May 31, 1966 A. B. MOYER ETAL 3,253,736

VENDING MACHINES

Filed May 25, 1964 2 Sheets-Sheet 1

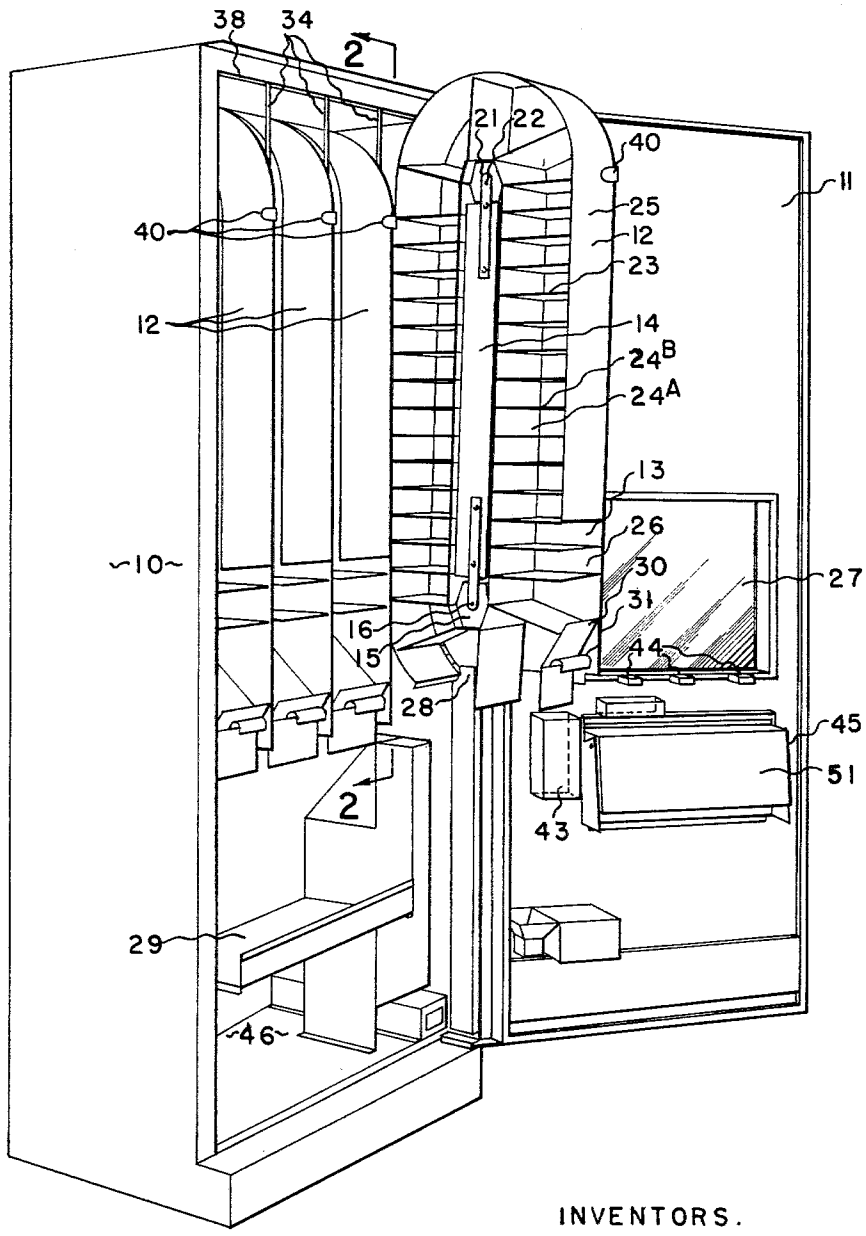


FIG. 1

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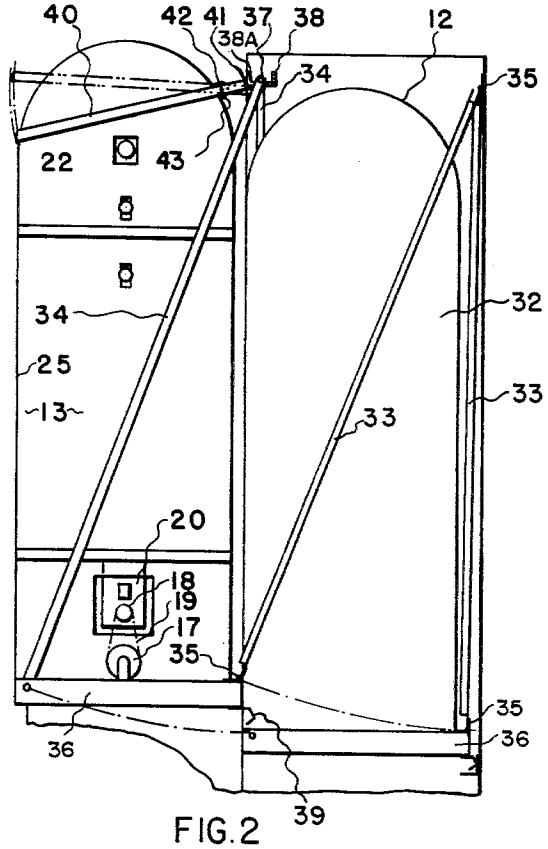


FIG. 2

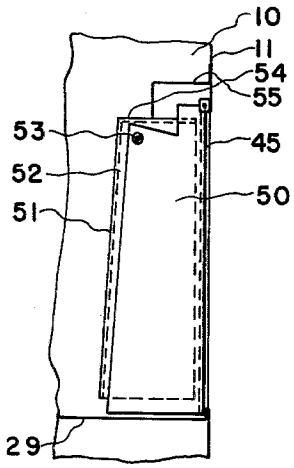


FIG. 4

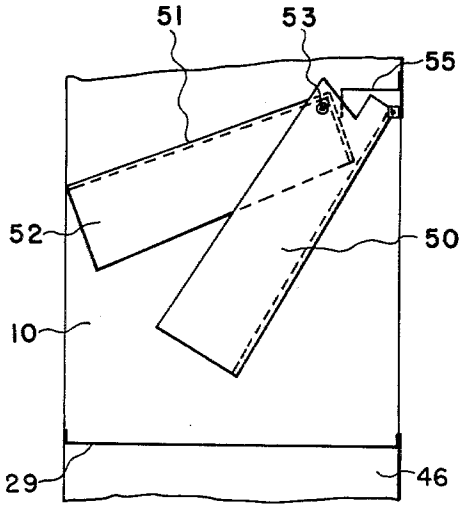


FIG. 5

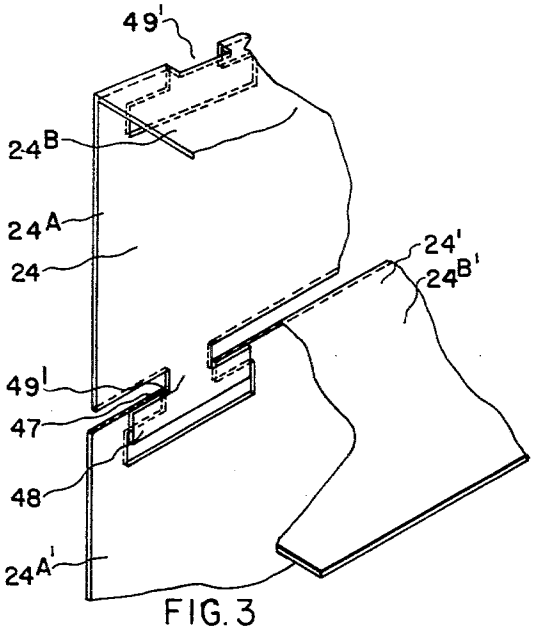


FIG. 3

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VENDING MACHINES

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This invention is concerned with improvements in or relating to vending machines, and especially to vending machines of the type in which one or more merchandising units contained therein is movable between dispensing and loading positions.

One of the major problems that arises in the design of a dispensing machine is to effect a satisfactory compromise between the capacity of the machine, its ease of servicing, such as its loading, and the space occupied by the machine.

It is an object of the present invention to provide a new vending machine.

It is another object of the invention to provide a new vending machine comprising merchandising units mounted in a new manner for movement between dispensing and loading positions.

It is a particular object of the present invention to provide a new vending machine capable either of incorporation in a cabinet, or in the type of structure comprising a bank of such machines.

It is a further object of the invention to provide a new merchandising unit for use in a vending machine.

According to the present invention there is provided a vending machine comprising a body, a merchandising unit, and means mounting said merchandising unit relative to the body for movement between a dispensing position and a loading position, said means comprising first and second spaced suspension link members, each pivoted at an upper pivot to the body and at a lower pivot to the merchandising unit, and stop means for retaining the merchandising unit in the said loading position.

Preferably, the said merchandising unit comprises a planar support member, a motor-driven sprocket mounted with its axis of rotation extending from said planar member, an indexing motor operatively connected to the said sprocket, an idled sprocket spaced from said motor-driven sprocket and mounted with its axis of rotation parallel to the axis of the motor-driven sprocket, an endless belt mounted on said sprockets for indexing movement by said indexing motor, and a plurality of platform members extending from said belt to provide an article receiving compartment between each immediately succeeding pair of platform members.

An endless belt for such a merchandising unit comprises a plurality of L-section members interlinked in a manner to be described particularly hereinafter.

A particular preferred embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, wherein:

FIGURE 1 is a perspective view of a vending machine, with the door thereof shown in the fully opened position, and one of the merchandising units shown in the loading position while the remainder of the units are in the dispensing position,

FIGURE 2 is a section through the upper part of the machine, on the line 2—2 of FIGURE 1, to show the manner in which each of the merchandising units is suspended in the vending machine,

FIGURE 3 is a part perspective view to a larger and showing a detail of the construction of the endless belt of each merchandising unit of the vending machine, and

FIGURES 4 and 5 are respectively a part perspective view and a part side elevation to show the method of operation of an access door of the machine.

Referring now especially to FIGURES 1 and 2, the vending unit illustrated and described herein is of the type comprising a free-standing cabinet having a body **10** and a front door **11** pivoted to the body about a vertical axis. Four merchandising units **12** are mounted side by side within the body of the cabinet, the three left hand units being shown in the so-called dispensing position, while the extreme right hand unit is shown in the so-called loading position.

Each unit comprises a flat supporting back plate **13** having a channel member **14** fastened to the central portion thereof, the said member serving as a support at its bottom end for a hexagonal-section sprocket **15**, which is mounted with its axis of rotation **16** perpendicular to the plane of the back plate **13**. This sprocket **15** is driven via pinions **17** and **18** and a chain **19** from a small, electrically driven, indexing motor **20** mounted on the back plate **13** beneath the channel **14**, so that the motor is protected by the channel. A second hexagonal-section idler sprocket **21** is mounted at the other end of the channel member **14** with its axis of rotation **22** perpendicular to the plane of the backing member **13** and parallel to the axis **16**. An endless belt **23**, consisting of a plurality of L-section members such as **24** passes over both of the sprockets and is moved intermittently as required under the control of the indexing motor **20**. Each of the L-section members comprises a link arm **24A** and a platform arm **24B**, the links being connected together to form the endless belt in a manner to be described more particularly below. It will be seen that the link arms of all the L-section members are coplanar and form the endless belt, while the platform arms extend substantially perpendicular to the plane of the belt and generally parallel to one another. An edge member **25** extends almost completely around the edge of the back plate **13** and completely surrounds the belt except for a viewing aperature **26** disposed opposite a window **27** in the door, and a dispensing aperture **28** which (with the merchandising unit in the dispensing position) is disposed above a tray **29** mounted in the body of the machine. A minor edge member **30** is mounted at the bottom front corner of the back plate **13** to form a bridge between the viewing aperture **26** and the dispensing aperture **28** carries an operator's handle **31**.

Referring now especially to FIGURE 2, each unit **12** shown therein in the loading position has a protective back plate **32**, the back plate of the nearer unit being shown as removed in order to show the means for mounting the unit in the body **10**, said means comprising first and second link suspension members **33** and **34** respectively. The member **33** is of box section having its upper end pivotally connected, as by a hinge **35**, to the upper part of the back wall of the body **10**, and its lower end pivotally connected, as by another hinge **35**, to a channel-section member **36** fastened to the back plate **13**. The member **34** comprises a bar pivoted at its lower end to the member **36**, and having at its upper end a cross bar **37** by which the member can be removably hooked into a channel section member **38** mounted at the top of the body **10**, unhooking being effected by passing the cross bar **36** through an appropriately shaped slot **38A** in the side wall of the channel member **38**. It will be understood that the distances between the respective pivots of the members **33** and **34** are substantially the same, so that the two members are parallel to one another. An adjustably mounted bump member **39** on the channel **36** engages the back wall when the merchandising unit is in the dispensing position and permits adjustments of this position.

A stop member for retaining the merchandising unit in the said loading position comprises a lever **40** having a detent **41** at the end of the shorter arm thereof and



an upper pivot to the body and each pivoted at a lower pivot to the said planar support member with the plane of movement of said suspension link members parallel to the plane of the planar support member, the axes of said pivots being substantially parallel to one another and perpendicular to the plane off said planar support member, and stop means for retaining the merchandise unit in said loading position.

5. A vending machine comprising a vertically disposed, rectangular section body, a channel member disposed in the neighbourhood of the upper front edge of said body, and a merchandising unit comprising a planar support member, an endless belt mounted by said support member and providing a plurality of article receiving compartments, and means for indexing said endless belt through a dispensing station, the machine also comprising means mounting said merchandising unit for movement between a dispensing position and a loading position, said means comprising a first suspension link member pivoted at its lower end to the planar support member and pivoted at its upper end by a hook pivot connection to the channel member, and a second suspension link member spaced from and parallel to the first mentioned member, pivoted at an upper pivot to the body and at a lower pivot to the said planar support member and stop means for retaining the merchandising unit in the said loading position comprising a lever having a long arm and a short arm and pivoted to the said planar member and a detent on said short arm engageable in the said loading position with the said channel member to prevent return of the merchandising unit to the said dispensing position.

6. A vending machine comprising a body, a merchandising unit, means mounting said merchandising unit for movement relative to the body between a dispensing position and a loading position, said means comprising first and second spaced suspension link members each pivoted at an upper pivot to the body, and at a lower pivot to the merchandising unit, stop means for retaining the merchandising unit in the said loading position, a dispensing position to which articles are discharged from the merchandising unit, and a door permitting access to said dispensing position, said door comprising inner and outer door members pivoted to one another and facing one another, and means so engaging the inner door member that movement of the outer door member to obtain access to the dispensing position causes movement of the second door member to a position preventing access from the dispensing position into the merchandising unit.

7. A vending machine as claimed in claim 6, wherein said two door members are of channel section, with the sides of the channels pivotally connected respectively to one another and comprising a member fixed to the body, and an extension on the inner door member engaging said fixed member whereby movement of the outer door member raises the pivot between the two door members, and thereby raises the second door member into the said access preventing position.

8. A vending machine comprising a body, a merchandising unit and means mounting said merchandising unit for movement relative to the body between a dispensing position and a loading position, said mounting means comprising first and second spaced suspension link members each pivoted at an upper pivot to the body and at a lower pivot to the said plane arm support member, and stop means for retaining the merchandising unit in the said loading position, said merchandising unit comprising a planar support member, a motor-driven sprocket mounted with its axis of rotation extending from said planar member, an indexing motor operatively connected to the said sprocket, and an idler sprocket spaced from said motor-driven sprocket and mounted with its axis of rotation parallel to the axis of the motor-driven sprocket, an endless belt mounted on said sprockets for movement by said indexing motor and a plurality of platform members extending from said belt to provide respective receiving compartments between each immediately succeeding pair of platform members.

9. A vending machine comprising a body, a merchandising unit and means mounting said merchandising unit relative to the body for movement between a dispensing position and a loading position, said means comprising first and second spaced suspension link members each pivoted at an upper pivot to the body and at a lower pivot to the merchandising unit, and stop means for retaining the merchandising unit in the said loading position, said merchandising unit comprising a planar support member, an endless belt mounted by said support member for indexing movement and providing a plurality of article receiving compartments, said endless belt comprising a plurality of L-section members having one arm thereof constituting a platform member, and the other arm thereof constituting a link member, a pair of spaced tab extensions projecting from the free edge of each link member coplanar with the remainder of the member, enlarged heads on said tab extensions, and respective co-operating slots at the junction of each link and platform member adapted to permit passage therethrough of the tab extensions, the said link members of all the L-section members being coplanar and the said platform members of all the L-section members being substantially parallel to one another.

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