

Jan. 10, 1950

J. MAGNUSSON

2,494,186

SHEET FEEDING MECHANISM

Original Filed Sept. 13, 1945

5 Sheets-Sheet 1

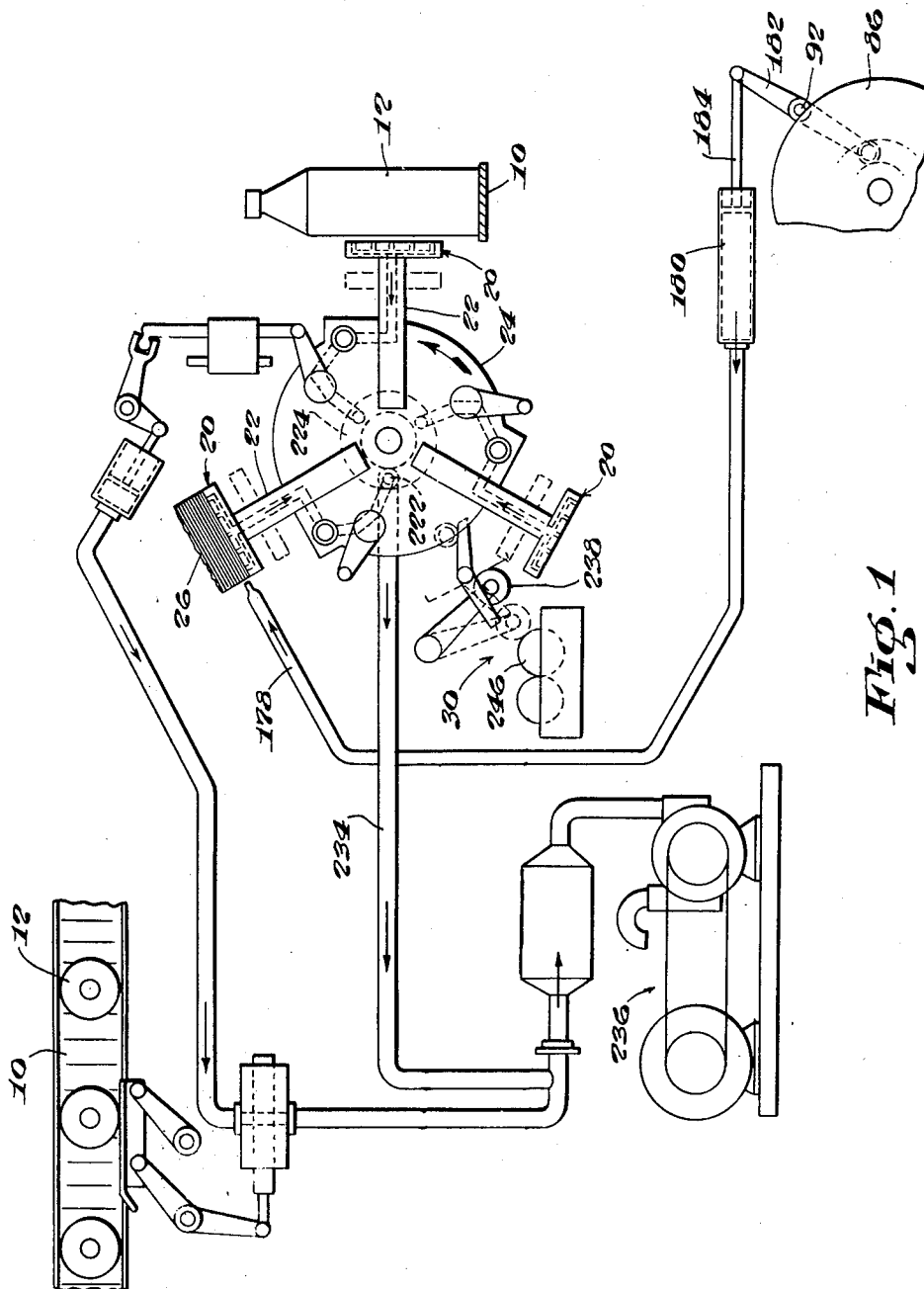


Fig. 1

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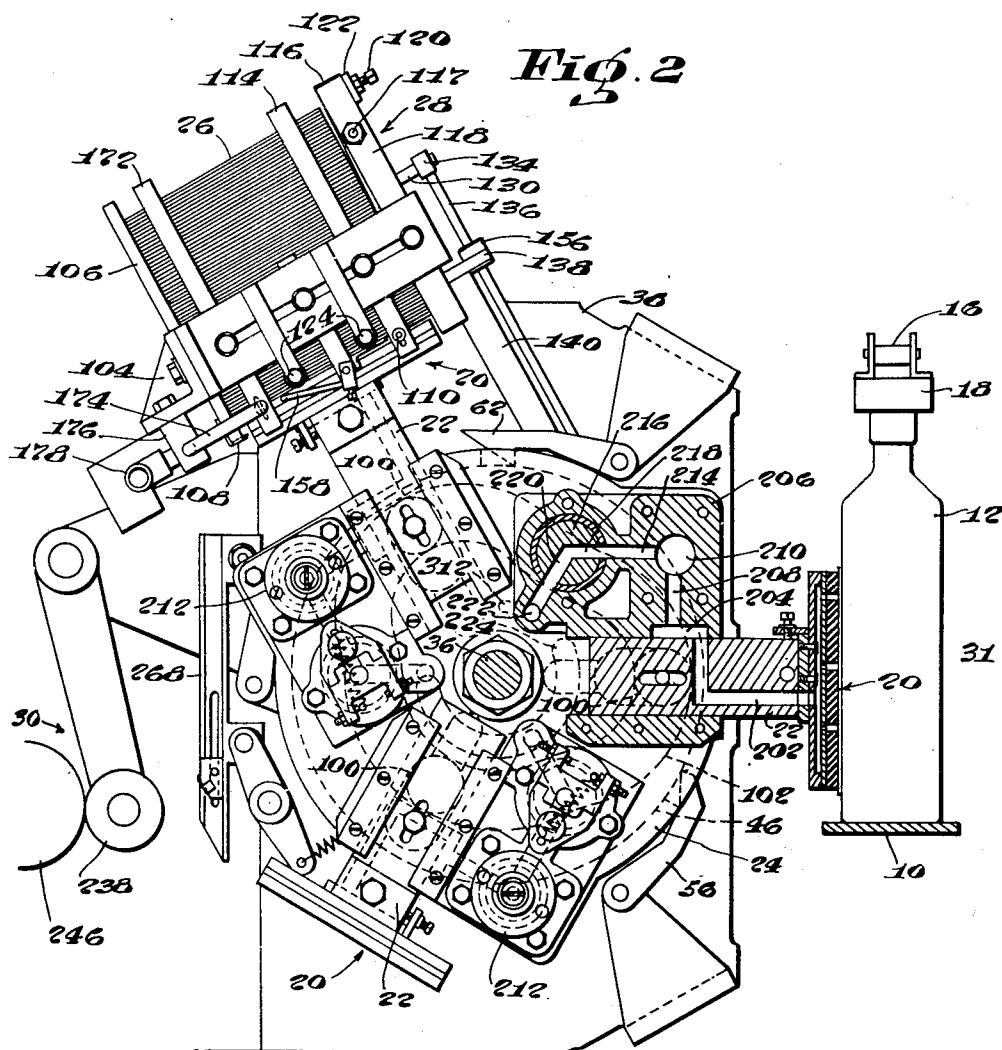
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5 Sheets-Sheet 2



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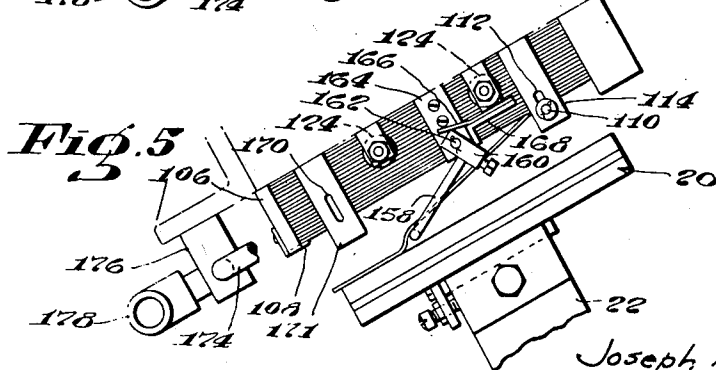
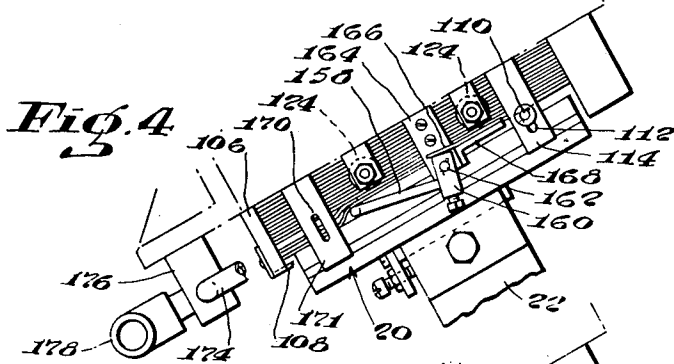
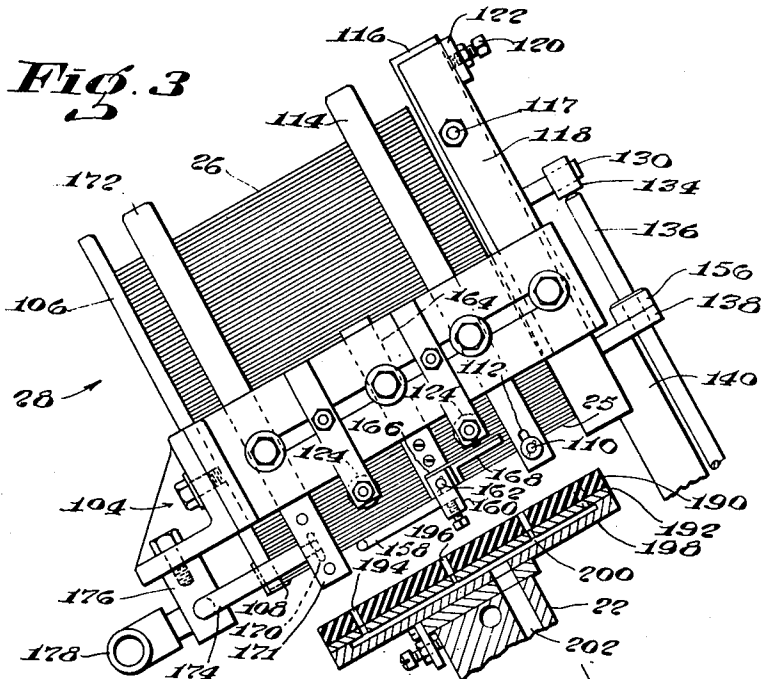
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SHEET FEEDING MECHANISM

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5 Sheets-Sheet 3



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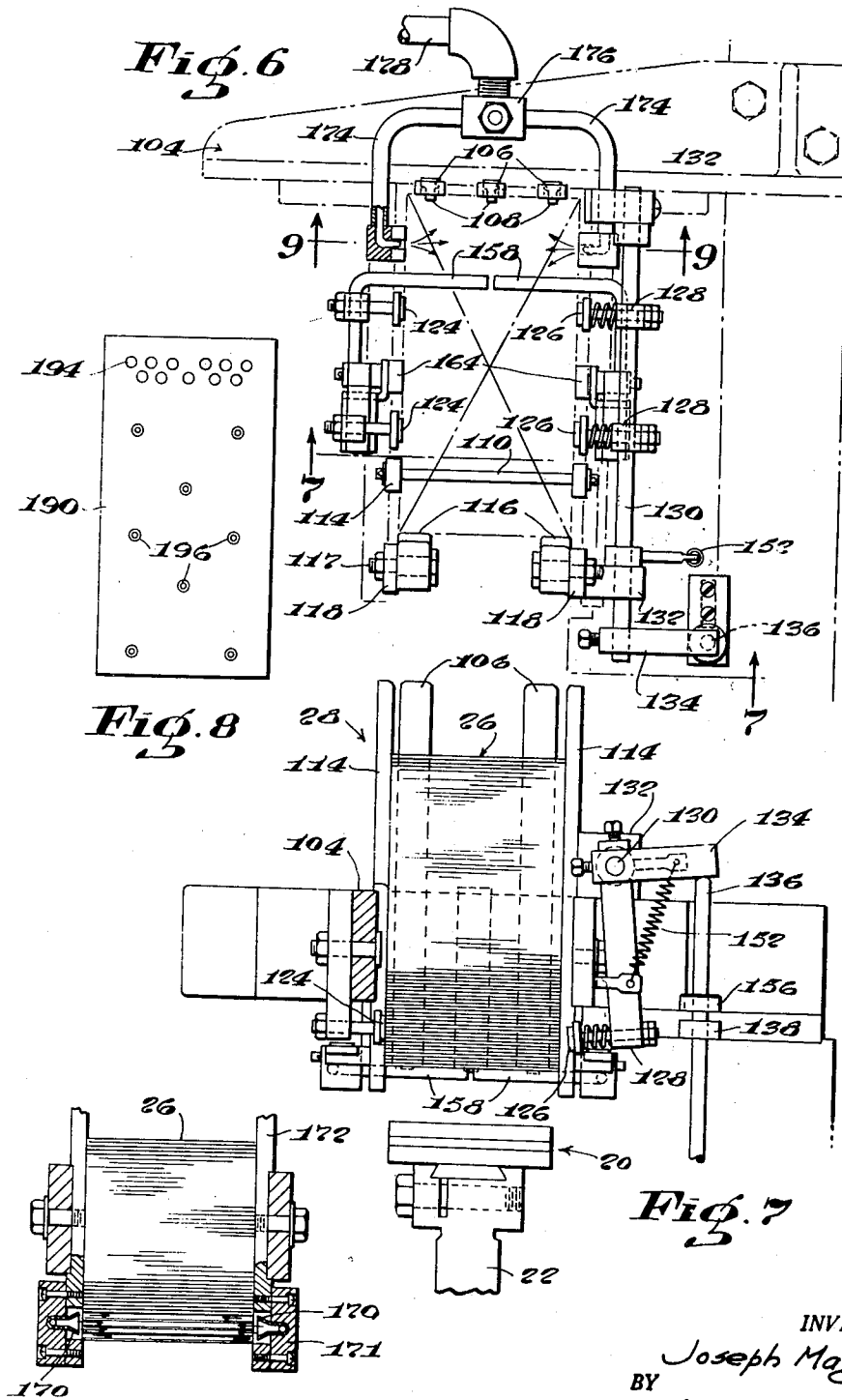
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SHEET FEEDING MECHANISM

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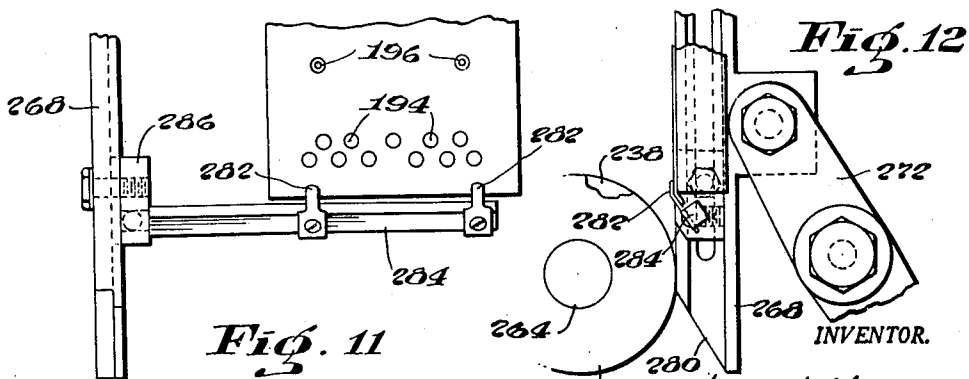
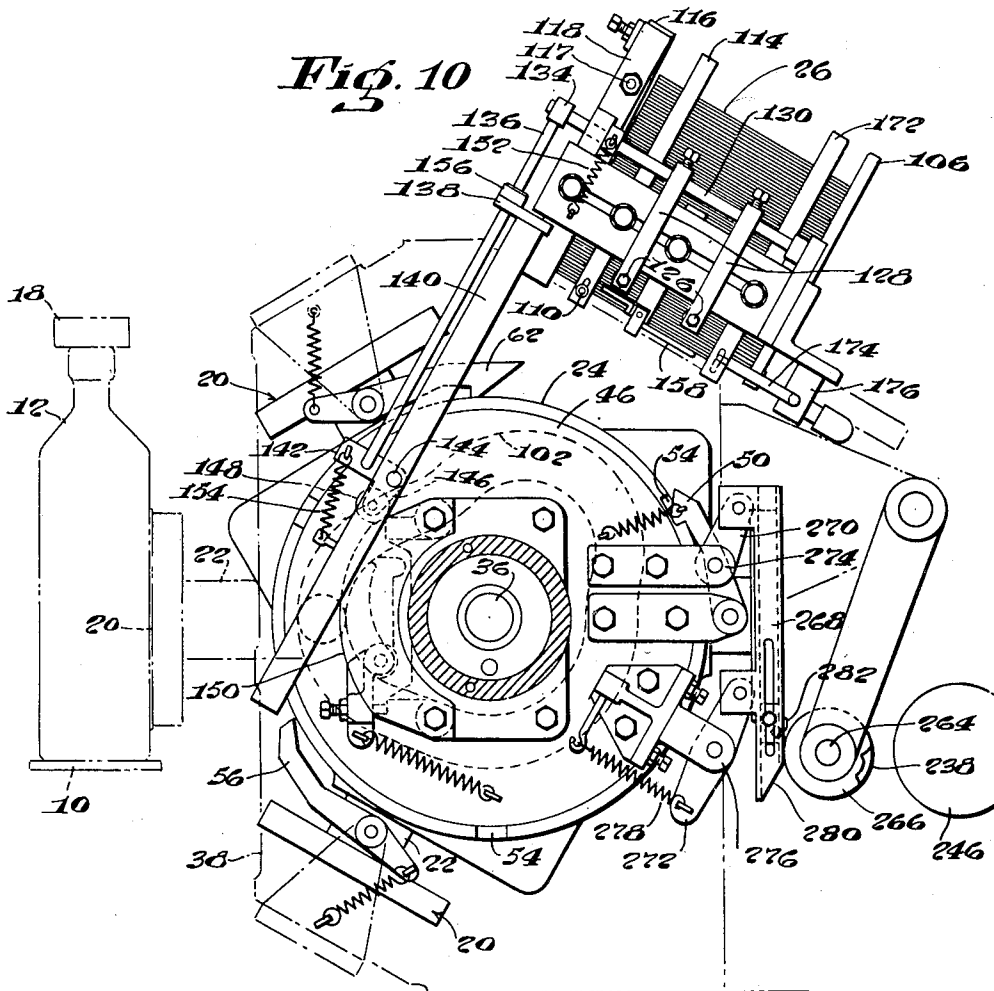
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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,494,186

SHEET FEEDING MECHANISM

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Original application September 13, 1945, Serial
No. 615,973. Divided and this application June
4, 1947, Serial No. 752,465

11 Claims. (Cl. 271—32)

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This invention relates to sheet feeding mechanism.

The object of the invention is to provide a novel and improved sheet feeding mechanism of the type wherein a plurality of sheets are supported in stack form, and in which provision is made for relieving the weight of the stack of sheets from the lowermost sheets in the stack and for withdrawing and feeding successive sheets in a novel, efficient and practical manner.

With this general object in view and such others as may hereinafter appear, the invention consists in the sheet feeding mechanism, and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is an outline view diagrammatically illustrating the present sheet feeding mechanism as embodied in a labeling machine; Fig. 2 is a side elevation of the sheet feeding mechanism as embodied in a labeling machine; Fig. 3 is an enlarged side elevation of the sheet feeding mechanism showing a sheet withdrawing member about to be raised into engagement with the bottom of the stack of sheets; Fig. 4 is a view of the lower portion of Fig. 3 illustrating the sheet withdrawing member in engagement with the stack of sheets; Fig. 5 is a similar view showing a sheet in the process of being withdrawn from the bottom of the stack; Fig. 6 is a plan view of the sheet feeding mechanism; Fig. 7 is a cross sectional view taken on the line 7—7 of Fig. 6; Fig. 8 is a plan view of the sheet withdrawing member; Fig. 9 is a cross sectional view taken on the line 9—9 of Fig. 6; Fig. 10 is a rear view of the mechanism shown in Fig. 2; Fig. 11 is a front elevation of a portion of the mechanism shown in Fig. 10; and Fig. 12 is a side elevation of the same, a portion of the metal bearing roller being broken away to show the adhesive applying roller.

In general, the present sheet feeding mechanism is illustrated as embodied in a labeling machine of the type provided with an intermittently operated conveyer upon which the containers are carried in spaced relation for registration with the labeling mechanism. In the illustrated embodiment of the invention, provision is made for applying adhesive to the label and for thereafter applying the label to the container. In the prior machines of this type difficulties have been encountered in the handling of the label particularly with respect to the mechanism for with-

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drawing a label from a supply thereof, and for holding the label during the application of adhesive thereto. It is the aim of the present invention therefore to provide novel and efficient apparatus for handling the label and affixing the same to a container whereby to successfully perform the labeling operation.

In general, the illustrated embodiment of the invention includes an intermittently rotated spider provided with a plurality of suction heads or pads capable of withdrawing successive labels from the bottom of a stack thereof and for holding the label during the application of adhesive thereto. The suction pad and its label are subsequently moved into operative position to a container supported upon the intermittently operated conveyer and the suction pad is operated to affix the label to the container. The intermittently operated conveyer is preferably arranged to run in timed relation to the operation of the label applying pads to effect application of labels to successive containers.

One of the difficulties encountered in prior machines was the inability to successfully remove a sheet, such as a label from the bottom of a stack thereof supported in a magazine. Due to the weight of the stack and the pressure of the suction pad thereagainst it was difficult to adjust or control the suction of the pad to remove but a single label, particularly if the labels were somewhat porous, in which event two or more labels would be withdrawn. In accordance with one feature of the present invention, provision is made for relieving the weight of the entire stack and releasing only a small group of labels at the bottom of the magazine and then pneumatically separating the small group so that the suction pad will be effective to withdraw only the lowermost label. Another feature of the present invention consists in the construction and disposition of the label magazine in a manner such as to permit alignment of the forward edge of the labels whereby to effect corresponding registration of successive labels with successive suction pads as will be hereinafter more fully described. Provision is also made for gripping the forward portion of the label on the pad to prevent displacement thereof during the adhesive applying operation.

Referring now to the drawings, the present invention is illustrated as embodied in a labeling machine having an intermittently operated conveyer indicated generally at 10 upon which the containers 12 are carried in spaced relation for registration with the present labeling mechanism.

The conveyer 10 may and preferably will comprise the intermittently operated conveyer illustrated and described in the U. S. patent to Everett, No. 2,245,659, issued June 17, 1941, and which may be arranged to run in timed relation to the operation of the labeling apparatus for the application of successive labels to successive containers. As shown in the said patent and as illustrated herein, see Fig. 2, the conveyer includes a cooperating upper chain 16 provided with a plurality of presser pads 18 engaging the tops of the containers to firmly hold the latter in registered position during the application of labels. As indicated generally in Fig. 2 the present labeling apparatus comprises a plurality of, herein shown as three, suction heads or pads 20 mounted upon the outer ends of radially extended arms 22 carried by and arranged for reciprocation in an intermittently rotated spider 24.

In general, the operation of the apparatus during one complete revolution of the spider is as follows: The suction pad 20 in the upwardly extended position shown in Fig. 5 is reciprocated to engage and withdraw the lowermost label 26 from a stack 26 thereof supported in a magazine 28. The spider is then rotated 120 degrees to carry the suction pad and label past the adhesive applying mechanism, indicated generally at 30, and which is arranged to provide a film of adhesive on the label held by the suction pad. The spider is then again moved 120 degrees to present the pad to the label applying station indicated generally at 31 where the suction pad is again reciprocated to affix the label to the container, the suction being released prior to the retracting movement of the pad to free the label from the latter. The label thus applied in its flat condition to a round container is merely "tacked" on, adhering to the container in an area adjacent the plane of tangency sufficient to hold the label in position for a subsequent wiping or pressing operation arranged to press the adhesive coated label into firm engagement with the container.

Provision is made for intermittently rotating the spider 24 to present the suction pads 20 successively to the different stations of operation, and, in the preferred embodiment of the invention the spider 24 may be fast on the shaft 36 and arranged to be intermittently rotated through connections from a cam member 46 loosely mounted on the shaft 36. The cam member 46 is arranged to be rocked back and forth through an arc of 120° during each cycle of operation and is operatively connected to the spider 24 by a spring pressed driving pawl 50 carried by the rocking cam member 46 and engageable with successive notches 54 formed 120° apart in the periphery of the spider. A second spring pressed pawl 56 is arranged to prevent reverse rotation of the spider 24 during the return stroke of the driving pawl 50, and, a third pawl 62 may be provided to limit the forward stroke to insure accurate registration of the pads 20 with the cooperating mechanisms. The cam member 46 may be rocked back and forth by any usual or preferred intermittently operated mechanism, not shown, so that in operation, the spider 24 is rotated with the cam member during the advancing stroke of the latter, and is held stationary during the return stroke of the cam member.

As above stated, the suction pads 20 are mounted upon radial arms 22 carried by the spider 24 and, as herein shown, the arms 22 are arranged to be reciprocated at the label with-

drawing and applying stations during the retracting stroke of the cam disc 46. As shown in Fig. 2, each radially extended arm 22 is provided with a roller 100 adjustably secured thereto and arranged to cooperate with a cam path 102 formed in the oscillating cam disc 46. During the advancing stroke of the driving pawl 50, the cam and spider are moved as a unit through 120° during which time the arms 22 and pads 20 are in their retracted positions. The cam disc 46 is then rotated 120° in the opposite direction while the spider remains stationary and during such return stroke of the cam disc, the cam path 102 effects extension and retraction of the spider arms 22 and their suction pads 20 at the label withdrawing and label applying stations. Fig. 2 illustrates the mechanism at its halfway point with the arms 22 extended at the two stations as described, the remaining arm being retained in its retracted position, as shown. A full return stroke of the cam disc 46 disposes the parts in their original position at the start of a new cycle of operation.

Referring now to Figs. 2 and 10, the label magazine 28 comprises in general a rectangular frame 104 supported from the bracket 38 and provided with a plurality of upright guide bars adjustably supported in the frame. As herein shown, the magazine is disposed at an angle to conform to the angular disposition of the reciprocal suction pad 20, and, the angular disposition of the magazine permits the stack to be aligned in the magazine so that successive labels are registered in corresponding relationship upon successive label pads whereby upon application to the containers the labels will be uniformly disposed thereon. As better shown in Fig. 3, the forward edges of the labels bear against the front guide bars 106, the bottom of the stack being supported by spring retaining hooks 108 provided at the lower ends of the bars, and by a cross rod 110 supported for vertical axial movement in slots 112 provided in the side guide bars 114. Thus, the stack of labels inserted in the magazine will fall naturally by gravity with their forward edges in engagement with the front bars 106. In order to further assure alignment of the forward edges of the labels, the rear of the stack is arranged to be engaged by a pair of relatively heavy bars 116 pivotally mounted at 117 on adjacent uprights 118. As shown in Fig. 3, the pivotal bars 116 bear against the lower end of the stack so as to urge the lowermost labels forward against front guide bars 106. A stop screw 120 adjustably secured in an extension 122 from the upright 118 is arranged to engage the upper end of the bar to limit its pivotal movement.

In order to permit the lowermost label to be freely withdrawn from the bottom of the stack, provision is made for relieving the weight of the stack during the withdrawing operation. This is accomplished by engagement of the suction pad 20 which operates to raise the entire stack a short distance in the magazine, and, by a plurality of gripper pads 124, 126 arranged to engage the sides of the stack to hold the major portion thereof in its raised position during the withdrawing operation, permitting only a few labels at the lower end of the stack to be free, said gripper pads being operative to release the stack at the end of the withdrawing operation. As herein illustrated, the gripper pads 124 disposed on one side of the magazine, see Fig. 2, are stationary and are arranged to cooperate with an opposing set of grippers 126 on the other side of the maga-

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zine, see Fig. 10, which latter are yieldingly mounted on arms 128 arranged to be rocked into and out of engagement with the side of the stack. As best shown in Figs. 6 and 7, the arms 128 are fixed on a shaft 130 rockingly mounted in bearings 132 secured to the magazine. The outer end of the rocker shaft 130 is provided with an arm 134 arranged to be engaged by a rod 136 vertically reciprocated through a guide member 138 extended from a bar 140 supported from the bracket 38. The lower end of the rod is connected to one arm 142 of a bell crank pivoted at 144 in the bar 140, the other arm 146 of the bell crank being provided with a roller 148 arranged to cooperate with a cam piece 150 secured to and movable with the rocking cam member 46.

A spring 152 urges the gripper pads 126 into engagement with the stack, the cam piece 150 operating to move the grippers away from the stack. The cam piece 150 is designed to effect release of the stack when the suction pad is extended into engagement with the bottom thereof to permit the stack to be raised in the magazine and immediately thereafter the grippers engage the side of the stack, as above described. A spring 154 is provided to hold the roller 148 against its cam. Thus, the weight of the major portion of the stack is relieved during the withdrawing operation, permitting but a few loose labels to remain at the lower end of the stack. A collar 156 provided on the rod 136 is arranged to engage the extension 138 to limit the downward movement of the rod.

Referring now to Figs. 3, 4 and 5 the label withdrawing operation is effected by the suction pad 20 pneumatically engaging and pulling downwardly on the forward end of the lowermost label, the remainder of the label being drawn off the bottom of the stack and pneumatically engaged by the pad as the latter is moved to the next station of operation. Fig. 3 illustrates the relative position of the suction pad with the bottom of the magazine when the spider comes to rest and prior to extension of the suction pad, and, Fig. 4 shows the pad in its fully extended position and in engagement with the bottom of the magazine and with the stack in its raised position. As therein shown, when the pad is extended it engages the axially movable cross rod 110 and a pair of rocker rods 158 which extend across the bottom of the stack adjacent the forward end thereof, as better shown in plan in Fig. 6. The rocker rods 158 are adjustably secured in blocks 160 pivotally mounted at 162 in guide bars 164. The rods are normally maintained in a position parallel to the bottom of the stack by flat springs 166 extending from supports 168 across the tops of the blocks, as shown in Fig. 3. In operation, when the suction pad is extended it bears against the rods to raise the stack off the retaining hooks 108, leaving the forward portions of the labels loose and free, as illustrated in Fig. 4, to be engaged by the suction pad.

During the withdrawing operation, streams of air are directed against both sides of the lowermost labels adjacent the forward end thereof for the purpose of separating any labels which may be lightly stuck together by the printing ink thereon and also to prevent the suction pad from being effective to withdraw more than one label, particularly if the labels are somewhat porous. As best shown in Figs. 6 and 9 the air is directed through nozzles 170 supported in blocks 171 attached to opposed side guide bars 172. The nozzles 170 are connected to tubes 174 which com-

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municate with an air chamber formed in a block 176 secured to the frame 104. The block 176 is provided with a flexible connection 178 attached at its other end to an air pump 180 diagrammatically illustrated in Fig. 1. As therein shown, the pump 180 may be actuated by a cam 86 through connections including an arm 182 fast on a pivot shaft 92 and a rod 184. Thus the few loose labels disposed at the lower end of the stack are separated by the streams of air during the withdrawing operation so as to assure that only one label will be withdrawn by the suction pad.

From the description thus far it will be observed that the forward end of the lowermost label in the stack is engaged by the suction pad, and when the latter is retracted, as shown in Fig. 5, the remainder of the label is pulled downwardly to cause it to slide out from the bottom of the stack and at the same time causing the rocker rods 158 to swing to the position shown in Fig. 5, the rods remaining in such position by virtue of the pressure of the flat springs 166 against one corner of the block 160. Upon subsequent intermittent movement of the spider 24 the suction pad is moved to the left as viewed in Fig. 5 to withdraw the label from the stack, and to permit it to be drawn into engagement with the suction pad. As the rearmost edge of the suction pad passes beneath the magazine it engages the rocker rods 158 to urge them back into their normal position after the label has been entirely withdrawn.

Referring now to Figs. 3 and 8, each suction pad 20 comprises a composite unit including a yieldable face member 190 and a metal backing member 192 provided with a plurality of suction openings including a group of closely spaced openings 194 at one end for engaging the forward end of the label as above described, and, a plurality of widely spaced openings 196 disposed throughout the remainder of the pad. As shown in Fig. 3 the openings 194 are of the same size through both the yieldable member 190 and the backing member 192 to provide a greater amount of suction at the forward portion, and, the remaining openings 196 are reduced in size in the backing member 192 providing sufficient suction to hold a label after it has been withdrawn but insufficient suction to have any withdrawing effect on the label when the pad is in its raised position against the cross rods 110 and 158. Thus, it will be observed that, in operation, when the suction pad 20 is elevated against the bottom of the stack, the bottom supporting rods 110, 158 serve the purpose of holding that portion of the pad having the reduced size and widely spaced openings 196, away from direct contact with the lowermost label and permit only the forward portion of the label to be engaged by the closely spaced and relatively larger openings 194, and, the rods 158 being pivotally mounted are permitted to swing down to facilitate withdrawal of the remainder of the label during the withdrawing operation.

As herein shown, each suction pad 20 is mounted on a hollow head 198 adjustably secured to the end of its reciprocating arm 22. The suction openings 194, 196 communicate with an air chamber 200 formed in the head 198 which connects with a passageway 202 formed in the arm 22. The passageway 202 extends at right angles, as best shown in Fig. 9, through one side of the reciprocating arm 22 and into communication with an elongated port 204 formed in a control casing 206 attached to the spider 24. The port 204 is

of a length such as to permit sliding connection of the passageway 202 therewith during the extension and retraction of the arm 22. The port 204 is connected by a passageway 208 to a chamber 210 formed in a pneumatically operated control unit 212 and a passageway 214 connects the chamber 210 to a rotary valve unit 216 having two radial passageways 218, 220 one of which communicates with the passageway 214 and the other with a port 222 which extends through the control casing 206 and through the spider 24. Each port 222 is arranged to open into an arcuate chamber 224 formed in the face of the cam member 46, and, during the relative movement of the cam and spider 24, the ports are opened and closed to admit or cut off the air to the suction pad 20. The chamber 224 may be connected by a pipe 234 to a suction pump unit 236 as diagrammatically illustrated in Fig. 1.

As above stated, during the advancement of the pad and its label from the withdrawing station to the next station the pad passes the adhesive applying mechanism 30 during which time the label is brought into engagement with an adhesive applying roller 238 normally disposed in the path thereof to apply a film of adhesive to the label. The roller 238 may and preferably will be yieldingly mounted and provision may be made for rocking the roller into engagement with an adhesive supply roll 246 and for returning the roller into operative position to apply a film of adhesive to the label each cycle of operation.

In order to guide the roller 238 with relation to the label so as to maintain a substantially uniform pressure and even distribution of the adhesive on the label, the roller shaft 264 is provided with a metal collar 266 arranged to engage a rail 268 mounted on and movable with the rocking cam disc 46. As best shown in Fig. 10, the rail 268 is carried by parallel links 270, 272 pivotally mounted in brackets 274, 276 respectively, attached to the back of the cam member, and, the rail is disposed to travel in parallel relation to successive suction pads 20 as they are intermittently moved past the adhesive applying device. A spring 278 is provided to urge the rail outwardly, and, in operation, when the cam disc is intermittently moved past the adhesive applying device the collar 266 engages the beveled front end 280 of the rail and presses it down until the roller 238 engages the label carried by the pad. In order to prevent displacement of the label when engaged by the adhesive applying roller 238, a pair of spring clamping fingers 282 are provided which are arranged to engage the forward edge of the label and hold it in place on the suction pad. As shown enlarged in Figs. 11 and 12 the clamping fingers are attached to a square rod 284 extended from a block 286 adjustably mounted on the rail 268. The clamping fingers are adjusted so that when the guide collar 266 engages the rail 268 to press it down as described, the fingers engage the edge of the label as shown in Fig. 12, and, upon continued movement of the pad the adhesive roller passes over the fingers and the label. At the end of the advancing stroke of the cam disc 46, the rail together with the clamping fingers are rocked up away from the pad by the spring 278, and, upon rotation of the disc in the opposite direction the rail unit is returned into parallel position with a succeeding suction pad. On the return stroke the roller 238 is rocked out of the way to avoid the rail as shown in Fig. 2.

When the spider is again moved to present the

suction pad and label into operative position with relation to a container 12 on the conveyer 10, the arm 22 is reciprocated as above described to apply the label to the container. As best illustrated in Fig. 9, in which the pad is shown in its maximum outward position in engagement with the container 12, the oscillating cam member 46 is in its half-way position on its return stroke traveling in a clockwise direction. In such position it will be observed that the end of the arcuate chamber 224 has passed beyond the port 222 communicating with the pad in engagement with the container and that the port is in alignment with a vent port 312 which is open to the atmosphere thus relieving the label on the pad to permit it to adhere to the container. The label thus applied is only loosely attached, adhering to the container merely at its contact with the container. Upon advancement of the container upon the intermittently movable conveyer 10 the labeling operation may be completed at a label pressing or wiping station not shown, which operates to firmly press the label on the container.

This application is a division of my copending application Serial No. 615,973, filed September 13, 1945.

While the preferred embodiment of the invention has been herein illustrated and described it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a substantially vertical stack of labels, a reciprocal suction pad adapted to engage said stack and withdraw the lowermost label in the stack on its retracting stroke, the pad, in its upward stroke, moving upwardly a sufficient distance to raise the entire stack in the magazine, means operable in timed relation to said pad to engage the sides of the stack when in its raised position to hold the major portion thereof in its elevated position during the retracting stroke of the pad whereby to relieve the lowermost labels in the magazine from the weight of the stack during said retracting stroke.

2. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a substantially vertical stack of labels, a reciprocal suction pad adapted to engage said stack and withdraw the lowermost label in the stack on its retracting stroke, the pad, in its upward stroke, moving upwardly a sufficient distance to raise the entire stack in the magazine, means operable in timed relation to said pad to engage the sides of the stack when in its raised position to hold the major portion thereof in its elevated position during the retracting stroke of the pad, leaving a relatively few labels free at the lower portion of the magazine, whereby to relieve the latter from the weight of the stack during the said retracting stroke, and means for pneumatically separating a plurality of said free labels to prevent withdrawal of more than one label by said suction pad.

3. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, a reciprocal suction pad mounted for movement upwardly into engagement with the bottom of the lowermost label of said stack at an area adjacent one end thereof, and for downward movement to effect withdrawal of said one end during its retracting

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stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect lateral withdrawal of the remainder of the label from the bottom of the stack.

4. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, said magazine being open at the top and having one or more intermediate, transversely extended cross rods at the bottom for supporting the lower end of the stack and arranged to provide an open area at one end of the lowermost label, a reciprocal suction pad mounted for movement upwardly into engagement with the bottom of the lowermost label of said stack at said open area and for effecting withdrawal of said one end of the label during the retracting stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect lateral withdrawal of the remainder of the label from between said cross rods and the bottom of the stack.

5. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, said magazine being open at the top and having one or more intermediate, transversely extended cross rods at the bottom for supporting the lower end of the stack and arranged to provide an open area at one end of the lowermost label, a reciprocal suction pad mounted for movement upwardly into engagement with the bottom of the lowermost label of said stack at said open area and for effecting withdrawal of said one end of the label during the retracting stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect lateral withdrawal of the remainder of the label from between said cross rods and the bottom of the stack, one of said cross rods being pivotally mounted to permit rocking thereof toward and away from said stack to facilitate withdrawal of the label.

6. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, means for relieving the lowermost labels in the magazine from the weight of the stack, a reciprocal suction pad mounted for movement into engagement with the bottom of the forward end of the lowermost label in the stack and for effecting downward withdrawal of said forward end during the retracting stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect withdrawal of the remainder of the label from the bottom of the stack.

7. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, a vertically reciprocal suction pad adapted, on its downward stroke, to engage and withdraw downwardly the forward end of the lowermost label in the stack, the upward stroke of said pad being of sufficient length to raise the entire stack in the magazine, means operable in timed relation to said pad to engage the sides of the stack when in its raised position to hold the major portion thereof in its elevated position during the downward stroke of said pad whereby to relieve the lowermost labels from the weight of the stack during the said withdrawing operation, said suction pad being also mounted for lateral movement in a forward direction to effect withdrawal of the remainder of the label from the bottom of the stack.

8. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a substantially vertical stack of labels, said

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magazine being open at the top and having one or more intermediate, transversely extended cross rods at the bottom for supporting the lower end of the stack and arranged to provide an open area at one end of the lowermost label, a unitary reciprocal suction pad mounted for extension into engagement with the bottom of the lowermost label at said open area and for effecting downward withdrawal of said one end of the lowermost label during the retracting stroke, means for relieving the lowermost labels in the magazine from the weight of the stack during the said retracting stroke, means for pneumatically separating the lowermost labels during the retracting stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect withdrawal of the remainder of the label from between said cross rods and the bottom of the stack, one of said cross rods being pivotally mounted to permit rocking thereof during the retracting stroke to facilitate withdrawal of the label.

9. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a stack of labels, a plurality of reciprocal label withdrawing members comprising suction pads mounted for movement to engage and withdraw successive lowermost labels in the stack, said magazine being angularly disposed to cause the forward edges of the labels to be maintained in alignment by gravity against the forward edge of the magazine whereby to assure uniform registration of successive labels with successive suction pads, means for relieving the lowermost labels in the magazine from the weight of the stack during the label withdrawing stroke of said pads, and means including a pivotally mounted and weighted bar engageable with the rear edges of said lowermost labels to assist in maintaining the labels in uniform alignment against the forward edge of the magazine.

10. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a substantially vertical stack of labels, said magazine being open at the top and having transversely extended rods for supporting the bottom of the stack, said rods being arranged to provide an open area at one end of the lowermost label, said rods being supported in the magazine for vertical movement relative thereto, a reciprocal suction pad mounted for movement into engagement with said bottom supporting rods and movable upwardly a sufficient distance to effect lifting of the entire stack in the magazine, means operable in timed relation to said pad and engageable with the sides of the stack when in its raised position to hold the major portion of the stack in its elevated position to relieve the lowermost labels of the weight of the stack during the retracting stroke of said pad, said suction pad being operable to withdraw the end of the lowermost label adjacent said open area downwardly during the said retracting stroke, said suction pad being also mounted for lateral movement when in its retracted position to effect withdrawal of the remainder of the label from between said transverse supporting rods and the adjacent lowermost labels.

11. In a labeling machine, in combination, labeling mechanism including a magazine for supporting a substantially vertical stack of labels, said magazine being open at the top and having transversely extended rods for supporting the bottom of the stack, said rods being arranged to provide an open area at one end of the lowermost

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label, said rods being supported in the magazine for vertical movement relative thereto, a reciprocal suction pad mounted for movement into engagement with said bottom supporting rods and movable upwardly a sufficient distance to effect lifting of the entire stack in the magazine, means operable in timed relation to said pad and engageable with the sides of the stack when in its raised position to hold the major portion of the stack in its elevated position to relieve the lowermost labels of the weight of the stack during the retracting stroke of said pad, said suction pad being operable to withdraw the end of the lowermost label adjacent said open area downwardly during the said retracting stroke, said suction pad 5 being also mounted for lateral movement when in its retracted position to effect withdrawal of the remainder of the label from between said transverse supporting rods and the adjacent lowermost labels, and means for separating the lowermost labels including a pair of blower nozzles arranged to direct streams of air against opposed edges of

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said lowermost labels adjacent said open area whereby to prevent withdrawal of more than one label by said suction pad.

JOSEPH MAGNUSSON.

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