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VENDING MACHINE


Fig. 1.

Fig. 2.


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VENDing MAGHINE

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VENDING MACHINE

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This invention relates to improvements in coin actuated vending machines and has particular reference to a vending machine wherein edible food products are conducted in a horizontal path below a discharge opening in a step by step movement.
The invention contemplates a novel form of carrier for the edible food products wherein a plurality of individual plural cavity carriers are linked together to be shifted upon a trackway in a step by step movement for aligning one cavity of a carrier beneath a discharge opening in a housing whereby the food product in the particular cavity may be manually removed.
The invention further contemplates multiple linked together plural cavity carriers that are shiftable in a step by step movement on a trackway to expose successively corresponding cavities of each carrier throughout one complete revolution of the group of carriers and, upon the approach of a last carrier, to actuate a valve plate in the housing opening to expose the other corresponding cavities successively for a second revolution of the linked group of carriers.
It is contemplated that any well known coin controlled mechanism shall be employed to permit the actuation of the carriers in their step by step motion and that the actuation of the carriers shall be accurately timed to properly position a carrier unit beneath a discharge opening whereby the operator may manually remove one edible food product and be prevented from having access to a food product in adjacent cavities.
Various features of novel construction and operation will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred embodiment of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.
In the drawings:
Figure 1 is a fragmentary perspective view of a vending machine, wherein is included the mechanism of this invention,

Figure 2 is a horizontal section, taken substantially on line $2-2$ of Figure 1, illustrating the carrier mechanism in top plan view,
Figure 3 is a slightly enlarged transverse section, taken substantially on line 3-3 of Figure 1,
Figure 4 is a fragmentary longitudinal section, taken substantially on line 4-4 of Figure 3,
Figure 5 is a fragmentary horizontal section taken on line 5-5 of Figure 4, illustrating a carrier actuated valve plate,

Figure 6 is a prespective view of one multiple cavity carrier unit and,
Figure 7 is a longitudinal section taken on line 7-7 of Figure 6.
Referring specifically to the drawings, the numeral 5 designates a housing in the form of any desirable properly insulated cabinet having a top 6. Arranged in any desirable position with respect to the cabinet is a coin slot 7
and associated with the coin slot is an actuating coin mechanism and coin changing device (not shown), through the medium of which suitable mechanism may be actuated to shift carrier devices, to be described. Preferably arranged in the top 6, is a rectangular shaped discharge opening 8 through which the food products to be dispensed may be manually removed. Shiftable beneath the opening 8 in suitable guides $\mathbf{1 0}$, a valve plate 9 is adapted to expose but one half of the opening 8 for one full revolution of the carriers, to be described, after which the plate 9 is released to be shifted under the influence of a spring 11 to cover the former opening and to expose the other half of the opening. The plate 9 is held against accidental shifting by unauthorized tampering, by a latch dog 12, pivoted at 13 upon one of the guides 10 and urged to latching position by a spring 14. The plate 9 is provided with latch openings 15 at opposite ends for the reception of the dog 12 whereby the plate will be positively held in either of its covering positions. The latch dog is provided with an elongated arm 16 that lies in the path of movement of a trip rod carried by the carrier mechanism, to be described.

The numeral 17 indicates the carrier as a whole, comprising a plurality of individual and identical units 18 . Each unit 18 is preferably formed of suitable non-rusting metal and consists of a flat walled rectangular carrier that is open at its top and provided intermediate its length with a partition wall 19, forming two identical cavities 20. The spacing of the side walls are predetermined in accordance with the type of food product to be dispensed. It might be here stated, that the particular form of food article for which this carrier has been designed, is a generally rectangular ice cream bar having a preferably wood handle that projects above the top of the cavities to facilitate its removal through the opening 8 in a manner to be presently described. The side walls of each carrier unit may be perforated as at 21 for a free circulation of refrigerated air to the food article, it being understood that suitable refrigerating means are positioned within the cabinet 5 .
It is contemplated that a plurality of the units 18 shall be closely linked together in a hinged manner to travel in a horizontal path in a step by step motion. The hinge means includes a lower hinge plate 22, preferably formed integral with a flat casting 23 that is secured to and substantially co-extensive with the bottom wall of the unit 13. The hinge plate 22 extends beyond the opposite sides of the unit and its opposite ends are apertured for the passage of vertically arranged hinge rods 24. Upper hinge plates $\mathbf{2 5}$ are rigidly connected to the front wall of each carrier unit 18 and are co-extensive and parallel with the hinge plates 22 . The plates 25 are also apertured in alignment with the apertures of the plate 22 for the passage of the rods 24 . The hinge plates 22 and 25 of each alternate unit 18 are slightly elevated to overlie the next adjacent hinge plates to receive the rods 24 whereby the units are linked together in a manner to permit them to travel around a toothed drive and guide means to be described. Antifriction rollers 26 are disposed upon the rods 24 to rest upon the plates 22 to facilitate the travel of the carrier. Loose hinge plates 27 are apertured to receive the rods 24 and extend between the several carrier units to rest upon the tops of the rollers 26 and impart rigidity to the rods 24 as the carrier is driven. Any suitable means may be employed to prevent displacement of the rods 24, such as cotter pins at opposite ends.
Since the carrier in the present instance is driven in a horizontal path, it becomes essential that means be provided to support the weight of the units. For this purpose, each casting plate 23 is provided with anti-fric-
tion rollers 28 that are rotatably carried upon rods 29 , journaled in apertured ears 30 . The rollers are spaced apart a predetermined distance for a proper balance of the units and are horizontally arranged to traverse trackways 31.
The means to drive and guide the endless group of carrier units in a horizontal path upon the trackways 31, comprises a pair of substantially identical sprockets 32 that are horizontally arranged and supported upon vertical shafts 33. The teeth of the sprockets are spaced and proportioned to engage between a pair of adjacent rollers 26 to shift the carrier in a step by step motion around the trackways to alternately position a carrier unit 18 in underlying alignment with the opening 8. Any desirable means may be employed to drive one or both of the sprockets, such for instance an electric motor 34 that drives any conventional form of worm gearing to a shaft 33 . The motor would obviously be controlled by the coin actuated mechanism. Due to the possible undesirability of employing an electric motor in a refrigerated cabinet, any mechanical and manually actuated linkage or ratchet mechanism may be employed to shift the carrier, such manual shifting also being controlled by the coin actuated mechanism. As shown in Figure 4, one rod 24 has been extended upwardly to be disposed in a position to contact the arm 16 of the latch dog 12 whereby the valve plate is released to be shifted to a position to cover one half of the opening 8 after a corresponding series of cavities 20 have been exhausted and to expose the other series of corresponding cavities. At each extent of movement of the valve plate 9 , it is latched against movement and, upon exhausting both series of cavities, must be manually reset by an attendant.

The use of the device is as follows:
Assuming that all of the cavities have been loaded with ice cream bars, with their handles projecting upward, the valve plate 9 is shifted inwardly to cover the inner half of the opening 8 and latched into position for exposing the outer row of cavities 20 . When a coin is inserted, the mechanism functions to drive the carrier one step to position a loaded unit beneath the opening 8. The operator then reaches in and removes the ice cream bar, leaving that particular cavity empty. This operation continues until all of the cavities in the outer row have been exhausted. At this time, the extended hinge rod $24 a$ is in a position one step from the arm 16 controlling the valve plate 9. Now, when another coin is inserted, the mechanism shifts forwardly one step, causing the latch dog to be released by the rod $24 a$, permitting the plate 9 to shift to an opposite position to cover the exhausted cavities and expose the cavities of the inner row. The dispensing is continued as before described until the inner row has been exhausted after which any suitable indicating means or lock means embodied in the coin mechanism shall function to prevent further actuation of the carrier or to prevent the insertion of additional coins. Such control means are well known in the art and form no part of the present invention.

It will thus be seen, that a very novel form of carrier has been provided to support and dispense a very considerable number of food products in a minimum of space. The carrier units are hingedly connected in a continuous and uninterrupted series of dual cavities passing below a common opening in the cabinet. While each unit 18 has been shown as having a pair of cavities, it will be apparent that this number may be increased or decreased and the valve plate controlled in a manner to expose the cavities for each cycle of operation of the device where the carriers make one complete revolution for each cycle. The carrier units are simple in construction and closely arranged by the hinge plates to prevent unauthorized entry to any cavity except the one which is directly underlying the exposed portion of the opening 8. The mechanism is such as to require little
provided with a horizontal and integral extension that is connected with the bottom of the units, spaced apart and horizontally arranged anti-friction rollers rotatably sup-
ported upon the extension, continuous and rigidly suphorizontally arranged anti-friction rollers rotatably supported trackways in the cabinet to be traversed by the 75 rollers throughout the movement of the carrier, each of
or no attention, other than systematic loading and is fully controlled by the selected coin mechanism. The parts are cheap to manufacture, are strong, durable and highly efficient in use and the carrier construction is such as to readily adapt it to refrigerated cabinets with relatively little structural change.

It is to be understood, that while a preferred form of the device has been illustrated and described, changes are contemplated as readily fall within the spirit of the invention or the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A vending machine of the character described that includes a cabinet having a top provided with an elongated opening for the manual removal of articles to be dispensed, a carrier disposed in the cabinet for the support of edible articles to be removed through the top opening, the carrier comprising a plurality of identical units that are each provided with a pair of rectangular pockets in end to end relation, the pockets opening upwardly and with the pair of pockets being jointly co-extensive with the top opening, hinge plates rigidly connected with one end of each unit and with the plates of adjacent units being overlapping, a hinge rod that connects the several units together and with the rod passing through the overlapped ends of the plates, the several units forming an endless carrier that is horizontally arranged in the cabinet and which traverses a path for the major length of the cabinet, anti-friction rollers positioned upon the hinge rods, sprocket wheels at opposite ends of the carrier that engage the rollers, drive means for one of the sprockets that is adapted to be controlled by a coin controlled mechanism in a manner to drive the carrier in a step by step motion to dispose one unit at a time beneath and in registry with the top opening, a valve plate for alternately covering one half of the top opening to expose one of the pockets of an underlying unit, latch means for retaining the valve plate in either position of covering, one of the hinge rods being extended upwardly to lie in the path of the latch means whereby the latch is actuated to permit the shifting of the plate to a second covering position when the carrier has been shifted one complete revolution to expose the other of said pockets of the units, rigid horizontally arranged trackways for supporting the several connected units throughout their travel and anti-friction rollers supported upon the bottom of each unit that ride upon the trackways.
2. An ice cream bar vending machine that includes a cabinet having a top that is provided with an elongated discharge opening and a valve plate that is shiftable to alternately cover one half of the opening, latch means for controlling the plate and with the latch and plate being spring loaded, a carrier for the ice cream bars that comprises a plurality of connected units to form an endless support, the carrier being horizontally disposed in the cabinet, each of the units being identical and including a housing having end walls and spaced apart side walls, a partition in each housing intermediate its length to form a pair of upwardly opening pockets, an upper hinge plate and a lower hinge plate rigidly connected to one end of the housing and with the plates extending beyond opposite sides of the housing, the opposite ends of the plates being apertured for the passage of hinge rods, the hinge plates of alternate units being elevated to have overlapping engagement with the next adjacent hinge plates whereby the several units are flexibly connected in a continuous chain, the lower hinge plates each

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the hinge rods carrying tubular anti-friction rollers, a pair of spaced apart and horizontally arranged sprockets having teeth that engage the tubular roller, one of the sprockets being power driven and the other of said sprockets guiding the traverse of the carrier in a horizontal path, the power drive for one sprocket adapted to be actuated by a coin controlled mechanism in a manner to shift the carrier in a step by step movement to successively position each unit and its pockets in underlying alignment with the top opening.

References Cited in the file of this patent UNITED STATES PATENTS

435,901
Olmsted Sept. 2, 1890
Jennings
$\qquad$ 2,351,432

Stewart

## FOREIGN PATENTS

Germany $\qquad$ of 1927
Denmark $\qquad$ of 1912

