

DESCRIPTION

TITLE OF INVENTION: FOOD CONTAINER SUPPLY AND COLLECTION SUPPORT SYSTEM

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TECHNICAL FIELD

The present invention relates to a food container supply and collection support system, and more particularly, to a food container supply and collection support system configured to improve management efficiency while supporting supply and collection for use
10 of food containers that can be repeatedly used.

BACKGROUND ART

In general, a disposable food packaging container refers to a container that is used for packaging food therein and carrying the container like a lunch box or for delivery, and is
15 configured by a structure and a material that can contain or wrap food.

The disposable food packaging container is a paper or plastic container with a rectangular or circular lid. After eating, the original function of the container is achieved and the container is discarded or recycled depending on the material.

The disposable food container is suggested in various ways, such as Korean
20 Registered Utility Model No. 20-0267304.

In recent years, the number of single-person households is increasing, and there is a need for a method to support supply and collection of food containers that can be repeatedly used and to improve management efficiency, while relieving burdens of container-washing and leftover food dealing for reuse after using food containers for food intake so as to solve
25 environmental problems due to the use of disposable containers.

DETAILED DESCRIPTION OF THE INVENTION

TECHNICAL PROBLEM

The present invention has been made to solve the above requirements, and an object
5 thereof is to provide a food container supply and collection support system capable of
supplying food containers that can be repeatedly used and supporting collection and re-supply
of the used food containers, thereby alleviating user's burdens of container-washing and
leftover food dealing after use of the food containers.

TECHNICAL SOLUTION

10 In order to achieve the above object, a food container supply and collection support
system according to the present invention includes an unused food container accommodation
information processing device configured to support pull-out for use of food containers
accommodated for use standby in a supply housing provided at a place of use, and to generate
container use status information relating to a change in quantity of containers according to
15 pull-out of each of the accommodated food containers; a used food container accommodation
information processing device configured to generate collected container status information
relating to the number of food containers collected in a collection housing capable of
accommodating food containers pulled out and used from the unused food container
accommodation information processing device; and a supply and collection management
20 server configured to gather and process the container use status information and the collected
container status information generated and transmitted from the unused food container
accommodation information processing device and the used food container accommodation
information processing device via a communication network, and to transmit notification
information set to match the gathered container use status information and collected container
25 status information to a set notification target terminal.

In addition, the supply and collection management server is configured to transmit collection instruction information to a notification terminal of a company that collects the collection housing, when the collected container status information received from the used food container accommodation information processing device meets a collection condition.

5 Preferably, the unused food container accommodation information processing device includes a container identification reading unit installed in the supply housing and configured to read unique identification information from an identification information provision unit equipped on each of the food containers; a container accommodation management control unit configured to generate the container use status information relating to the change in
10 quantity of containers according to pull-out of each of the accommodated food containers, from the unique identification information read by the container identification reading unit; and an accommodation communication unit controlled by the container accommodation management control unit to transmit the container use status information to the supply and collection management server.

15 Further, the identification information provision unit may be an RFID equipped on each of the food containers, and the container identification reading unit may be configured to read the RFID and to provide the read information to the container accommodation management control unit.

20 Further, the food containers are each formed of a material that can be reused after a washing process, the unused food container accommodation information processing device further includes a charging support unit configured to support wireless charging of power required for operation of the identification information provision unit equipped on each of the food containers, and an inner surface of the supply housing excluding a communication area of the accommodation communication unit for communication with an outside is formed with

a shielding layer made of a metal material that shields electromagnetic waves, so as to surround the accommodated food containers.

ADVANTAGEOUS EFFECTS OF INVENTION

5 According to the food container supply and collection support system of the present invention, it is possible to provide advantages of preventing environmental pollution and improving user convenience by supporting supply and collection for use of food containers that can be repeatedly used by washing.

10 BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a view showing a food container supply and collection support system according to the present invention.

FIG. 2 is a detailed block diagram showing a control system of an unused food container accommodation information processing device of FIG. 1.

15 FIG. 3 is a detailed block diagram showing a control system of a used food container accommodation information processing device of FIG. 1.

FIG. 4 is a detailed block diagram of a supply and collection management server of FIG. 1.

20 BEST MODE FOR IMPLEMENTATION OF THE INVENTION

Hereinafter, a food container supply and collection support system according to a preferred embodiment of the present invention will be described in more detail with reference to the accompanying drawings.

FIG. 1 is a view showing a food container supply and collection support system
25 according to the present invention.

Referring to FIG. 1, a food container supply and collection support system 100 according to the present invention includes an unused food container accommodation information processing device 110, a used food container accommodation information processing device 150, a supply and collection management server 200, a member terminal 300, and a collection server 400.

The unused food container accommodation information processing device 110 is provided at a place of use, for example, in a single person's home or a restaurant, and is configured to support pull-out for use of food containers 120 accommodated for use standby, to generate container use status information relating to a change in quantity of containers according to pull-out of each of the food containers 120 accommodated for use standby, and to provide the container use status information to the supply and collection management server 200 via a communication network 10. The unused food container accommodation information processing device 110 will be described with reference to FIG. 2.

Here, the food containers 120 are each formed of a material that can be reused after a washing process. In addition, the food containers 120 are each equipped with an identification information provision unit 125 for providing unique identification information. Here, as for the identification information provision unit 125, an RFID for wirelessly transmitting recorded unique identification information may be applied.

Further, the food containers 120 may also be each equipped with an advertisement indicator (not shown) capable of electronically changing and displaying advertisement information.

The unused food container accommodation information processing device 110 is provided with unique identification information, respectively, and can be guided to distinguish and manage the accommodated food containers 120 by container types.

The unused food container accommodation information processing device 110 includes a supply housing 112 having an accommodation space for accommodating the food containers 120, an accommodation sensing unit 130, a container accommodation management control unit 135, an accommodation storage unit 136, an accommodation communication unit 137, a container identification reading unit 141, an accommodation display unit 142, and a charging support unit 148.

The supply housing 112 is formed to have an accommodation space for accommodating the food containers 120 therein. The supply housing 112 has a structure configured to open and close the accommodation space by a door (not shown).

The accommodation sensing unit 130 may be configured to sense and measure information corresponding to the number of the food containers 120 on use standby accommodated in the supply housing 112, and in the shown example, a load cell 132 for measuring a weight of the food container 120 accommodated in the supply housing 112 is applied to each arrangement position of the food container 120.

In addition, although not shown, the accommodation sensing unit 130 may also be configured to perceive the number of the accommodated food containers 120 in various ways, such as a contact sensor provided at each arrangement position of the food container 120 and configured to output a signal corresponding to whether the food container 120 is contacted or seated.

Unlike the shown example, the accommodation sensing unit 130 may be omitted, and the number and types of the accommodated food containers 120 may be perceived only by the container identification reading unit 141, which will be described later.

The accommodation storage unit 136 is controlled by the container accommodation management control unit 135 and is used to record recording target information.

The accommodation communication unit 137 is controlled by the container accommodation management control unit 135 to transmit the container use status information to the supply and collection management server 200 via the communication network 10.

5 The container identification reading unit 141 is installed in the supply housing 112 and is configured to read and provide the unique identification information provided by the RFID, which is the identification information provision unit 125 equipped on the food container 120, to the container accommodation management control unit 135. In this case, the container accommodation management control unit 135 is configured to generate the container use status information by using the unique identification information received from
10 the container identification reading unit 141.

When the food container 120 deviates from a set distance, for example, 1 meter, based on the supply housing 112, the container identification reading unit 141 may be configured to process the food container as being pulled out and to provide reading processing information to the container accommodation management control unit 135. Preferably, a
15 shielding layer 114 is formed on an inner surface of the supply housing 112 so as to increase recognition efficiency with respect to the pull-out of each of the food containers 120 from the supply housing 112.

The shielding layer 114 is formed on the inner surface of the supply housing 112 excluding a communication area of the accommodation communication unit 137 for
20 communication with an outside, in such a way of surrounding the accommodated food container 120 with a metal material that shields electromagnetic waves so as to be able to prevent recognition of the container identification reading unit 141 for the food container 120 located outside the supply housing 112. By such a shielding layer 114, the container identification reading unit 141 can read the unique identification information only for the food
25 container 120 located inside the supply housing 114, and cannot read the unique identification

information for the food container pulled out from the supply housing 112 due to the shielding layer 114, so that it is possible to improve the pull-out recognition rate of the unused food container 120.

The container accommodation management control unit 135 is configured to generate, from the unique identification information read by the container identification reading unit 141, the container use status information relating to the change in quantity of containers according to pull-out of each of the accommodated food containers 120, and to process the information for transmission to the supply and collection management server 200 via the accommodation communication unit 137.

In addition, the container accommodation management control unit 135 may be configured to count the number of the accommodated food containers 120 by using complementarily the unique identification information of the food containers 120 read by the container identification reading unit 141 and the information on the number of the food containers 120 acquired from the accommodation sensing unit 130 with respect to the container use status information relating to the change in quantity of containers according to pull-out of each of the food containers 120 accommodated in the supply housing 112.

Further, the container accommodation management control unit 135 may be configured to record a pull-out time and unique identification information for the food container 120 pulled out for use in the accommodation storage unit 136, to perform processing of outputting a reuse prohibition message through the accommodation display unit 142 when re-accommodation of the food container 120 that has been pulled out in a state that does not correspond to a set re-supply condition is recognized by the container identification reading unit 141, and to transmit reuse information to the supply and collection management server 200.

Here, the re-supply condition may be set such that when a time until re-accommodation is within 1 minute or after 24 hours from a time when the pull-out from the supply housing 112 has been confirmed, it is determined as meeting the re-supply condition, and when the time exceeds 1 minute and is less than 24 hours, it is determined as not meeting the re-supply condition, for example.

The charging support unit 148 is configured to support wireless charging of power required for operation of the identification information provision unit 125 equipped on the food container 120 accommodated in the supply housing 112.

The charging support unit 148 may also be configured to support power charging to match an applied charging structure of the identification information provision unit 125, such as electromagnetic induction, light emission, piezoelectric and thermoelectric ways.

The accommodation display unit 142 is controlled by the container accommodation management control unit 135 to display display information.

The used food container accommodation processing device 150 is configured to generate collected container status information relating to the number of the food containers 120 collected in an accommodation housing 152 configured to support the food containers 120, which have been pulled out from the supply housing 112 of the unused food container accommodation information processing device 110 and used to contain and consume food, and collection of leftover food and to provide the collected container status information to the supply and collection management server 200 via the communication network 10. The used food container accommodation processing device 150 will be described with reference to FIG. 3.

The used food container accommodation processing device 150 includes a collection housing 152, a collection display unit 162, a collection storage unit 166, a collection

communication unit 167, a container collection management control unit 165, and a container identification reading unit 161.

The collection housing 152 is formed to have a structure capable of opening a collection space through a door and storing the used food containers 120. The collection housing 152 is also given unique identification information.

A shielding layer 114 is formed on an inner surface of the collection housing 152 so as to increase recognition efficiency with respect to the identification information provision unit 125 of the food container 120, like the supply housing 112.

The collection display unit 162 is controlled by the container collection management control unit 165 to display display information.

The collection storage unit 166 is controlled by the container collection management control unit 165 to record recording target information.

The collection communication unit 167 is controlled by the container collection management control unit 165 to communicate with the supply and collection management server 200.

The container identification reading unit 171 is equipped in the collection housing 152 and is configured to read the unique identification information provided by the identification information provision unit 125 equipped on the food container 120 stored for collection in the collection housing 152 and to provide the unique identification information to the container collection management control unit 165.

The container collection management control unit 165 is configured to generate collected container status information, which includes the number and types of the collected food containers 120, from the unique identification information perceived from the container identification reading unit 171 with respect to the food containers 120 contaminated by use and stored for collection, and to process the collected container status information for

transmission to the supply and collection management server 200 via the collection communication unit 137 every set cycle.

Meanwhile, the collection housing 152 may be provided with a collection weight sensing unit (not shown) configured to measure and provide weights of the collected food containers and leftover foods so as to perceive an amount of accommodated leftover food. In this case, the container collection management control unit 165 may be configured to acquire a weight of leftover food, which is obtained by subtracting, from a weight sensed by the collection weight sensing unit, a stored weight of the collected food containers 120 calculated from the number and types of the food containers 120 perceived from the container identification reading unit 171, and to process the weight of leftover food for transmission to the supply and collection management server 200 via the collection communication unit 167.

The supply and collection management server 200 is configured to gather and process the container use status information generated and transmitted from the unused food container accommodation information processing device 110 via the communication network 10 and the collected container status information generated and transmitted from the used food container accommodation information processing device 150 via the communication network 10, and to transmit notification information set to match the gathered container use status information and collected container status information to a set notification target terminal.

Here, the notification target terminal may include various terminals, such as a member terminal 300 registered to receive and use food containers and terminals operated by a food container supply company and a supply and collection company.

The supply and collection management server 200 is configured to support supply and collection processing of food containers, and will be described with reference to FIG. 4.

A member registration unit 210 is configured to support member registration of a user terminal connected via the communication network 10 so as to use a food container rental

service for supplying and collecting food containers. The member registration unit 210 is configured to support registration of information necessary for registration, such as a user name, a supply address and a billing method, which are required for member registration, and to record the information in a database (DB) 250.

5 A food container supply support unit 220 is configured to receive an order for an application for supply of the food containers 120 through the member terminal 300 of the member registered in the member registration unit 210, and to perform processing for supply corresponding to the applied supply order details. The food container supply support unit 220 is configured to provide a menu by which a type, a quantity and the like of the food containers
10 to be supplied can be applied and ordered, and to provide order information for food containers to be supplied to a supply company of the food container 120 so that the selected food containers 120 can be delivered.

 A food container collection support unit 230 is configured to gather and process the collected container status information generated and transmitted from each of the used food
15 container accommodation information processing devices 150 via the communication network 10, and to transmit collection instruction information to a notification terminal of a company that collects the collection housing 152, when the collected container status information meets a collection condition. Here, as for the collection condition, various conditions such as an amount of collected food containers and a collection progress period
20 may be set. In addition, the food container collection support unit 230 may be configured so that when an emergency collection request is made through the member terminal 300, the collection processing is performed.

 Here, the collection server 400 is exemplified as the notification terminal of the company that collects the collection housing 152, but a mobile communication terminal such

as a mobile phone may also be applied as the notification terminal of the company that collects the collection housing 152.

Further, the company that collects the collection housing 152 refers to a company linked to process collection, washing and re-supply of food containers, but a plurality of
5 companies can also be applied to independently perform collection, washing and re-supply of food containers, respectively.

A billing processing unit 240 is configured to perform billing processing according to a billing system set corresponding to the use status information aggregated with respect to the use of the food containers 120 that the member has received. Here, as a billing method for
10 rental use of food containers, various billing methods such as a method of paying for a quantity and types of food containers used on a monthly basis may be applied.

According to the food container supply and collection support system as described above, it is possible to provide advantages of preventing environmental pollution and improving user convenience by supporting supply and collection for use of food containers
15 that can be repeatedly used by washing.

CLAIMS

1. A food container supply and collection support system comprising:

an unused food container accommodation information processing device configured

5 to support pull-out for use of food containers accommodated for use standby in a supply housing provided at a place of use, and to generate container use status information relating to a change in quantity of containers according to pull-out of each of the accommodated food containers;

a used food container accommodation information processing device configured to

10 generate collected container status information relating to the number of food containers collected in a collection housing capable of accommodating food containers pulled out and used from the unused food container accommodation information processing device; and

a supply and collection management server configured to gather and process the

container use status information and the collected container status information generated and
15 transmitted from the unused food container accommodation information processing device and the used food container accommodation information processing device via a communication network, and to transmit notification information set to match the gathered container use status information and collected container status information to a set notification target terminal.

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2. The food container supply and collection support system according to Claim 1,

wherein the supply and collection management server is configured to transmit collection instruction information to a notification terminal of a company that collects the collection housing, when the collected container status information received from the used food

25 container accommodation information processing device meets a collection condition.

3. The food container supply and collection support system according to Claim 1,
wherein the unused food container accommodation information processing device comprises:

a container identification reading unit installed in the supply housing and configured
5 to read unique identification information from an identification information provision unit
equipped on each of the food containers;

a container accommodation management control unit configured to generate the
container use status information relating to the change in quantity of containers according to
pull-out of each of the accommodated food containers, from the unique identification

10 information read by the container identification reading unit; and

an accommodation communication unit controlled by the container accommodation
management control unit to transmit the container use status information to the supply and
collection management server.

15 4. The food container supply and collection support system according to Claim 3,
wherein the identification information provision unit is an RFID equipped on each of the food
containers, and the container identification reading unit is configured to read the RFID and to
provide the read information to the container accommodation management control unit.

20 5. The food container supply and collection support system according to Claim 4,
wherein the food containers are each formed of a material that can be reused after a washing
process,

wherein the unused food container accommodation information processing device
further comprises a charging support unit configured to support wireless charging of power

required for operation of the identification information provision unit equipped on each of the food containers, and

wherein an inner surface of the supply housing excluding a communication area of the accommodation communication unit for communication with an outside is formed with a
5 shielding layer made of a metal material that shields electromagnetic waves, so as to surround the accommodated food containers.