VENDING MACHINE FOR COSMETIC MATERIALS

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ABSTRACT

A vending machine includes a receptacle having a delivery chute, a container delivering device disposed in the receptacle, for selectively supplying a selected container to the delivery chute of the receptacle after proper coins have been deposited into the vending machine, and a filling device for receiving a merchandise and for selectively supplying the merchandise to the selected container. A supporting device may support and move the container toward the filling device, and the filling device may supply various kinds of merchandise to the container, such as the solid golden powder, liquid lotion, or pasty or soft lipstick materials.
VENDING MACHINE FOR COSMETIC MATERIALS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a vending machine, and more particularly to a vending machine having a movable supporting device for supporting and delivering the selected containers to receive the selected materials or merchandise, such as cosmetic materials.

[0003] 2. Description of the Prior Art

[0004] Various kinds of typical vending machines have been developed and comprise a number of coin chutes for receiving the coins, and a number of magazines for receiving and storing various kinds of goods to be sold, and a number of buttons to be depressed or actuated by the users, in order to determine the required goods to be purchased.

[0005] For example, U.S. Pat. No. 649,737 to Martin discloses one of the typical vending machines for dispensing cigars or other material capable of being carried in circular racks, and for dispensing cigars of various prices and to provide a means whereby coins of required dimensions may be placed in the same chute and will find their way to the compartments designed to receive them.

[0006] In these typical vending machines, the selected goods will be automatically dropped into the delivery chutes after the proper coins have been deposited into the vending machine. However, the users may not know or may not see how the selected goods are selected and dropped into the delivery chutes.

[0007] U.S. Pat. No. 4,722,267 to Gallockin et al. discloses another typical French fry vending machine including a number of frozen foodstuff holding compartments in a refrigeration chamber, a metered dispensing rotatable wheel positioned below the outlet of each holding compartment to, upon activation, dispense a metered quantity of frozen foodstuff to a cooking chamber, preferably by the delivery of the foodstuff to a conveyer position beneath a line of metered dispensing rotatable wheels, and an oil circulating, filtering, heating and replenishment system provided to service a deep frying tank with a quantity of oil into which frozen food stuff is emerged for a predetermined period of time for cooking.

[0008] In these typical vending machines, the selected quantity of the foodstuff may be cooked after selection. However, the typical vending machines may not be used for selling cosmetic materials, such as lipstick materials, lotion materials, golden particles or powder, or other solid, liquid, or pasty cosmetic materials.

[0009] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional vending machines.

SUMMARY OF THE INVENTION

[0010] The primary objective of the present invention is to provide a vending machine including a movable supporting device for supporting and delivering the selected containers to receive the selected materials or other merchandise, such as the cosmetic materials from the selected charging or filling devices.

[0011] In accordance with one aspect of the invention, there is provided a vending machine comprising a receptacle including a delivery chute, a container delivering device disposed in the receptacle, for selectively supplying a selected container to the delivery chute of the receptacle, and a filling device for receiving a merchandise and for selectively supplying the merchandise to the selected container.

[0012] The receptacle includes a supporting device disposed therein, to selectively support and move the selected container toward the filling device. The supporting device includes a carrier slidably disposed in the receptacle, and a casing disposed on the carrier, for supporting the selected container.

[0013] The supporting device includes a motorized lazy tone device disposed between the carrier and the casing, for moving the casing up and down relative to the carrier. The casing includes a pair of spring-biased jaws disposed therein, for stably retaining the selected container in the casing.

[0014] The filling device includes a housing for receiving the merchandise therein, and a nozzle extended from the housing, for selectively filling the merchandise into the selected container. The filling device includes a vacuum device coupled to the nozzle, for drawing excessive merchandise out of the selected container and into a collecting reservoir.

[0015] The filling device includes a plunger coupled to the nozzle, for injecting the merchandise into the selected container. The filling device includes a block disposed between the housing and the nozzle, and having a bore formed therein, and a rod rotatably engaged into the bore of the block and having a three-way conduit formed therein, for controlling a flowing of the merchandise. The filling device includes a stirrer engaged into the housing, for stirring the merchandise.

[0016] The receptacle includes a supporting device disposed therein, to selectively support and move a mold device toward the filling device. The mold device includes a mold cavity formed therein for receiving the merchandise from the filling device, and a cap for attaching onto the mold device.

[0017] The container delivering device includes a rotary member having a slot formed therein, for receiving the selected container, and a motor coupled to the rotary member, for rotating the rotary member to selectively disengage the selected container from the rotary member.

[0018] The container delivering device includes a frame for receiving containers to be selected by the user, and includes a motorized rotary wheel having a number of depressions formed in an outer peripheral portion thereof, for receiving and for sending the containers toward the rotary member one by one.

[0019] An elevator is disposed between the frame and the rotary member, and includes an endless belt having a number of recesses formed therein, for receiving and elevating and sending the containers toward the rotary member one by one.

[0020] Further objectives and advantages of the present invention will become apparent from a careful reading of the
detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] FIG. 1 is a partial exploded view of a vending machine in accordance with the present invention;

[0022] FIG. 2 is a partial cross sectional view of the vending machine, taken along lines 2-2 of FIG. 3;

[0023] FIG. 3 is a partial cross sectional view of the vending machine, taken along lines 3-3 of FIG. 2;

[0024] FIG. 4 is an enlarged partial perspective view illustrating a container delivering device of the vending machine;

[0025] FIG. 5 is a further enlarged partial perspective view of the container delivering device of the vending machine;

[0026] FIG. 6 is a side schematic view of the container delivering device of the vending machine;

[0027] FIG. 7 is a side schematic view similar to FIG. 6, illustrating the operation of the container delivering device of the vending machine;

[0028] FIG. 8 is an enlarged partial plan schematic view of the container delivering device of the vending machine;

[0029] FIG. 9 is an enlarged partial perspective view illustrating a movable supporting device of the vending machine, for supporting the selected containers;

[0030] FIG. 10 is a partial exploded view of the movable supporting device of the vending machine;

[0031] FIGS. 11, 12 are partial cross sectional views illustrating the operation of the movable supporting device of the vending machine;

[0032] FIG. 13 is an enlarged partial cross sectional view illustrating the operation of a charging or filling device for filling or charging the solid merchandise into the selected containers;

[0033] FIG. 14 is a partial exploded view similar to FIG. 1, illustrating the other charging or filling device of the vending machine, for filling or charging the liquid merchandise into the selected containers;

[0034] FIG. 15 is a partial cross sectional view of the vending machine, taken along lines 15-15 of FIG. 16;

[0035] FIG. 16 is a partial cross sectional view of the vending machine, taken along lines 16-16 of FIG. 15;

[0036] FIG. 17 is an enlarged partial perspective view illustrating the charging or filling device of the vending machine, for filling or charging the liquid merchandise into the selected containers;

[0037] FIG. 18 is a partial exploded view of the charging or filling device filling or charging the liquid merchandise into the selected containers;

[0038] FIGS. 19, 20 are partial cross sectional views illustrating the operation of the charging or filling device for filling or charging the liquid merchandise into the selected containers;

[0039] FIG. 21 is a partial exploded view similar to FIGS. 1 and 14, illustrating the further charging or filling device of the vending machine, for filling or charging the pasty or soft merchandise into the selected containers;

[0040] FIG. 22 is a partial cross sectional view of the vending machine as shown in FIG. 21;

[0041] FIGS. 23, 24 are partial cross sectional views illustrating the operation of the charging or filling device for filling or charging the pasty or soft merchandise into the selected containers;

[0042] FIG. 25 is a partial exploded view illustrating a mold device for receiving and forming the pasty or soft merchandise from the charging or filling device; and

[0043] FIGS. 26, 27 are partial exploded views illustrating the forming of the molded pasty or soft merchandise from the vending machine with the selected containers.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0044] Referring to the drawings, and initially to FIGS. 1-5, a vending machine 1 in accordance with the present invention comprises an outer receptacle 10 including one or more chambers 11 formed therein (FIGS. 1-3, 14-16 and 21-22) for receiving one or more container delivering devices 20 therein, which may contain and supply various containers 90 of different sizes or volumes or areas to be selected by the users, and including one or more further chambers 12 formed therein for receiving one or more charging or filling devices 40 (FIGS. 1-8, 11-13, 50 (FIGS. 14-20), 70 (FIGS. 21-24) therein, which may contain and supply various materials or merchandise, such as solid or liquid or pasty or soft cosmetic materials, to be selected by the users, into the containers 90 selected by the users.

[0045] The outer receptacle 10 includes a front panel or a front panel 13 having one or more typical chutes 14 formed or provided thereon, for receiving coins or paper money or the like from the users, and having a number of display windows 15 for displaying the containers 90 of different sizes or volumes or areas to be selected by the users, and includes an outlet port or delivery chute 16 formed or provided in the front panel 13, for receiving the containers 90 selected by the users. The outer receptacle 10 further includes a number of display windows 17 for displaying the merchandise or cosmetic materials 91, 92, 93 to be selected by the users, and includes an outlet port or delivery chute 18 formed or provided in the front panel 13, for receiving the merchandise or cosmetic materials 91, 92, 93 to be selected by the users.

[0046] For example, the display windows 17 of the front panel 13 may be used to display the solid merchandise or cosmetic materials 91, such as decorative golden particles or powder or other solid materials, to be supplied by the charging or filling devices 40 (FIGS. 1-3), or may be used to display the liquid merchandise or cosmetic materials 92, such as the lotion materials or other liquid or fluid materials, to be supplied by the charging or filling devices 50 (FIGS. 14-16), or may be used to display the pasty or soft merchandise or cosmetic materials 93, such as the lipstick materials or other pasty or soft materials, to be supplied by the charging or filling devices 70 (FIGS. 21-22).
The outer receptacle 10 may further include a number of buttons (not shown) formed or provided on the front panel 13 thereof, for being depressed or actuated by the users, in order to choose or to select the required goods or containers 90 or merchandise or cosmetic materials 91, 92, 93. The structures of the coin chutes 14, the delivery chutes 16, 18, and the buttons are not related to the present invention and will not be described in further details. The outer receptacle 10 may further include an enlarged container 90 and/or the merchandise or cosmetic materials 91, 92, 93 disposed or provided on top of the outer receptacle 10 (FIGS. 1-3, 14-16, 21-22).

As shown in FIGS. 4-7, each of the container delivering devices 20 includes a frame 21 disposed in the outer receptacle 10, for receiving the containers 90 to be selected by the users, and includes a ramp 22 for downwardly directly or supplying the containers 90 toward a motorized rotary wheel 23 which includes a number of depressions 24 formed in the outer peripheral portion thereof, for receiving and for sending the containers 90 toward the lower portion 25 of the frame 21 one by one. An elevator 26 includes an endless belt 27 supported or conveyed by two rollers 28, and having a number of recesses 29 formed therein, for receiving and elevating and sending the containers 90 toward another ramp 30 one by one. A motor 31 (FIG. 5) may drive the elevator 26 to elevate and send the containers 90.

A rotating or guiding device 32 includes a rotary member 33 having a slot 34 formed therein, for receiving one of the containers 90, and a motor 35 coupled to the rotary member 33, for rotating the rotary member 33, and for allowing the selected container 90 received in the slot 34 of the rotary member 33 to be disengaged from the rotary member 33 when the slot 34 of the rotary member 33 is rotated to be perpendicular to the ground, best shown in FIGS. 7 and 8. The selected container 90 may then be disengaged from the rotary member 33 and dropped into the outlet port or delivery chute 16, and to be obtained or fetched by the users. The obtained container 90 may then be used to receive the merchandise or cosmetic materials 91, 92, 93 from the charging or filling devices 40, 50, 70 respectively.

As shown in FIGS. 9-13, a supporting device 8 is disposed in front of the charging or filling devices 40, 50, 70 respectively, and includes a carrier 80 threaded with a bolt 81, and a motor 82 coupled to the bolt 81 (FIGS. 11-12), for rotating the bolt 81 to move the carrier 80 laterally toward either of the selected charging or filling devices 40, 50, 70. Another motor 83 is disposed on the carrier 80, a screw 84 is coupled to the motor 83 for being rotated or driven by the motor 83, and threaded to a lazy bone device 85 which includes a casing 86 provided on top thereof, to expand or stretch or retract the lazy bone device 85, in order to move the casing 86 up and down relative to the receptacle 10 and the charging or filling devices 40, 50, 70 respectively.

A weighing device 87 may be disposed in the casing 86, for weighing purposes, and a pair of chucks or jaws 88 may be slidable received in the casing 86, and biased or pressed by spring members 89, which may bias or force the jaws 88 to claim and to retain the selected container 90 in place. In operation, the user may engage the selected container 90 into the delivery chute 18, and disposed or engaged and compressed between the jaws 88, and the carrier 80 may then move the selected container 90 laterally or sidewise toward the selected charging or filling devices 40, 50, 70, and the motorized lazy bone device 85 may then be actuated by the motor 83, to move the selected container 90 upwardly and downwardly relative to the selected charging or filling devices 40, 50, 70, to receive the merchandise or cosmetic materials 91, 92, 93 from the charging or filling devices 40, 50, 70 respectively.

For example, as shown in FIG. 13, the filling device 40 includes a housing 41 for receiving the solid merchandise or cosmetic materials 91 therein, such as decorative golden particles or powder or other solid materials, and a nozzle 42 extended downwardly from the housing 41, for engaging into the selected container 90, and for filling the merchandise or cosmetic materials 91 into the selected container 90. A tube 43 may be engaged onto the outer peripheral portion of the nozzle 42, and may couple the nozzle 42 to a vacuum source or device 44, which may draw or the like excessive merchandise or cosmetic materials 91 out of the selected container 90, and into a collecting reservoir 45. After the filling operation, the supporting device 8 may then move the container 90 and the merchandise or cosmetic materials 91 to the delivery chute 18, for being fetched or obtained by the users.

Similarly, as shown in FIGS. 14-16, and particularly in FIGS. 17-20, the other filling device 50 also includes a housing 51 for receiving the fluid or liquid merchandise or cosmetic materials 92 therein, such as the lotion or other fluid cosmetic materials, and a block 52 attached to the bottom of the housing 41 and having a bore 53 formed therein for receiving the fluid or liquid merchandise or cosmetic materials 92 from the filling device 50, and a nozzle 54 coupled to the block 52 and engageable into the selected container 90 (FIG. 20), and for filling the liquid merchandise or cosmetic materials 92 into the selected container 90.

A rod 55 is rotatably engaged into the bore 53 of the block 52, and includes a three-way conduit 56 formed therein, for controlling the flowing of the liquid merchandise or cosmetic materials 92, and the rod 55 is coupled to a motor 57 which may rotate the rod 55 relative to the block 52. A syringe or injecting device 58 is attached or coupled to the block 52, and includes a passage 59 formed therein and communicating with the bore 53 of the block 52, for slidable receiving a plunger 60 therein. A follower 61 is slidable attached to the injecting device 58 with one or more guide poles 62, and includes the plunger 60 attached thereto or extended therefrom, for moving the plunger 60 along the passage 59 of the injecting device 58, in order to inject the liquid merchandise or cosmetic materials 92 into the nozzle 54.

A bolt 63 is threaded with the follower 61, and is coupled to a motor 64 which may rotate the bolt 63 to move the follower 61 and thus the plunger 60 toward and away from the rod 55 and the block 52 and the nozzle 54. In operation, as shown in FIG. 19, when the plunger 60 is moved away from the rod 55 and the block 52 and the nozzle 54 by the motor 64, the liquid merchandise or cosmetic materials 92 may be drawn into the passage 59 of the injecting device 58 by the plunger 60, when the three-way conduit 56 of the rod 55 communicates the passage 59 of the injecting device 58 with the housing 51.
As shown in FIG. 20, the liquid merchandise or cosmetic materials 92 may then be forced or injected into the container 90 via the nozzle 54, when the plunger 60 is moved toward the rod 55 and the block 52 and the nozzle 54 by the motor 64, and when the three-way conduit 56 of the rod 55 communicates the nozzle 54 with the housing 51. A stirrer 66 may be engaged into the housing 51, and coupled to and driven by a motor 67, to agitate the liquid merchandise or cosmetic materials 92. After the filling operation, the supporting device 8 may then move the container 90 and the liquid merchandise or cosmetic materials 92 to the delivery chute 18, for being fetched or obtained by the users.

As shown in FIGS. 21-25, the further filling device 70 includes a mold device 71 to be attached to or supported on the casing 86 with the spring biased jaws 88, and having a mold cavity 72 formed therein for receiving the pasty or soft merchandise or cosmetic materials 93 from the filling device 70, and a cover 73 for attaching onto the mold device 71, and a housing 74 for receiving the pasty or soft merchandise or cosmetic materials 93 therein, such as lipstick materials, and a nozzle 75 extended downwardly from the housing 74, for engaging into the mold device 71, and for filling the pasty or soft merchandise or cosmetic materials 93 into the mold cavity 72 of the mold device 71. A cooling device 77 (FIGS. 23, 24) may be used to cool and to harden the pasty or soft merchandise or cosmetic materials 93 into the lipstick.

After the pasty or soft merchandise or cosmetic materials 93 has been filled into the mold cavity 72 of the mold device 71, the supporting device 8 may move the mold device 71 toward the delivery chute 18, for allowing the users to fetch and to disengage the mold device 71 from the supporting device 8. As shown in FIGS. 26, 27, the user may then remove the cap 73 from the mold device 71, and may engage the container 90 onto the lipstick 93, in order to remove the lipstick 93 from the mold device 71.

In operation, when a proper coin or proper coins or paper money or the like are deposited into the coin chutes 14, and when the predetermined merchandise or cosmetic materials 91, 92, 93 have been selected with such as the buttons, the user may first obtain the selected container 90 from the delivery chute 16, and may then engage the selected container 90 into the delivery chute 18, and disposed or engaged and compressed between the jaws 88 of the casing 86, and the carrier 80 may then move the container 90 to either of the filling devices 40, 50, to obtain the solid or liquid merchandise or cosmetic materials 91, 92 from the filling devices 40, 50. The other the filling device 70 may fill the pasty or soft merchandise or cosmetic materials 93 into the mold cavity 72 of the mold device 71, and the user may then fetch the hardened lipstick from the mold device 71.

It is to be noted that the typical cosmetic materials should be purchased from stores, and may not be sold via vending machines, such that the users may not easily obtain the required cosmetic materials at any time. The vending machine in accordance with the present invention allows the users to purchase and to select the required cosmetic materials.

Accordingly, the vending machine in accordance with the present invention includes a movable supporting device for supporting and delivering the selected containers to receive the selected materials or other merchandise, such as the cosmetic materials from the selected charging or filling devices.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. A vending machine comprising:
   a receptacle including a delivery chute,
   a container delivering device disposed in said receptacle, for selectively supplying a selected container to said delivery chute of said receptacle,
   a filling device for receiving a merchandise and for selectively supplying the merchandise to said selected container.

2. The vending machine as claimed in claim 1, wherein said receptacle includes a supporting device disposed therein, to selectively support and move said selected container toward said filling device.

3. The vending machine as claimed in claim 2, wherein said supporting device includes a carrier slidably disposed in said receptacle, and a casing disposed on said carrier, for supporting said selected container.

4. The vending machine as claimed in claim 3, wherein said supporting device includes a motorized lazy tone device disposed between said carrier and said casing, for moving said casing up and down relative to said carrier.

5. The vending machine as claimed in claim 3, wherein said casing includes a pair of spring-biased jaws disposed therein, for stably retaining said selected container in said casing.

6. The vending machine as claimed in claim 1, wherein said filling device includes a housing for receiving the merchandise therein, and a nozzle extended from said housing, for selectively filling the merchandise into said selected container.

7. The vending machine as claimed in claim 6, wherein said filling device includes a vacuum device coupled to said nozzle, for drawing excessive merchandise out of said selected container and into a collecting reservoir.

8. The vending machine as claimed in claim 6, wherein said filling device includes a plunger coupled to said nozzle, for injecting the merchandise into said selected container.

9. The vending machine as claimed in claim 8, wherein said filling device includes a block disposed between said housing and said nozzle, and having a bore formed therein, and a rod rotatably engaged into said bore of said block and having a three-way conduit formed therein, for controlling a flowing of the merchandise.

10. The vending machine as claimed in claim 6, wherein said filling device includes a block disposed between said housing and said nozzle, and having a bore formed therein, for stirring the merchandise.

11. The vending machine as claimed in claim 1, wherein said receptacle includes a supporting device disposed therein, to selectively support and move a mold device toward said filling device.

12. The vending machine as claimed in claim 11, wherein said mold device includes a mold cavity formed therein for
receiving the merchandise from said filling device, and a cap for attaching onto said mold device.

13. The vending machine as claimed in claim 1, wherein said container delivering device includes a rotary member having a slot formed therein, for receiving said selected container, and a motor coupled to said rotary member, for rotating said rotary member to selectively disengage said selected container from said rotary member.

14. The vending machine as claimed in claim 13, wherein said container delivering device includes a frame for receiving containers to be selected by the user, and includes a motorized rotary wheel having a plurality of depressions formed in an outer peripheral portion thereof, for receiving and for sending said containers toward said rotary member one by one.

15. The vending machine as claimed in claim 14, wherein an elevator is disposed between said frame and said rotary member, and includes an endless belt having a plurality of recesses formed therein, for receiving and elevating and sending said containers toward said rotary member one by one.