May 22, 1956 A. DONALD ET AL 2,746,226

CASING MACHINE

Filed April 25, 1950 2 Sheets-Sheet 1

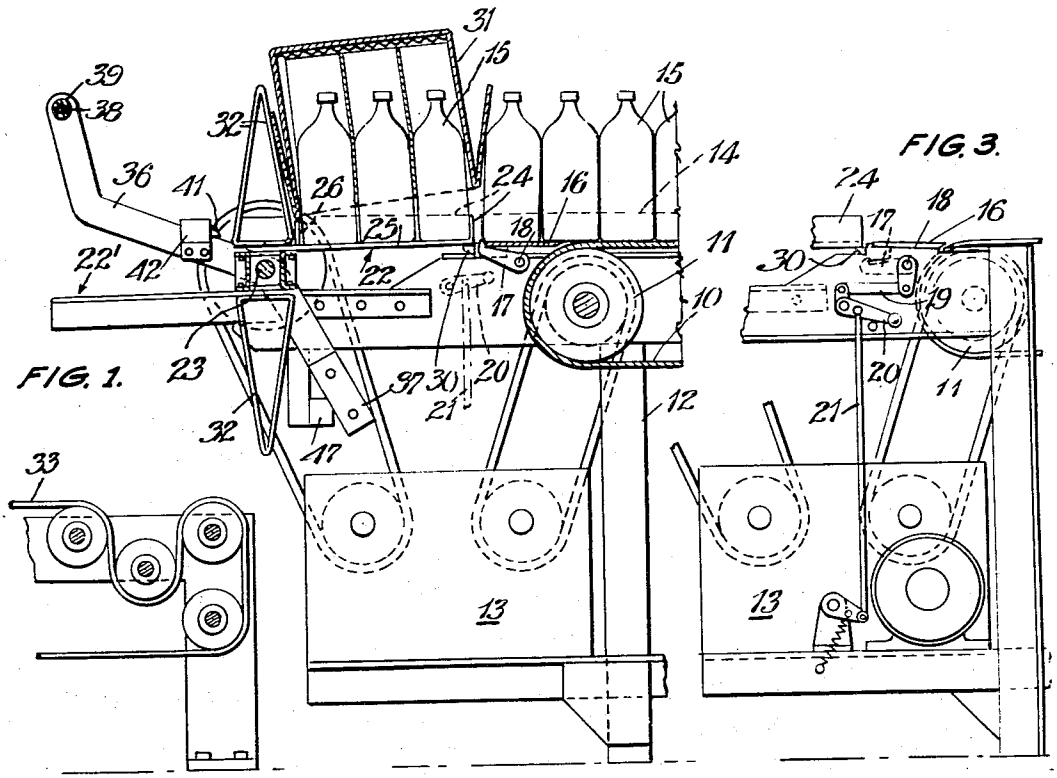
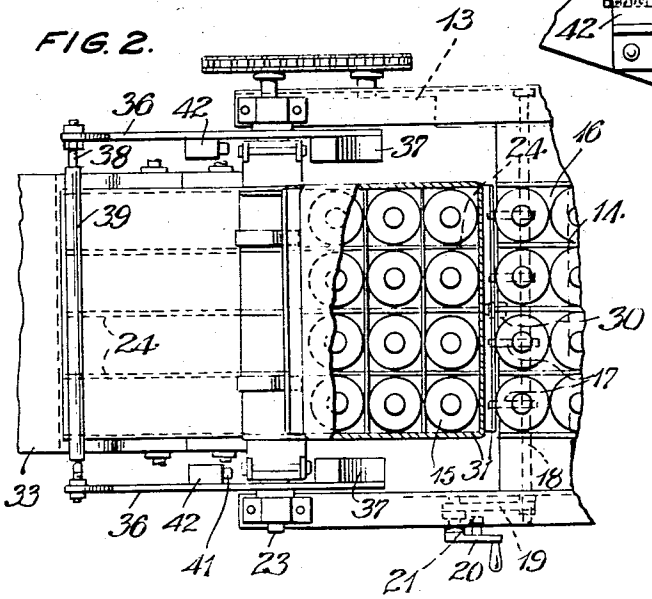


FIG. 1.

FIG. 3.

FIG. 2.



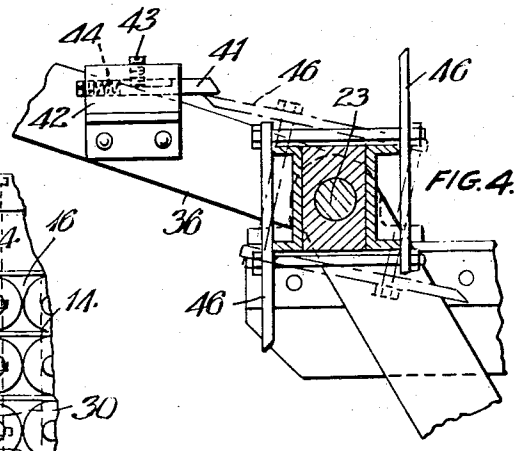


FIG. 4.

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May 22, 1956 A. DONALD ET AL 2,746,226

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Filed April 25, 1950 2 Sheets-Sheet 2

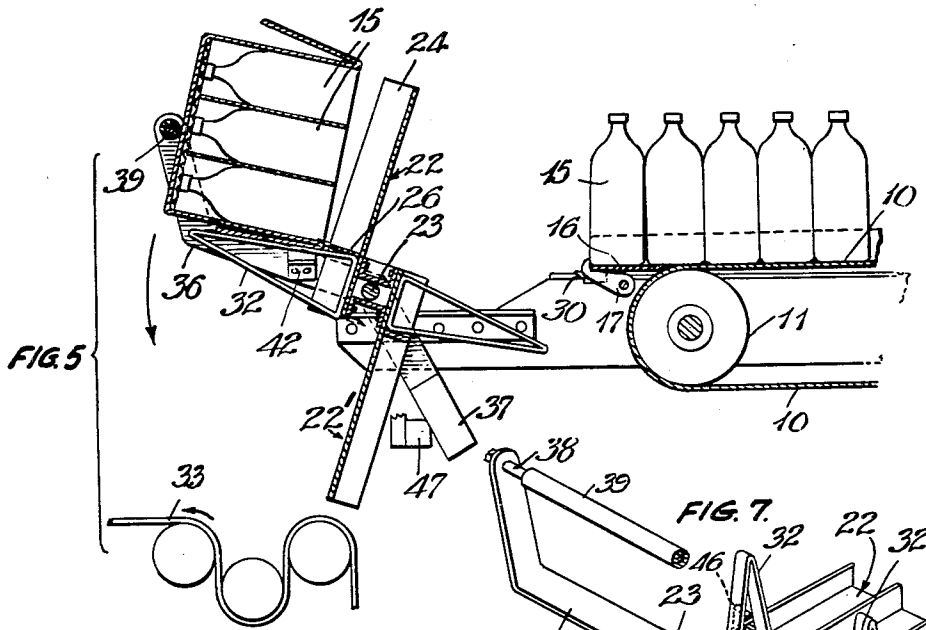


FIG. 5

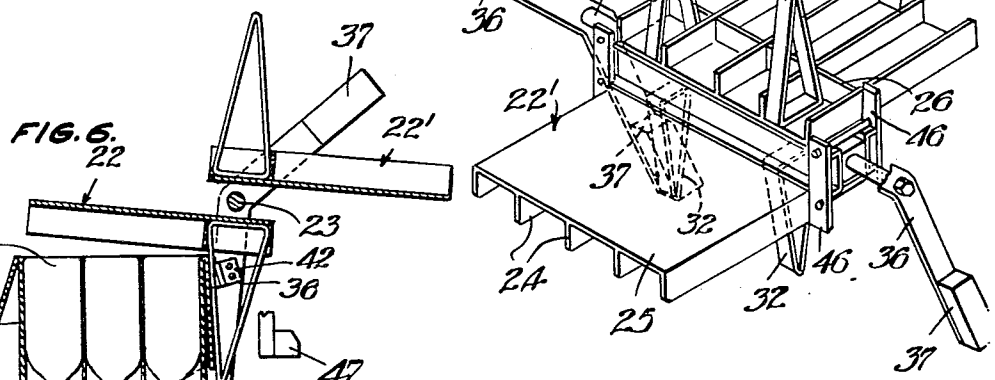


FIG. 7.

FIG. 6.

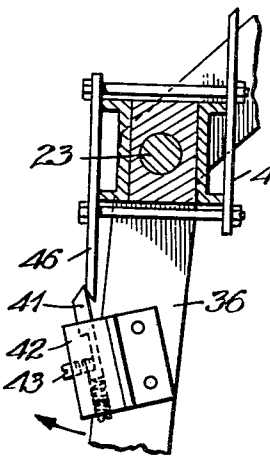


FIG. 8.

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CASING MACHINE

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Application April 25, 1950, Serial No. 157,924

8 Claims. (Cl. 53—391)

The present invention relates to container handling and casing apparatus of a character disclosed and claimed in the copending applications of Anthony R. Silva, Serial No. 37,291, filed July 8, 1948, now Patent No. 2,692,713, and Serial No. 101,575, filed June 27, 1949, now Patent No. 2,646,197. This invention relates more particularly to a casing machine of the above character which provides a gentle depositing action of a case of containers onto the discharge conveyor.

It is the general object of the invention to provide a casing machine of the above character in which the containers are placed in a suitable array for casing, the inverted case is placed over the containers, and the case with the containers therein are inverted during depositing on a discharge conveyor with means for effecting a gentle depositing action of the case of containers on the conveyor to avoid any breakage or label mutilation.

A further object is to provide a casing machine of the above character in which a plurality of container support tables or trays which are brought successively in position to receive a feed of containers which operate successively in conjunction with a single depositing control means.

The above and other objects of the invention will be apparent from the following description of a preferred embodiment thereof, as illustrated in the accompanying drawing, in which:

Figure 1 is an elevational view partially in section of the casing end of the apparatus.

Figure 2 is a plan view of the casing end of the apparatus.

Figure 3 is a fragmentary side elevational view illustrating certain of the controls for the bottle feed.

Figure 4 is an enlarged sectional view illustrating the pivotal mounting of the tables and the cooperation of the depositing control arm latch with the table latch elements.

Figure 5 is a fragmentary view similar to Figure 1 but showing the table in operation as it moves to deposit a case on the discharge conveyor.

Figure 6 is a fragmentary view similar to Figure 5 but showing the parts as positioned when a case has been delivered to the discharge conveyor.

Figure 7 is a perspective view of the rotary casing table with the associated case depositing elements.

Figure 8 is a fragmentary sectional view illustrating the relation of the latch on the control arm to the latch on the table in a position of the parts corresponding to that shown in Figure 6.

Referring to Figures 1 and 2, the machine includes a suitable belt conveyor **10** which is trained about a driving drum **11** suitably journalled upon the frame **12** and driven continuously from a conventional form of drive mechanism **13**, indicated schematically in the drawings. The frame supports a plurality of separating partitions **14** above the conveyor **10** so that four rows of containers, such as bottles **15**, are fed thereto through suitable dividing mechanism of the character disclosed in the said applications. Adjacent the end of the conveyor **10** there

is provided a transfer plate **16** on which the endmost bottles are received and the bottles are normally restrained at the end of each row by a plurality of stop fingers **17** as disclosed in said applications which stop fingers are pivoted at **18** (Figures 1 and 3) and operated through a linkage **19** from a manual control handle **20** having a control extension **21** extending to a cyclic clutch mechanism of the drive mechanism **13**. Preferably the conveyor **10** and the transfer plate **16** are placed at a slight inclination so that the leftmost edge of the transfer plate **16**, as viewed in Figure 1, for example, is higher than any portion of the conveyor **10** to produce a slight tilt of the bottles **15** thereon toward the right.

The casing mechanism per se comprises a rotary table casing unit including a pair of tables or trays **22** and **22'** of similar construction and spaced 180° apart with respect to their common support shaft **23**. As disclosed in said applications, each of the units of the casing units or trays, unit **22**, for example, comprises a plurality of vertically arranged strips **24** mounted on a base plate **25** and terminating at an inner stop plate **26** adjacent to the shaft **23**. The vertical plates **24** provide partitions which form four elongated pockets to receive four rows of three bottles each. The axis of the shaft **23** is offset with respect to the respective trays **22** and **22'** and is also positioned with respect to the upper surface of the conveyor **10** and the transfer plate **16** to place the adjacent tray **22** at a slight angle thereto so that the bottles **15** on the tray have a slight tilt to the left as viewed in Figure 1. In this position of the parts, the weight of the tray unit presented to the conveyor **10** is supported by a spring-urged latch **30**.

From the above description, it will be seen that twelve cans or bottles can be fed onto the cooperating support tray upon movement of the fingers **17** to inactive position so that the drive of the conveyor through the bottles **15** will force these bottles onto the aligned tray **22**, for example, and up against the stop **26** thereof which, if desired, may be of resilient material.

The bottles on the tray **22** are then in the proper array for depositing of a case **31** thereover, as seen in Figure 1, for example. It will be noted that the relative tilted positioning of the bottles **15** on the transfer plate **16** and the tray **22** provides a gap for insertion of the case. Each tray has associated therewith a case support means in the form of a pair of inclined brackets **32** extending upwardly from adjacent the stop **26** but spaced therefrom to provide clearance for the adjacent wall and flap of the case **31**. Subsequently, as the tray **22** is revolved counterclockwise from the position shown in Figure 1 the case **31** with the bottles therein will rest against the support brackets or case support **32** as seen, for example, in Figure 5.

In order to provide a gentle depositing of the case upon an adjacent discharge conveyor, as shown, for example, at **33**, a movable container support or depositing control means is provided for successive operation with the trays **22** and **22'** as they are active, with means provided for in effect locking the movable container support to the tray to move downward therewith as well as supporting the case so that it is generally deposited on the discharge conveyor **33**. For this purpose, a pair of arms **36** (Figures 1 and 2) are pivoted freely on the shaft **23** and are provided with counterweights **37** at their lowermost ends so that the arms **36** are normally balanced in the position of the parts shown in Figure 1. The upper ends of the arms **36** are connected by a transverse rod **38** on which a tubular case-engaging sleeve **39** is mounted. As seen in Figure 5, the arms **36** and the sleeve **39** are positioned for cooperation with a case after the table has turned approximately 90° from its home or bottle receiving position and a drive connection is provided be-

tween the container support arms 36 and the tray supporting shaft 23 so that the arm 36, upon which the weight of the case is supported, can not travel ahead of the tray in moving downwardly to deposit the case 31 on the conveyor 33. For this purpose, each arm 36 carries a spring-urged latch 41 (Figure 4) in a latch housing 42. Each latch 41 (Figure 4) is slotted to receive a stop screw 43 and is under the urgency of a spring 44.

As seen in Figure 4, the upper face of the latch 41, as positioned in its normal position, is beveled for cooperation with the beveled face of a fixed latch element 46 carried by the tray support. When the tray with the case thereon has travelled to the position shown in Figure 5, i. e., to the dotted line position of the latch 46 in Figure 4, the respective latches 46 have moved beneath the respective latches 41 at each side of the container support so that the arms 36 and their connecting shaft 38 cannot move downwardly faster than the rate of travel of the tray 22 under control of its power drive. The continued counter-clockwise movement of the tray 22 moves the parts to position shown in Figure 6 when the sleeve 39 is received in a pocket 33*a* of the belt mechanism and when the case 31 is supported on the belt 33 for discharge thereby. In this condition of the parts, after the case 31 has been removed from above the sleeve 39, the arms 36 are free to return under influence of their weighted ends to the position shown in Figure 1 where the weighted ends engage suitable rubber stops 47.

In operation of the machine with the tray 22 positioned as shown in Figure 1, the latch fingers 17 are in inactive position, as shown in Figure 3, and the cyclic clutch is also inactive so that the containers 15 are fed onto the tray 22 and a case 31 is placed thereover. At this time lever 20 is operated to trip the clutch drive and the fingers 17 are returned to position shown in Figure 1 to restrain further feeding of bottles. A counterclockwise movement of the loaded tray 22 with the containers thereon and the case 31 placed over the containers is begun. As the rotary movement of the tray 22 progresses, the case tilts until it rests on the supports 32, and then until its bottom wall engages the other container support in the form of the sleeve 39 and the arms 36. With this condition of the parts, the latch fingers 46 have moved ahead of the latch fingers 41, as shown in dotted lines in Figure 4, and the rotary movement of the tray assumes control of the downward movement of the arms 36. Subsequently, the parts move together until the case is deposited on the discharge conveyor 33, as shown in Figure 6, when the rotary movement of the trays 22 and 22′ continues for the remainder of the half cycle to place the tray 22′ in operative relation to the conveyor 10 and the case 31 being moved by the discharge conveyor 33 moves from above the sleeve 39 so that the arms 36 can return to the position shown in Figure 1, thus completing a cycle of operation.

While we have shown and described certain preferred embodiments of the invention, it will be understood that the invention is capable of variation and modification from the form shown so that its scope should be limited only by the scope of the claims appended hereto.

We claim:

1. In a casing machine having means for supplying parallel rows of containers in upright position, a rotary table having a plurality of trays for successive alignment with said container supplying means to receive an array of containers in upright position therefrom, a case support extending substantially at right angles to each of said trays, other case supporting means pivoted coaxially with said trays for successive cooperation therewith in handling a case of containers during movement of said table, and means for establishing a one-way drive connection between said other case supporting means and said table to prevent overtravel of said other case supporting means by a case of bottles with respect to said rotary table.

2. In a casing machine having means for supplying parallel rows of containers in upright position, a rotary table for alignment with said container supplying means to receive an array of containers in upright position therefrom, a case support extending substantially at right angles to said table, other case supporting means pivoted coaxially with said table for cooperation therewith in handling a case of containers during movement of said table, and means for establishing a one-way drive connection between said other case supporting means and said table to prevent overtravel of said other case supporting means by a case of bottles with respect to said rotary table.

3. In a casing machine having means for supplying parallel rows of containers in upright position, a rotary table having a plurality of trays for successive alignment with said container supplying means to receive an array of containers in upright position therefrom, a case support extending substantially at right angles to each of said trays, other case supporting means pivoted coaxially with said trays for successive cooperation therewith in handling a case of containers during movement of said table, said other case supporting means having a part positioned in the path of movement of a case on a tray, and means for establishing a one-way drive connection between said other case supporting means and said table before engagement of a case on said table with said other supporting means to prevent overtravel of said other supporting means by a case of bottles with respect to said rotary table.

4. In a casing machine having means for supplying parallel rows of containers in upright position, a rotary table having a plurality of trays for successive alignment with said container supplying means to receive an array of containers in upright position therefrom, a case support extending substantially at right angles to each of said trays, other case supporting means pivoted coaxially with said trays for successive cooperation therewith in handling a case of containers during movement of said table, said other case supporting means having a part positioned in the path of movement of a case on a tray, and means for establishing a one-way drive connection between said other case supporting means and said table before engagement of a case on said table with said other supporting means to prevent overtravel of said other supporting means by a case of bottles with respect to said rotary table, said drive connection establishing means comprising a pair of cooperating latch elements carried respectively by said table and said other supporting means.

5. In a casing machine having means for supplying parallel rows of upright containers, a rotary table having a plurality of trays for successive alignment in horizontal position with said container supplying means, each tray when disposed in said horizontal position being adapted to receive a rectangular array of containers in upright position from said supplying means, the axis of rotation of said rotary table being disposed substantially in the plane of a tray in said horizontal position, a case supporting surface on said table for each of said trays and extending substantially at right angles thereto, said case supporting surface being disposed substantially vertically when the associated tray is in said horizontal position, means for operating said rotary table to lift a tray with the rectangular array of bottles and the case thereon away from said horizontal position, thereby separating said rectangular array of containers from said parallel rows of containers, and other case supporting means pivoted coaxially with said trays and mounted for oscillatory movement for successive cooperation therewith and positioned to engage the bottom of the case inserted over said rectangular array of bottles to control depositing of the case of bottles in inverted position after movement of said rotary table to invert the case of bottles.

6. In a casing machine as recited in claim 5 in which said other supporting means has a rest position along the rotary path of travel of a case on a tray.

7. In a casing machine as recited in claim 5 in which the container supplying means and a tray in said horizontal position are relatively tilted to provide divergent surfaces as viewed from the top thereof whereby an opening is provided between said rectangular array of containers on said tray and the adjacent containers on said supplying means, said opening providing for insertion of an outer wall portion of a case in said opening.

8. In a casing machine having means for supplying parallel rows of containers in upright position, a rotary casing structure having a plurality of container lifting elements for successive alignment with said container supplying means to lift a rectangular array of containers with a case inserted thereover, a case support pivoted coaxially with said rotary structure for movement between an upper rest position in the path of a case of containers being moved by said lifting means and a lower unbalanced case delivering position, the weight distribution of said case support providing for the gravity return thereof to said rest position.

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