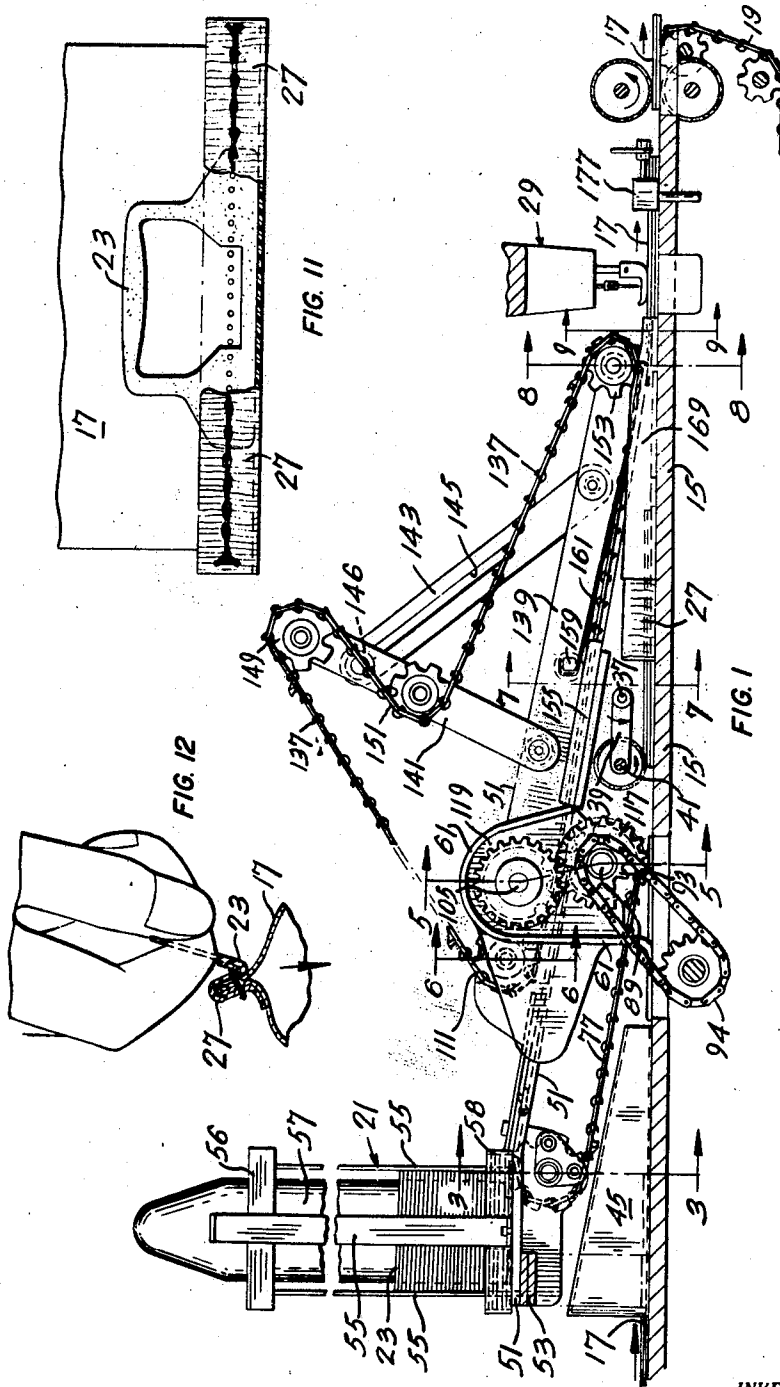
JEAN PAUL BLANCHETTE

3,498,244

BAG HANDLING APPLICATOR

Filed Oct. 30, 1967

4 Sheets-Sheet 1



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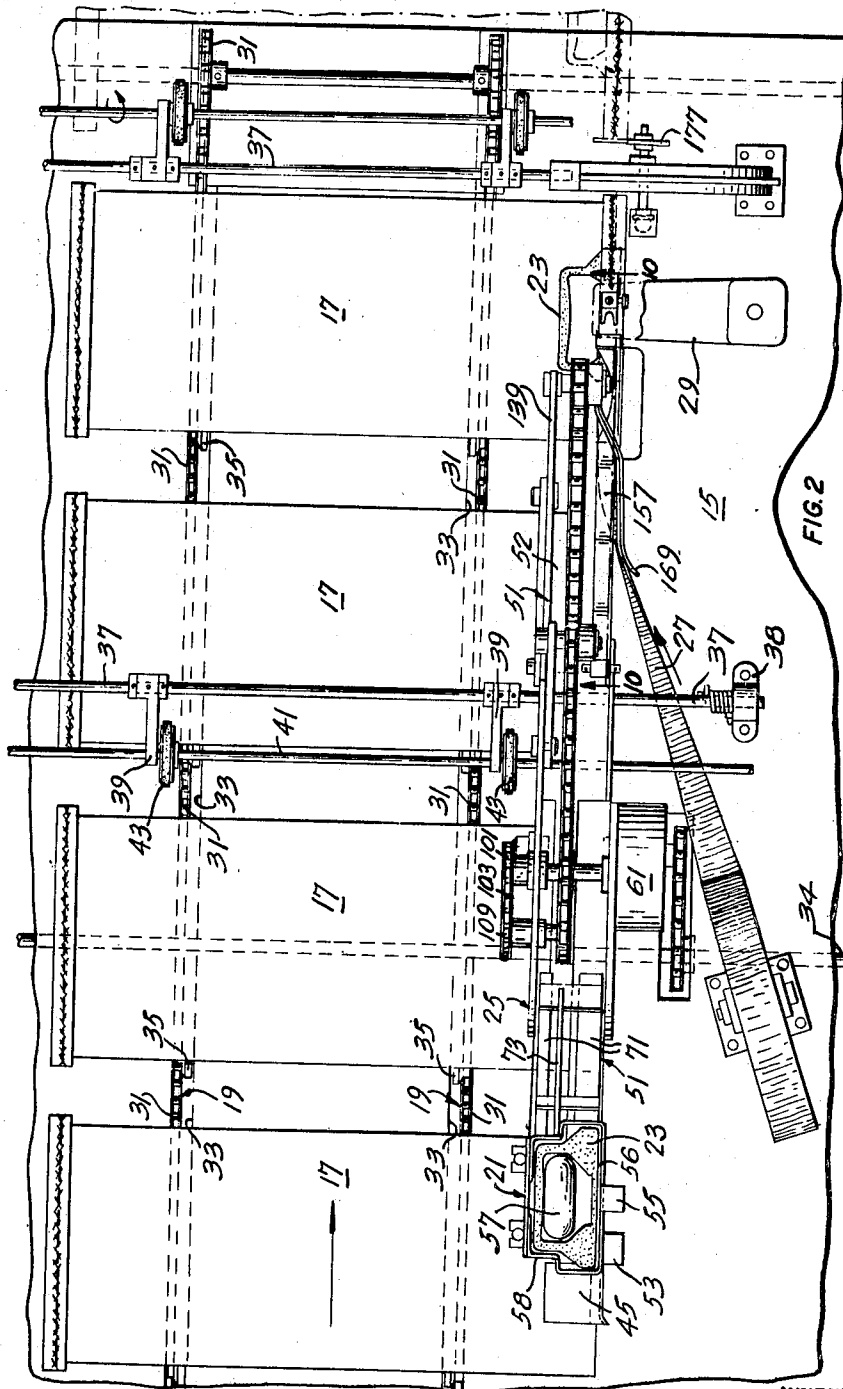
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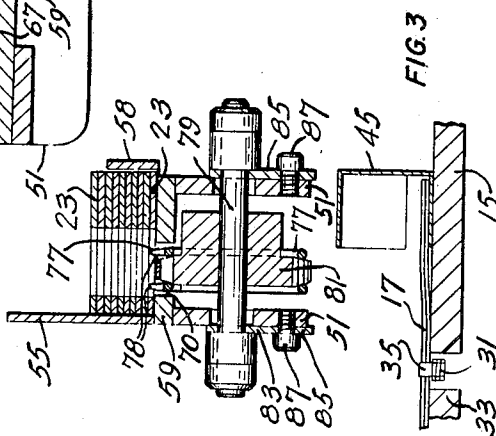
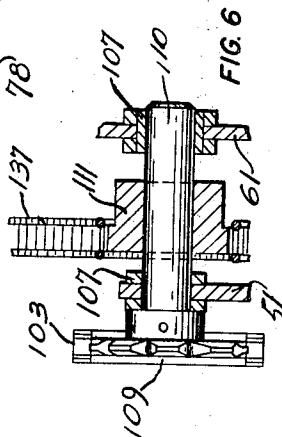
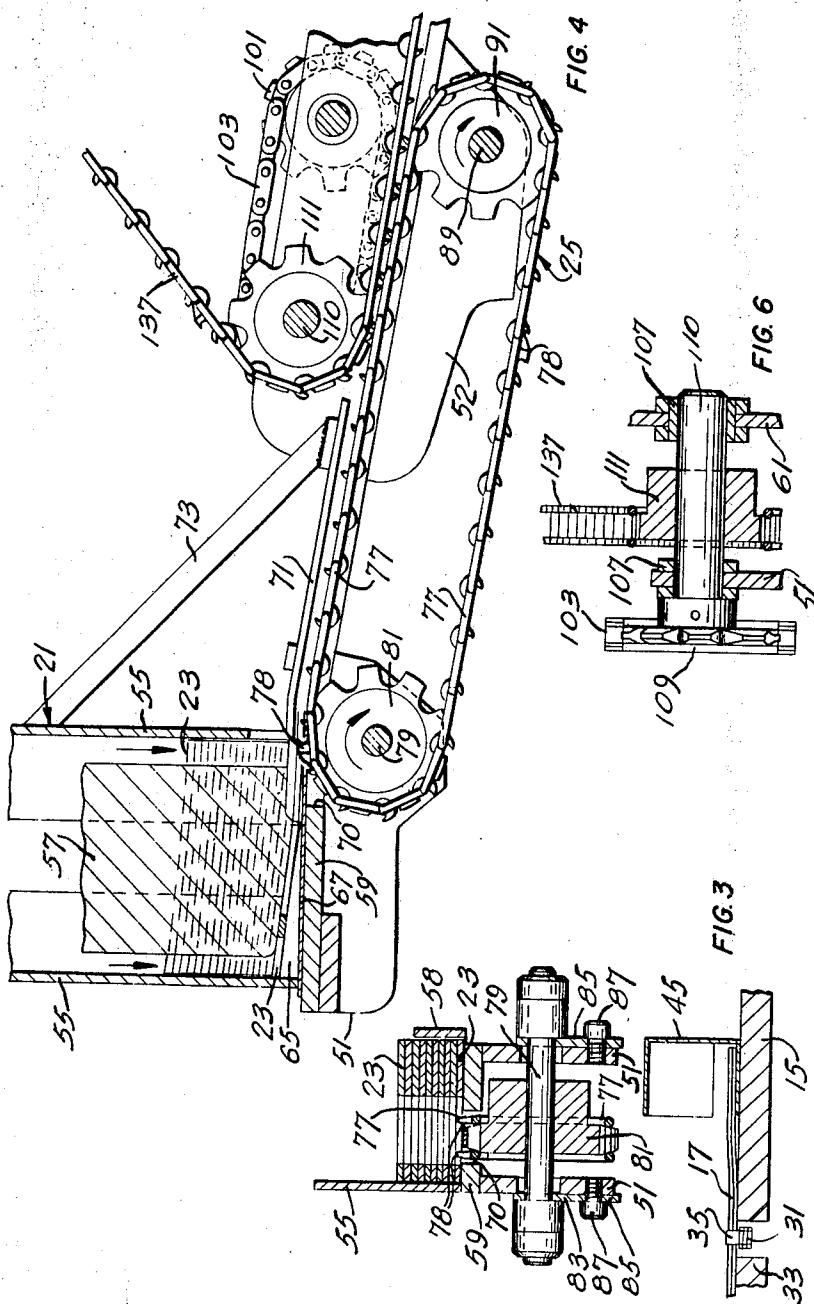
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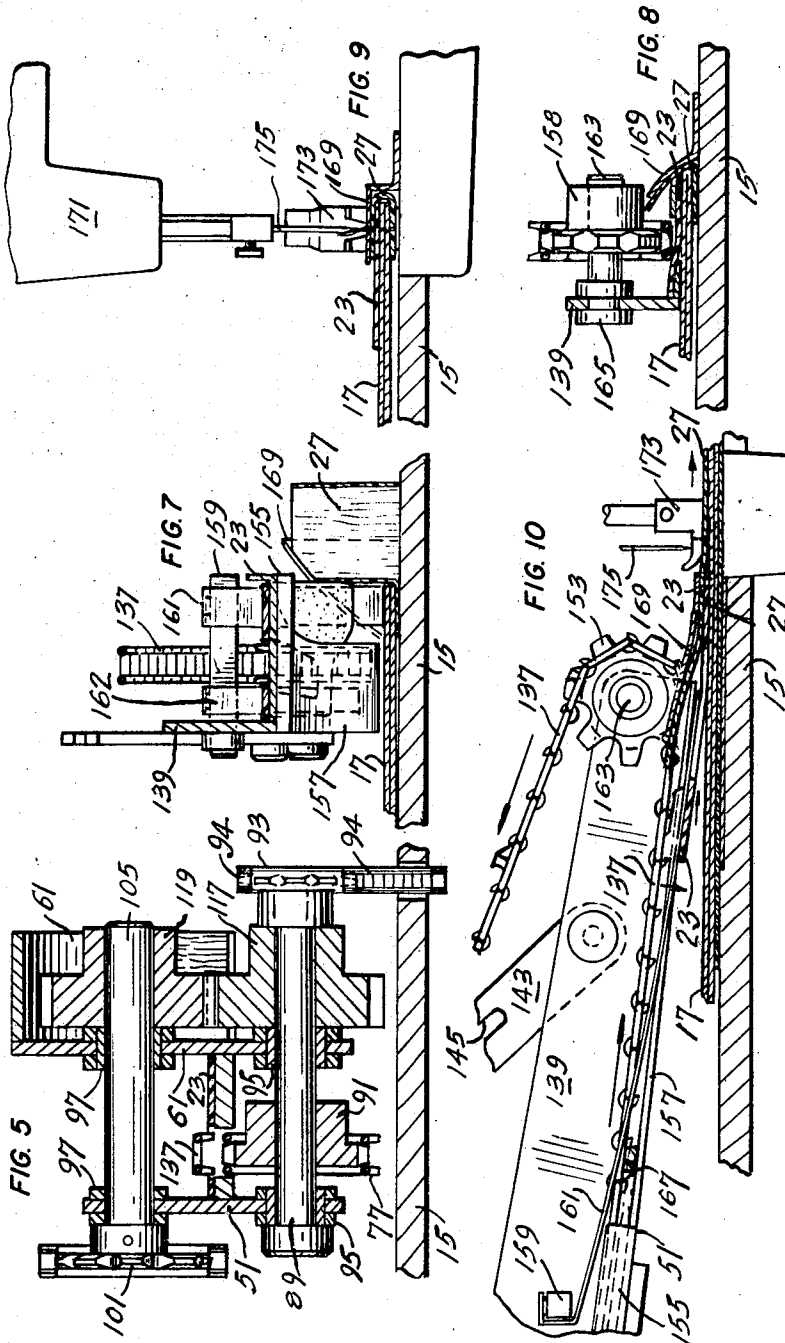
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4 Sheets-Sheet 4



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3,498,244

BAG HANDLING APPLICATOR

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10 Claims

ABSTRACT OF THE DISCLOSURE

A bag handle applicator which includes a magazine having a floating core, a chain conveyor retrieving plastic handles one by one from the magazine and feeding them individually to bags passing by on an assembly line conveyor and simultaneously forming a strip seam over the handle base, fixing it to the edge of the bag.

The present invention relates to bag handle applicator and particularly to an apparatus for closing one end of a bag and simultaneously attaching a carrying handle to that end of the bag.

In one stage of a typical bag making operation, the bag is fed along a predetermined path on a table, with the longitudinal axis of the bag extending in a transverse direction to the path of travel. One edge of the path is normally fixed while the other can be variable so as to be adjusted to different lengths of bags. On the fixed edge of the path, a binding apparatus such as a sewing machine in combination with means for feeding binding tape to the open edge of the bag and the sewing machine or adhesive applicator are provided. If the bags are plastic, a heat sealing device or adhesive applicator can be substituted for the sewing machine.

Heretofore, attempts have been made to simultaneously attach a carrying handle to the end of the bag being sealed. In one example, a pneumatically operated system has been used whereby a cartridge filled with handles is mounted on the table over the path of travel of the bags directly opposite the binding apparatus. As the bags advanced, an air piston would forward a given handle to a point on the edge of the bag, just before it is engaged by the sewing machine. However, such an apparatus has been found in many cases to be frequently subject to stoppages and misfires, thus slowing down the closing stage, and thus, the whole bag making operation. The handles also tended to be placed off center of the bag end thus resulting in an inferior appearing and sometimes weaker package.

It is an aim of the present invention to provide an improved apparatus and method of feeding the handles to the binding apparatus which is less subject to stoppages and which can position the handle more accurately on the bag end.

A construction in accordance with the present invention comprises a vertically extending magazine for receiving a stack of handles. The magazine is mounted on the table upstream from the binding apparatus; conveying means for positively engaging and conveying the handles one at a time from the magazine to the binding apparatus, at the same velocity as the velocity of the advancing bags and at a distance one from each other corresponding to the distance between the center lines of the bags.

In more specific construction, the magazine and conveyor means are mounted directly over the fixed path edge of the table and a sewing machine and a binding tape feeding means are provided whereby the binding tape is formed about the edge of the bag and the base of the handle; and the sewing machine then stitches them together.

Having thus generally described the nature of the invention, particular reference will be made to the accompanying drawings showing by way of illustration a preferred embodiment thereof, and in which:

FIGURE 1 is a view in side elevation showing the bag closing and handle applicator apparatus;

FIGURE 2 is a top plan view of the apparatus shown in FIGURE 1;

FIGURE 3 is a vertical cross section taken along line 3—3 in FIGURE 1;

FIGURE 4 is an enlarged fragmentary view of a detail shown in FIGURE 1;

FIGURE 5 is a vertical cross section taken along line 5—5 in FIGURE 1;

FIGURE 6 is a vertical cross section taken along line 6—6 in FIGURE 1;

FIGURE 7 is a vertical cross section taken along line 7—7 in FIGURE 1;

FIGURE 8 is a vertical cross section taken along line 8—8 in FIGURE 1;

FIGURE 9 is a vertical cross section taken along line 9—9 in FIGURE 1;

FIGURE 10 is a horizontal cross section taken along line 10—10 in FIGURE 2;

FIGURE 11 is a fragmentary view of the bag showing the closed end with the handle applied, and

FIGURE 12 is a fragmentary view of the bag showing the handle in an operative position.

Referring now to the drawings and more specifically to FIGURES 1 and 2, the apparatus includes a table 15 which is provided with a bag conveyor 19 for conveying bags 17 in the direction of the arrow along the table 15. At this stage, the bags 17 have been formed with one or both ends open. In FIGURE 2, the bags 17 are shown with the one end which has been previously sealed. Generally, the handle applicator apparatus includes a magazine 21, a conveyor arrangement 25 for supporting the handles from the magazine 21 to a position on the bags 17. A binding tape 27 is also fed to the open end of the bag 17 simultaneously with the handle 23 which are then sewn together with the sewing machine 29.

As shown in FIGURE 2, the bag conveyor 19 is provided with a pair of chains 31 which travel in the slots 33 in table 15. A drive shaft 34 is provided underneath the table and cooperates with the chains 31 (not shown) to drive the chain conveyor 19 at the same velocity as the handle conveyor 25 which will be described in more detail. The conveyor chains 31 are also provided with spaced lugs 35 which extend above the level of the table 15 and engage the edges of the bags 17 to move them forward. A spring mounted shaft 37 also extends across the path of the bag 17 and is journaled in the bearing blocks 38. The shaft mounts a pair of arms 39 through which a shaft 41 is journaled. A pair of wheels 43 are freely mounted on the shaft 41. The spring tensioned shaft 37 forces the wheels 43 to press against the bags 17 as they advance forward, thus insuring that the bags remain flat on the table. The guide channel 45 is also mounted on the table for determining the lateral position of the bags as they advance towards the handle receiving station.

The magazine 21 is mounted at the upstream end of frame 51. At this point, the frame 51 is suspended over the edge of the bag 17 and the guide channel 45 by means of a mounting bracket 53. The frame 51 extends gradually downwardly from the magazine position to a point short of the sewing machine 29 adjacent the level of the table 15. Also supporting the frame is a member 61 which also functions as a cover for the gearing which will be described hereinafter. The magazine 21 includes

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vertically extending strips 55 on the sides, front and rear of the magazine 21. These strips are connected to an upper frame 56 and a lower frame 58. A removable core 57 is also provided which is adapted to fit through the openings of the handles 23.

The handle 23 may be of the type which is described in Canadian Patent 590,802.

The frame 51 is also provided with a magazine platform 59, as shown more clearly in FIGURES 3 and 4. The rear portion of the platform 59, which in FIGURE 4 is the left-hand end of the platform, is provided with a wedge 65. The forward portion of the platform 59 which is towards the right-hand side of FIGURE 4 is slotted at 70 to allow the conveyor chain 77 to pass. Leaf spring 67 is fixed to the platform 59 and at its free end extends over the slot 70 as shown. A deflector 71 is provided at the extreme forward end of the platform 59 and is raised from the platform approximately the distance corresponding to the thickness of a single handle 23. The support arm 73 connects the end of the deflector 71 to a side strip 55 of the magazine 21. The wedge 65 lifts the rearward end of the handles 23 slightly as shown in FIGURE 4 in order to direct the lowest handle 23 in the direction of the conveyor chain. The deflector 71 of course defines a gap between itself and the leaf spring 67 which only permits one handle to be delivered from the magazine at a time.

The conveyor chain 77 is made up of individual, replaceable links. Some of the links, which are spaced apart, include pairs of lugs 78 adapted to engage within the opening in handle 23. The pair of lugs 78 are each spaced laterally approximately the width of the spring 67.

Frame 51 also mounts a ramp 52 which is slotted centrally to pass the chain conveyor 77.

The conveyor chain 77, which was referred to above, passes through the slot 70 as shown in FIGURES 3 and 4 and is supported at this point by a sprocket 81 which is mounted on a freely rotating shaft 79, which in turn is journaled in the bearings 83 lodged in the mounting brackets 85 on either end of the shaft. The mounting brackets 85 are connected to the frame 51 by means of bolts 87.

The chain conveyor 77 is also mounted about a driven sprocket 91 which is spaced along the frame 51 from the sprocket 81 as shown in FIGURES 4 and 5. Sprocket 91 is fixedly mounted on a driven shaft 89. The driven shaft 89 mounts a chain sprocket 93 as shown in FIGURES 1 and 5 which is driven by a chain 94 which is connected to a suitable driving source. The shaft 89 rotates in bearings 95 supported by the frame 51a and the cover mounting 61. A second parallel shaft 105 is similarly mounted in bearings 97 on the frame 51 and the cover 61, and is driven by the driven shaft 89 through the intermediary of spur gears 117 and 119 fixedly mounted on the respective shafts 89 and 105. Shaft 105 mounts at its other end a chain sprocket 101. As shown in FIGURES 1, 4, and 6, the sprocket 101 drives the chain 103 which is also engaged about the sprocket 109. Sprocket 109 is mounted on another parallel shaft 110 which is journaled in bearings 107 and which in turn mounts a conveyor chain sprocket 111.

The conveyor chain sprocket 111 supports the endless conveyor chain 137, similar to chain 77, immediately above the chain 77.

The frame 51 includes a frame member 139, as shown in FIGURES 1, 7, 8 and 10, extending along one side of the conveyor ramp and mounts pivoting arms 141 and 143. Arm 143 defines a slot 145 and arm 141 has a tightening screw 146 which passes through the slot 145 to secure the arm 141 in a locked position when a desired adjustment position is attained. Idler chain sprockets 149 and 151 are both mounted on the pivoting arm 141. Adjustment of the arm 141 in relation to the arm 143 either slackens or tightens the chain 137. At the lowest extremity of the frame 51 or frame member 139 is

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mounted the idler sprocket 153 which engages with the chain conveyor 137. The sprocket 153 as shown in FIGURES 8 and 10 is mounted on a shaft 163 which is journaled in a bearing 165 mounted on the frame member 139. The chain conveyor 137 as can be seen in FIGURE 1 extends over the sprockets 111, 149, under sprocket 151 and over sprocket 153. The lower run of the conveyor chain 137 passes over guide channel 155 and finally over the flange portion 157 of the frame member 139. Also mounted on the frame member 139 is a spring mounting member 159 which mounts a pair of leaf springs 161 and 162. The spring 162 bears down on the inner side of the chain conveyor 137 against the flange 157 while the spring 161 abuts or extends as far as the table 15 on the outer side of the chain conveyor 137 since the flange 157 does not extend that far.

The chain conveyor 137 includes spaced lugs 167 which are adapted to engage the handles 23.

The folding device 169 is provided adjacent the handle feeding apparatus and is adapted to fold the binding tape 27 over the end of the bags 17 and the handle 23. The folding device 169 includes a plate which extends from an initial vertical position tapering gradually to a flat channel-like position with the table 15. Next to the folding device 169 is the sewing machine 29 which includes the sewing machine head 171 and needle 175 and a pressure foot 173. The sewing machine applies a stitch to the folded binding tape 27 which has been folded over the handle 23 and the end of the bag 17.

Next to the sewing machine 29 is a conventional cutting device 177 which trims the binding tape 27 between the individual bags 17.

In operation, the bags 17 are fed, with their longitudinal axes extending laterally, along the table by means of lugs 35 on the chain conveyors 31. At the same time, the chain conveyor 77 passes through the slot 70 and the lugs 78 engage a single handle 23. The lugs 78 actually engage within the opening in the handle 23 and pull it forward. Of course, the gap 75 prevents more than one handle from passing therethrough. The handle is advanced down the conveyor ramp by the chain conveyor 77 at a speed which is coordinated with the chain conveyor 31 on the table. The chain conveyor 137 which is driven, as described earlier at the same speed as the chain 77, engages the handle 23 by means of its spaced-apart lugs 167. The chain conveyor 137 pushes the handle 23, as it is released by chain conveyor 77, over the guide channel 155 where it is contacted on its upper surfaces by the springs 161 and 162. As the chain conveyor 137 advances, the base of the handle 23 is pressed by the spring 161 against the bag 17 as it moves forward and between the binding tape 27 which is being folded by the folding device 169. As the binding tape 27 is folded, the sewing machine applies a stitch through the binding tape 27, the handle 23 and the bag 17.

Various embodiments have been contemplated. For instance, the method of binding the handle to the end of the bag can be adapted to different types of conventional bag closing methods. For instance, if the bag is a plastic bag, the tape 27 can be replaced by a plastic tape, which is fed in a similar way. The sewing machine 29 in this embodiment, could be replaced by a heat sealing device which could heat seal the plastic tape, the bag, and the handle which is sandwiched between the tape and the plastic bag, together.

The invention can also be adapted to another conventional bag end closing device. For instance, the tape 27 can be dispensed with if the handles are fed to a paper bag end having a flap which is normally folded over and adhesively secured. In this case, the adhesive could be applied to the flap before arriving at the handle positioning location and a folding device similar to the folding device 169 is provided to fold the flap over the handle as it is being positioned and press rollers, or other con-

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ventional means, could be provided for securing the flap with the adhesive to the handle and the bag wall.

I claim:

1. An apparatus for applying handles to bags comprising support means, means adapted to advance the bags individually across the support means; a vertically extending magazine mounted on said support means adjacent the advancing means, and adapted to receive a stack of handles to be applied to the bags, positioning means mounted on the support means downstream of the magazine adapted to position a handle on one of said bags, conveying means for feeding the handles from the magazine to the positioning means and a binding means for binding the handle to the bag, guide means provided on the support means to define a predetermined path for the edges of the bags to which the handles are to be applied, the magazine including a delivery portion and spaced from the plane of the bag path on the support means, a ramp extending from the magazine delivery portion to the handle positioning means adjacent the plane of the bag path; and conveying means for feeding the handles one by one down the ramp at the same velocity as the velocity of the advancing bags at an interval corresponding to the distance between the center lines of the succeeding bags.

2. An apparatus as defined in claim 1 wherein the positioning means includes a leaf spring mounted over said ramp and pressing toward it at a position near the end of the conveyor means, whereby the ramp is cut away to allow the leaf spring to press downwardly past the ramp and against the predetermined support means.

3. An apparatus for applying handles to bags comprising a support table; conveyor means for advancing the bags across the support table; guide means for guiding at least one edge of the bags along a predetermined bag path edge as they are being advanced; a magazine mounted on the support table and adapted to receive a stack of handles to be applied; the magazine extending vertically with the delivery portion thereof being in a plane parallel to but spaced above the table; the magazine being substantially located over the bag path edge; positioning means for positioning the handles individually on each advancing bag; conveyor means extending downwardly from said magazine delivery portion to the positioning means substantially in line with the bag path edge; and binding means provided on the table upstream from said magazine, located along the bag path edge and adapted to bind the handles to the advancing bags.

4. An apparatus as defined in claim 3 wherein the conveying means extending from the magazine delivery portion to the positioning means includes a frame, the frame mounting a ramp, a first endless conveyor cooperating with the ramp and including means for engaging each handle from the magazine and carrying it down the ramp; the ramp defining a slot accommodating the endless conveyor and the delivery portion of the magazine including a slotted platform corresponding to the slot

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in the ramp to accommodate the endless conveyor; the endless conveyor being adapted to move the handle at a velocity corresponding to the velocity of the advancing bags; a second conveyor cooperating with the first conveyor and having a portion thereof which extends over the first conveyor; the second conveyor being mounted over the lower portion of the ramp and being adapted to engage a handle from the first conveyor and move it to the end of the conveyor means, whereby the handle is positioned on the bag.

5. An apparatus as defined in claim 4 wherein the magazine includes a floating core portion on which the stack of handles is adapted to be seated, the delivery portion of the magazine including a wedge on the slotted platform tapering downwardly in the direction of the ramp, means defining a gap forward corresponding to the thickness of one handle of the wedge above the first conveyor, whereby only one handle is engaged at a time.

6. An apparatus as defined in claim 3 wherein the binding means including means for feeding the binding tape over the edge of the advancing bags simultaneously with the positioning of a handle on the edge of the bag and means for sewing a stitch through the binding tape, handle and bag.

7. A method for applying handles to bags including the steps of feeding the bags one by one at a predetermined interval in a horizontal plane through a binding stage, providing at least one edge of the bag along a predetermined path; feeding handles from a reserve magazine, feeding said handles in a path parallel to the path of the bags and aligned with the edges of the bags one by one at the same velocity as the bags are advancing and spaced at intervals corresponding to the distance between the center lines of the bags, pressing the individual handles down on the edge of the bag as it advances, simultaneously fixing the handle to the edge of the bag.

8. A method as defined in claim 7 wherein the handle is fixed to the edge of the bag by folding a binding tape over the handle and the bag and finally providing a seam along the binding tape handle and the bag.

9. A method as defined in claim 8 wherein the seam is provided by sewing a stitch through the tape handle and bag.

10. A method as defined in claim 8 wherein the seam is provided by heat sealing along a suitable binding strip.

References Cited

UNITED STATES PATENTS

1,731,295	10/1929	Cornell	112—153 XR
3,128,035	4/1964	Teweles	229—54
3,156,206	11/1964	Hall et al.	112—10 XR

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