

Sept. 12, 1961

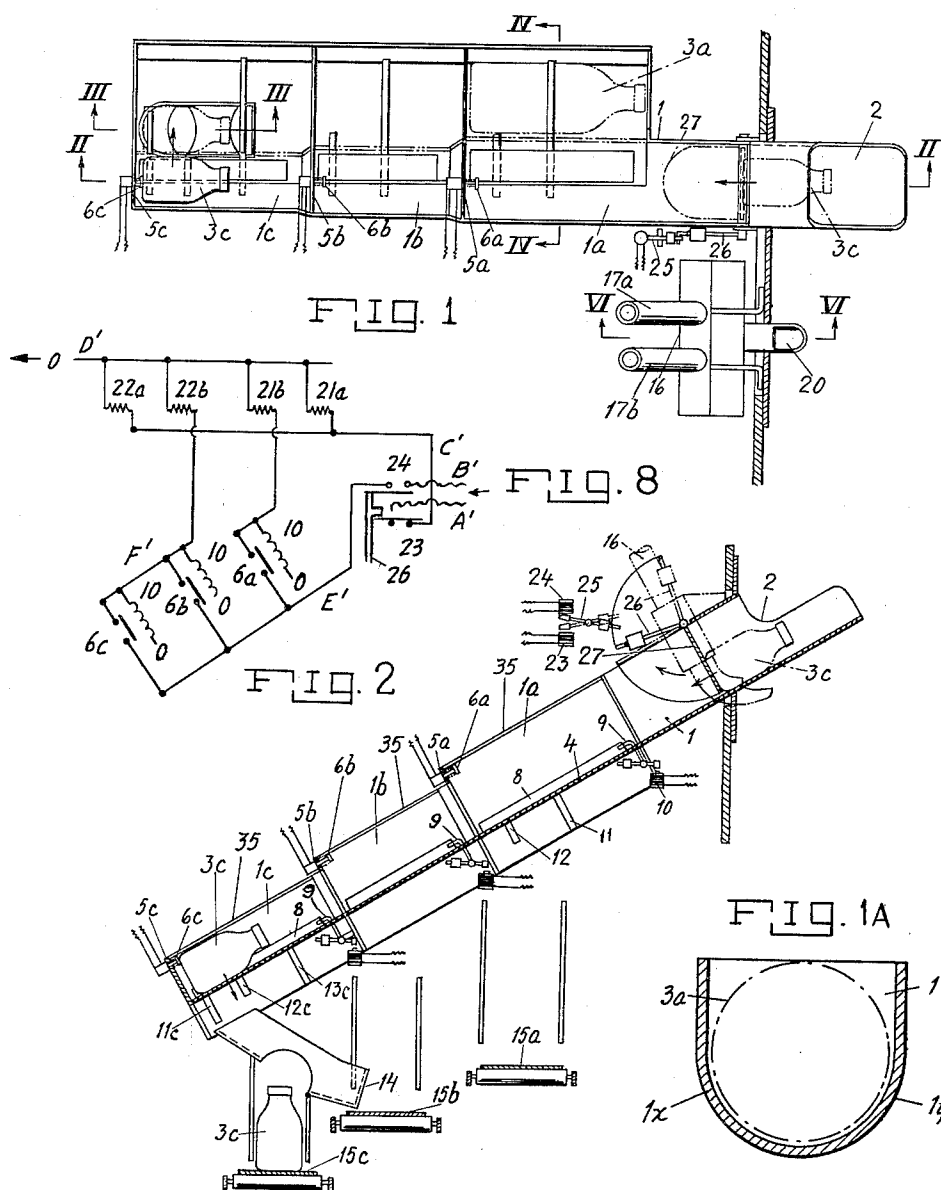
A. G. O. GLEMBRING

2.999.576

16 1957 IMPROVEMENTS IN APPARATUS FOR RECEIVING, ASSORTING AND
STORING OF EMPTY MILK BOTTLES AND THE LIKE

Filed Jan. 16, 1957

2 Sheets-Sheet 1



INVENTOR.

INVENTOR.
A. G. O. Glembring
BY
Glaswell Downing Perbold,
ATTYS.

ATTYS

Sept. 12, 1961

A. G. O. GLEMBRING
IMPROVEMENTS IN APPARATUS FOR RECEIVING, ASSORTING AND
STORING OF EMPTY MILK BOTTLES AND THE LIKE

2,999,576

Filed Jan. 16, 1957

2 Sheets-Sheet 2

FIG. 6

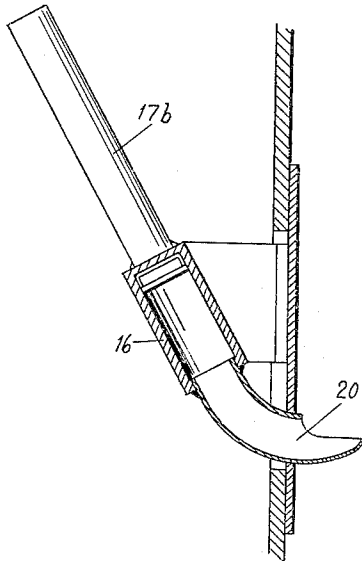


FIG. 7

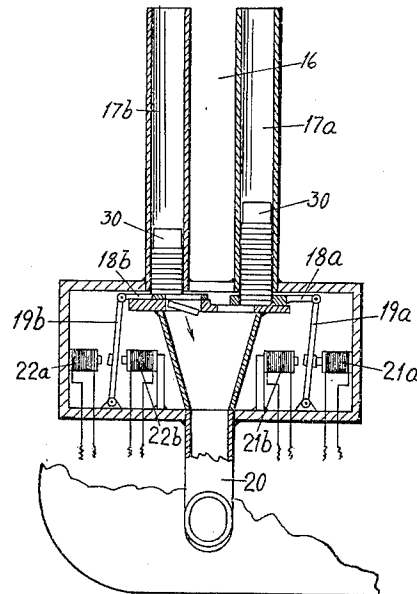


FIG. 3

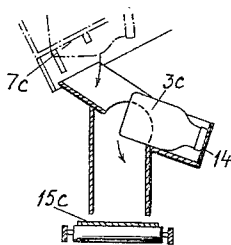


FIG. 4

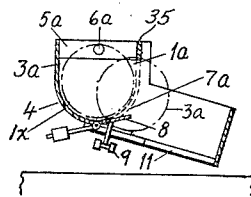
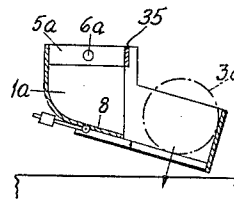


FIG. 5



INVENTOR.
A. G. O. Glembring
BY
Glasco & Downing Peabody
ATTYS.

1

2,999,576

IMPROVEMENTS IN APPARATUS FOR RECEIVING, ASSORTING AND STORING OF EMPTY MILK BOTTLES AND THE LIKE

Allan Gustaf Otto Glembring, 19-B Norra Gubberogatan, Goteborg, Sweden

Filed Jan. 16, 1957, Ser. No. 634,516

Claims priority, application Sweden Jan. 20, 1956

6 Claims. (Cl. 194—4)

The present invention relates to an improved apparatus for receiving, assorting and storing of returned empty bottles for milk, refreshing drinks and the like in shops and stores in order to free the employees from this work and improve the selling service.

One object of the invention is to provide a fully automatic-working bottle-receiving apparatus effecting a matching and separation of bottles of different sizes.

Another object of the invention is to provide a fully automatic-working bottle-receiving apparatus assorting and distributing bottles of different sizes to different storing places.

A further object of the invention is to provide a fully automatic-working bottle-receiving apparatus comprising a receipt-delivering device.

With these and other objects in view the invention essentially consists in an apparatus for receiving, assorting and storing of returned empty bottles, comprising a guiding path for the movement of the bottles from an intake end of the guiding path to alternative stop places for bottles of different diameters in compartments arranged successively in line after each other along the path, each compartment except the last one having an opening in the rear end for free passage of bottles with smaller diameter than the certain bottle which is intended to be retained in the compartment, each compartment containing a stopper for the certain bottle, an outlet opening in the path, a blocking shutter in the opening, a catch for the shutter, releasing means for the shutter permitting in dependence of the stop position of the certain bottle a slipping off of the bottle through the outlet opening on its way to a storing place.

In the accompanying drawings:

FIGURE 1 is a plan view of the bottle-receiving apparatus,

FIGURE 1A is a section of the trough at intake 2.

FIGURE 2 a side view in section along the section line II—II in FIGURE 1.

FIGURE 3 is a section of a detail along the section line III—III in FIGURE 1, and

FIGURES 4 and 5 sections of details along the section line IV—IV in FIGURE 1 with the bottle in different positions.

FIGURE 6 is a side view partly in section along the section line VI—VI in FIGURE 1 of a receipt delivering device belonging to the apparatus, and

FIGURE 7 a front view thereof partly in section.

FIGURE 8 is a diagram of an acceptable conventional circuit for the apparatus.

In the embodiment shown in the drawings the bottle-receiving apparatus comprises a housing provided with a guide path 1 in the shape, for instance, of a channel or trough with an intake end 2 for bottles 3a, 3c of different diameters and usually also of different length, the bottles being inserted in lying position through the intake with their bottom preferably foremost. The construction of the channel is comparatively simple and easy to understand. At the intake end 2 the channel 1 has the shape of FIG. 1A with solid side walls 1x, 1y. In the chambers 1a—1c the side wall 1y is broken away to permit the bottle to roll out laterally. Of the wall 1y there is left only a small portion 35 for stiffening purposes, and this

2

"band"-portion must be narrow as seen in FIG. 4, so that there is no hindrance for the bottle to roll out. To indicate that here is an outlet for the bottles this portion in FIG. 1 of the drawing is indicated with dashed and dotted lines.

The channel is illustrated as containing three receiving compartments 1a, 1b, 1c—although any number may be used—in line with each other for receiving empty bottles, for instance milk- and cream-bottles, of different diameters with the largest bottle destined for the first compartment 1a next to the intake and the smallest bottle for the compartment 1c most remote from said intake. The channel has such an inclination downwards from the intake that the bottles will, because of their weight, slide down along the floor or bottom 4 of the channel. The two compartments 1a, 1b are at their rear ends provided with openings limited by upper cross members or beams 5a, 5b disposed at a predetermined height above the bottom of the channel that the particular size bottle destined for one of these compartments cannot pass the cross member or beam, which however will permit bottles of smaller diameters to slide on to their afterlying intended compartments. If 1c designates the last compartment in the row an end member 5c defining the bottom of the apparatus is substituted for the cross beam. At each cross beam as well as at the end member 5c there is provided for the bottle a stop member in the shape, for instance, of a push button 6a, 6b, 6c serving at the same time as a switch for an electric circuit, not shown, to be actuated by the bottom of the corresponding bottle when it arrives at the respective stop position. In each compartment, the walls of which are supported by an iron band 35, there is an outlet opening for the bottle in the bottom and side wall of the channel or trough 1 and designated 7a for the compartment 1a, as well as 7c for the last compartment 1c, extending towards the center line of the channel bottom, where a pivotable shutter 8 for the opening is arranged and is balanced by a weight. This shutter is in its closing position locked by a catch 9 to be actuated by an electromagnet 10 in circuit with the corresponding push button switch 6a. When for instance the switch 6a is closed by an arriving bottle 3a the corresponding magnet 10 will withdraw the catch 9, and the bottle will roll out laterally on laterally directed guide rails 11, 12 and drop down upon a transport conveyor or band 15a or any other suitable remover. Such conveyors 15b and 15c are also provided for the remaining compartments. For the compartments 1a and 1b the guide rail 12 near the rear end of the compartment is shorter than the other rail 11, on account of which the bottle, upon arriving at the end of the shorter rail 12, will tip to an upright position and remain in such position on the conveyor. For the smallest bottle 3c, for instance a cream bottle, disposed in the last compartment 1c the rail 11c, which is longer than the rail 12c, is lying next to the rear end of the apparatus and the bottle will tip to its inverted position. The bottle slides in this position along a slide or channel into a stop corner 14, where the bottle will tip backwards over an edge of an opening and drop in its upright position upon the conveyor 15c. The reason for this arrangement is that the diameter of the cream bottles is usually substantially similar to the diameter of longer bottles used for refreshing drinks, so that the last compartment is able to be used also for such bottles. For these bottles there is a further and still longer rail 13c which is positioned furthest from the rear end of the compartment and the longer bottle will roll out on the rails 11c, 13c and tip directly to upright state upon the conveyor, the underlying channel for the shorter bottle being temporarily removed.

The apparatus is further provided with a device 16 for delivering receipt disks or tickets. In the embodiment

shown in FIGURES 6 and 7 this device is provided with two stack of disks 17a, 17b, the first one for the simultaneous delivering of two disks corresponding to the value of the greatest bottle, and the other stack for the delivering of single disks for smaller bottles. Beneath each stack there is a catch slide 18a, 18b for corresponding number of disks, each slide being connected to a swingable slide-actuating arm 19a, 19b to push the slide to a disk-catching position and then back to a disk-delivering position over a disk-transporting tube 20, from which the customer can pick up the disk or disks. The arms are lying between electromagnets, the arm 19a between the magnets 21a, 21b, and the arm 19b between the magnets 22a, 22b whereby the magnets 21a, 22a cause the arm movement for disk catching, and the magnets 21b, 22b the arm movement for disk delivering. The magnets 21a, 22a for the disk-catching movement are included in the electric circuit of a switch 23, the closing of which by a swingable contact arm 25 is dependent on the opening movement of a movable member or swingable flap 27 in the intake end opening of the channel 1. Said flap is swung to open position by the bottle as this is inserted into the channel, and an arm 26 attached to the flap knocks against said contact arm 25 and thereby closes the circuit of the switch 23 with the result that both the catch slides 18a, 18b are drawn into position beneath the disk stacks, the one slide-catching two disks and the other slide one disk.

The circuitry for the apparatus is seen in FIGURE 8 and is explained as follows:

When a bottle is inserted the flap 27 at the entrance is swung open and the connected arm 26 closes the switch 23. The current from the line A passes through the line C and through the magnet coils 21a, 22a to the O-line D. The magnets draw the slides 18a, 18b to the stacks 17a, 17b and the slide 18a will be loaded with two disks and the slide 18b with one disk.

When the flap 27 is swung back to closed position and the bottle has passed the entrance the flap arm 26 opens the switch 23 and closes the switch 24. The current from the line B passes through the line E.

Provided that a middle-size bottle has passed and stopped at 6b, this switch is closed and the current passes this switch to line F and from this line to the magnet 22b, that drives the slide 18b with the sole disk to the outlet opening permitting the disk to fall out. At the same time, the corresponding lock for the bottom shutter in the corresponding compartment for the bottle is released by energizing the corresponding magnet 10, through which the current passes to the O-line. Also the current through the magnet coil 22 passes to the O-line or to earth.

The contact arm 25 will also serve as a circuit closer for a switch 24 at the returning movement of the flap, the arm 26 of which will again knock the contact arm 25 and switch it over to said switch 24. The electric circuit of this switch includes the two magnets 21b and 22b for the back pushing of the slides to disk delivery positions. However, as the disk or disks from one stack only are to be let free the magnets last mentioned are placed in dependence on the compartment switches 6a, 6b, 6c in such a way that the switch 6a actuated by the greatest bottle is in circuit connection with the magnet 21b for delivery of two disks, and the two other compartment switches 6b, 6c actuated by the smaller bottles in circuit connection with the magnet 22b for delivery of one disk only. Thus the two disks for the greatest bottle are delivered if both the compartment switch 6a and the switch 24 are simultaneously in closing position, and one disk will be delivered for the smaller bottles if any of the compartment switches 6b, 6c and the switch 24 are simultaneously in closing position. A result of this is that no disks are delivered if the flap is opened and closed by a bottle which is then redrawn by the customer.

By the apparatus and device described above empty

bottle are received, assorted and delivered in accordance with their respective size to different storing places and the customer receives a receipt at the same time. Thus the customer always has proof for each empty bottle he has returned and can use this upon buying a new full bottle.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitations, the scope of the invention being defined in the claims.

I claim:

1. An apparatus for receiving, assorting and storing different size bottles and the like, comprising a housing including an intake end and a lower end, cross beams disposed in said housing defining a plurality of tandemly arranged compartments, a stop member for said bottles carried by each of said cross beams and said lower end, said housing being provided with a channel defining a guide path for movement of said bottles from said intake end to said lower end, each of said cross beams being spaced from the bottom of said channel a predetermined distance to provide respective openings of different sizes permitting further movement of said bottles towards said lower end whose diameters are smaller than said opening, so that only bottles having a diameter greater than its associated compartment opening are collected in said compartment, each of said compartments being further provided with an outlet opening, a blocking shutter disposed adjacent said opening, a catch for said shutter, releasing means for said catch actuated by its associated stop member permitting removal of said bottle through said outlet opening to a storing place.

2. An apparatus for receiving, assorting and storing different size bottles and the like, comprising a housing including an intake end and a lower end, cross beams disposed in said housing defining a plurality of tandemly arranged compartments, a stop member for said bottles carried by each of said cross beams and said lower end, said housing being provided with a downwardly inclined channel defining a guide path for movement of said bottles from said intake end to said lower end, each of said cross beams being spaced from the bottom of said channel a predetermined distance to provide respective openings of different sizes permitting further movement of said bottles towards said lower end whose diameters are smaller than said opening, so that only bottles having a diameter greater than its associated compartment opening are collected in said compartment, each of said compartments being further provided with an outlet opening, a blocking shutter disposed adjacent said opening, a catch for said shutter, releasing means for said catch actuated by its associated stop member permitting removal of said bottle through said outlet opening to a storing place.

3. An apparatus according to claim 2, including means associated with said housing and responsive to the movements of said bottles down said inclined channel for delivering receipts to a customer for bottles deposited in said apparatus.

4. An apparatus for receiving, assorting and storing different size bottles and the like, comprising a housing including an intake end and a lower end, cross beams disposed in said housing defining a plurality of tandemly arranged compartments, a stop member for said bottles associated with each of said compartments carried by each of said cross beams and said lower end, said housing being provided with a downwardly inclined channel defining a guide path for movement of said bottles from said intake end to said lower end, each of said cross beams being spaced from the bottom of said channel a predetermined distance to provide respective openings of different sizes permitting further movement of said bottles towards said lower end whose diameters are smaller than said opening, so that only bottles having a diameter greater

5

than its associated compartment opening are collected in said compartment, each of said compartments being further provided with an outlet opening, a blocking shutter disposed adjacent said opening, a catch for said shutter, releasing means for said catch actuated by its associated stop member permitting removal of said bottle through said outlet opening, a pair of rails disposed adjacent each of said outlet openings for receiving said bottle from said outlet opening, said pair of rails being of different lengths and arranged so that said bottle will tip into an upright position for subsequent removal by a conveyor to a suitable storing place.

5. An apparatus according to claim 4, including a third rail disposed between said pair of rails and shorter than the latter pair for receiving bottles different in length from those normally received in its associated compartment, said third rail tipping bottles received thereon into their inverted position, a slide member adjacent said rails for receiving said inverted bottles and provided with an aperture through which said bottles fall into an upright position for subsequent removal to a storing place.

6. An apparatus for receiving, assorting and storing different size bottles and the like, comprising a housing including an intake end and a lower end, cross beams disposed in said housing defining a plurality of tandemly arranged compartments, a stop member for said bottles carried by each of said cross beams and said lower end, said housing being provided with a channel defining a guide path for movement of said bottles from said in-

6

take end to said lower end, each of said cross beams being spaced from the bottom of said channel a predetermined distance to provide respective openings of different sizes permitting further movement of said bottles towards said lower end whose diameters are smaller than said opening, so that only bottles having a diameter greater than its associated compartment opening are collected in said compartment, each of said compartments being further provided with an outlet opening, a blocking shutter disposed adjacent said opening, a catch for said shutter, releasing means for said catch actuated by its associated stop member permitting removal of said bottle through said outlet opening to a storing place, a movable member located at said intake end and acted upon by said bottles, means responsive to said movable member and the abutment of said bottles with its respective stop member for releasing a predetermined number of deposit receipts to a customer corresponding to the value of the bottle returned.

References Cited in the file of this patent

UNITED STATES PATENTS

381,241	Hiatt	Apr. 17, 1888
1,987,835	Love	Jan. 15, 1935
2,463,578	Tyler	Mar. 8, 1949
2,570,395	Siegal	Oct. 9, 1951

FOREIGN PATENTS

1,427	Great Britain	1910
-------	---------------	------