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DISPENSING MECHANISM

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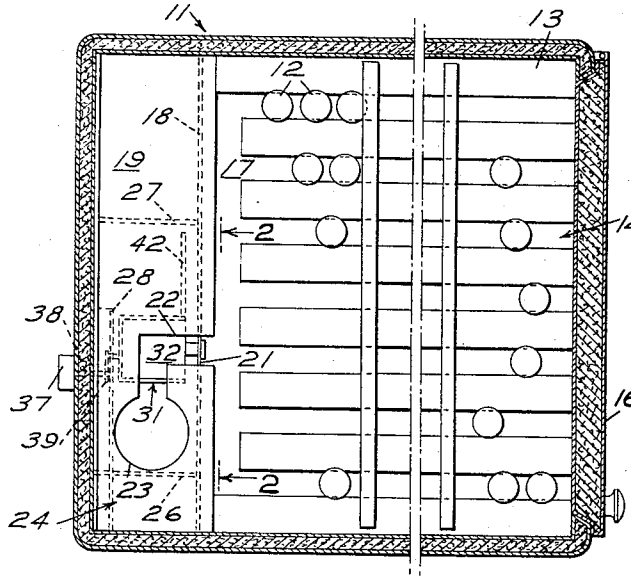


Fig. 1.

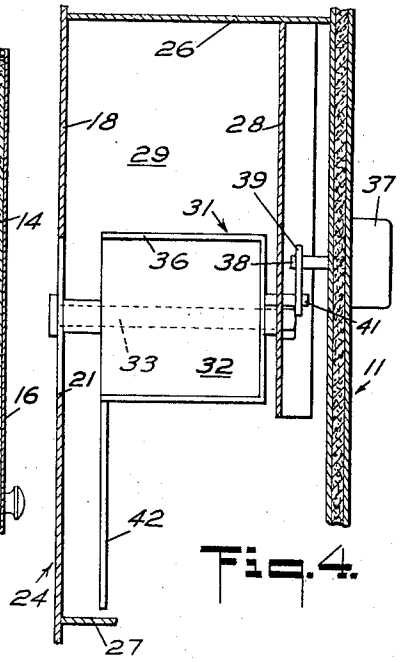


Fig. 4.

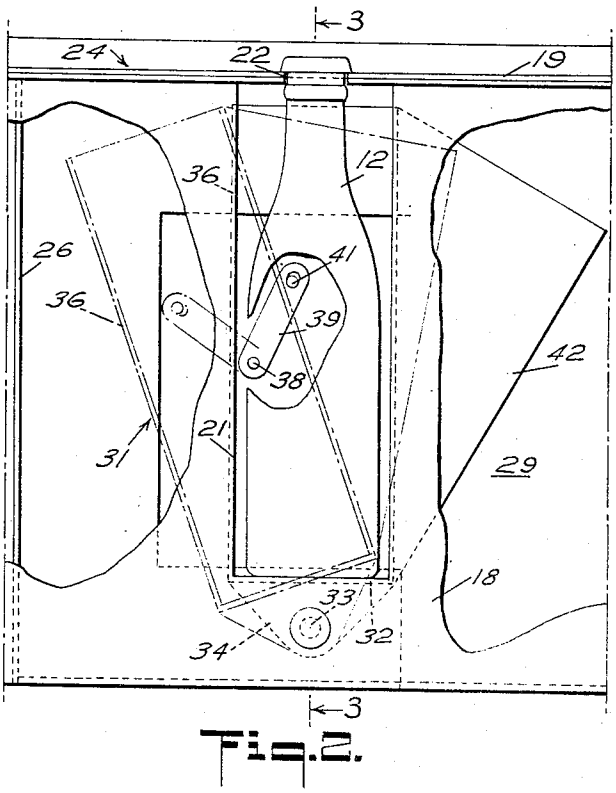


Fig. 2.

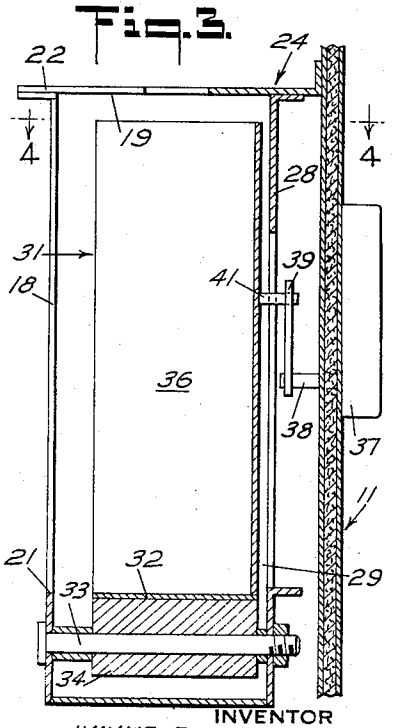


Fig. 3.

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DISPENSING MECHANISM

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3 Claims. (Cl. 221—133)

The present invention relates to improved dispensing mechanism and particularly to the type adapted to individually dispense selected objects such as bottles of soft drinks in response to coin operated actuating means.

There have been developed numerous machines adapted to dispense individual objects from a plurality of like or dissimilar objects upon the insertion of one or more coins and designed to facilitate and further the sale of items without the necessity of attendant sales personnel. Particularly in the sale of confections and soft drinks have these devices found favor and increasingly complex are the dispensing mechanisms becoming available, however, this very complexity has proven disadvantageous in that mutilplication of the number of moving parts increases the probability of mechanical failure and the frequency of necessary inspection and maintenance to defeat the very purpose of automatic sales machines of this type. The present invention provides an improved dispensing mechanism having the very minimum of operating or moving parts and yet at the same time being substantially foolproof and quite convenient to operate. While the improved dispensing mechanism of the present invention may be employed to dispense any of a large variety of objects, the mechanism is for convenience herein disclosed and described in connection with the dispensing of bottles as may contain soft drinks or the like. In this respect note that the structure identified contemplates the handling of bottles having a top or neck with a lesser cross section than the lower bottle portion, however, such is not necessary for the objects to be dispensed may be substantially entirely enclosed, with fingers or the like extending into contact therewith from a position accessible to the user so that the objects to be dispensed are restrained from removal by other than the dispensing mechanism.

It is an object of the present invention to provide an improved dispensing mechanism.

It is another object of the present invention to provide an improved dispensing mechanism for dispensing individual objects and having a minimum of moving parts.

It is a further object of the present invention to provide an improved dispensing mechanism including a pivotable carrier positively dispensing individual objects.

It is yet another object of the present invention to provide an improved dispensing mechanism having an entirely unrestricted dispensing aperture and means moving individual objects into alignment therewith for convenient removal therethrough.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing wherein:

Figure 1 is a sectional plan view of enclosure and dispensing means embodying the present invention.

Figure 2 is a partial sectional view taken at 2—2 of Figure 1.

Figure 3 is a sectional view taken at 3—3 of Figure 2.

Figure 4 is a horizontal sectional view taken at 4—4 of Figure 3.

Considering now the structural details of the illustrated embodiment of the invention, and referring to the drawings, there is provided enclosure means 11 defining a rectangular box having a hinged top and preferably including double walls having insulation therebetween, as shown, to preserve a reduced temperature therein. The enclosure 11 is adapted to contain a plurality of containers or bottles 12 placed upright upon the bottom thereof and a horizontal top grill 13 is affixed within the enclosure walls with a plurality of longitudinal slots or guideways 14 therein through which the tops of the bottles are adapted to extend. The guideways have a width greater than the top or neck cross section of the bottles 12 and less than the minimum cross-sectional dimension of the main portion of the bottles so that the bottles are thereby retained from direct removal from the enclosure means 11 and at the same time are free to slide upon the enclosure bottom longitudinally of the guideways 14. Filling of the enclosure means 11 may be accomplished through a door 16 provided in the side wall thereof and communicating with each of the guideways, locking means, not shown, are preferably provided on the side door 16.

The parallel guideways 14 in the horizontal grill 13 each communicate with a transverse slot 17 of the same width as the guideways and extending across the enclosure means 11. A vertical side wall 18 extends along and downwardly from the transverse slot 17 defining one side thereof and a horizontal top wall 19 is secured to side wall 18 at the top thereof and extends therefrom away from the transverse slot in the grill 13. Removal of bottles from the enclosure means 11 for dispensing is accomplished through an opening 21 provided in the side wall 18 and having a width at least equal to the maximum bottle width so that the bottles readily pass therethrough. The top wall 19 is also provided with an aperture therein including a slot 22 extending away from side wall 18 and thence at right angles parallel to the side wall 18 to an enlarged access aperture 23 larger than the bottle cross section so that the bottles may be readily withdrawn therefrom. Insofar as the above noted walls are concerned the bottles are thus movable longitudinally of the guideways 14 into the transverse slot 17 and thence through the side wall opening 21, the bottle top being then movable through the top wall slot 22 into the access aperture 23.

Considering now the dispensing mechanism itself, there is provided a housing 24 including the top wall 19 and the side wall 18 or a counterpart thereof together with a pair of end walls 26 and 27 and another side wall 28 defining a rectangular chamber 29. Within the chamber 29 there is provided a carrier 31 having a bottom platform 32 and side walls defining a bottle receptacle into which individual bottles 12 are adapted to slide through the side wall opening 21. A shaft 33 is mounted within the dispensing chamber 29 between the side walls 18 and 28 thereof perpendicularly to same and directly below the opening 21 in the side wall 18. One or more flanges 34 depend from the carrier platform 32 and the shaft 33 extends therethrough in rotatable relation thereto so that the carrier 31 is pivotable about the shaft 33. The carrier 31 at least includes a front wall 36 extending up-

ward from the platform edge nearest the access aperture 23 in the top wall and is at least open at the top and on the side adjacent side wall 18, other carrier walls being optional. In vertical or normal position the carrier 31 is disposed in communication with the interior of the enclosure means 11 through the opening 21 in the side wall 18 so that a bottle may be readily slid onto the carrier platform 32 from the enclosure means 11. A bottle upon the platform 32 of carrier 31, as shown in Figure 2, extends through the slot 22 in the top wall but is not removable therethrough because of the small slot width and is not removable through the access aperture 23 in the top wall 19 because the carrier front wall 36 intervenes.

With regard to the pivoting of the carrier 31 there is provided means to control same and adapted to operate in response to a coin actuated device 37 or the like which may be secured to the exterior of the enclosure means 11 as by attachment to a vertical wall thereof. The coin actuated device 37 may comprise any one of numerous well known devices of this type including a shaft 38 extending through the wall of the enclosing means 11 and in this case having a crank arm 39 attached to the inner end thereof and extending upward therefrom parallel to the side wall 28. The arm 39 is engaged by a pin 41 attached to the carrier 31 as at the back wall thereof and extending through an opening in the wall 28 perpendicularly to the crank and through a longitudinal slot in the end thereof. In the normal upright position of the carrier 31 the crank arm 39 is slanted away from the access aperture 23 and is locked in such position by the coin device 37 to hold the carrier 31 from movement. Operation of the coin device 37 by insertion of a coin frees the shaft 38 so that the crank arm is free to rotate or pivot about the shaft axis and tilting of the carrier is thus possible with the carrier pin 41 sliding in the slot in the crank arm as same pivots. By limiting the length of the slot in the crank arm 39 the pivotal travel of the carrier is likewise limited as the carrier pin 41 cannot move further than the slot length. There is additionally provided as a part of the dispensing mechanism closure means 42 upon the carrier 31 extending parallel to the side wall 18 adjacent thereto and disposed, in the normal position of the carrier, beside the side wall opening 18 away from the top wall access aperture 23.

Considering now the operation of the dispensing mechanism it is first noted that in the first or normal position of the carrier 31, same communicates with the interior of the enclosure means 11 through the opening 21 in the side wall 18 so that a bottle may be slid along any one of the guideways 14 and transverse slot 17 onto the carrier platform 32 with the bottle top then extending upward through the top wall slot 22. In this position the bottle cannot be removed for the front carrier wall 36 is disposed between the top wall access aperture 23 and the bottle 12. Actuation of the coin device 37 frees the shaft 38 so that the user upon grasping the bottle top may readily pivot the carrier 31 about the shaft 33 carrying same with the pin 41 rotating the crank arm 39 and sliding in the slot therein until the pin reaches the end of the slot, in which position the bottle 12 is aligned with the top wall access aperture 23 so that it may be readily withdrawn from the carrier 31 through this aperture. As the shaft 38 is freed by the coin actuated device 37 a force applied to the left upon the carrier as shown in Figure 2, as by one urging the bottle 12 in that direction, causes the carrier pin 41 to rotate the shaft 38 and arm 39 so that the carrier and arm move into the position shown in dotted lines in Figure 2. Movement of the carrier 31 also moves the extension 42 thereof which thereby pivots across the side wall opening 21 so as to effectively close same. It will be appreciated that the closure means or carrier extension 42 serves the function of blocking the side wall opening 21 when the carrier is in the second or pivoted position and may thus have the platelike configuration illustrated or may have alternative shapes, such as one or more bars or rods for example. Following removal of the bottle 12 from the carrier 31 through the access aperture 23 and return of the carrier 31 to the first or normal position, the shaft 38 is again locked in the manner of conventional coin actuated devices to prevent a second pivoting of the carrier 31 without insertion of a coin in the device 37. In this first position the carrier is again receptive of a bottle of the user's choosing from the enclosure means 11 and the above operation is then repeatable.

It will be appreciated that the carrier is at all times receptive of a single bottle from the enclosure means 11 except when pivoted to the second position and that in this latter position no way of removing other than the single bottle on the carrier is possible. Also the access aperture through which the bottles are singly removed is at all times completely open so that the chosen bottle may be most conveniently removed therefrom. Provision may be made for limiting the backward pivoting of the carrier 31 as by contacting the dispensing chamber end wall 27 with the carrier extension 42 in the normal carrier position and also means such as a light spring or a counterweight may be employed to normally position the carrier in upright unpivoted position. Similarly the lower portion of the carrier may be made solid to increase the weight thereof and stabilize the unpivoted position thereof, as shown in Figure 3.

It will of course be appreciated that the dispensing mechanism need not be formed integral with the enclosure means as illustrated for although they may, as shown, form a single combined device including bottle storage space or the like, the dispensing mechanism may be separately constructed and thereby adaptable for cooperation with any enclosure means either of the type illustrated or of other types.

What is claimed is:

1. A bottle dispenser comprising a housing provided with side walls and an open top, a horizontal grid within said housing having a plurality of parallel longitudinal guideways through which the tops of bottles may extend, said grid terminating at one edge in horizontal spaced relation to one side wall of the housing and said passageways opening upon such one edge, a vertical wall within said housing disposed in parallel relation to said one side wall and in closely spaced relation to said one edge of the grid to define a transverse passageway therewith into which all of said longitudinal passageways open, a top wall extending from said vertical wall to said one side wall, said vertical wall having an opening therein extending downwardly from the intersection of the vertical wall and the top wall and of a width to pass only a single bottle therethrough, said top wall having an L-shaped passage therein of a width to pass only the top of a bottle therethrough, said passage having a first portion extending from the juncture of the top wall and vertical wall towards said one side wall normal to said vertical wall and centered between the opposite sides of the opening therein and a second portion extending parallel to said vertical wall, said top wall also having an access opening therein of larger diameter than the maximum cross sectional dimension of bottles to be dispensed from the housing, said access opening intersecting the second portion of the L-shaped passage at the end thereof remote from the first portion, a bottle trapping carrier positioned between said one side wall and the vertical wall below said top wall, said carrier having an open side normally in register with said opening in the vertical wall and having an open top normally in register with said first portion of said L-shaped passage so as to receive a bottle in the carrier with the top thereof positioned substantially in the center of said L-shaped passage, means pivotally mounting said carrier for movement in a vertical plane parallel to said vertical wall between the aforementioned

normal position and a dispensing position in which the top of the carrier is in register with said access opening in the top wall to permit a bottle to be withdrawn from the carrier through such access opening, said means comprising a pivot pin at the lower end of said carrier and positioned perpendicularly to said vertical wall, means for maintaining said carrier in its normal position and for releasing the same for movement into the dispensing position, and means on said carrier and movable therewith into blocking relationship with the opening in said vertical wall when said carrier is in its dispensing position.

2. A bottle dispenser comprising a housing provided with side walls and an open top, a vertical wall within said housing disposed in parallel adjacent relation to one of said side walls, means within said housing permitting manual engagement of a bottle positioned therein while preventing removal thereof through said open top, a top wall extending from said vertical wall to said one side wall, said vertical wall having an opening therein extending downwardly from the intersection of the vertical wall and the top wall and of a width to pass only a single bottle therethrough, said top wall having an L-shaped passage therein of a width to pass only the top of a bottle therethrough, said passage having a first portion extending from the juncture of the top wall and vertical wall towards said one side wall normal to said vertical wall and centered between the opposite sides of the opening therein and a second portion extending parallel to said vertical wall, said top wall also having an access opening therein of larger diameter than the maximum cross sectional dimension of bottles to be dispensed from the housing, said access opening intersecting the second portion of the L-shaped passage at the end thereof remote from the first portion, a bottle trapping carrier positioned between said one side wall and the vertical wall below said top wall, said carrier having an open side normally in register with said opening in the vertical wall and having an open top normally in register with said first portion of said L-shaped passage so as to receive a bottle in the carrier with the top thereof positioned substantially in the center of said L-shaped passage, means pivotally mounting said carrier for movement in a vertical plane parallel to said vertical wall between the aforementioned normal position and a dispensing position in which the top of the carrier is in register with said access opening in the top wall to permit a bottle to be withdrawn from the carrier through such access opening, said means comprising a pivot pin at the lower end of said carrier and positioned perpendicularly to said vertical wall, means for maintaining said carrier in its normal position and for releasing the same for movement into the dispensing position, and means on said carrier and movable therewith into blocking relationship with the opening in said vertical wall when said carrier is in its dispensing position.

3. A bottle dispenser comprising a housing provided with side walls and an open top, a horizontal grid within said housing having a plurality of parallel longitudinal guideways through which the tops of bottles may extend, said grid terminating at one edge in horizontal spaced

relation to one side wall of the housing and said passageways opening upon such one edge, a vertical wall within said housing disposed in parallel relation to said one side wall and in closely spaced relation to said one edge of the grid to define a transverse passageway therewith into which all of said longitudinal passageways open, a top wall extending from said vertical wall to said one side wall, said vertical wall having an opening therein extending downwardly from the intersection of the vertical wall and the top wall and of a width to pass only a single bottle therethrough, said top wall having an L-shaped passage therein of a width to pass only the top of a bottle therethrough, said passage having a first portion extending from the juncture of the top wall and vertical walls towards said one side wall normal to said vertical wall and centered between the opposite sides of the opening therein and a second portion extending parallel to said vertical wall, said top wall also having an access opening therein of larger diameter than the maximum cross sectional dimension of bottles to be dispensed from the housing, said access opening intersecting the second portion of the L-shaped passage at the end thereof remote from the first portion, a bottle trapping carrier positioned between said one side wall and the vertical wall below said top wall, said carrier having an open side normally in register with said opening in the vertical wall and having an open top normally in register with said first portion of said L-shaped passage so as to receive a bottle in the carrier with the top thereof positioned substantially in the center of said L-shaped passage, means pivotally mounting said carrier for movement in a vertical plane parallel to said vertical wall between the aforementioned normal position and a dispensing position in which the top of the carrier is in register with said access opening in the top wall to permit a bottle to be withdrawn from the carrier through such access opening, means for maintaining said carrier in its normal position and for releasing the same for movement into the dispensing position, and means on said carrier and movable therewith into blocking relationship with the opening in said vertical wall when said carrier is in its dispensing position.

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