

Oct. 3, 1950

J. E. GRANT
CONTAINER FEED MEANS

2,524,700

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3 Sheets-Sheet 1

Fig. 1

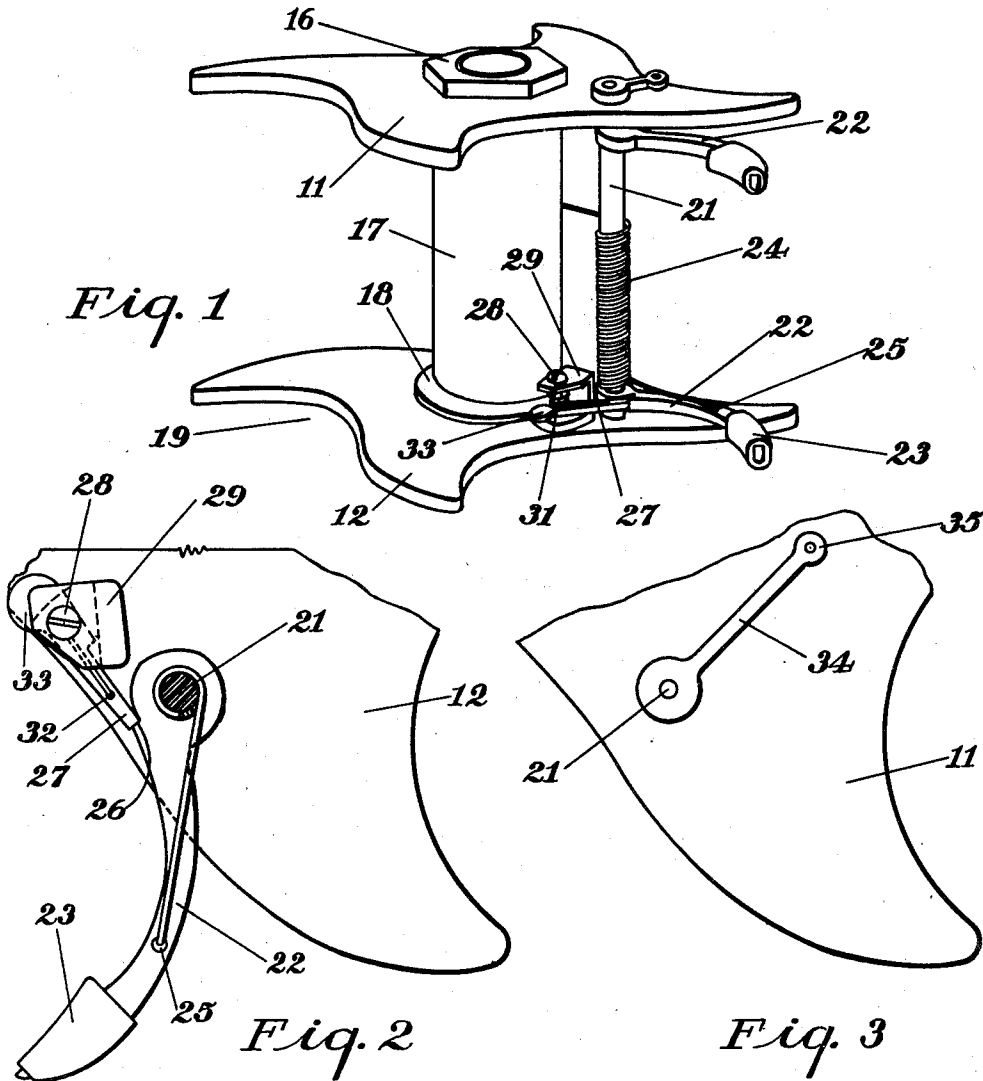


Fig. 2

Fig. 3

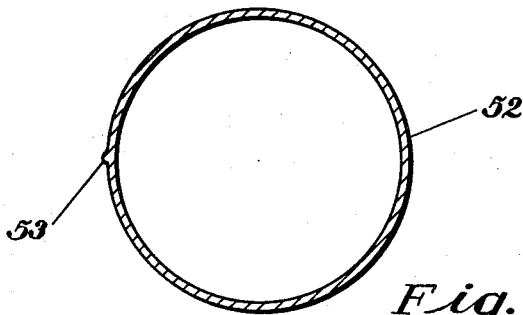


Fig. 4

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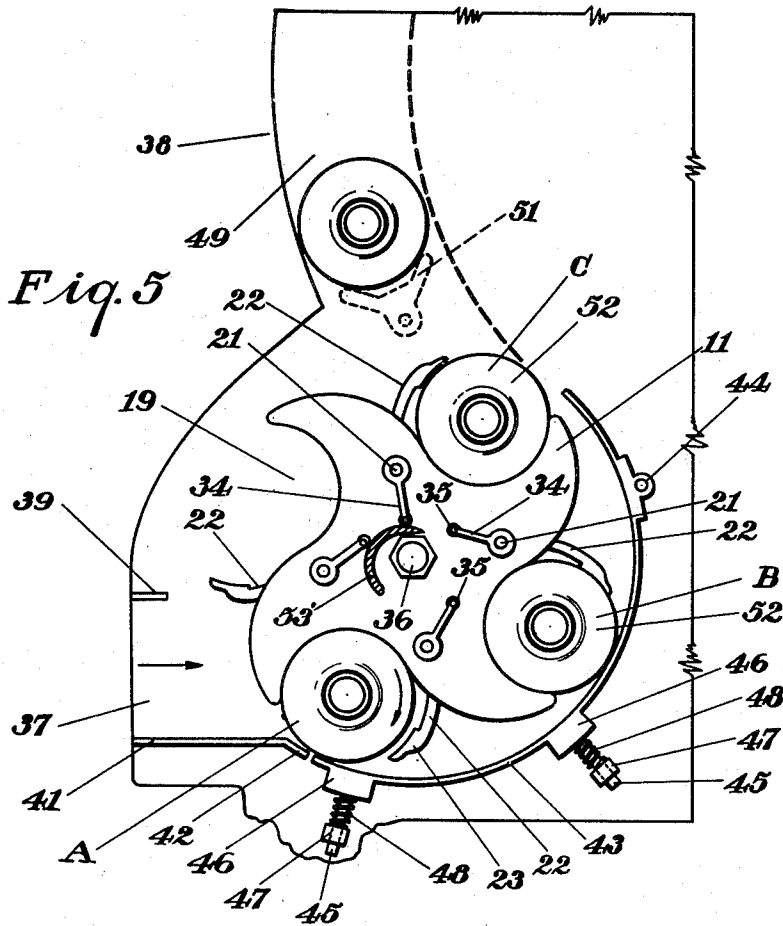
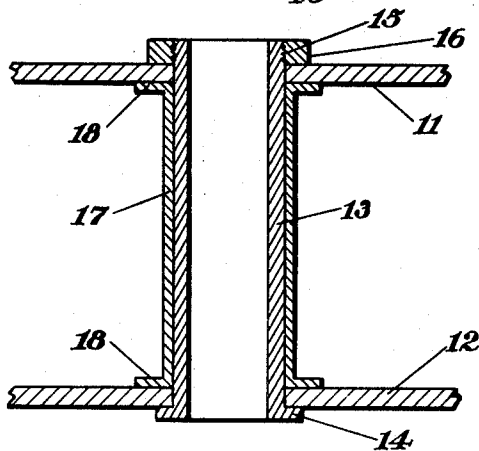
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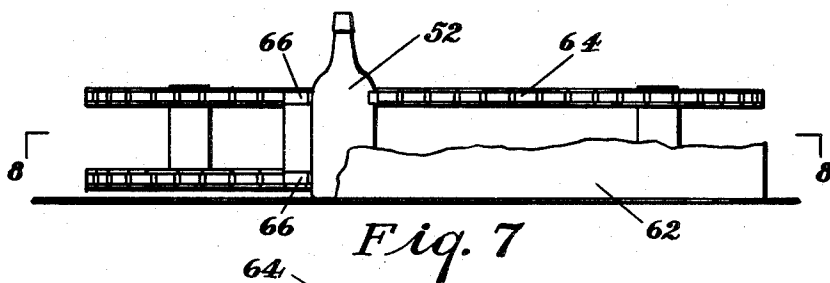
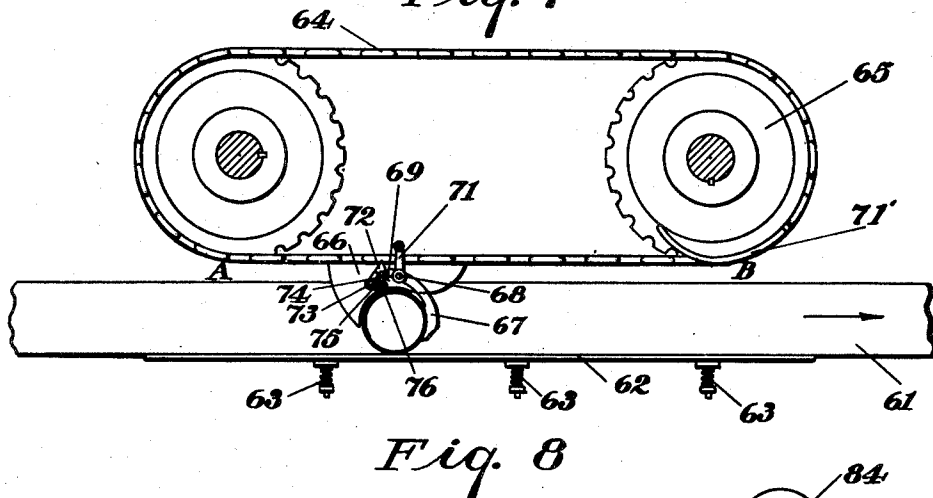
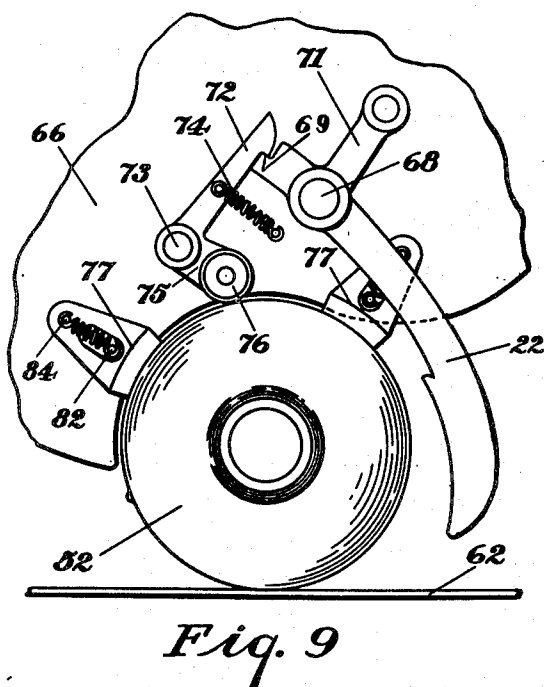
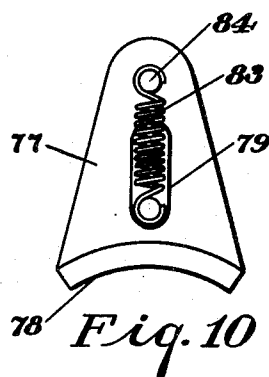
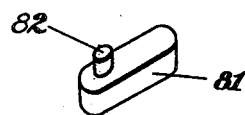


Fig. 11

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CONTAINER FEED MEANS

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15 Claims. (Cl. 198—33)

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This invention relates to feed means for label-applying machines, and more particularly to means for feeding a container to a label-applying machine in a position whereby the label or labels are applied to the container in predetermined locations on the periphery of the container.

So-called "spotting" devices have been proposed for the feed of containers in predetermined positions into labeling machines. Such devices, as typified by the disclosures in Fenner Patent 2,106,997 and Darling Patent 2,115,061, have been designed for containers having relatively large projections extending therefrom such as bails, or relatively deep indentations in the surfaces, such as those for receiving handles of openers. Such devices are of no value in the spotting of a container such as a round bottle which has a substantially smooth surface interrupted only by a relatively small so-called "spotting dot" located adjacent the bottom of the bottle on the outer surface thereof and ordinarily passing unnoticed. The magnitude of the problem of spotting such bottles, usually of the fifth or quart size, is increased when it is considered that the body label, the federal stamp, and usually a neck label or medallion must all be accurately positioned relative to one another.

In solving the aforesaid problem, it is an object of my invention to provide a novel container feed assembly wherein the containers received therein are rotated to the desired predetermined position and positively locked therein against further rotation until delivered to the labeling machine.

A further object of my invention is the provision of a novel container feed assembly wherein the containers are rotated and clamping means is provided to secure the containers against rotation upon their reaching a predetermined position, the clamping means being arranged to be actuated by a relatively small interruption or protuberance on the surface of the container, such as a "spotting dot."

A further object of my invention is the provision of a novel container feed assembly wherein the containers received therein are rotated to the desired predetermined position and positively locked therein against further rotation until delivered to the labeling machine, the locking means being of a snap-action type arranged to be moved into clamping position through actuation of a trigger by the rotating container at the desired position.

A further object of my invention is the provi-

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sion of novel spotting and clamping means of a snap-action type for a container, means being provided to release the container to a labeling machine and reset the spotting and clamping means for operation on another container.

Still another object of my invention is the provision of a novel container feed assembly especially adapted for use on a straight line conveyor, the spotting of the articles being accomplished as they are transported on the conveyor.

Another object of my invention is the provision of novel spotting and clamping means for a container, means being provided to effect rotation of the container until spotted, said means being arranged to become inoperative as regards rotation of the container as soon as the latter is spotted.

Other objects and advantages of my invention will appear from the following description and claims taken in connection with the attached drawings wherein:

Fig. 1 is a perspective of a preferred embodiment of the feed star of my invention, showing only one clamping assembly.

Fig. 2 is a plan of a portion of the bottom of the star, the clamp pivot being shown in section with the clamp locked in open position.

Fig. 3 is a plan of a portion of the top of the feed star showing the cocking arm.

Fig. 4 is a section taken through a container, such as a liquor bottle, showing the spotting dot.

Fig. 5 is a plan, partly diagrammatic, showing the feed star in operation, and its relation to the feed conveyor and the labeling machine.

Fig. 6 is an axial section of the feed star, the clamping assemblies being omitted, showing the construction by which the star elements can readily be changed to accommodate containers of different sizes.

Fig. 7 is a front elevation of an embodiment of my invention in a straight line spotter.

Fig. 8 is a section taken on the line 8—8 of Fig. 7.

Fig. 9 is a view similar to that of Fig. 2 showing a modification wherein the container is moved clear of the adjacent guide after being spotted.

Fig. 10 is a plan of one of the sliding shoes of Fig. 9.

Fig. 11 is a perspective of a preferred form of pin for guiding the shoe of Fig. 10.

Referring to the embodiments shown in the drawings which are to be considered as illustrative only and not limiting of the invention, the

feed star of Figs. 1 to 6, inclusive, includes a pair of substantial identical upper and lower spiders 11 and 12 (Fig. 6), mounted on a hollow shaft 13 having a shoulder 14 at the bottom and a threaded section 15 at the top to receive a lock nut 16. The two spiders are spaced by a collar 17, fitting about shaft 13 and having shoulders 18 at each end. In plan each spider appears as shown in Fig. 5, a series of peripheral recesses 19 being provided to receive the containers to be spotted. To enable containers of different sizes to be handled, the feed star in its entirety may be changed or lock nut 16 removed and the spider elements 11 and 12 changed.

A shaft 21, having two bottle gripping arms 22 keyed or otherwise secured thereto to rotate therewith, is mounted adjacent each recess in the spiders, the outer ends of the arms at 23 being preferably covered with a relatively soft material such as rubber. A helical spring 24 is wound about shaft 21, one extending end abutting collar 17 and the other secured in an aperture 25 in the lower arm to urge the arms toward their corresponding container recess. Lower arm 22 is formed with a small notch 26 arranged to receive one end of a latch 27 pivoted on a pin 28 mounted between the arms of a bracket 29 secured to the lower spider. A latch spring 31 of the coil type is mounted about pin 28, one extending end being in contact with bracket 29 and the other secured in an aperture 32 in latch 27, the latch spring being arranged to urge the latch in a counterclockwise direction as viewed in Fig. 2. The end of latch 27, opposite from that arranged to lock in notch 26, is formed with an enlarged protuberance 33, of a size to extend slightly beyond the edge of the container recess when the latch is in latching position as shown in Fig. 2.

The upper end of shaft 21 extending above spider 11, is reduced in diameter to receive a cocking arm or lever 34, keyed, pressed or otherwise fitted on the shaft to rotate therewith. The extending end 35 of the cocking lever is arranged to contact a cam to release the container and reset the gripping arms in a manner to be explained. If desired, end 35 can be formed with a small upstanding roller to reduce friction in contacting the cam.

Referring to Fig. 5, the spider is mounted for rotation on a shaft 36 forming part of the drive for a labeling machine, shaft 36 being arranged to be driven in a counterclockwise direction as viewed in Fig. 5. A conventional feed belt or like conveyor 37 is provided to feed containers to the feed star for spotting prior to their delivery to a labeling mechanism, generally indicated at 38. Conveyor 37 has a guide 39 at one side and a guide 41 at the other side. Guide 41 is preferably extended as an integral member in an arcuate path around the feed star, determining the outer limit of travel of the containers and positioned to effect rotation of the containers as they are moved by the feed star. However it may be terminated at 42, and a spring-pressed plate 43 substituted therefor. Plate 43 is pivoted at 44 and pressed inwardly against the containers by pins 45, fixed in lugs 46 on plate 43 and supported in apertures in lugs 47 on the base of the assembly, springs 48 being provided to react against lugs 46 and 47 to maintain plate 43 in frictional contact with the containers. If desired, plate 43 may be faced with rubber or equivalent material.

The labeling mechanism, of conventional type, includes a conveyor 49 arranged to take the spotted containers from the feed star and deliver

them in the correct position to be labelled, the correct spotting of the containers being maintained in any convenient manner such as by a Y-clamp 51 on the conveyor in combination with clamping means of the type shown in Fenner Patent 2,106,997 or Darling Patent 2,115,061. As the labeling mechanism forms no part of my invention, a detailed description thereof is considered unnecessary.

In operation, the containers to be labeled such as liquor bottles 52 are fed to the feed star on conveyor 37. In a cross-section taken at a level corresponding to the level of trigger element 33, the bottles appear as shown in Fig. 4, each bottle having a relatively small protuberance or spotting dot 53 on the outer periphery thereof. As the bottles are fed forward by conveyor 37, they are removed by the arms of the feed star and carried in a counterclockwise direction in recesses 19, their frictional engagement with plate 43 causing them to rotate in a clockwise direction. At position A in Fig. 5, arms 22 are in a latched position out of contact with the container, by reason of latch 27 being in engagement with notch 26. As bottle 52 continues to rotate, spotting dot 53 eventually contacts trigger element 33, rotating latch 27 against the action of spring 31 and releasing arms 22. The arms then snap into the position of position B, firmly locking the bottle in recess 19 against further rotation. The position of the bottle in this locked position is thus determined by the spotting dot.

As the bottle, now held against rotation, is continued in displacement by the feed star, it is delivered onto the conveyor 49 of the labeling mechanism as shown at position C. As control of the bottle is being taken over by conveyor 49, cocking lever 34 is engaged by a fixed cam 53' which functions to rotate lever 34 and shaft 21 in a counterclockwise direction to release the bottle from recess 19. Cam 53' continues its opening action until latch 27, actuated by spring 31, reengages notch 26 in the lower arm 22 and resets the arms for receiving another container.

Figs. 7 and 8 illustrate an embodiment of my spotting mechanism as applied to a straight line conveyor and wherein the movement of the container is not interrupted to any substantial extent. The assembly therein shown includes a conventional conveyor belt 61 for the support of the containers such as bottles 52, a spring-loaded tension rail 62, preferably rubber-faced, along one side of the conveyor to contact and effect rotation of the containers, spring-loading assemblies 63 for rail 62 (of the same general type as shown in Fig. 5), a pair of endless chains 64 on the opposite side of the conveyor, supported by driven sprockets 65 and mounting a number of bottle engaging elements 66, preferably arranged in paired relation on the upper and lower chains, only one being shown in the drawing.

It is to be understood that a number of such bottle engaging elements will be mounted on chains 64 in spaced relation to one another to engage the containers as fed at the left end of the conveyor.

Elements 66 are suitably secured to chains 64 as by extended lugs with pins passing therethrough and through the chains or elements 66 may be welded, bolted or otherwise secured to certain of the chain links, the manner of support in all cases being such that elements 66 extend outwardly from the chains in positions to engage the bottles on conveyor 61.

Each pair of elements 66 supports a gripping

arm 67 of the same type as gripping arm 22 of Figs. 1 to 6, the arm being similarly mounted on a pivot 68 with a coiled spring, not shown, but like spring 24 of Fig. 1, functioning to urge the arm in a clockwise direction. Each gripping arm 67 has a latch engaging notch 69 and a cocking arm 71. A latch member 72 is pivoted at 73 and arranged to be urged in a clockwise direction by a spring 74, secured at one end to the latch and to element 66 at its opposite end, to engage notch 69 of the gripping arm to lock the latter in non-gripping relation to the container. An arm 75 with a bead-contacting roller 76 is formed integral with latch 72 so that the latch will be actuated by the bead, spotting dot, or similar protuberance on the container to release the gripper and permit it to go to gripping position when the container is spotted. This arrangement is much the same as that shown in Figs. 1 to 6 and no further description thereof is considered necessary.

In operation, containers 52 to be spotted enter at the left end of the assembly, each container being engaged by an element 66, chain 64 traveling at about or at a slightly higher speed than conveyor 61, the gripping arms being latched in non-gripping position so that the containers may be rotated by tension rail 62. When the spotting dot or other protuberance on each container actuates latch 72, the gripping arm is released immediately and moved to gripping position wherein the container is held securely against further rotation. As the container reaches the right end of the assembly, the control thereof may be taken over by any well known means such as by a Y-clamp 51 (Fig. 5) in combination with well known gripping means already referred to, the gripper being released by the engagement of cocking lever 71 with a fixed cam 71'. Cam 71' is arranged so that the gripper opens far enough to release the container and is reset by engagement of latch 72 therewith.

In Figs. 9 to 11, I have shown a modification wherein means is provided to relieve the spotted container from contact with the surrounding or adjacent tension rail, thereby eliminating any possibility of it being disturbed in its spotted position by contact with the rail. The gripping arm and latch element are of the same type shown in Fig. 8. In addition, a plurality of shoes 77 having steel or plastic faces 78 of a contour to engage the sides of the container are mounted upon elements 66. Shoes 77 are formed with longitudinal slots 79 arranged to fit over elongate guides 81 secured to element 66, the guides being of less length than the slots so that the shoes are permitted a certain amount of reciprocal movement to and from the container 52, and at the same time are prevented from swinging sidewise in either direction. Guide 81 mounts a pin 82 which carries one end of a spring 83, the opposite end of the spring being secured to a pin 84 mounted atop a shoe.

When the container is initially received in an element 66 and has not yet been spotted so that it is desired that it be rotated by the aforesaid spring-loaded tension rail, gripping arm 22 is out of engagement with the container and shoes 77 function to urge the container against the face of the rail, thereby effecting its rotation by reason of the continued movement of the conveyor. As soon as the container is spotted, gripper arm 22 operates to lock the container in position in the recess in element 66. Since the spring operating gripping arm 22 is stronger than springs 83, shoes 77 are forced backward against the 75

action of springs 83, the container thus being moved by gripper arm 22 to a position where it is free of contact with the tension rail and not subject to any unspotting thereby.

It will be appreciated that before being spotted, shoes 77 maintain the container a slight distance out from the recess in element 66. Accordingly, it is necessary in this modification that the spotting rollers 76 extend farther out than the spotting rollers in Fig. 2, dependent on how far the container is held out of the recess by shoes 77.

The spotting arrangement shown herein has proven especially advantageous in the handling of containers in continuous machines, both of the rotary type and the straight line type. The spotting may be performed continuously, the containers being handled at a relatively low speed.

Having described my invention, I claim:

1. An assembly for use with a labeling machine for feeding containers having interrupted surfaces thereon to the label-applying mechanism in a predetermined label receiving position, comprising: a rotatable feed star having a series of recesses, each arranged to receive and move a container into the label applying mechanism as the star is rotated; means to effect rotation of each container while being moved by the feed star; means on the star adjacent each recess therein and movable from a position out of contact with the container to a position wherein the container is clamped thereby in the recess and held against rotation; means for yieldingly forcing the clamping means against the container; means for releasably holding the clamping means in the non-clamping position out of contact with the container against the action of the forcing means; and means responsive to contact with an interrupted portion of the container surface during its rotation to release the latter means to permit the clamping means to move to the clamping position to secure the container in the star recess in its predetermined position.

2. The assembly of claim 1 wherein means is provided to release the clamping means from the container as the container is delivered by the star to the labeling machine in its predetermined position.

3. The assembly of claim 1 wherein means is provided to reset the clamping means in its non-clamping position against the action of said forcing means as the container is delivered by the star to the labeling machine in its predetermined position.

4. An assembly for use with a labeling machine for feeding containers of the type having label spotting means thereon to the labeling mechanism in predetermined label-receiving positions, comprising: a member having a recess arranged to receive a container while moving toward the labeling mechanism; means to effect rotation of each container as moved by said member; a pivoted clamp on said member adjacent the recess to hold a container in said recess against rotation; a spring for yieldably forcing the clamp into clamping position; and a latch for releasably locking the clamp in non-clamping position against the action of the spring, the latch being arranged to be engaged and released by the label spotting means on the container as the container rotates in the recess.

5. The assembly of claim 4 wherein the clamp pivot is provided with an extending arm, and a cam is provided to contact said arm for rotating the clamp away from clamping position as the

container in its predetermined position is delivered to the labeling machine.

6. The assembly of claim 4 wherein an extending arm is fixed to the clamp pivot to rotate therewith, and a cam is provided to engage said arm for resetting the clamp against the action of the spring as the container is delivered by said member to the labeling mechanism in its predetermined position.

7. The assembly of claim 4 wherein the latch is provided with a spring arranged to return the latch to its latching position when the clamp is pivoted from clamping to non-clamping position.

8. An assembly for use with a labeling machine for feeding containers having relatively small spotting dots thereon to the labeling mechanism in predetermined label-receiving position, comprising: a member having at least one recess arranged to receive a container while moving toward the labeling mechanism; means to rotate the container as it is moved by said member; a pivoted clamp on said member adjacent the recess and arranged to hold the container in the recess against rotation; means for yieldingly forcing the clamp into clamping position; and a latch for releasably locking the clamp in non-clamping position against the action of said forcing means, said latch being provided with a trigger element arranged to be contacted and actuated by a spotting dot on the container as the latter rotates in its recess.

9. An assembly for use with a labeling machine and a conveyor for feeding containers having interrupted surfaces to the label-applying mechanism in a predetermined label receiving position, comprising: a member having a recess arranged to receive a container supported on said conveyor; means to support and move said member in a path adjacent that of said conveyor; means to effect rotation of the container in said recess as it is moved toward the label-applying mechanism; means adjacent said recess to clamp the container in the recess against rotation; means for yieldingly forcing the clamping means against the container; means for releasably holding the clamping means in the non-clamping position out of contact with the container against the action of the forcing means; and means responsive to contact with an interrupted portion of the container surface during its rotation to release the latter means to permit the clamping means to move to the clamping position and secure the container in said recess in its predetermined position.

10. The assembly of claim 9 wherein the means to support and move said member includes an endless conveyor having one run thereof adjacent the path of said first-mentioned conveyor.

11. The assembly of claim 9 wherein means is provided to maintain the container in frictional contact with said means to effect rotation thereof,

said means being arranged to become inoperative when the clamping means moves to clamping position.

12. An assembly for use with a labeling machine for feeding containers having label spotting means thereon to the labeling mechanism in predetermined label-receiving positions and wherein a friction member is positioned adjacent the path of the container comprising: a member having a recess arranged to receive and retain a container while moving toward the labeling mechanism; means on said member for yieldingly forcing the container into frictional contact with said friction member as the container moves toward the labeling mechanism; and means responsive to a predetermined position of the label-spotting means on the container for clamping the container in said recess against further rotation and rendering said forcing means inoperative.

13. The assembly of claim 12 wherein the forcing means includes a spring-loaded shoe on said member arranged to contact the container and urge it against said friction member.

14. The assembly of claim 12 wherein the forcing means includes a spring-loaded shoe on said member arranged to contact the container and urge it against said friction member, and said clamping means is arranged to push said container inwardly against the walls of the recess against the force of said shoe and out of contact with said friction member.

15. An apparatus for feeding containers in a predetermined position to a labeling machine comprising: a member movable in a predetermined path and adapted to receive a container; means for rotating said container in said member as the container is moved by the member; container clamping means carried by said member; a trigger mechanism carried by said member and releasable by a spotting device on said container for actuating said clamping mechanism to hold the container; and means operative in a predetermined position of said member to release said clamping means for delivering the container to a labeling machine.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,245,730	Johnson et al.	Nov. 6, 1917
1,300,406	Johnson et al.	Apr. 15, 1919
1,302,683	Levey	May 6, 1919
2,106,997	Fenner	Feb. 1, 1938
2,115,061	Darling	Apr. 26, 1938
2,222,503	Essen	Nov. 19, 1940
2,222,504	Essen	Nov. 19, 1940
2,293,553	Magnusson	Aug. 18, 1942