

[54] ANTI-THEFT MEANS FOR VENDING MACHINE MODULES

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[51] Int. Cl. G07f 11/58

[58] Field of Search 221/78, 79, 80, 84, 221/85, 86, 216, 219, 217, 218; 198/179, 180

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[57] ABSTRACT

A replaceable vending machine merchandise dispensing module having endless-chain-mounted merchandise supporting means and means associated therewith for preventing improper dislodging of the merchandise and for ensuring proper discharge therefrom.

8 Claims, 7 Drawing Figures

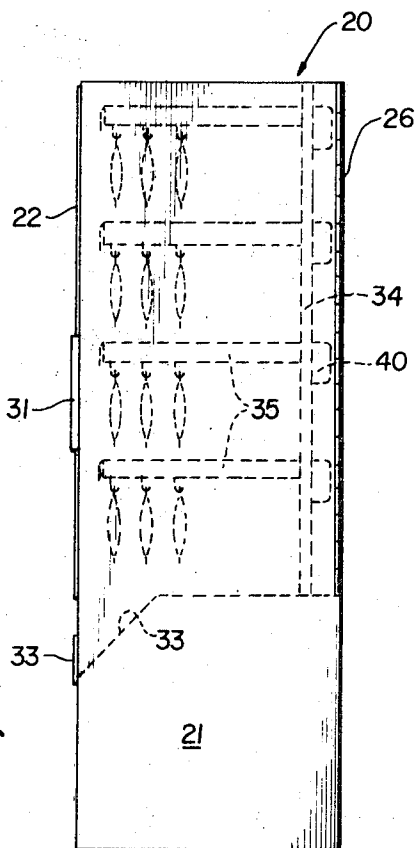


FIG. 1

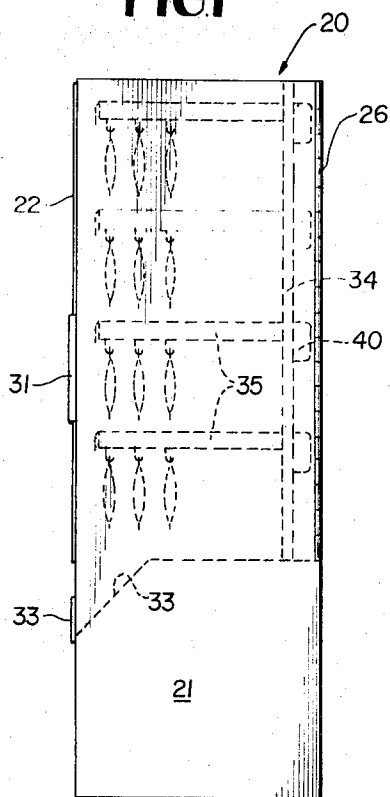


FIG. 3

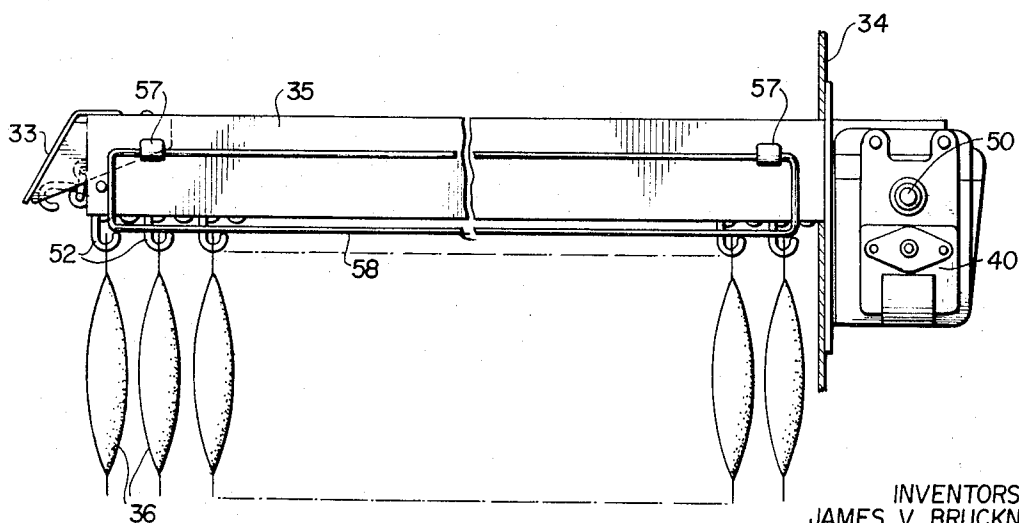
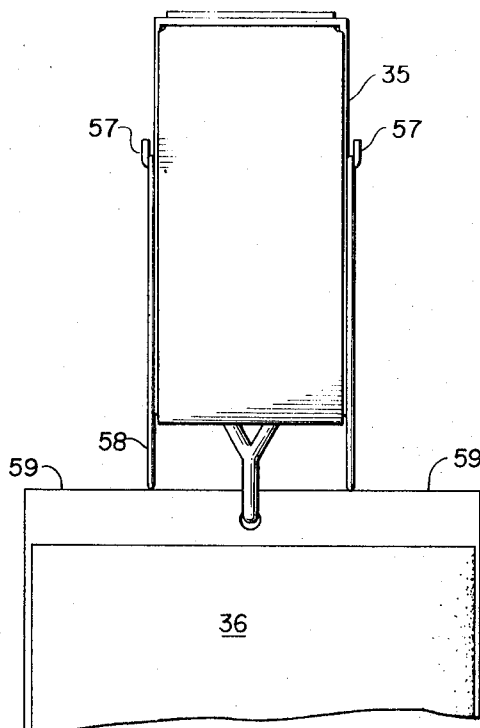


FIG. 2

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FIG4

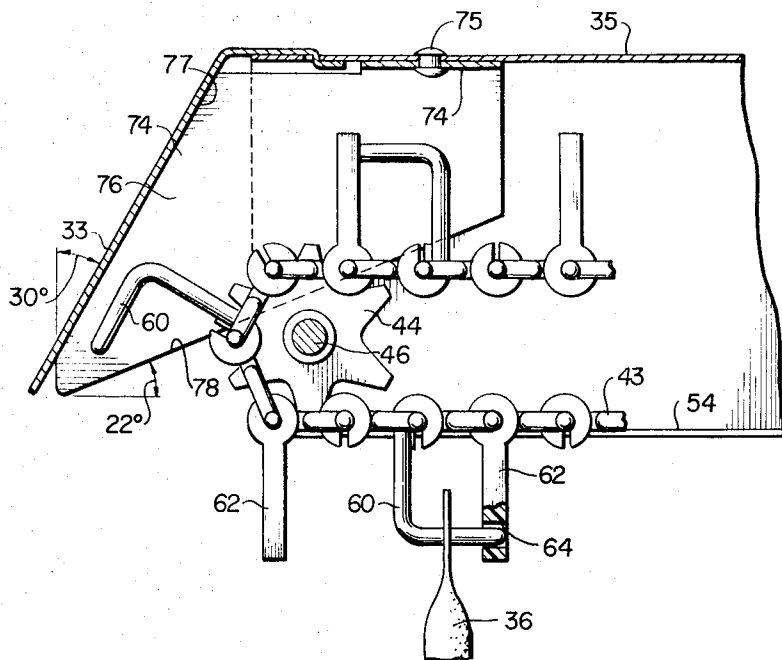


FIG7

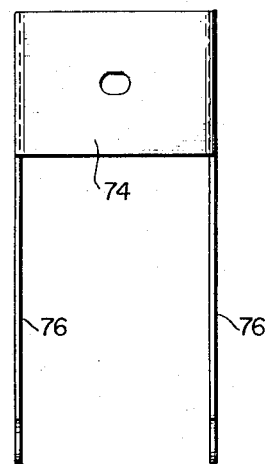


FIG6

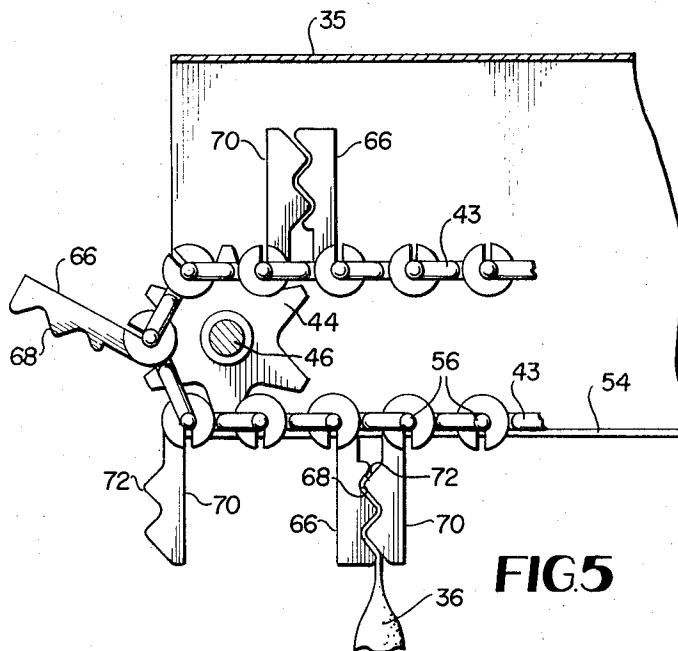
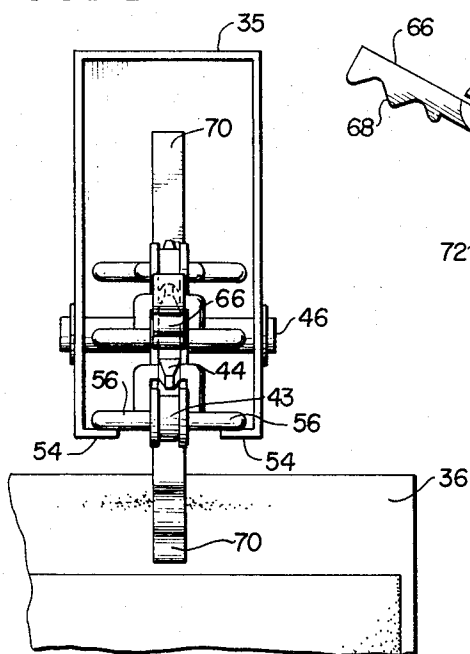


FIG5

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ANTI-THEFT MEANS FOR VENDING MACHINE MODULES

This invention is an improvement on the replaceable merchandise dispensing modules disclosed in the co-pending application of William A. Patrick for Letters Patent, Ser. No. 47257, filed June 19, 1970, entitled "Vending Machine," now U.S. Pat. No. 3,720,350.

While the disclosed modules have proven far superior to other known dispensing modules in preventing the theft of merchandise therefrom by tilting and shaking the vending machine in which they are mounted, dislodgment and theft of the merchandise from the modules does occur. A related problem lies in the aperture of the tab by which the merchandise is supported on a hook of the module chain. When the aperture is too small or the material of the package is not of adequate strength so that the hook tears a small recess in the upper edge of the aperture, proper discharge of the package during the vending operation does not occur.

Accordingly, the main object of the present invention is to provide an improved dispensing module for vending machines in which improper dislodging of the merchandise is prevented and proper delivery thereof is ensured.

An important object of the present invention is to provide novel anti-dislodgment means which cooperates directly with the module supported merchandise packages to prevent the theft thereof.

A further important object of the present invention is to provide novel stripping means to ensure the proper delivery of a package from a hook.

Another important object of the present invention is to provide a pair of module supported means each of which engages a chain supported merchandise package to prevent the dislodgment thereof.

Another important object of the present invention is to provide a module supported stripper having a pair of wings each of which engages a chain supported merchandise package to ensure the proper delivery of a package from a hook.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings we have shown several embodiments of the invention. In these showings:

FIG. 1 is a side elevational view of a vending machine illustrating the manner in which a plurality of merchandise dispensing modules are mounted therein;

FIG. 2 is a side elevational view to an enlarged scale showing one embodiment of the module supported anti-dislodgment means and the means for ensuring proper discharge of a package comprising the present invention;

FIG. 3 is a front elevational view to a further enlarged scale thereof;

FIG. 4 is a vertical fragmentary, central longitudinal sectional view, parts being shown in elevation, of a further embodiment of the invention;

FIG. 5 is a similar view of another embodiment of the invention;

FIG. 6 is a front elevational view thereof; and

FIG. 7 is a top plan view of the means for ensuring proper delivery of a package.

Referring to FIG. 1 of the drawings, numeral 20 designates a coin operated vending machine as a whole which comprises a metal or a one-piece molded fiberglass cabinet 21 suitably supported on legs and/or roll-

ers (not shown). The cabinet 21 is provided with a front door 22 having a glass merchandise viewing panel and a rear door hinged as at 26 to provide access to the rear face of a support panel 34. The front face of the cabinet 21 includes a coin receiving slot, a coin return slot, a plurality of merchandise selector buttons 31 (one for each vending module), and a merchandise dispensing bin 32 to which access is had by a pivoted door 33.

The panel 34 supports thereon a plurality of horizontally and vertically spaced dispensing modules 35 which extend from a position to the rear of the panel adjacent their motors 40, forwardly through rectangular openings in the panel to a point adjacent the glass viewing panel in the front door 22 so that the merchandise packages to be dispensed may fall freely from the front end of their module into the dispensing bin 32. Each module holds a series of merchandise packages 36 by means of their tabs and may contain food such as potato chips, peanuts, etc., or any desired item or items.

As shown in FIG. 6, each module 35 is an elongated housing having an inverted U-shape in lateral cross-section with its bottom edges provided with coextensive intumed flanges 54 to support a merchandise supporting chain 43 by its transversely extending pins 56 and prevent its sagging. The chain 43 is supported on the module by a front idler sprocket 44 mounted on shaft 46 suitably journaled in the housing 35, and on a drive sprocket (not shown) axially aligned with and driven by the motor shaft 50. As seen in the embodiment of FIG. 2, the chain of each module 35 has hooks 52 fixed thereto at regularly spaced points (depending on the thickness of the merchandise packages 36) which hooks open to the rear of the machine.

The merchandise packages 36 are easily loaded onto a supporting module 35 by suspending them from the hooks 52 of the chain 43 by means of apertures in their tabs. Improper dislodgment of the packages from the hooks is prevented by a pair of depending wires 58 which are substantially coextensive with the module 35 and hinged to each side of it by means of struck-out tabs 57. As seen in FIG. 2 and 3, the wires 58 extend downwardly to engage the shoulders 59 of the tabs of the packages 36 and prevent dislodgment and the wires are only pivoted upwardly during and to facilitate package loading. When a given hook 52 and its package reaches the idler sprocket 44, the shoulders 59 of the package move out from under the wires 58 and the hook engages the pivoted, indicia bearing end plate 33 of the module 35 and the package 36 engages the inclined edges 78 of the wings 76 of a stripper 74 and drops off the hook 52 into the bin 32. Thus, theft of the packages is effectively prevented.

The stripper 74 is a U-shaped bracket fastened to the bottom surface of the top of the front end of the module 35 by a rivet 75 and its depending wings 76 lie flat against the module sides and extend downwardly and forwardly. As shown in FIGS. 2 and 4, the upper edges 77 of the wings 76 are inclined at an angle of 30° with respect to the vertical and form a rest for the pivotable indicia plate 33. The lower edges 78 of the wings 76 are inclined at an angle of 22° with respect to the horizontal and this angle is an important feature of the invention as it has been found to be the optimum angle for stripping merchandise packages from their supporting hooks as the latter move upwardly about the idler

sprocket 44. Regardless of the condition of the tab aperture which results in its adherence to a hook, the lower edges of 78 of the wings 76 engage the package shoulders 59 and strip the package from its hook to ensure its delivery to the bin 32.

In the embodiment of the invention disclosed in FIG. 4 wherein like parts bear like numbers, packages 36 are supported and prevented from dislodgment by pairs of metal or plastic members depending from the module supported chain 43. One of the pairs of members comprises an L-shaped or square hook 60 rigidly fixed to one link of the chain and the other is a closure tab 62 for the square hook which tab is provided with an aperture 64 for the reception of the end of the hook 60 as shown by the members just approaching the idler sprocket 44. It will be appreciated that a package 36 on the hook 60, when closed by the tab 62, cannot be dislodged therefrom by shaking, etc., the cabinet 21 and any theft therefrom is thus effectively prevented. As also shown in FIG. 4, the square hook 60 and its closure tab 62 are pivoted apart when they move around the idler sprocket 44 to permit the package 36 to drop into the discharge bin 32.

A further and important embodiment of the invention which is adaptable for use with packages 36 having either perforated or unperforated tabs is shown in FIGS. 5 and 6 wherein like parts again bear like numbers. As in FIG. 4, packages 36 are supported and prevented from dislodgment by pairs of metal or plastic members rigidly fixed to and depending from the module supported chain. One of the members of each pair comprises a generally rectangular clamping element 66, the thickness of which is slightly more than half of a chain link, and the rear face of which is undulated as at 68. The other of the members is a cooperating clamping element 70 of similar thickness and the forward face of which is provided with complementary or mating undulations as at 72.

In this embodiment of the invention, the module 35 is loaded with the packages from the front end by turning the sprocket 44 counterclockwise and it will be appreciated that as the clamping elements moved around the sprocket and come together with the tab of a package 36 in between, the latter will be tightly clamped and securely held in spite of any attempts to dislodge it by shaking, etc., the vending machine 20. Conversely, during a normal coinoperated vending dispensing operation, as a package 36 moves under the idler sprocket 44, the rigid mating clamping elements 66, 70 move apart, as shown in FIG. 5, to drop the package into the discharge bin 32.

It is to be understood that the forms of our invention herewith shown and described are to be taken as preferred examples of the same and that various changes

in the shape, size and arrangement of parts may be resorted to without departure from the spirit of the invention or the scope of the subjoined claims.

What is claimed is:

1. The combination with a dispensing module having depending sides supporting an endless merchandise conveyor on spaced sprockets; of a pair of members supported by and depending from the module and cooperatively engaging the merchandise to prevent its dislodgment from the conveyor; said members comprising a pair of wires fixed to and substantially coextensive with said module.
2. The combination recited in claim 1 wherein said wires are pivotable out of engagement with the merchandise to permit the loading of additional merchandise on the conveyor.
3. The combination recited in claim 1, and additional means mounted on said module to strip the merchandise from the conveyor to effect discharge thereof.
4. A merchandise conveyor comprising a support; a pair of spaced sprockets mounted on said support; an endless, merchandise supporting chain mounted on said sprockets; and a pair of members depending from said support and cooperatively engaging the merchandise to prevent its dislodgment from the conveyor; said members comprising a pair of wires fixed to and substantially coextensive with said chain.
5. The combination recited in claim 4 wherein said wires are pivotable out of engagement with the merchandise to permit the loading of additional merchandise on said chain.
6. The combination recited in claim 4, and additional means mounted on said module to strip the merchandise from the conveyor to effect discharge thereof.
7. The combination with a dispensing module having depending sides supporting an endless merchandise conveyor on spaced sprockets; of pairs of members independently supported by and depending from said conveyor; one of said members consisting of a hook solely for supporting merchandise and the other of said members consisting of an apertured closure tab positioned over the hook solely to retain the merchandise thereon.
8. A merchandise conveyor comprising a support; a pair of spaced sprockets mounted on said support; an endless merchandise supporting chain mounted on said sprockets; and pairs of members independently depending from said chain; one of said members consisting of a hook solely for supporting merchandise and the other of said members consisting of an apertured closure tab positioned over the hook solely to retain the merchandise thereon.

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