FOOD PRESERVATION APPLIANCE WITH FOOD MANAGEMENT SYSTEM

A food preservation appliance including a vacuum and sealing assembly for evacuating and sealing at least one food preservation container, a control panel including a processor, one or more switches, and electronic memory, an algorithm pre-programmed into one of the processor or electronic memory for execution by the processor for generating and storing data in electronic memory related to a type of food and quantity of food preservation containers containing food preserved by the food preservation appliance, wherein the one or more switches are used to update stored data that changes according to food preservation operations.
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FOOD PRESERVATION APPLIANCE WITH FOOD MANAGEMENT SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 61/948,215 filed March 5, 2014, entitled "Food Management System for Food Vacuum Sealing System".

FIELD OF THE INVENTION

[0002] The invention relates to food preservation, and more particularly to an improved food preservation appliance having a food management system for tracking data related to a type and quantity of food preserved.

BACKGROUND OF THE INVENTION

[0001] Vacuum packaging appliances that evacuate air from containers holding food are becoming increasingly popular with households for food preservation and storage. The removal of the air delays spoilage and extends the life of the food. The appliances are typically used in conjunction with bag material that constitutes the container holding the food. The bag material includes two stacked layers of thin, and optionally transparent, plastic film that are sealed together on lateral edges. A length of the bag material that is suitable to hold the food is cut into the desired length with a blade, for example. One of the cut edges of the bag material is sealed by applying heat and pressure to the cut edge to form a storage bag. After the food is inserted in the storage bag, the storage bag is fully sealed by applying heat and pressure to the remaining cut edges. Thus, the ends of the bag material that are cut (i.e. the transverse ends) are sealable to form a fully sealed bag. A vacuum may be applied to evacuate air from the storage bag before it is fully sealed.
In view of the above, it will be apparent to those skilled in the art from this disclosure that there exists a need for an improved food preservation appliance with a food management system that can track large amounts of food that are preserved. This invention addresses this need in the art as well as other needs, which will become apparent to those skilled in the art from this disclosure.

SUMMARY OF THE INVENTION

In an embodiment, there is provided a food preservation appliance including a vacuum and sealing assembly for evacuating and sealing at least one food preservation container, a control panel including a processor, one or more switches, and electronic memory, an algorithm pre-programmed into one of the processor or electronic memory for execution by the processor for generating and storing data in electronic memory related to a type of food and quantity of food preservation containers containing food preserved by the food preservation appliance, wherein the one or more switches are used to update stored data that changes according to food preservation operations.

In an embodiment, there is provided a method of preserving food and maintaining a record of a type and amount of food preserved, including the steps of: using a food preservation appliance to vacuum seal a food preservation container containing a food item, and maintaining an electronic database disposed in the food preservation appliance recording data related to a type of food preserved and a quantity of food preservation containers vacuum sealed with the type of food preserved.

BRIEF DESCRIPTION OF THE DRAWINGS
A more complete understanding of the present invention, and the attendant advantages and features thereof, will be more readily understood by reference to the following detailed description when considered in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view of an improved food preservation appliance with an integral food management system;

FIG. 2 is a block diagram of a control box containing the electronic components for the food preservation appliance of FIG. 1;

FIG. 3 is an embodiment of the food preservation appliance of FIG. 1 with an integral printer for printing data on a food preservation container; and

FIG. 4 is an embodiment of the food preservation appliance of FIG. 1 with an integral scale.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGS. 1 and 2 of the drawings, in an embodiment there is illustrated an improved food preservation appliance 100 including a food management system that makes the management of large quantities of food items stored in food preservation containers or bags 75 stored in the refrigerator or freezer simpler and easier. The food management system is comprised of an electronic database stored in electronic memory of a food preservation appliance 100 that stores the number of food storage containers sealed, the type of food stored therein, date and time they were sealed, and other related data. This Information is stored in electronic memory of the food preservation appliance 100 and synchronized with a mobile computing device 65 such as an iPhone so that users may better understand if they need to buy more food while shopping or if they have stored food in the food preservation containers 75 too long. The
information may be used in tracking food items in the refrigerator and freezer as part of an overall healthy lifestyle plan.

[0006] The food preservation appliance 100 includes a housing 4, a packaging film compartment 6, lid 7, cutting mechanism 8 (not shown), a heating and vacuum assembly 10, and a vacuum remote assembly 16. The housing 4 encloses the packaging film compartment 6 covered by the lid 7, a cutting mechanism (inside the compartment 6) for cutting a length of packaging film stored on a roll in the compartment 6, the heating and vacuum assembly 10, and the vacuum remote assembly 16. The housing 4 includes a slot 12 in the front for receiving an unsealed end of a food packaging container 75 formed from a length of packaging material cut from the roll of packaging material. Alternately, food preservation containers 75 may be used that are pre-formed and sealed on three edges at the factory. The slot 12 opens into a vacuum compartment (not shown) including a vacuum trough (not shown) connected to a vacuum motor (not shown) and a heating element (not shown) operatively connected to a control panel or control box CP. A similar or nearly identical food preservation appliance is disclosed in U.S. patent application serial no. 14/126,692 filed December 16, 2013, owned by a common assignee and incorporated by reference as if fully re-written herein.

[0007] The food packaging container 75 may be pro-sealed along two edges at the factory and sealed on the third edge after being cut from the roll by inserting into the slot 12 and energizing the heating assembly 10. The food packaging container 75 containing a food item may be evacuated and sealed on the unsealed end by inserting the unsealed end into the slot 12 and energizing the vacuum and heating assembly 10 via the control panel CP on the housing 4 as described below.
In particular, the control pane! CP comprises a user interface for controlling various functions of the food preservation appliance 100. The control panel CP may include exteriorly exposed buttons 34, 35, 36, and 37 for access by the user. For example, the button 34 may operate the heating assembly 10 only. The button 35 may operate both the vacuuming and heating assembly 10. The button 36 may operate the vacuum assembly 10 only. Finally, the button 37 may control electrical power being provided to the control panel CP and the electronic components within housing 4 as described below.

Within the housing 4, the control panel CP can include a microcomputer M with an operating control program that controls the vacuum and heating assembly 10, as discussed herein. The control panel CP can also include other conventional components such as a power circuit (not shown), an input interface circuit (not shown), an output interface circuit (not shown), and one or more storage devices ME, such as a ROM (Read Only Memory) device and a RAM (Random Access Memory) device. The power circuit is connected to an AC or DC power source and directs power to the motors, switches, sensors, etc. described herein, as well as provide power to other circuits and components of the control panel CP. The input interface circuit can be electrically connected to the buttons 34, 35, 36 and 37 for user control. The output interface circuit can be electrically connected to a LCD screen 45. The storage device ME stores processing results and control programs that are run by the microprocessor circuit M. The control panel is capable of selectively controlling any of the vacuum and heating assembly 10 or the vacuum remote assembly 16 in accordance with the control program. It will be apparent to those skilled in the art from this disclosure that the precise structure and algorithms for the control panel can be any combination of hardware and software that will carry out the functions of the present invention.
Referring now particularly to FIG. 2, in an embodiment there is illustrated the improved food preservation appliance 100 which includes the control box or control panel CP operative!- with an LCD screen 45 and several tactile buttons 41-44. On one side of the LCD screen 45 there are two tactile switches 41, 42 (one represented by a scroll up arrow and one by a scroll down arrow) to scroll through food items pre-programmed into the microprocessor M or storage devices ME. On the other side of the LCD screen 45 are two more tactile switches 43, 44 (one represented by a "+" sign and one by a "-" sign) to modify the quantity of selected food items as shown in the figure. The control box CP also has a print button 46 for troubleshooting purposes. Power for the control box CP may be provided with its own power supply, i.e., a low voltage rechargeable or disposable battery (not shown).

In an embodiment, the control box CP has a Bluetooth 4.0 transceiver module TC or other electronic wireless communication modality to be able to communicate with a portable computing device 65 such as iPhones. The portable computing device 65 may include an application (known as an app.) such that all data being used by the food preservation appliance 100 and displayed on the LCD screen 45 may be synchronized with the mobile computing device 65 and stored therein and simultaneously displayed thereon. In addition, the application is configured to allow the mobile computing device 65 to operate the controls 34-37 on the control panel CP and display all data on its display that is displayed on the LCD screen 45.

In another embodiment, the control box CP may be connected to a home wireless network (not shown) connected to a global computer network (not shown) connected to a cellular carrier subscribed to by the user of the mobile computing device 65. The user of the
Mobile computing device 65 may access the control box CP and stored information from a remote location such as the grocery store.

The control box CP may also be hard wired via USB or RS-232 to a programmable printer 50 like the Brother TD-4100N or Zebra GC420 using ZPL language to be able to print custom labels L directly. The custom labels L may include information such as type of food, date of storage including time stamp, weight, or virtually any information related to storage of the food item. Optionally, the printer 50 may print bar code labels that may be read using an application on the mobile computing device 65 or other device. In another embodiment, the custom label L may be printed by using the mobile computing device 65 or a computer (not shown) attached to the system with a regular label USB printer like DYMO LabelManager Plug ‘n’ Play Label Maker (not shown). In another embodiment illustrated in FIG. 3, the printer may be an integral printer disposed in the housing 4 of the food preservation appliance 10 and may custom print labels L for attachment to a food preservation container 75 or print the custom information directly on the food preservation container 75.

In an embodiment, the control box CP may include the ability to keep track of the current date and time continuously. The date and time may be set at the factory, upon initial use by the user, or set and periodically synchronized via one of the known web based time servers when connected to the global computer network (not shown).

In operation, every time the up or down arrow 41-42 (tactile switches) on the control box CP is pressed the LCD screen 45 would scroll through a different food item and quantity. When the "+" button 43 is pressed the count on that item goes up by one, the system waits two seconds and if no other buttons are pressed it prints a custom label with food type, count # and the current date; it also synchronizes the food database with the mobile computing
device 65. Every time the "--" button 44 is pressed on the appliance 100, the count # on that item lowers by one; it also synchronizes the food database with the mobile computing device 65. The print button 44 on the control box CP may serve as a troubleshooting help for the printer and prints the current food, count# and time shown on the LCD screen 45.

[0014] The control box CP stores a food database consisting of ten groups of data (ten food types and ten respective count #) in memory and synchronizes them with the mobile computing device 65. The application that is installed on the mobile computing device 65 displays these values as shown. The application enables the user to scroll through all ten items.

[0015] The application synchronizes real time with the control box CP and the "+/-" and "--" buttons on the application on the mobile computing device 65 have the same functionality as the ones in the control box CP.

[0016] User steps:

1. User scrolls through the items on the LCD panel 45 until the desired food to be stored is found in the food preservation container 75;
2. User places food into food preservation container 75 and prepares to vacuum seal;
3. User presses "+/-" button 41 for a particular type of food, count goes up by one, print label L w/ food type, count # and the current date;
4. User presses vacuum and seal button 35 and the food preservation appliance 100 vacuums and seals food preservation container 75, user places printed label L on food preservation container 75;
5. Food preservation appliance 100 synchronizes food inventory with application on the mobile computing device 65; and
6. When user presses the "--" button 44 on a particular food type, the count for that food goes down; the food preservation appliance 100 synchronizes information again with mobile computing device 65.

[0017] In operation, it is assumed that the mobile computing device 65 is always within wireless range of the control box CP or connected via a wireless carrier and the global computer network (not shown).
In an embodiment, there is illustrated an embodiment of a food preservation appliance 100 including an integral digital scale 60 for weighing a food item prior to sealing it in the food preservation container 75. In another embodiment, the digital scale 60 is a stand-alone device that wirelessly communicates weight information via Bluetooth to the control panel CP. The weight of the food item may be display on the LCD screen 45 and stored in memory ME along with the type of food, count, and date and time stamp, etc. The weight of the food item may also be used to calculate the calories the food item contains for further storage in memory ME and printing on the custom label L. The calorie tracking may be part of a custom healthy lifestyle plan. The weight and calorie information may also be synchronized by the application to the mobile computing device 65 and displayed thereon for remote use.

In an embodiment, other information that may be stored in memory ME and synchronized with the application on the mobile computing device 65 is the length of a section of the food packaging film in the roil storage compartment 6 that needs to be dispensed and cut for a particular type of food item and weight also stored in memory ME. As such, a food preservation appliance 100 equipped with an automatic container dispensing, cutting and sealing apparatus (not shown but disclosed in U.S. patent application serial no. 14/126,692 filed December 16, 2013, owned by a common assignee and incorporated by reference as if fully rewritten herein) may be signaled from the mobile computing device 65 to automatically cut a desired length of a section of packaging material and then seal one of the unsealed ends to form a food preservation container 75.

In an embodiment, the control panel CP via the application on the mobile computing device 65 may send a notification to the user when the count of a particular food item has dropped below a pre-determined threshold, usage of last item, availability of a coupon for a
desired food item (when synchronized with a site such as coupon.coin), or any other notification related to the food preservation appliance 100, the food management system, and related operations.

[0021] It will be appreciated by persons skilled in the art that the present invention is not limited to what has been particularly shown and described herein above. In addition, unless mention was made above to the contrary, it should be noted that all of the accompanying drawings are not to scale. A variety of modifications and variations are possible in light of the above teachings without departing from the scope and spirit of the invention, which is limited only by the following claims.
What is claimed is:

1. A food preservation appliance, comprising:
   a vacuum and sealing assembly for evacuating and sealing at least one food preservation container:
   a control panel including a processor, one or more switches, and electronic memory;
   an algorithm pre-programmed into one of the processor or electronic memory for execution by the processor for generating and storing data in electronic memory related to a type of food and quantity of food preservation containers containing food preserved by the food preservation appliance; and
   wherein the one or more switches are used to update stored data that changes according to food preservation operations.

2. The appliance of claim 1, the one or more switches further including:
   at least one switch for selecting a type of food stored in the electronic memory; and
   at least one second switch for incrementing and de-incrementing in the electronic memory a number of the type of food selected by the first pair of switches.

3. The appliance of claim 2, further including the at least one and second switch is each a pair of switches.

4. The appliance of claim 1, farther including a first display for displaying stored data related to the food preservation operations.
5. The appliance of claim 1, the control panel further including a transceiver for wirelessly communicating and synchronizing stored data in the electronic memory on the food preservation appliance with an application on a mobile communication device.

6. The appliance of claim 5, wherein the transceiver wirelessly communicates with the application on the mobile computing device via Bluetooth.

7. The appliance of claim 5, the mobile computing device further including a second display generated by the application displaying synchronized data received from the control panel including the type of food and the number of food preservation containers storing the type of food.

8. The appliance of claim 7, the second display including at least one first button for selecting the type of food stored in the electronic memory of the control panel; and

   at least one second button for incrementing and de-incrementing in the electronic memory of the control panel the number of food preservation containers storing the type of food selected by the first button;

   wherein the control panel is synchronized with the application when the at least first and second buttons are selected.

9. A method of preserving food and maintaining a record of a type and amount of food preserved, comprising the steps of:
using a food preservation appliance to vacuum seal a food preservation container containing a food item; and

maintaining an electronic database disposed in the food preservation appliance recording data related to a type of food preserved and a quantity of food preservation containers vacuum sealed with the type of food preserved.

10. The method of claim 9, further including:

displaying on a display the information stored in the electronic database related to the type of food and quantity of food preservation containers vacuum sealed with the type of food preserved.

11. The method of claim 9, further including:

using an integral or detached printer to print a custom label containing the type of food preserved and the date and time the food was preserved in a particular food preservation container for affixing to the food preservation container or using an integral printer to print on a particular food preservation container the type of food preserved and the date and time the food was preserved.

12. The method of claim 9, further including:

wirelessly synchronizing the data stored in the electronic database with an application on a mobile computing device;

displaying the data on a display of the mobile computing device.
13. The method of claim 12, further including:

updating the data using the application on the mobile computing device; and

wirelessly synchronizing the data with the electronic database.
A. CLASSIFICATION OF SUBJECT MATTER

B65B 3/102; B65B 41/12; G06Q 30/00; B65C 9/46; B65B 3/104; B65B 3/100

According to International Patent Classification (IPC) or to both national classification and IPC

B. DOCUMENTS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65B 3/102; B65B 41/12; G06Q 30/00; B65C 9/46; B65B 3/104; B65B 3/100

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic database consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS/KIPO (internal) & keywords: food preservation, vacuum sealing, control panel, processor, electronic memory, switch, mobile computing device

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Additional information:

Field specialization

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