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C. H. DIXON

2,425,870

VENDING MACHINE

Filed Oct. 23, 1943

2 Sheets-Sheet 1

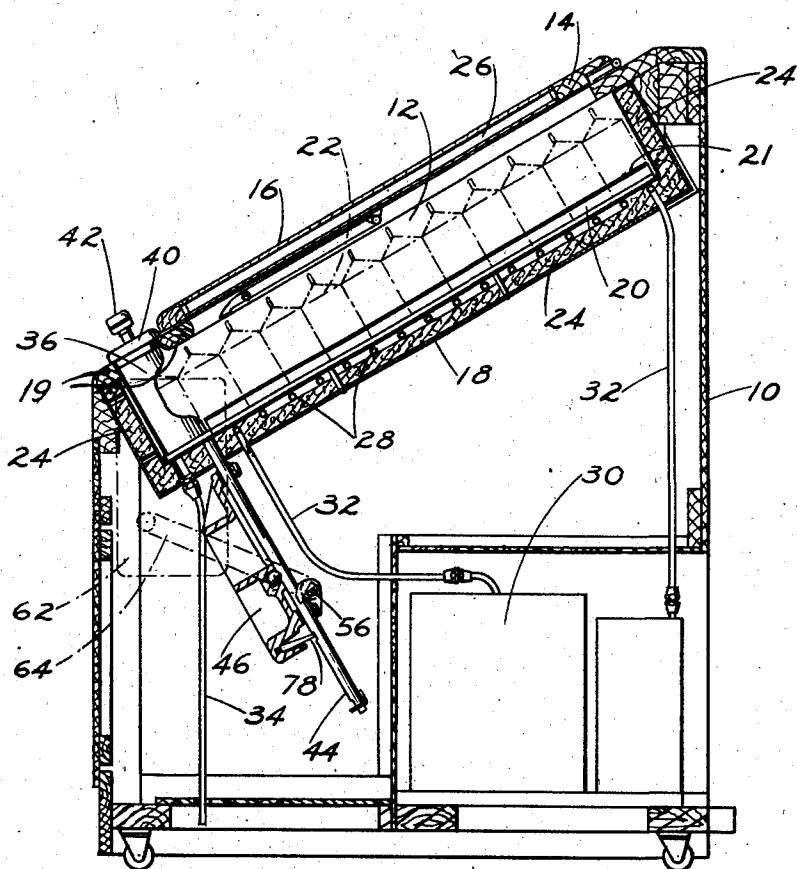


Fig. 1

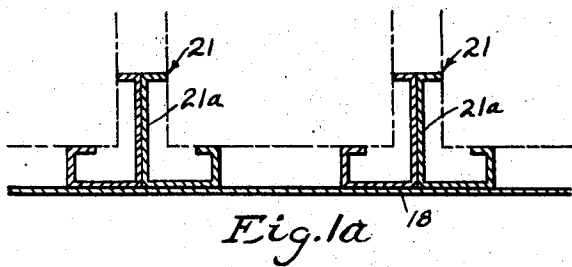


Fig. 1a

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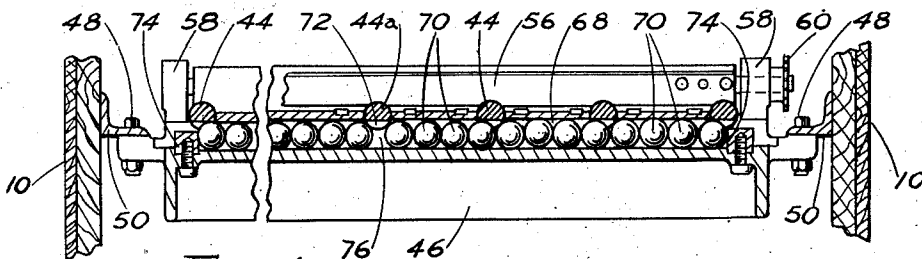


Fig. 4

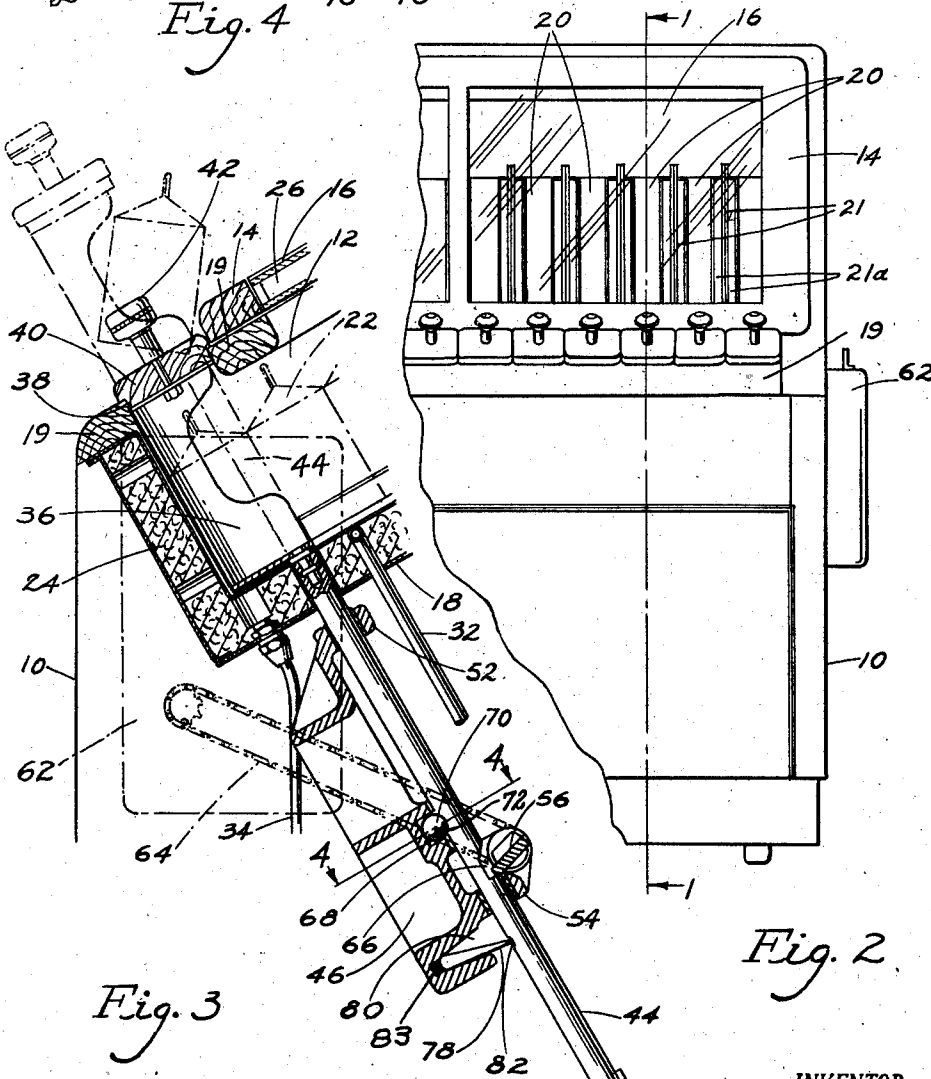


Fig. 2

Fig. 3

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VENDING MACHINE

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This invention relates to a vending machine and more particularly to a vending machine of the type in which any one of a plurality of dispensing devices may be selected for removing one of several articles from a compartment in the machine.

An object of the invention is to provide a vending machine having a cooling compartment which contains the articles to be dispensed and receives the articles in a series of inclined trays whereby the articles are fed by gravity to a dispensing device.

Another object of the invention is to provide a plurality of dispensing devices which are normally locked but which may be unlocked by a coin controlled mechanism.

A further object of the invention is to provide means in addition to the coin controlled mechanism for locking all of the dispensing devices except one, selected after all have been unlocked by the coin controlled mechanism.

A further object of the invention is to provide a plurality of dispensing devices for movement into and out of a container compartment with means associated therewith to prevent return movement of a selected dispensing device after it has started its outward movement until it has reached its fully withdrawn position.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a transverse sectional view of a vending machine showing a preferred embodiment of my invention taken on line 1-1 of Fig. 2;

Fig. 1^a is a fragmentary detail transverse sectional view through a portion of the chute structure included in the machine of Fig. 1 for receiving articles to be dispensed.

Fig. 2 is a front elevational view of a portion of the machine;

Fig. 3 is an enlarged sectional view through one of the dispensing members; and

Fig. 4 is a sectional view taken on line 4-4 of Fig. 3.

Referring to the drawings, I have shown a cabinet 10 having an article containing compartment 12. A hinged lid 14 is arranged on the upper surface of the cabinet and is preferably provided with transparent panels 16 to permit purchasers to see the articles in making a selection. The bottom 18 of the compartment 12 is arranged on an incline with respect to the base of the cabinet 10 to permit the articles therein to be fed by gravity to the lower edge of the bottom 18 and to the front of the cabinet 10.

The upper surface of the bottom 18 is provided with a plurality of channel or trough shaped chutes 20 for the reception of aligned articles, which in the illustrated form are cartons 22 con-

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taining a perishable food product such as milk. Chutes 20 are defined by a series of spaced apart ridges 21 formed in or mounted on the upper surface of the compartment bottom 18, and disposed in parallel relationship with the sides of the cabinet 10. The ridges 21 may be fabricated in any convenient manner. In the exemplary embodiment of the invention, they comprise a plurality of angle bars 21a arranged back to back and rigidly secured to bottom 18 as by screws or tack welds.

The compartment 12 has its walls insulated as indicated at 24 and the transparent panels 16 are preferably made of spaced glass panels providing a dead air space 26 for insulating the upper portion of the compartment 12. Cooling coils 28 are arranged in the bottom 18 and are connected to a refrigerating unit 30 through conduits 32. A drain 34 is arranged in the lower corner of the compartment 12 to remove any condensation which might be formed therein.

The vending machine illustrated is particularly adapted for dispensing milk containers 22 arranged in rows for sliding movement in the chutes 20. At the lower edge of the bottom 18 and in the line with the chutes 20 are dispensing members 36 in the form of receptacles with an open side facing the containers 22 for the reception of a single container at the lower end of each row of containers.

The dispensing members 36 are slidable into and out of the compartment 12 in a plane normal to the plane of the trays 20. These members also extend through apertures 38 of an elongated panel 40 which forms a portion of the upper face of the cabinet 10. The upper ends of the dispensing members 36 are provided with caps 40 which seal the openings 38 when the members are within the compartment. Handles 42 are secured to the caps 40 for the purpose of withdrawing the dispensing members 36 from the cabinet 10.

The bottom of each dispensing member 36 is normally flush with the bottom of the inclined chutes 20 so that the lower carton of each row is received in the dispensing member through its open side. When the dispensing member 36 is removed from the compartment 12, a carton is accessible to a purchaser through the open side as indicated in dotted lines of Fig. 3.

The dispensing members 36 are guided by downwardly extending guide rods 44 secured to the bottom of the members 36 adjacent their rear or open sides. These rods serve as stops for the cartons, preventing downward movement of the row when the members are withdrawn from the compartment 12.

A bracket 46 extends transversely of the cabinet and is secured to the side walls by bolts 48 securing the bracket 46 to angle members 50 se-

cured to the side walls. The bracket 46 is provided with upper and lower bearings 52 and 54 respectively which receive the rods 44.

Journalled in the bracket 46 is a transverse lock bar 56 having oscillatory movement in end bearings 58. A sprocket 60 at one end of the bar 56 is operatively connected to a coin controlled mechanism 62 through a chain 64, shown dotted. When the dispensing members 36 are in the compartment 12, the bar 56, in its position shown in the drawings, engages notches 66 in the guide rods 44, locking all dispensing members against removal. When a coin is inserted in the coin controlled mechanism, the bar 56 is free for oscillation by release of the locked chain 64. When one rod is moved longitudinally, the bar 56 is swung out of the path of the notches 66. This unlocks all dispensing members so that any one may be selected and the one selected withdrawn.

In order to prevent the purchaser from selecting and withdrawing more than one dispensing member by a single operation of the coin controlled mechanism, there is provided an interlocking means which operates to lock all members except the one selected and partially withdrawn from the compartment. The movement of any one member causes locking of all other members.

The bracket 46 is provided with a channel track 68 open toward the guide rods 44. A plurality of balls 70 are received in the track 68. These balls 70 are of a diameter substantially equal to the diameter of the rods 44. The track 68 is arranged with respect to the guide rods 44 such that the balls intersect the guide rods 44. Notches 72 are provided in the guide rods 44 to permit the balls 70 to pass the guide rods 44 when moved transversely thereof in the track 68.

Referring to Fig. 4, the end walls 74 of the track 68 are arranged in such a manner, with respect to the end rods, that when the balls contact the end walls, the center of the ball does not pass beyond the center of the rod. The number of balls in the track are such that a space, indicated at 76, is provided. This space is of a dimension to permit one of the rods to pass between adjacent balls. When the balls 70 are in a position as shown in Fig. 4, one rod such as the rod 44a is free for movement and by its movement it causes the balls to spread into the path of all other rods, thereby locking them against movement by the balls engaging the notches 72.

It will be understood that when all of the dispensing members 36 are within the compartment 12, and unlocked by the lock bar 56, any one may be withdrawn regardless of the position of the balls 70 and that such withdrawal movement causes the selected rod to move the intercepting ball out of its notch, crowding the other balls to the left or right into tight engagement locking all other dispensing members against withdrawal. As long as one of the rods 44 is withdrawn, or partially withdrawn, that rod retains the bar 56 in its unlocked position. When the rod is returned to its closed position, the bar 56, under tension (by a spring not shown) to rotate in a counterclockwise direction, falls in the notches 66 and automatically resets the coin controlled locking mechanism.

Means have been provided to prevent the return of the dispensing member 36 into the compartment 12 until the dispensing member has reached its fully withdrawn position. This means comprises a wedge 78 carried in a notch 80 in the bracket 46. One end of the wedge 78 is journalled in the notch 80 and its opposite end is

received in a notch 82 in the rod 44 when the rod is in its locked position. A compression spring 83 urges the wedge toward the rod 44. As the rod is moved outwardly, the wedge is swung upwardly with its free end in dragging engagement with the surface of the rod, when the rod is moving outwardly; but it is in binding engagement with the rod if attempt is made to move the latter in the opposite direction. At the end of the rod 44 is a removable clip 84 which engages the wedge 78 and limits the outward movement of the dispensing member when the rod is withdrawn to its outmost position. A notch 86 is provided to permit the wedge to drop below a position normal to the axis of the rod 44 so that the rod may be moved inwardly without binding on the wedge.

From the above it will be understood that a purchaser may insert a coin in the coin controlled mechanism and thereby unlock all of the dispensing members 36. A selection is then made and the dispensing member so selected is withdrawn from the compartment. Due to the limited space between the balls 70, it is impossible to withdraw more than one dispensing member at one time. The carton in the dispensing member may then be removed as indicated in dotted lines of Fig. 3. During this withdrawal movement, the rod holds the remaining cartons in that row from sliding toward the front of the compartment. When the dispensing member has been returned to its closed position, the row of cartons slides forwardly a distance equal to the thickness of one carton with the front carton in the dispensing member ready for the next purchase.

It will be understood that various changes including the size, shape and arrangement of parts may be made without departing from the spirit of my invention and it is not my intention to limit its scope other than by the terms of the appended claims.

I claim as my invention:

1. A vending machine having a substantially rectangular housing with an inclined top portion, an inclined compartment adjacent said top portion and extending parallel thereto, a plurality of parallel chutes in said compartment extending in a plane parallel to the inclination of said compartment whereby rows of articles in said chutes may be fed by gravity to the lower ends of said chutes, dispensing receptacles at the lower ends of said chutes for receiving the lower of the articles in said chutes, said receptacles being movable in a plane generally normal to the plane of said inclined chutes in and out of said compartment for moving the article contained therein from said compartment, means carried by each receptacle for holding the row of articles from sliding downwardly in said chutes while said receptacle is being moved out of said compartment, and means for allowing the movement of said receptacles only one at a time.

2. A vending machine having a compartment, a plurality of inclined chutes in said compartment for the reception of articles which are fed by gravity to the lower ends of said chutes, dispensing receptacles at the lower ends of said chutes for receiving the lower of the articles in said chutes and movable in a plane generally normal to the travel of the articles in said chutes, a guide carried by each of said receptacles having notches, a track adjacent the notches in said guides and extending transversely thereof, a plurality of balls in said track, means for limiting the transverse movement of the balls into and out

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of the notches in said guide, and a transverse bar rotatable into and out of locking engagement with means on said guides.

3. A vending machine having a plurality of inclined chutes for the reception of articles of purchase, a transversely movable dispensing member at the lower edge of each of said chutes for receiving the lower article in said chutes, a depending guide rod for each of said dispensing members having axial movement with its corresponding dispensing member through the path of articles in one chute and arranged with respect to said dispensing member to engage the article adjacent the article in said dispensing member to prevent the row of articles from moving downwardly in said chute by the force of gravity while said dispensing member is being moved transversely of said chute.

4. A vending machine having a compartment, a plurality of inclined chutes in said compartment for the reception of articles which are fed by gravity to the lower ends of said chutes, dispensing receptacles at the lower ends of said chutes for receiving the lower of the articles in said chutes and movable in a plane normal to the travel of the articles in said chutes, a transversely extending bracket below said compartment and receptacles, a guide rod carried by each receptacle having longitudinally spaced notches and supported for reciprocation in said bracket, a transversely extending track in said bracket, a plurality of balls in said track for reception in one of the notches of each guide rod, and a transverse bar carried by said bracket rotatable into and out of the other notch in each of said guide rods.

5. In a vending machine, the combination of a cabinet formed with a plurality of inclined chutes arranged in parallel side-by-side relation and each adapted to receive a series of articles for gravity feeding of the same, a corresponding plurality of dispensing receptacles of box-like form each having an open side facing toward the lower end of its corresponding chute, means slidably supporting said receptacles for individual endwise movement in a plane generally normal to the paths of travel of the articles in said chutes, a panel mounted on said cabinet transversely over said chutes and having apertures therein through which corresponding ones of said receptacles pass in their sliding movement, stop means for limiting the movement of each receptacle to a shift between two alternate positions in one of which the receptacle is located exteriorly of said panel with its open side exposed for access exteriorly of said panel and in the other of which positions said receptacle is located with said open side registering with the end of the corresponding chute, and manual means for pulling each receptacle outward through its corresponding aperture in said panel from the second mentioned position to the first mentioned position therefor.

6. In a vending machine, the combination of a cabinet formed with a plurality of inclined chutes arranged in parallel side-by-side relation and each adapted to receive a series of articles for gravity feeding of the same, a corresponding plurality of dispensing receptacles of box-like form each having an open side facing toward the lower end of its corresponding chute, means slidably supporting said receptacles for individual

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endwise movement in a plane generally normal to the paths of travel of the articles in said chutes, a panel mounted on said cabinet transversely of said chutes and having apertures therein through which corresponding ones of said receptacles pass in their sliding movement, stop means for limiting the movement of each receptacle to a shift between two alternate positions in one of which the receptacle is located exteriorly of said panel with its open side exposed for access exteriorly of said panel and in the other of which positions said receptacle is located with said open side registering with the end of the corresponding chute, manual means for pulling each receptacle outward through the corresponding aperture in said panel from the second mentioned position to the first mentioned position therefor, means carried by each receptacle for holding the row of articles in its corresponding chute from sliding downward while said receptacle is being moved to its first mentioned position from its second mentioned position, and means for allowing the movement of said receptacles only one at a time.

7. In a vending machine, the combination of a cabinet having an aperture therein, a receptacle having a side opening and dimensioned to plug said aperture, means slidably supporting said receptacle for movement through said aperture between two limit positions in one of which said side opening is exposed exteriorly of said cabinet and in the other of which said side opening is located within said cabinet, means within said cabinet for gravitationally sliding a series of articles to be purchased toward said receptacle for entry of the foremost one of the series into said receptacle through said side opening when said receptacle is in its second mentioned limit position, and coin releasable means for restraining said receptacle against being manually moved from said second mentioned limit position to said first mentioned limit position.

8. A cabinet having an aperture therein, a box-like receptacle having closed ends and an open side, said receptacle being dimensioned to slide endwise through said aperture and substantially plug the same, means for limiting the movement of said receptacle to a shift between two alternate positions in one of which said side opening is exposed exteriorly of said cabinet and in the other of which said side opening is located within said cabinet, and an inclined chute within said cabinet for supporting a series of articles to be purchased to slide sideways by gravity toward said receptacle for entry of the foremost of the series into said side opening when said receptacle is in its second mentioned limit position.

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