



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.04.2009 Bulletin 2009/15

(51) Int Cl.:
G07F 11/02 (2006.01)

(21) Application number: **08380278.5**

(22) Date of filing: **26.09.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(71) Applicant: **Zalbide Elustondo, Pedro**
20305- Irún, Guipúzcoa (ES)

(72) Inventor: **Zalbide Elustondo, Pedro**
20305- Irún, Guipúzcoa (ES)

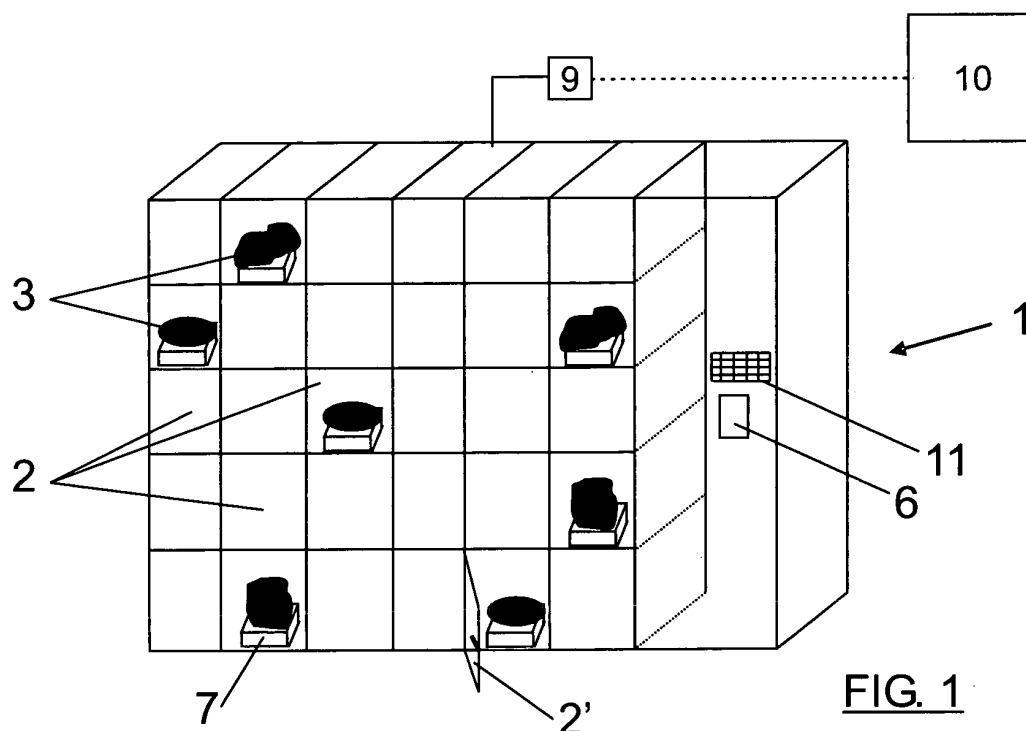
(74) Representative: **Carvajal y Urquijo, Isabel et al**
Clarke, Modet & Co.
Goya 11
28001 Madrid (ES)

(30) Priority: **27.09.2007 ES 200702536**

(54) **Fresh menu dispensing machine**

(57) The invention relates to a fresh menu dispensing system, comprising a dispensing machine (1) with a control unit (9) connected remotely to a control centre (10). The machine (1) has compartments (2) with the products (3) to be dispensed, each product (3) with a unique identifier; weighing means (7) in each compartment (2) responsible for weighing the products (3) and sending said information to the control centre (10); and reading means (6) reading the unique identifier of the products (3). The

control centre (10) has a database in which each unique identifier of the product (3) has information assigned thereto with the expiry date of each product (3), the prefixed weight of the product (3) and the type of product that it is. The control centre (10) has the inventory of the machine in real time, updated when the products (3) are removed from or replaced in the machine (1). The machine (1) only dispenses products (3) with a valid expiry date.



Description

Field of the Invention

[0001] The present invention is comprised within the field of article-dispensing machines. More specifically, the present invention is a fresh food (food or fresh products such as for example menus of the day) dispensing machine.

Background of the Invention

[0002] There currently exist food dispensing machines but they dispense food of the type that is packaged and has a long lifetime, not fresh food such as salads, dishes with sauce, etc. Fresh food requires a refrigerated environment and precise control of expiry dates to avoid civil liability problems. It must also have an advanced payment system since the payments are large (about 5-7 euros per transaction).

[0003] Furthermore, current vending machines are oriented to dispensing small products and single references, not to multiple references such as a menu of the day may be (a menu consists of several references). Nor do current vending machines resolve expiry date problems reliably and easily, since the products that they dispense normally have expiry dates of weeks or months, or some even do not have expiry dates (for example, a swimming cap-dispensing machine in a swimming pool). Nor do they usually have strict temperature control, which makes them unsuitable for dispensing fresh menus.

[0004] The dispensing machine object of the present invention solves the previously mentioned problems. It is a dispensing machine specially developed for dispensing fresh menus (menus of the day). The majority of these machines can be managed by catering companies and can be located in small- and medium-sized businesses, offices, petrol stations, and in general premises that are not currently prepared for offering menus of the day.

[0005] The machine automatically adjusts the expiry date of each menu, without the need for the person in charge of refilling it to enter said date manually.

[0006] The present invention offers, among others, the following advantages: automatic control of expiry dates, dispensing of selected items one by one or as a menu, automatic 24-hour monitoring with integrated events management, automatic quality control of the refilling of menus; remote stock control and stock control online via the web, electronic payment means (without coins), system for requesting menus in advance.

Description of the Invention

[0007] The invention relates to a fresh menu dispensing system according to claim 1. Preferred embodiments of the system are defined in the dependent claims.

[0008] The fresh menu dispensing system object of the invention comprises a machine of the type having

refrigeration means to keep the products it dispenses fresh, selection means for the user to select options and a control unit; and a control centre connected remotely to the control unit of the machine.

[0009] The dispensing machine additionally has:

- a plurality of compartments, the products to be dispensed being deposited in each one of them, each product to be dispensed having a unique identifier;
- weighing means in each compartment responsible for weighing the products to be dispensed, the control centre receiving said information through the control unit;
- reading means configured to read, when a product passes through its reading field, the unique identifier of said product.

[0010] The control unit is configured:

i) for each product replacement made in an empty compartment of the machine:

- to obtain from the reading means the identification of said product; and
- to obtain from the weighing means of said empty compartment the weight of the product introduced;
- to send said identification and weight to the control centre;

ii) for each product that the user requests, to send to the control centre the type of product requested.

[0011] The control centre has a database in which each unique identifier of the product has information assigned thereto with at least the expiry date of each product, the prefixed weight of the product and the type of product that it is.

[0012] The control centre has the inventory of the machine in real time and is configured:

i) for each product replacement made in an empty compartment of the machine:

- to compare the weight of the product introduced, received through the control unit, with the prefixed weight for that type of product, it being considered acceptable if it is within pre-established limits;
- to compare the expiry date assigned to the identifier of the product introduced, received through the control unit, with the current date, it being considered acceptable if it is within pre-established limits;
- in the event that the weighing and expiry date of said product are acceptable, to assign to said empty compartment the product introduced and to update the inventory of the machine;

ii) for each product that the user requests, either through the selection means or by pressing on the door of the compartment storing the product desired by the user, to send to the control centre the type of product requested:

- to check for the presence of the type of product chosen by the user, and received through the control unit, in the inventory of the machine;
- to detect those compartments having said product chosen by the user and whose expiry date is the same as or after the date on which the user has requested the product;
- in the event of having detected at least one compartment that fulfils the above requirements, to select a compartment and to indicate to the user, through the control unit, said selected compartment so that he or she removes the product, and to update the inventory of the machine;

[0013] The present system additionally allows a user to reserve a product at least one day in advance. For this purpose the machine preferably has user identification means connected to the control unit and the control unit is configured to:

- identify the user through the identification means;
- obtain from the selection means the product requested by the user;
- send the user identification and the type of product requested to the control centre.

[0014] The control centre is configured to reserve the product for said user in the event of having said product in a compartment of the machine with an acceptable expiry date.

[0015] The control centre can additionally receive from the control unit at least one of the following pieces of data:

- information about user data to proceed to the electronic payment;
- information about breakdowns or malfunctions of the machine.

[0016] The system preferably has temperature control means for each row of compartments, said means being controlled by the control unit, which determines the temperature of each row of compartments.

[0017] The term product can refer either to an individual item or a complete menu made up of several items. In the same way, a single menu or several items, elements making up a menu, of the same type, can be stored in each compartment.

[0018] Each compartment can have a door to access the same and door opening means activated by the control unit.

Brief Description of the Drawings

[0019] A series of drawings is very briefly described below which aid in better understanding the invention and are expressly related to an embodiment of said invention which is set forth as a non-limiting embodiment thereof.

[0020] Figure 1 schematically shows the dispensing machine object of the invention.

Description of a Preferred Embodiment of the Invention

[0021] As shown in Figure 1, the fresh menu dispensing machine 1 has a series of compartments 2, controllable one by one by the control unit 9 of the machine 1, in which the fresh products 3 to be dispensed (fresh food menus, with a short expiry period) are placed, which menus are each generally made up of several articles or products (normally first course, second course, dessert, drink, bread). The products 3 placed in each compartment can be, rather than complete menus, items or articles of the same type (for example, a seafood dish); the menu will thus be formed selecting items from different compartments (for example, pasta from a compartment A, meat from a compartment B, and dessert from a compartment C).

[0022] Each compartment 2 has a door 2' (in Figure 1 only an open door 2' is depicted) which is controlled by the control unit 9 of the machine 1. In turn, each compartment 2 has weighing means 7 responsible for weighing the products 3 that different fresh food menus allow.

[0023] The machine 1 further has a main door that is used to avoid losses of coldness.

[0024] The machine can be used in two different settings: as a complete menu, that is, with the products or items of each menu in only one niche, or with the customer choosing the products or items of each menu (without a set menu), which would imply that the items of the same type are in each niche.

[0025] The process of using the machine in both cases is very similar: the person opens the main door once the control unit 9 has electrically unblocked the opening system of the main door, after the customer is authenticated and a control centre 10, to which the machine 1 is connected, ensures that he or she has enough credit to buy the items.

[0026] Once the door is open, the end customer selects the product 3 (fresh food menu or an individual item from the menu) through selection means 11, for example a keyboard or a touch screen, or decides on the items from said menu by opening the corresponding compartment 2. In each product removal the control unit 9 ensures that the product removals do not exceed the available credit. The machine can indicate to the user from which compartment he or she must extract the product by means of a warning light, or an indication on an LCD display of the machine, an audio message, etc.

[0027] Once the items are removed the customer closes

es the main door and the machine recalculates the stocks of each compartment 2 and updates the transaction.

[0028] If a refill takes place, the process is similar. Once the main door is open, the different doors 2' of the compartments 2 are deactivated so that the refiller has quick access to all of them or can pull out the tray to facilitate the refilling from its upper part (the tray is blocked for everything that does not have the right to refilling).

[0029] The refilling process is as follows:

- The refiller (the person who carries out the refilling) opens the main door giving access to all the compartments 2 at the same time.
- The refiller takes a product 3, which can be a menu consisting of several items, and passes said menu through reading means 6 (for example an RFID reader if the menu or the products making up the menu have RFID tags, or a barcode reader if it has a barcode) after which he or she places it in a free compartment 2. In the event that he or she places several items (for example, several salads in a compartment 2), the filling is similar but in this case several units of the same product are placed in the same compartment 2 and the control unit 9 associates these items with said compartment 2.

Therefore, the sale in the dispensing machine 1 can be of two types: set menu or sale by portions. In the event that it is a sale by set menu, the compartment 2 contains the different portions making up the menu, including also, if the operator so wishes, a drink. If the sale is by portions, each compartment 2 has several portions but of the same reference; there must not be mixed references.

Each item has a unique identifier, as well as bearing an identifier of the type of product. In the packaging company, for each item that is identified, an xml document is generated in the control centre 10 that stores all the information. If a compartment 2 containing only items with expired expiry dates is to be opened, the machine 1 does not allow said compartment 2 to open, since the control centre 10 is what decides which compartment 2 can or cannot be opened. If the compartment 2 does not have its own door 2', the machine informs that said compartment is invalid due to expiry, through for example a display and/or sound messages.

The packaging company must have a terminal which allows, by Internet, recording each packaging (it is recorded in the moment of the packaging) in the control centre 10.

- The control unit 9 of the machine 1 obtains the weight of the product 3 from the weighing means 7 of the compartment 2 in which it has been introduced, and compares the weight with a prefixed value for this type of product 3.
- Once the necessary compartments are refilled, the refiller closes the main door.

[0030] The dispensing machine 1 is refrigerated to adequately preserve the fresh products in the machine, normally a few days. The machine has an integrated temperature control for each row or tray of compartments, which control is carried out continuously 24 hours a day and with an alarm included. When any established control level is exceeded the control unit 9 prevents the dispensing of menus and sends a warning to the control centre 10 to inform an operator to come and solve the malfunction.

[0031] The machine 1 allows several payment means, including electronic payment. This vending system involves very large payments for what is usual in the sector. The price to be paid ranges from 30 cents to 3-6 euros, for example. People do not always have so much change, and therefore the coin-operated payment system does not have so much validity in this sector. Another contemplated payment means is online electronic payment. In this case the user uses a C3 card or pays with a credit or debit card. In both cases the payment is without coins. The third payment means is offline payment, that is, the person is identified and the company in which he or she works is charged at the end of the week or month for all his or her expenses in these machines. This means allows applying the subsidy that some companies apply to their users, a subsidy usually reaching 40% of the total cost.

[0032] The present invention allows automatic control of the refilling and dispensing of menus because the weight of each compartment 2 is monitored, which allows knowing if the refilling has been carried out correctly (it detects if products are lacking in the refilling) and if in the dispensing the customer has collected all the products of which the menu consists. The expiry dates are automatically adjusted in the refilling process. Furthermore, the sale of food with an expired expiry date is prevented.

[0033] The menu-compartment assignment is carried out by the control unit 9 during the refilling process. After the user specifies the menu that he or she wants, he or she can access the compartment containing the products of that menu (and with an acceptable expiry date), indicating to the user which compartment is selected. This control ensures that menus with expired expiry dates are not dispensed. The door 2' has for this an opening mechanism activated by the control unit 9 when the conditions are fulfilled.

[0034] In the event of wishing to customize the menu there are two options: if the machine does not have an intermediate door 2' per compartment 2, the user must simply take from each niche what he or she wants. When an item is extracted, the machine 1 detects the variation in weight and records it. If the machine has an intermediate door 2' per compartment, the user must press said door and it will open, the user then being able to remove the item. When it is removed, due to the variation in weight, it is accounted for. In this case the menu will be that adjusted to the user's liking.

[0035] The user can also reserve a certain menu one

day (or even several days) in advance. This pre-selection will have priority over later customer requests. The menu is reserved as follows:

- The user is identified (the machine may have user authentication means configured so that the user can be identified). For example, the identification can be made through a magnetic card or an RFID card. 5
- The user requests the reservation of the menu, indicating in turn the menu specifically chosen, through the selection means 11. 10
- If the product is in the machine and the expiry date is valid, the control centre 10 (the control unit 9 does not have information about expiry dates but about the content of the niches) assigns a compartment to the user (his or her request can be put in a queue and when there is another request for the same item or menu it checks if there is stock remaining to respond to the customer that has requested this item or menu in advance). If there is no product, the person responsible for refilling the machine is informed that a menu of that type has a guaranteed sale. 15 20

[0036] The control unit 9 controls what is replaced and what is dispensed, and passes this data to the control centre 10 which in turn controls the inventory of the machine 1 in real time since every transaction is carried out against the control centre 10. The control centre 10 is what knows what there is in each machine at all times. For this reason these machines require an Internet connection (cable or wireless). 25 30

Claims

1. A fresh menu dispensing system, comprising:

- a dispensing machine (1) of the type having refrigeration means to keep the products that it dispenses fresh, selection means (11) for the user to select options and a control unit (9); and 35 40
- a control centre (10) connected remotely to the control unit (9) of the machine (1);

characterized in that the dispensing machine (1) additionally has: 45

- a plurality of compartments (2), the products (3) to be dispensed being deposited in each one of them, each product (3) to be dispensed having a unique identifier; 50
- weighing means (7) in each compartment (2) responsible for weighing the products (3) to be dispensed, the control centre (10) receiving said information through the control unit (9); 55
- reading means (6) configured to read, when a product (3) passes through its reading field, the unique identifier of said product (3);

in that the control unit (9) is configured:

i) for each product (3) replacement made in an empty compartment (2) of the machine:

- to obtain from the reading means (6) the identification of said product (3); and
- to obtain from the weighing means (7) of said empty compartment (2) the weight of the product (3) introduced;
- to send said identification and weight to the control centre (10);

ii) for each product (3) that the user requests, to send to the control centre (10) the type of product requested;

in that the control centre (10) has a database in which each unique identifier of the product (3) has information assigned thereto with at least the expiry date of each product (3), the prefixed weight of the product (3) and the type of product that it is; and **in that** the control centre has the inventory of the machine in real time and is configured:

i) for each product (3) replacement made in an empty compartment (2) of the machine:

- to compare the weight of the product (3) introduced, received through the control unit (9), with the prefixed weight for that type of product (3), it being considered acceptable if it is within pre-established limits;
- to compare the expiry date assigned to the identifier of the product (3) introduced, received through the control unit (9), with the current date, it being considered acceptable if it is within pre-established limits;
- in the event that the weighing and expiry date of said product (3) are acceptable, to assign to said empty compartment (2) the product (3) introduced and to update the inventory of the machine

ii) for each product (3) that the user requests:

- to check for the presence of the type of product (3) chosen by the user, and received through the control unit (9), in the inventory of the machine (1);
- to detect those compartments (2) having said product (3) chosen by the user and whose expiry date is the same as or after the date on which the user has requested the product;
- in the event of having detected at least one compartment (2) that fulfils the above requirements, to select a compartment (2)

and to indicate to the user, through the control unit (9), said selected compartment so that he or she removes the product (3), and to update the inventory of the machine;

5

2. The fresh menu dispensing system according to claim 1, allowing a user to reserve a product (3) at least a day in advance; **characterized in that** the machine (1) has user identification means connected to the control centre (9);
in that the control unit (9) is configured to:

10

- identify the user through the identification means;
 - obtain from the selection means (11) the product (3) requested by the user;
 - send the user identification and the type of product requested to the control centre (10);
- and **in that** the control centre (10) is configured to reserve the product (3) for said user in the event of having said product (3) in a compartment (2) of the machine (1) with an acceptable expiry date.

15

20

3. The fresh menu dispensing system according to any of the previous claims, **characterized in that** the control centre (10) additionally receives from the control unit (9) at least one of the following pieces of data:

25

30

- information about user data to proceed to the electronic payment;
- information about breakdowns or malfunctions of the machine.

35

4. The fresh menu dispensing system according to any of the previous claims, **characterized in that** it has temperature control means for each row of compartments, said means being controlled by the control unit (9), which determines the temperature of each row of compartments.

40

5. The fresh menu dispensing system according to any of the previous claims, **characterized in that** each product (3) is one of the following:

45

- an individual item;
- a complete menu made up of several items;

6. The fresh menu dispensing system according to any of the previous claims, **characterized in that** in each compartment (2) the following are stored:

50

- a single menu;
- items, elements making up a menu, of the same type;

55

7. The fresh menu dispensing system according to any

of the previous claims, **characterized in that** each compartment (2) has a door (2') to access the same and door (2') opening means activated by the control unit (9).

