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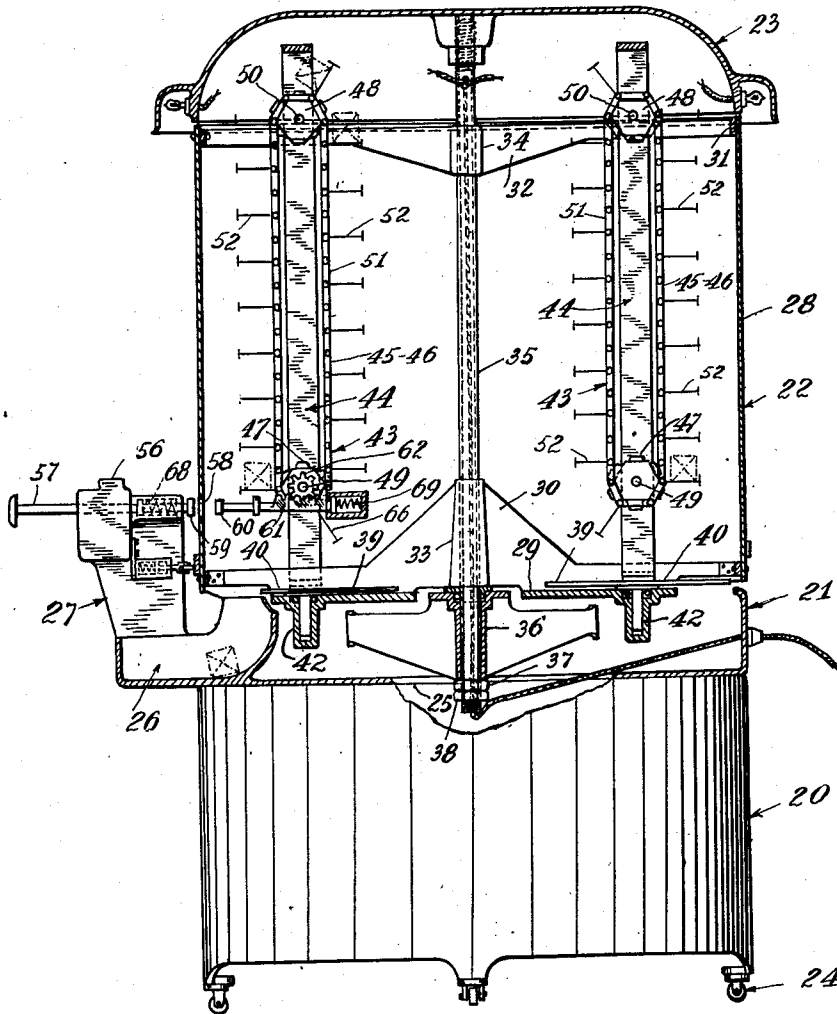
A. J. LAU ET AL
DISPENSING APPARATUS

2,363,340

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4 Sheets-Sheet 1

Fig. 1



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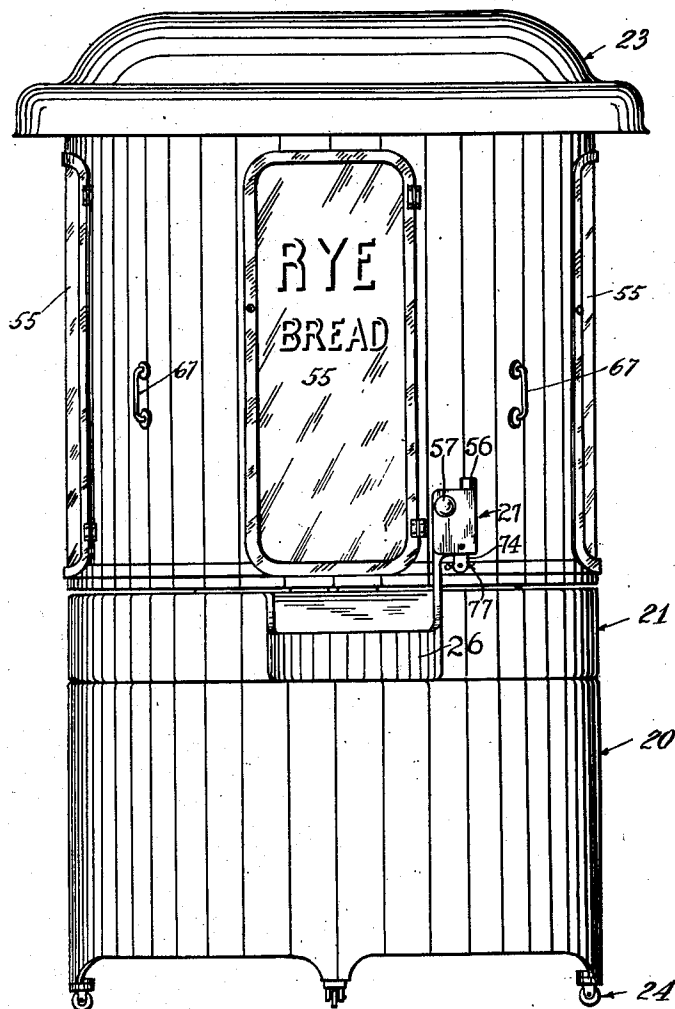


Fig. 2

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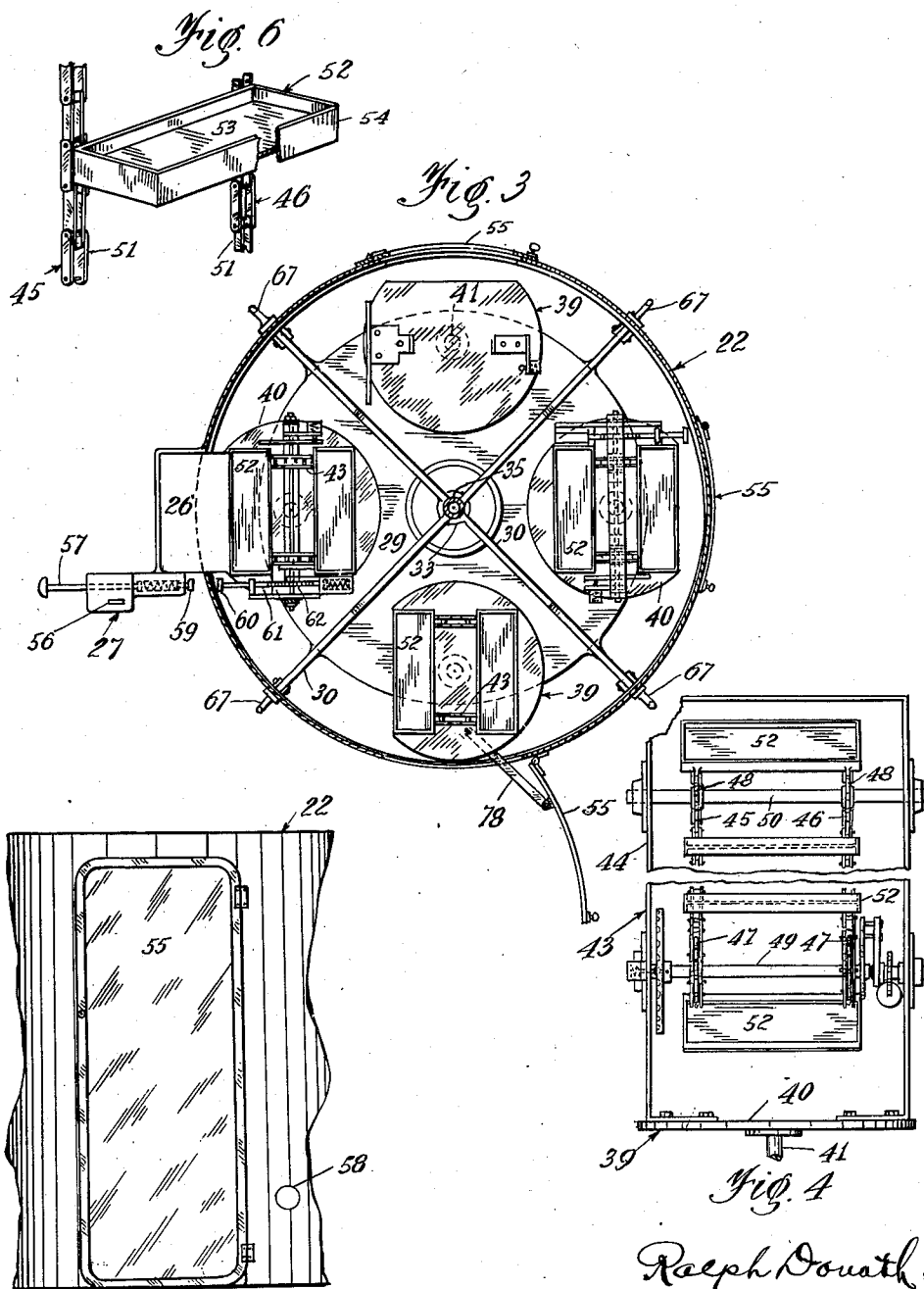
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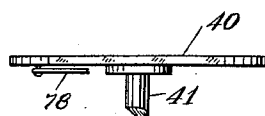
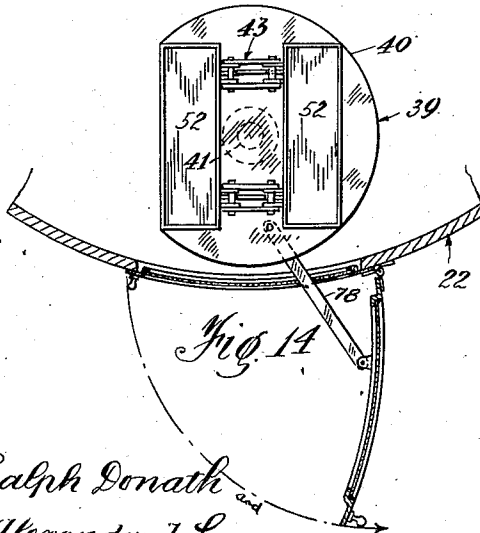
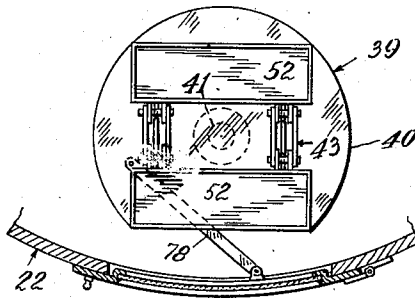
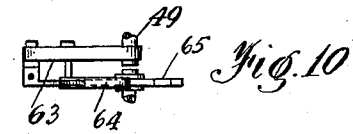
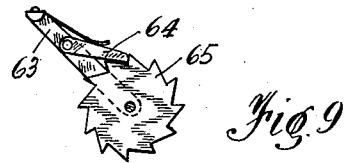
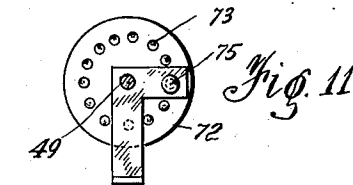
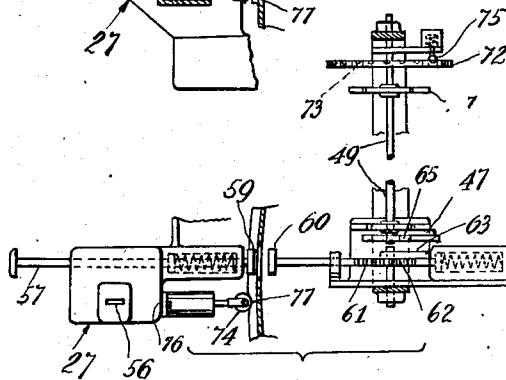
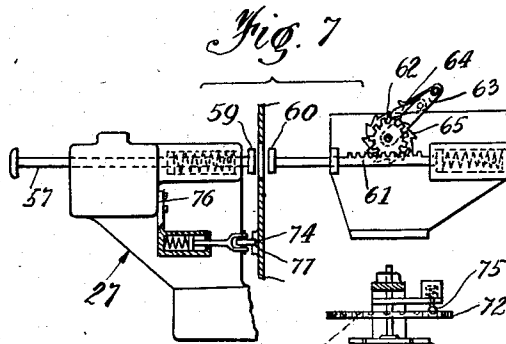
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UNITED STATES PATENT OFFICE

2,363,340

DISPENSING APPARATUS

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Application December 16, 1940, Serial No. 370,312

5 Claims. (Cl. 312—96)

This invention relates to vending apparatus primarily intended for vending selectively different articles in which the purchaser makes his own selection.

Another object of the invention is to provide a selective vending apparatus in which a large quantity of various articles may be vended.

Still another object of the invention is to provide a selective vending machine in which articles to be vended are quickly replenished.

A still further object of the invention is to provide a selective vending apparatus which is suitable for stores or other public places in which the available floor space is limited.

Another object of the invention is to provide a selective vending apparatus with a series of vertical, endless conveyors secured within a cylindrical housing in which the latter is rotatably mounted on a stationary base and adapted to be rotated by the prospective purchaser to a position until the conveyor with the desired article is brought into registration with the delivery chute and the coin device.

Yet another object of the invention is to provide a selective vending apparatus with a series of vertically disposed endless conveyors, each holding articles of one kind but all of said conveyors operable from a single coin device and all articles dispensed into a single delivery chute.

A further object of the invention is to provide a selective vending machine with a series of vertically disposed endless conveyors, each mounted on a base-plate and adapted to be turned on an axis for a distance of ninety degrees from its normal position for the purpose of replenishing the stock.

A further object of the present invention is to produce a simple and inexpensive vending apparatus and yet one which will be exceedingly effective and useful for the purpose for which it is designed.

In the accomplishment of these and such other objects as may hereafter appear the invention consists of the novel construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like numerals of reference designate corresponding parts throughout the several views,

Figure 1 is a vertical sectional view of the apparatus with the base and the coin device shown in outline.

Figure 2 is an outline view of the complete apparatus.

Figure 3 is a horizontal sectional view of the device with certain parts of the conveyor mechanism eliminated.

Figure 4 is a front elevation on a larger scale of one of the conveyors mounted on a rotatable base-plate, as used in this invention.

Figure 5 is a fragmentary front outline view of the rotatable cylindrical housing showing one of the windowed doors and the opening in the housing through which the plunger of the coin device operates.

Figure 6 is a fragmentary perspective view illustrating one of the conveyor trays attached to the conveyor chains, part of the tray being broken away to show its construction.

Figure 7 shows a side view on a larger scale of the coin device in combination with the mechanism which imparts rotary movement to the conveyor for the predetermined distance of one tray every time a coin is inserted in the slot of the coin device and the operating lever is being pushed in by the customer.

Figure 8 is a top view of Figure 7 including portions of the conveyor.

Figure 9 is a side elevation of the pawl and ratchet arrangement which determines the distance of travel of the conveyor.

Figure 10 is a top view of Figure 9.

Figure 11 is a side view somewhat enlarged of the arrangement which regulates the distance of the movement of the conveyor and retains it in the desired position.

Figure 12 shows the door operated mechanism by means of which the base-plate which supports a conveyor is being turned for a distance of ninety degrees, in this figure the conveyor is shown in its normal position and with the door closed.

Figure 13 is a fragmentary side view of the conveyor base-plate showing the connecting lever, which ties the base-plate and the door, pivotally attached to the underside of the base-plate.

Figure 14 is a view similar to Figure 12 showing the door open and the base-plate including the conveyor turned for a distance of 90 degrees to facilitate loading.

In carrying the invention into effect in one convenient manner when applying the same, for example, to dispensing bread or similar articles,

the same comprises in general a base 20, a sub-base 21, a rotatable housing 22 and a domed top 23.

As shown, the base is of cylindrical outline and is provided with casters 24 of any standard make to permit easy moving.

The sub-base 21 is secured to the upper portion 25 of said base 20 in any suitable manner and is provided with a delivery chute 26 extending outwardly of said sub-base 21.

Adjacent said delivery chute 26 is a coin device 27 of any standard make and suitable for the purpose intended. This coin device 27 constitutes no part of the present invention. A detailed construction thereof is therefore not indicated, but will be briefly referred to later.

The said rotatable housing 22 comprises a cylindrical outer casing 28 supported at the bottom by a platform 29 having radiating ribs 30 which extend outwardly and are secured to the interior of said casing 28 in any suitable manner. The upper portion of said casing 28 is supported by a bracket 31 which is provided with radiating ribs 32 extending outwardly and also secured to the interior of casing 28. The platform 29 and bracket 31 are provided with central hubs 33 and 34 respectively which serve as bearings for the vertically disposed stationary tubular axis 35 which is secured at the lowermost end to the shaft-socket 36 of the sub-base 21 by means of a nut 37 and a lock-nut 38 as shown in Figure 1 of the drawings.

Referring now to Figures 1 and 3, it will be noted that the housing 22, including of course the platform 29 and the bracket 31, is adapted to be rotated manually from the exterior of the housing in a horizontal plane, but this will be explained later.

In the present instance the said platform 29 has four, with the outer casing 28 concentrically arranged and equidistantly spaced, partly revolving base-plates 39 each comprising a circular table 40 provided with a centrally disposed depending stub-shaft 41 adapted to be rotatably supported in the downwardly extending bearing housing 42 of said platform 29.

Each of said tables 40 has secured thereon a vertically arranged chain conveyor structure 43 supported by a frame 44 of any suitable design. This conveyor 43 consists of a pair of spaced chains 45 and 46, running over spaced sprocket wheels 47, 48 respectively. Said sprocket wheels are mounted on sprocket shafts 49 and 50 respectively and mounted for rotation in said frame 44.

The endless chains 45, 46 are composed of a plurality of links 51 to which are secured equally spaced and parallelly disposed trays or shelves 52 of rectangular shape as best shown in Figure 6 of the drawings. The bottom 53 of said trays is preferably placed midway of the rectangular frame 54 so as to provide a double protecting rim for both faces of the bottom 53 of the trays 52 thereby adapting same to prevent sliding off of articles while the conveyor is in motion or for any other reason.

The outer casing 28 is provided with a windowed door 55 (see Figures 2, 3 and 5) for each conveyor, partly for convenience to enable the prospective buyer to see the desired article and partly to enable the proprietor to again replenish the conveyors after articles have been sold out.

It is well known in the art that coin operated dispensing machines, such as for instance the one herein described, are made to only operate

after the proper coin had been placed in the entrance slot 56 of the coin device 27 (not detailed). In this case, the forward movement of the push-rod 57 is normally prevented, but if a coin is placed in entrance slot 56 it may be moved forwardly and through the aperture 58 (see Figures 1 and 5) of the outer casing 28 of the apparatus. By doing this, the button 59 of said push-rod 57 strikes the cooperating button 60 of the rack-lever 61, which is in axial alignment with push-rod 57, and moves the rack-lever 61 forward thereby turning the rack-gear 62, which is in engagement with the teeth of the rack-lever 61, in a counterclockwise direction.

At every push of the push-rod 57 the rack-gear 62 turns for a predetermined distance, corresponding to the distance between two trays (pitch of the trays) of the conveyor 43. The ratchet lever 63 by means of the spring tensioned pawl 64 rotates the ratchet wheel 65 and the chain sprockets 47 and 48 over which the endless chains 45, 46 are trained, thus imparting a counterclockwise movement for a distance corresponding to the tray-pitch of the conveyor. By this arrangement the lowermost tray 66 is turned around the lower sprocket wheels 48 thereby ejecting the article deposited on that tray into the delivery chute 26 which is then removed by the patron.

Of course, the push-rod 57 of the coin device as well as the rack-lever 61 return to their normal position by means of the coil springs 68 and 69 respectively.

It will be noted that the shaft 49 which carries the lower sprocket wheels 47 and the ratchet wheel 65, and the stub-shaft on which the rack-gear 62 is mounted are in axial alignment with each other but separated. This is done to prevent the conveyor from going backwards when the rack-lever 61 returns again to its original normal position.

Shaft 49 is also provided with a circular disc 72, as shown in Figures 8 and 11, which is provided with a plurality of equidistantly spaced, small hemispherical dents 73 adapted to receive the ball shaped head of a spring tensioned bolt 75. Each space between said dents 73 corresponds to the distance of the tray-pitch of the conveyor.

The above described arrangement is intended to control the intermittent motion of the conveyor so that the lowermost front tray is at all times in a horizontal position.

The operation of the machine and its parts is quite apparent from the foregoing. If the machine were to have four conveyors, for instance, as shown and each conveyor for a separate brand or kind of article, the prospective purchaser stands in front of the machine facing the delivery chute 26 and the coin device 27. He then takes hold of one of the handles 67, conveniently secured to the outer casing 28 of the machine (see Figure 2) and rotates the casing in a horizontal plane in either direction until the selected article fronts the purchaser, either through the aid of the indicating letters or labels on the articles seen through the window of the door or by suitable signs painted on the window.

As the prospective purchaser revolves the rotatable housing 22 to select the conveyor which carries the selected article a spring tensioned roller 74, which is secured to the outer casing 76 of the coin device 27 (see Figures 1, 7 and 8), drops into a shallow cavity 77 every time the aperture 58 of the casing 28 of the housing 22

registers with the push-rod 57 of the coin device 27 and therefore also registers with the rack-lever 61 which operates the conveyor in a manner as heretofore described.

In order to disengage the roller 74 from the cavity 77 a little pressure must be exerted by the purchaser while turning the housing 22 and this is repeated until the selected articles appear through the door window 55.

The patron having located the desired article then drops the proper coin in the slot of the coin device 27 after which he pushes the push-rod 57, which in turn pushes the rack-lever 61 forwardly thereby rotating rack-gear 62 and consequently the conveyor a distance of one pitch tray after which the article placed upon the lowermost tray facing the patron drops into the delivery chute 26, ready to be taken away by the purchaser.

As is well known, in dispensing machines of this type it is highly desirable to provide means whereby the replenishing of the stock may be rapidly effected and this object is, it is believed, accomplished by providing a turntable 40 for each complete conveyor unit by means of which the normally front and rear trays 52 of the conveyor may be replenished without rotating the conveyor.

Normally, the conveyors are positioned in the rotatable housing 22, as shown in Figure 12, ready to discharge articles into the delivery chute 26. In that position the trays in the rear of the conveyor could not be replenished without continually rotating the conveyor, which, of course would consume considerable time. This is fully overcome by providing simple means by means of which the turntable on which a complete unit is mounted is turned around a distance of ninety degrees, every time the door is opened. This is readily accomplished by providing a lever 78, one end of which is pivotally attached in the proper place at the underside of the turntable 40 and the other end of which is pivotally attached to the lower portion of the frame of the windowed door 55 as best shown in Figures 12 to 14 inclusive.

Since the doors are normally closed and only opened when replenishing the trays of the conveyors this feature is of great importance for several reasons: firstly, to save time, secondly to retain the complete unit locked from rotating and thirdly merchandise may be placed on all trays without rotating the conveyor.

It will be apparent that the herewith described apparatus may be equipped with only one conveyor unit or with four units as shown in the drawings and described herewith.

From the foregoing description, taken in connection with the drawings, it will be seen that the present invention provides a device of the character set forth which is simple in construction and designed to carry out the objects of the invention in a reliable and efficient manner. It will, of course, be understood that while the construction disclosed is preferred, changes for and within the scope of the appended claims may be made without departing from the spirit or sacrificing any of the advantages of the invention.

We claim:

1. In a dispensing device of the character described comprising a base provided with a discharge chute at a point about its periphery, a top and a cylindrical casing interposed between the base and the top; said casing provided with

a platform rotatable about a vertical axis; a plurality of tables radially arranged on said platform in position to successively move into position adjacent the chute when the platform is turned, each table supporting an endless conveyor arranged to move vertically about horizontal axes and provided with a plurality of outwardly extending, equally spaced trays, each adapted to support an article of merchandise; means to rotate said platform in a horizontal plane to move a selected table into position adjacent the chute, and means to operate the conveyor adjacent the chute and advance its trays a distance equalling the pitch of said trays and cause an article resting upon one of the trays to be dropped into the chute.

2. In a dispensing device of the character described comprising a stationary base provided with a discharge chute, a stationary top and a cylindrical casing rotatably interposed therebetween; said casing provided with a platform; a plurality of horizontally disposed tables arranged radially on said platform in position to successively move into position adjacent the chute as the casing is turned, each table supporting an endless conveyor adapted to move vertically about horizontal axes and provided with a plurality of outwardly projecting, equally spaced trays adapted to support articles of merchandise; manual means to rotate said casing and platform in a horizontal plane and move a selected table into position adjacent the chute, the mechanical means to operate conveyor of the table disposed adjacent the chute to advance the trays thereof a distance equalling the pitch of said trays and cause an article resting upon one of its trays to be dropped into the chute.

3. In a dispensing device of the character described, a rotatable cylindrical casing, a platform within said casing having a plurality of horizontally disposed and radially arranged tables rotatably mounted thereon; a delivery chute mounted on a support below the casing, said tables being movable successively adjacent thereto when the platform is turned; each of said tables supporting an endless conveyor arranged to move vertically about horizontal axes and provided with a plurality of equally spaced and outwardly extending trays adapted to freely support articles of merchandise; manual means to rotate said platform in a horizontal plane into a selected position; individual means for each of said conveyors to advance the conveyor trays successively a predetermined distance equalling the pitch of said trays, said individual means operable by a unitary means common to all of said conveyors, the advance of the conveyors permitting passage of the merchandise from said trays.

4. In a dispensing device of the character described, a rotatable cylindrical casing, a platform within said casing having a plurality of horizontally disposed and radially arranged tables rotatably mounted thereon; a delivery chute mounted on a support below the casing, said tables being movable successively adjacent thereto when the platform is turned; each of said tables supporting an endless conveyor arranged to move vertically about horizontal axes and provided with a plurality of equally spaced and outwardly extending trays adapted to support articles of merchandise; individual means for each of said conveyors to advance the conveyor trays successively a predetermined distance equalling the pitch of said trays; said individual

means operable by a unitary means common to all of said conveyors, the advance of the conveyors permitting passage of the merchandise from said trays; said cylindrical casing provided with doors, and door operated means to cause said rotary tables, including the conveyors mounted thereon to be partly rotated.

55. In a dispensing device of the character described including a rotatable cylindrical casing having doors; a delivery chute mounted on a support below the casing; a platform within said casing having a plurality of horizontally disposed and radially arranged tables rotatably mounted thereon; said tables being movable successively adjacent the chute when the platform is turned; each of said tables supporting an end-

less conveyor arranged to move vertically about horizontal axes and provided with a plurality of equally spaced and outwardly extending trays adapted to support articles of merchandise; the advance of the conveyors permitting passage of the merchandise from said trays, means for actuating the conveyor of a table adjacent the chute and cause an article to be dropped into the chute and door operated means to cause said rotatable tables, including the conveyors mounted thereon, to be turned for one fourth of a revolution from its normal position when opening the door and returned to normal position when closing the door.

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