Title: A SALAD CHEF SYSTEM AND A NUT VENDOR SYSTEM

Abstract: A salad making device including a plurality of salad ingredient bins for storing a corresponding plurality of salad ingredients, a plurality of salad ingredient feeders respectively associated with the plurality of salad ingredient bins, a salad defining interface allowing a customer to define a desired salad, at least one cutters, at least one mixers, at least one salad container suppliers and a controller operative to coordinate operations of the salad ingredient feeders, cutters, mixers and salad container suppliers in order to provide a salad, in an individual one of the salad containers, which has been cut and mixed in accordance with a desired salad defined by a customer.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
A SALAD CHEF SYSTEM AND A NUT VENDOR SYSTEM

FIELD OF THE INVENTION

The present invention relates to automatic food vending machines in general and particularly to a computer controlled salad chef system providing salad item storage, salad item cutting, salad blending and selectable salad serving functionalities; and a nut vendor system providing nut storage, nut weigh-scaling and nut serving functionalities.

BACKGROUND OF THE INVENTION

Salad making devices are known. A variety of typically manually driven devices for cutting, shredding and slicing vegetables and fruits, as well as devices for cheese grating are known, such as "Chef Gadget". Commercially available electrically driven salad makers are known, such as "Lectrix 0401 Saladxpress Electric Salad Center". Automatic shops are also known. A typically closed receptacle is provided which comprises products such as soft-drink cans, candies, sandwiches and the like. A user selects a product and provides payment via a suitable user interface, and the product is automatically provided to the user.

Nut and sweet-thing vending machines are known. A receptacle is attached to a typically mechanical payment device wherein a user inserts a coin and turns a handle so as to receive a handful of nuts.

The disclosures of all publications mentioned in the specification and of the publications cited therein are hereby incorporated by reference.
SUMMARY OF THE INVENTION

The present invention describes a computer controlled salad chef system, which is intended to provide quality salad servings to one or more users. The system described by the present invention typically comprises a plurality of containers for storing salad items; one or more cutters and/or other electronically actuated salad making devices; and a user interface for presenting to a user typically selectable salad designations and receiving a salad selection by a user. The system described by the present invention is distinguished from all salad makers known in the art in that it provides a fully automatic procedure of salad making. In addition, the present invention provides a considerable improvement of all automatic shops known in the art in that it stores fresh salad items rather than prepared servings, and a salad serving is prepared from the said salad items and provided to a user upon and in accordance with a user's request. It may therefore be appreciated that the salad chef system described by the present invention provides a number of considerable advantages over existing systems and methods of salad making. One advantage refers to the fact that the quality of a salad serving strongly depends on the degree of freshness of its constituent salad items, which degree of freshness typically drops rapidly shortly after the various items have been put together within the same receptacle. A salad chef system in accordance with the present invention, which makes a salad serving instantly upon a user's request, using typically unprocessed salad items that are separately stored, presents therefore a considerable advantage over all methods of salad making and merchandizing such as salad bars which provide salad servings prepared in advance.

Another advantage of the present invention stems from the fact that the quality of a salad serving is strongly dependent on a chef's skill, which in the case of salad making reveals itself mainly in an accurate choice of salad items, accurate measurement of their relative amounts and an accurate choice of the cutting and other processing modes to be used with each salad type. In the salad chef system described by the present invention, the amounts of the various salad items to go with each salad type as well as their modes of processing may be accurately determined and adjusted in accordance with the recipes of the best of professional chefs.
Another advantage of the present invention relates to its use as an automatic salad bar in public and/or work places such as bars, offices and the like. In accordance with present invention, a single supplier may provide fresh salad items to a plurality of salad chef systems located in different locations. This procedure provides a considerable improvement over existing methods of food and meal ordering and supplying, where a supplier collects requests from a plurality of individual customers and later provides prepared food servings to the said customers. In a preferred embodiment of the present invention, a salad chef system comprises a networked computer providing communication with a supply center, thereby fully automating not only the process of salad making but also that of supplying the system with fresh salad items. In addition, a salad chef system in accordance with the present invention may also be provided in a home version, suitable for use in private homes. These and other embodiments of the present invention as well as the advantages provided thereby are detailed with reference to the figures described below.

Another food-vending machine described by the present invention comprises a nut vendor system, which is intended to provide sophisticated functionalities of vending nuts and seeds. A nut vendor system typically comprises a plurality of heated containers respectively storing a plurality of types of nuts and/or dried fruits preferably including sunflower seeds, peanuts, almonds, cashew nuts, Brazil nuts, hazelnuts, pecan nuts. The system described by the present invention is operative to receive a request by a user and to provide a nut serving in accordance with the said request. The system is operative to provide an amount of nuts into a typically paper bag, to weigh the net weight of the nuts provided, to calculate the price of the resulting nut serving, to receive a payment by the user and to provide the said nut serving to the user.

In a preferred embodiment of the present invention, a nut vendor system is operative to provide a combination of nuts of different types into a single nut serving and to determine the price for the said serving in accordance with the price per weight unit of each of the nut types included in the said combination.

It is appreciated that the nut vendor system described by the present invention provides a considerable advantage over existing nut vending machines in that stores heated nuts and, in addition, provides interactivity functionality, wherein the net weight and/or types of nuts included in a nut serving are typically dependent on a
request by a user. These and other features of a nut vendor system are detailed with reference to the figures described below.

There is thus provided in accordance with a preferred embodiment of the present invention a salad chef system including a plurality of containers respectively operative to store a plurality of salad items, a cutter operative to cut an amount of salad item provided via at least one of the containers, a receptacle operative to receive salad items provided via at least one of the cutter and the plurality of containers, and to provide to a user the salad items, an output unit operative to present to a user a plurality of salad designations, each salad designation designating at least one salad item and an input unit operative to receive a user input including one of the plurality of salad designations, and wherein in response to a user input including a salad designation, the salad chef system provides to the user via the receptacle the at least one salad item designated by the salad designation.

There is also provided in accordance with another preferred embodiment of the present invention a salad chef system including a plurality of containers respectively operative to store a plurality of salad items, each of the containers being operative to provide selectable amounts of the salad item stored via the container, a cutter operative to receive an amount of salad item provided via at least one of the containers and to provide an amount of salad item cut in accordance with at least one of selectable cutting modes and selectable cutting sizes, a receptacle operative to receive salad items provided via at least one of the cutter and the plurality of containers, and to provide to a user the salad items, a data storage including a plurality of salad recipes respectively coupled to a plurality of salad designations, each of the salad recipes including at least one designation of a salad item and at least one of a salad item amount and a salad item cutting mode and size coupled therewith, an output unit operative to present to a user the plurality of salad designations respectively coupled to the salad recipes and an input unit operative to receive a user input including one of the plurality of salad designations and wherein in response to a user input including a salad designation, the salad chef system provides to the user via the receptacle a salad serving in accordance with the salad recipe coupled with the salad designation.

In accordance with another preferred embodiment of the present invention the plurality of containers include containers storing vegetables, a container
storing cheese, and a container storing salad dressing. Preferably, the container storing cheese provides cheese-grating functionality wherein an amount of grated cheese is provided via the container storing cheese.

In accordance with yet another preferred embodiment of the present invention the plurality of containers includes a container of a transparent material. Additionally or alternatively, the plurality of containers include a refrigerated container operative to keep at a low temperature a salad item stored via the container.

In accordance with still another preferred embodiment of the present invention the system also provides a minimal amount indication functionality providing indication that one of the containers stores a predetermined amount of salad item. Preferably, the indication is provided via a remote computer terminal over a network. Additionally, the system also provides a menu adjustment functionality, wherein in response to the indication that one of the containers stores a predetermined amount of salad item, the output unit does not present any salad designation designating the salad item. In accordance with another preferred embodiment of the present invention the system also provides an economy salad making functionality, wherein in response to the indication that one of the containers stores a predetermined amount of salad item, the one of the containers provides a lower amount of the salad item stored by the container.

In accordance with yet another preferred embodiment of the present invention the cutter includes a cutter of a transparent material.

In accordance with still another preferred embodiment of the present invention the cutter includes two or more cutters operative to at least one of simultaneously cut two salad items respectively provided via two of the plurality of containers and provide two cut salad items to respectively two receptacles.

In accordance with another preferred embodiment of the present invention the cutter is operative to cut an amount of salad item provided via at least one of the containers in cutting modes including at least one of slicing, cutting into chips and cutting into cubes. Preferably, the slicing includes selectable density slicing; the cutting into chips includes cutting into selectable thickness chips and the cutting into cubes includes cutting into selectable size cubes.

There is further provided in accordance with yet another preferred embodiment of the present invention a salad chef system including a plurality of
containers respectively operative to store a plurality of salad items, a cutter operative to cut an amount of salad item provided via at least one of the containers, a receptacle operative to receive salad items provided via at least one of the cutter and the plurality of containers, and to provide to a user the salad items, an output unit operative to present to a user a plurality of salad designations, each salad designation designating at least one salad item and a payment amount, an input unit operative to receive a user input including one of the plurality of salad designations and a payment reception unit operative to receive payment by a user and wherein in response to a user input including a salad designation and reception of a payment amount via the payment reception unit, the payment amount being designated by the salad designation, the salad chef system provides to the user via the receptacle the salad items designated by the salad designation.

Preferably, the payment reception unit is operative to receive payment by a user via a user card.

In accordance with another preferred embodiment of the present invention the system also includes a blender operative to blend salad items within the receptacle. Additionally, the blender is operative to blend salad items within the receptacle via at least shaking the receptacle.

In accordance with still another preferred embodiment of the present invention the system also includes a recipe update functionality utilization wherein the output unit presents to a user a salad designation provided via a remote computer over a network.

In accordance with yet another preferred embodiment of the present invention the output unit is also operative to present to a user salad item designations, the input unit is also operative to receive at least one salad item designation by a user and in response to a user input including at least one salad item designation, the salad chef system provides to the user via the receptacle the salad item designated via the user input.

In accordance with still another preferred embodiment of the present the system also includes a microwave oven operative to cook an amount of salad item provided via at least one of the containers and the cutter, and to provide an amount of
salad item cooked via the microwave oven to at least one of the receptacle and the cutter.

In accordance with another preferred embodiment of the present invention the system also includes a grill operative to cook an amount of salad item provided via at least one of the containers and the cutter, and to provide an amount of salad item cooked via the grill to at least one of the receptacle and the cutter.

Preferably the output unit includes an audible output unit.

In accordance with yet another preferred embodiment of the present invention the system also includes a plate server operative to store a plurality of salad plates and wherein the receptacle is also operative to receive the salad items provided via at least one of the cutter and the plurality of containers and to provide to a user the salad items via a salad plate provided via the plate server.

Alternatively, the system also includes a user plate reception functionality utilization wherein the receptacle includes a plate provided by a user.

In accordance with another preferred embodiment of the present invention the system also includes a freshness control functionality utilization wherein an indication is provided that a salad item stored in one of the plurality of containers is unusable for a salad. Preferably, the indication is provided at least partially in accordance with at least one of the type of the salad item and the temperature of the container. Additionally or alternatively, the indication is provided via a remote computer terminal over a network.

In accordance with yet another preferred embodiment of the present invention the receptacle includes multiple receptacles and the blender includes multiple blenders respectively associated with the multiple receptacles and operative to blend separate collections of salad items within the multiple receptacles. Additionally, the system also includes at least one bypassing outlet directly associated with at least one of the containers and the cutter, and operative to provide an unblended salad item via the at least one of the containers and the cutter.

In accordance with yet another preferred embodiment of the present invention the audible output unit is utilized in order to provide to a user at least one voice announcement related to at least one salad-making operation currently performed by the salad chef system.
In accordance with another preferred embodiment of the present invention the system also includes at least one washing unit operative to wash at least one of the containers, cutter and receptacle. Alternatively, the system also includes multiple washing units respectively associated with the multiple receptacles.

There is even further provided in accordance with another preferred embodiment of the present invention a nut vendor system including a plurality of containers operative to respectively store a plurality of types of nuts, a receptacle operative to receive a nut serving, a weigh-scale device operative to determine the net weight of nuts within the receptacle and a user interface operative to receive a request by a user, the request including at least a weight designation and wherein in response to a request by a user, a serving of nuts is provided via at least one of the containers into the receptacle, the net weight of the nut serving, which net weight is determined via the weigh-scale device, being approximately equal to the weight designation included in the request by the user.

In accordance with another preferred embodiment of the present invention the nut vendor system also includes at least one vent-outlet unit associated with at least one of the containers and operative to vent out of the container aroma-carrying air. Preferably, the vent-outlet unit includes a sample of heated nuts of the type of nuts stored within the container and is operative to vent out of the container air carrying the aroma of the heated nuts.

In accordance with another preferred embodiment of the present invention the request also includes multiple nut types designations and wherein in response to a request by a user, a serving of nuts is provided via at least one of the containers into the receptacle, the serving including nuts of multiple types in accordance with the nut types designations included in the request by the user.

There is also provided in accordance with yet another preferred embodiment of the present invention a salad making device including a plurality of salad ingredient bins for storing a corresponding plurality of salad ingredients, a plurality of salad ingredient feeders respectively associated with the plurality of salad ingredient bins, a salad defining interface allowing a customer to define a desired salad, at least one cutters, at least one mixers, at least one salad container suppliers and a controller operative to coordinate operations of the salad ingredient feeders, cutters,
mixers and salad container suppliers in order to provide a salad, in an individual one of the salad containers, which has been cut and mixed in accordance with a desired salad defined by a customer.

Preferably, the salad defining interface allows a customer to define at least one salad by a salad name and the controller includes a database associating each salad name with a sequence of operations of at least some of the salad ingredient feeders, cutters, mixers and salad container suppliers, which sequence of operations results in a salad of the type defined by the salad name.

There is even further provided in accordance with still another preferred embodiment of the present invention a network of salad making devices, including a multiplicity of interconnected salad making devices, each salad making device including a plurality of salad ingredient bins for storing a corresponding plurality of salad ingredients, a plurality of salad ingredient feeders respectively associated with the plurality of salad ingredient bins, a salad defining interface allowing a customer to define a desired salad, at least one cutters, at least one mixers, at least one salad container suppliers and a controller operative to coordinate operations of the salad ingredient feeders, cutters, mixers and salad container suppliers in order to provide a salad, in an individual one of the salad containers, which has been cut and mixed in accordance with a desired salad defined by a customer and a central network server operative to send at least one message to at least one of the interconnected salad making devices.

In accordance with another preferred embodiment of the present invention the device also includes vending apparatus for accepting payment and responsively activating the controller. Additionally or alternatively, the device also includes price computation apparatus for computing a price of a salad provided by the controller and for associating an indication of the price with the salad.

In accordance with another preferred embodiment of the present invention the salad defining interface is operative to accept a customer's ID and salad defining input and to store, upon request, the salad defining input for later retrieval using the customer's ID as a retrieval key. Additionally or alternatively, the salad defining interface communicates with the controller via the Internet.

In accordance with another preferred embodiment of the present
invention the device also includes a customer satisfaction recording unit operative to prompt the customer to indicate his level of satisfaction with the salad and to record the customer's response to the prompt. Additionally, the customer satisfaction recording unit is operative to prompt a customer to select at least one complaint and to reprogram the controller in accordance with accumulated complaints.

In accordance with yet another preferred embodiment of the present invention the device also includes a customer selection recording unit operative to record each salad ordered and to generate summarizing statistics accordingly.

There is also provided in accordance with still another preferred embodiment of the present invention a vending system for nuts including a plurality of bins for storing a corresponding plurality of nut types, a plurality of feeders respectively associated with the plurality of bins for channeling the nuts into a nut container, a customer interface operative to receive from a customer a desired nut combination including a desired amount of at least one of the plurality of nut types and a feeder controller operative to control the plurality of feeders in accordance with a desired nut combination received by the customer interface, to supply the desired amount of at least one of the plurality of nut types into the nut container.

Preferably, the feeder controller is operative to control at least one feeder to selectably provide different quantities of nuts from its associated bin. Alternatively or additionally, the feeder controller includes a nut container scale operative to weigh the nut container as it is filled and to control supply of nuts into the nut container responsive to accumulated weight.

There is further provided in accordance with another preferred embodiment of the present invention a vending system for nuts including a plurality of bins for storing a corresponding plurality of nut types, a plurality of feeders respectively associated with the plurality of bins for channeling the nuts into a nut container, a customer interface operative to receive from a customer a desired nut combination including a plurality of nut types and a feeder controller operative to control the plurality of feeders in accordance with a desired nut combination received by the customer interface, to supply the desired amount of a plurality of nut types into the nut container.

There is still further provided in accordance with yet another preferred
embodiment of the present invention a vending system for nuts including a plurality of bins for storing a corresponding plurality of nut types, a plurality of feeders respectively associated with the plurality of bins for channeling the nuts into a nut container, a customer interface operative to receive from a customer a desired nut combination including at least one of the plurality of nut types, a feeder controller operative to control the plurality of feeders in accordance with a desired nut combination received by the customer interface, to supply the desired amount of at least one of the plurality of nut types into the nut container and an aroma generator operative to generate an aroma of roasting nuts, thereby to encourage passersby to approach the vending system.

In accordance with another preferred embodiment of the present invention the nut container includes a paper bag and the system also includes a paper bag dispenser operative to supply and open paper bags for filling with nuts.

It is appreciated that the aroma generating unit may comprise a unit for roasting nuts which are typically not sold. The nuts roasted by the aroma generating unit are typically maintained at a higher temperature than the nuts which are intended to sale. The aroma generating unit typically includes a ventilator operative to distribute the aroma over a large area.

It is appreciated that the term "nuts" is used generally to indicate foods which comprise small, typically dry and crisp, bite-sized elements, including but not limited to nuts, seeds, small dried fruits, popcorn, and synthetic snack foods.
BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1 is a simplified schematic illustration of a salad chef system provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 2 is a simplified block-diagram illustration of a salad chef system provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 3 is a simplified block-diagram illustration of a salad chef network provided and employed in accordance with a preferred embodiment of the present invention;

Figs. 4A and 4B are two simplified schematic illustrations respectively showing a side and a top view of a container device, provided and employed in accordance with a preferred embodiment of the present invention;

Figs. 4C, 4D, 4E and 4F are four simplified schematic illustrations showing four successive stages of fixed amount providing functionality of the container device of Figs. 4A and 4B;

Fig. 5 is a simplified flowchart illustration of the fixed amount providing functionality of the container device of Figs. 4A and 4B;

Fig. 6A is a schematic illustration of a cutter unit provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 6B is a schematic illustration of the frame block of the cutter unit of Fig. 6A;

Fig. 6C is a schematic illustration of the wire saw of the cutter unit of Fig. 6A;

Fig. 6D is a schematic illustration of a cutting table and a receptacle of the cutter unit of Fig. 6A;

Figs. 6E, 6F, 6G and 6H are 4 schematic illustrations respectively showing 4 successive stages of the cutting functionality of the cutter unit of Fig. 6A;
Fig. 7 is a table illustrating a recipe database record, provided and employed in accordance with a preferred embodiment of the present invention;

Figs. 8A and 8B are simplified flowchart illustrations of salad making functionality of the system of Figs. 1, 2 and 7;

Fig. 9 is a table illustrating a salad item database record, provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 10 is simplified flowchart illustration of freshness control and menu adjustment functionalities of the system of Figs. 1, 2, 3 and 9;

Fig. 11 is a table illustrating a user database record, provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 12 is a simplified flowchart illustration of personalized menu functionality of the system of Figs. 1, 2 and 11;

Fig. 13 is a schematic illustration of a salad chef system provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 14 is a schematic illustration of a nut-container unit provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 15 is a schematic illustration of a nut vendor system in accordance with a preferred embodiment of the present invention;

Fig. 16 is a schematic illustration of a multi-container system provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 17 is a simplified schematic illustration of a nut vendor system in accordance with a preferred embodiment of the present invention;

Fig. 18 is a simplified schematic illustration of a nut vendor system in accordance with a preferred embodiment of the present invention;

Fig. 19 is a simplified section view illustration of a nut vendor system in accordance with a preferred embodiment of the present invention;

Fig. 20 is a simplified schematic component illustration of cheese grater unit for a salad chef system, provided and employed in accordance with a preferred embodiment of the present invention;

Fig. 21 is a simplified flowchart illustration of the functionality of a nut vendor system in accordance with a preferred embodiment of the present invention;

Fig. 22A is an example of a screen display of a main screen in a graphic
salad ordering interface suitable for use the salad chef system of Figs. 1 and 2;

Fig. 22B is an example of an input device, suitable for use with the salad chef system of Figs. 1 and 2;

Figs. 23, 24 and 25 are examples of screens presented to the customer by the salad ordering interface used in the salad chef system of Figs. 1 and 2; and

Fig. 26 is an example of a feedback screen forming part of the salad chef system of Figs. 1 and 2.
DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference is now made to Fig. 1, which is a simplified schematic illustration of a salad chef system 100 provided and employed in accordance with a preferred embodiment of the present invention. As seen in Fig. 1 salad chef system 100 comprises a plurality of containers 101, respectively storing a plurality of salad items, typically including at least a variety of types of vegetables, cheese and salad dressing.

Containers 101 preferably comprise containers storing vegetables including containers for tomatoes, cucumbers, lettuce, carrots, cabbage, pepper, radishes and/or onions; containers for cheese including containers for goat's cheese, Cheddar, Gouda, Camembert, Parmesan, Brie and/or Roquefort; containers for salad dressing including containers for vinaigrette, mayonnaise, French dressing Thousand Island dressing, tomato sauce and/or soy sauce; containers for salad additives including containers for olives, nuts, almonds, croutons and the like; containers for fruits including containers for apples, pears, peaches and/or plums – preferably without pits – and preferably peeled oranges and/or bananas; containers for fruit salad additives including containers for sugar, sugar powder, chocolate chips, cream, maple syrup and the like.

Fresh salad items such as vegetables are preferably provided unprocessed for storage in containers 101. Alternately or in addition, chopped salad items are provided for some or all of the vegetable containers 101 in a salad chef system.

Containers 101 preferably comprise one or more containers of a transparent material thereby enabling a user to view the salad item/s stored via the said containers. Preferably, containers 101 comprise refrigerated containers operative to keep at a low temperature the salad item/s stores therein. Alternately, or in addition, some or all of containers 101 are located within a refrigerator. Each container 101 comprises a container outlet 102 operative to provide selectable amounts of a salad item stored via the said container. Outlets 102 typically comprise outlets provided in accordance with different types of salad items in accordance with the type of salad item stored in each container 101. Thus, outlets 102 typically comprise outlets appropriate for different types of salad items including outlets operative to provide an amount of
vegetables such as tomatoes, outlets operative to provide an amount of liquid items such as a salad dressing and the like. Outlets 102 preferably comprise one or more outlets that are operative to process a salad item: For example, a container storing cheese comprises an outlet operative to grate cheese and to provide an amount of grated cheese. Alternately, or in addition, one or more of containers 101 stores grated cheese and comprise appropriate outlets 102 operative to provide an amount of cheese stored via the said containers. Preferably, outlets 102 comprise outlets operative to provide selectable amounts of a salad item.

As also seen in Fig. 1, salad chef system 100 comprises a cutter unit 103 operative to cut an amount of salad item provided via one or more of containers 101, and to provide an amount of cut salad items. Cutter unit 103 typically comprises a combination of several cutters thereby allowing selectable cutting modes and sizes. For example, a combination of cutting cord frames, with each frame comprising a plurality of adjustable density cutting cords, and a blade-shape cutter operative to chop into cubes of adjustable size slices of vegetable provided via the said cutting cord frames. Cutter unit 103 preferably comprises a cutter receptacle of a transparent material thereby allowing a user to view a cutting process. Cutter unit 103 preferably comprises two or more cutters operative to simultaneously cut salad items provided via two or more of containers 101 and/or to simultaneously provide two or more amounts of a cut salad item.

As further seen in Fig. 1, salad chef system 100 comprises a salad receptacle 104 operative to receive one or more salad items provided via cutter unit 103 and/or directly via one or more of containers 101. Typically, upon making a salad serving, a collection of salad items in predetermined amounts are received via receptacle 104, which salad items may be cut into different size chops and/or otherwise processed in accordance with a salad recipe. Salad chef system 100 comprises a blender 105 operative to blend a collection of salad items within receptacle 104. For example, blender 105 comprise a lever operative to shake receptacle 104. Alternately or in addition a blender such as, for example, a spoon-shape blender is provided, which is operative to directly blend a collection of salad items within receptacle 104. Receptacle 104 is typically operative provide a serving of collected, blended and/or otherwise processed salad items via, for example, an opening bottom within receptacle 104 which
allows the salad items within receptacle 104 to be provided into a second receptacle after the said items have been collected and blended with receptacle 104.

As also seen in Fig. 1, salad chef system 100 comprises a plate stand 107 and a plate server unit 106, typically storing a plurality of possibly disposable plates, and operative to provide a plate onto plate stand 107. Alternately, or in addition, a user provides a plate 108 onto a specified location on stand 107, typically beneath receptacle 104. Plate stand 107 preferably comprises a sensor operative to detect the presence of plate 108 at the proper location beneath receptacle 104. For example, a collection of touch sensors are provides allowing detection of an object of a proper size at the required location.

It is appreciated that within a salad chef system that is otherwise identical with system 100, one or more salad items may be provided via cutter unit 103 and/or containers 101 directly into plate 108. In addition, salad items within plate 108 may be blended via a blender similar to blender 105 by means of, for example, shaking plate 108. For example, a plate is placed by a user and/or via a plate server onto a proper location within a plate stand and held firmly therein. A salad chef system is then operative to provide salad items into the plate and to shake the said plate in order to blend the salad items contained therein.

As further seen in Fig. 1, salad chef system 100 comprises a user interface 109 comprising an output unit 110, an input unit 111 and a payment reception unit 112. Output unit 110 typically comprises a visual display of selectable salad designations. Output unit 110 preferably comprises a voice output unit operative to present to a user selectable salad designations. Input unit 111 typically comprises a push button input unit, operative to receive a user choice from a list of salad designations presented to the user via output unit 110. User interface 109 preferably provides an interactive salad selection option. For example, in response to a user selecting a salad designation via input unit 111, output unit 110 presents to the user selectable versions of the salad designation selected by the user. Payment reception unit 112 typically comprises a payment reception unit operative to receive payment via cash, credit card, user card or any other standard payment reception device known in the art.

Reference is now made to Fig. 2, which is a simplified block-diagram illustration of a salad chef system 200, which may be identical to salad chef system 100
of Fig. 1, provided and employed in accordance with a preferred embodiment of the present invention. As seen in Fig. 2, salad chef system 200 comprises a container unit 201, comprising a refrigerator 212. Container unit 201 also comprises a plurality of containers 211, which may be identical with containers 101 of salad chef system 100 of Fig. 1. Containers 211 comprise containers for vegetables, containers for cheese and containers for salad dressing. It is appreciated that containers 211 may comprise containers for other sorts of salad items including, for example, fruits, spices, and the like. As seen in Fig. 2, some of containers 211 are located within refrigerator 212. It is appreciated that all containers 211 within container unit 201 may be located within refrigerator 212.

As also seen in Fig. 2, salad chef system 200 comprises a cutter unit 202 operative to receive an amount of salad item provided via containers 211, and to provide an amount of cut salad item in accordance with selectable cutting modes and sizes. Cutter unit 202 may be identical with cutter unit 103 of salad chef system 100 of Fig. 1.

As further seen in Fig. 2, salad chef system 200 comprises a receptacle unit 203, comprising a receptacle 231, operative to receive salad items via cutter unit 202 and/or directly via one or more containers 211. Receptacle unit 203 also comprises a blender 232 operative to shake and/or blend salad items within receptacle 231. Receptacle unit 203 further comprises a plate stand 233, typically operative to provide a stand for a salad plate beneath receptacle 231. Plate stand 233 is typically operative to provide an indication that a plate has been placed at a proper location within plate stand 233, for example, by means of one or more touch sensors. Receptacle unit 203 also comprises a plate server 234, operative to store a plurality of preferably disposable plates, and to provide a plate into a proper location within plate stand 233.

As also seen in Fig. 2, salad chef system 200 comprises a user interface 204 comprising an output unit 241, and input unit 242 and a payment reception unit 243, which may be respectively identical with output unit 110, input unit 111 and payment reception unit 112 of salad chef system 100 of Fig. 1.

As further seen in Fig. 2, salad chef system 200 comprises a computer 205, communicating with the various components of the system detailed above. Computer 205 typically stores a plurality of database records including salad designations, salad recipes and salad item storage information. Examples of such
database records and the user made thereof with a salad chef system are described below with reference to Figs. 7-10. As seen in Fig. 2 computer 205 communicates with containers 211 and is typically operative to instruct any one of containers 211 to provide a particular amount of salad item stored therein. In addition, computer 205 typically receives a sensor reading from a sensor located within any one of containers 211, informing computer 205 of the amount of salad item stored with the said container. For example, a thin board of a light material covers and rests upon a salad item within container 211, and is operative to move downwards as the quantity of salad item within the container drops. A lever connected to the said board is also connected to a potentiometer which provides to computer 205 a reading of the quantity of salad item within container in question.

Computer 205 also communicates with refrigerator 212 thereby to actuate refrigerator 212, for example, in accordance with a rise of ambient temperature.

Computer 205 also communicates with cutter unit 202 thereby to actuate cutter unit 202 to cut an amount of salad item provided via one or more of containers 211. Computer 205 typically instructs cutter unit 202 to cut an amount of salad item in cutting mode dictated in accordance with salad recipe provided via a salad recipe database record stored on computer 205.

Computer 205 communicates with receptacle 231 preferably receiving a sensor reading via receptacle 231 indicating that one or more salad item amounts have been provided to receptacle 231. For example, a weight sensor is provided within receptacle 231 indicating the total weight of salad item within the said receptacle. It may therefore be appreciated that computer 205 is operative to determine whether a collection of salad items amounts which computer 205 previously instructed containers 211 to provide, have in fact been provided into receptacle 231. Computer 205 also communicates with blender 232 thereby to instruct blender 232 to blend a collection of salad items contained within receptacle 231 by means of, for example, shaking receptacle 231. Computer 205 is then typically operative to instruct receptacle 231 to provide the salad items contained therein to a plate located on plate stand 233.

Computer 205 also communicates with plate server 234 thereby to instruct plate server 233 to provide a plate onto a suitable location upon plate stand 233. Computer 205 preferably also communicates with plate stand 233 receiving indication
via a suitable sensor on plate stand 233 that a plate had been placed at a suitable location upon plate stand 233 by a user and/or via plate server 234.

Computer 205 communicates with user interface 204, providing available salad designations via output unit 241, receiving a user's request via input unit 242, and receiving indication of a user's payment via payment reception unit 243.

In a preferred embodiment of the present invention, a salad chef system that may be otherwise identical with system 200 of Fig. 2 also comprises at least one of a grill and a microwave oven. The functionality a salad item requiring cooking such as a potato is provided via a container and/or a cutter unit into the said grill and/or microwave oven, and the cooked item is then provided to at least one of a cutter unit or a salad receptacle.

Reference is now made to Fig. 3, which is simplified clock-diagram illustration of a salad chef network 300, provided and employed in accordance with a preferred embodiment of the present invention. As seen in Fig. 3, salad chef network 300 comprises a plurality of salad chef system including salad chef systems 301-304, which may be identical with the salad chef system of Figs. 1 and 2. Salad chef systems 301-304 are respectively located within locations 311-314 which may comprise a public place such as shopping center, a supermarket or a salad bar, a work place such as an office building lobby, a private home and/or any other location suitable for providing salad serving to one or more users. As further seen in Fig. 3, salad chef systems 301-304 communicate via the Internet with a salad item supplier 320, preferably informing supplier 320 which salad item containers within systems 301-304 need to be refilled and which of the systems requires payment collection. Systems 301-304 also communicate via the Internet with a chef center 330, informing chef center 330 of salad requests by individual users, thereby enabling chef center to analyze user preferences and to provide recipe updates to systems 301-304.

Reference is now made to Figs. 4A and 4B, which are two simplified schematic illustrations respectively showing a side and a top view of a container device 400, provided and employed in accordance with a preferred embodiment of the present invention. As seen in Fig. 4A, container device 400 comprises a container 401 storing a plurality of ball shape vegetables such as, for example, tomatoes. Typically, container 401 is provided with vegetable items of a fixed size with a known size tolerance.
Container device 400 further comprises a moveable platform 402, operative to move upward and lift the vegetable items contained within container 401.

Container device 400 further comprises a lever 403, operative to push horizontally one or more vegetable items contained in container 401.

Container device 400 further comprises a sensor 404 such as, for example, an electronic eye, operative to sense the presence of one or more objects such as vegetable items in front of sensor 404. For example, sensor 404 senses the presence of vegetable items at a horizontal distance up to the length of container 401.

Container device 400 further comprises a tray device 405 operative to receive a small amount of vegetable items pushed out of container 401 via lever 403. As seen in Fig. 4B, only a single item may be pushed as far as the end of tray device 405. Tray device is operative to rotate counterclockwise round axis 406. Tray device 405 comprises an outlet 407, operative to open and allow a vegetable item at the end of tray device 405 to fall downwards.

Container device 400 also comprises an outlet 408 operative to lead a vegetable item provided via tray device 405 to a subsequent unit within a salad chef system such as, for example, a cutter unit. Outlet 408 preferably comprises a sensor such as, for example, a pressure sensor, which is operative to sense that an object such as a vegetable item has been released via outlet 407 and has fallen via outlet 408.

Reference is now made to Figs. 4C, 4D, 4E and 4F, which are four simplified schematic illustrations respectively showing four successive stages of fixed amount providing functionality of the container device of Figs. 4A and 4B. Turning to Fig. 4C it is seen that lever 403 pushes vegetable items in the direction of tray 405.

Turning to Fig. 4D, it is seen that some vegetable items have been pushed into tray device 405. It is appreciated that only a single vegetable item may be pushed into the far end of tray device 405, above outlet 407.

Turning to Fig. 4E, it is seen that tray device 405 has rotated round axis 406 into its upper position. At the same time, lever 403 is locked into its end position, thereby preventing vegetable items in tray device 405 to slide back into container 401.

Turning to Fig. 4F, it is seen outlet 407 has rotated into its open position, thereby allowing a single vegetable item to fall down from tray device 405 into outlet
408. It is appreciated that due to the upper position assumed by tray device 405, no other vegetable item from tray device 405 may fall down via outlet 407.

Reference is now made to Fig. 5, which is a simplified flowchart illustration of the fixed amount providing functionality of the container device of Figs. 4A and 4B. Container device 400, operative within a salad chef system such as system 200 of Fig. 2, is instructed to provide N vegetable items. Sensor 404 indicates whether vegetable items are present in front of lever 403. If no items are present, platform 402 lifts the vegetable items contained in container 401 until sensor 404 indicates the presence of one or more items. If platform 402 has reached its uppermost position without a positive indication via sensor 404, the system reports that container 401 is empty and the process is aborted.

Based on a reading via sensor 404 indicating the presence of vegetable items, lever 403 is instructed to push vegetable items into tray 405. A sensor on outlet 407 indicates whether a vegetable item has reached the end of tray 405. Lever 403 is instructed to push vegetable items until an item is sensed at outlet 407 or until a maximal pressure indication is received, typically via a pressure sensor on lever 403. A maximal pressure value is set so as to prevent damage to vegetable items within container 401. If maximal pressure has been indicated with no item sensed at outlet 407, the system reports a malfunction at container 401, and the process is aborted.

Once an item is sensed at outlet 407, lever 403 is locked into its last position, thereby blocking vegetable items in tray device 405 to slide back into container 401. Tray device 405 is then lifted to its upper position, and outlet 407 is instructed to turn into its open position allowing a single vegetable item to fall into outlet 408. A sensor on outlet 408, such as, for example, a pressure sensor, indicates that a vegetable has been provided via outlet 407 to outlet 408. Alternately, or in addition, the said indication is provided via an appropriate sensor on a receptacle into which the said item provided via outlet 408. With lack of a proper indication, the system signals a malfunction and the process is aborted. With the proper indication, outlet 407 returns into a closed position, tray device 405 returns into its lower position, and lever 403 returns into its held back position. Thereafter the process repeats itself for the second item, and so on until N items have been provided.
It is appreciated that the process of Fig. 5 is particularly appropriate for a container unit of a salad chef system, which container unit is operative to store vegetable items and to provide selectable amounts of the said vegetable items.

Reference is now made to Fig. 6A, which is a schematic illustration of a cutter unit 500 provided and employed in accordance with a preferred embodiment of the present invention. Cutter unit 500 might be identical with cutter unit 202 of salad chef system 200 of Fig. 2. As seen in Fig. 6A, cutter unit 500 comprises a frame block 501 comprising two perpendicular sets of cutting wires and operative to be lifted and lowered with regard to the fixed construction of cutter unit 500. Cutter unit 500 also comprises a wire saw 502 operative to slide along a track 503. Cutter unit 500 further comprises a cutting table 504 comprising grooves into which the wires of frame block 501 exactly fit. It may therefore be appreciated that frame block 501 may be lowered so that its wires go below the surface of cutting table 504. Cutter unit 500 further comprises a receptacle 505.

Reference is now made to Fig. 6B, which is a schematic illustration of frame block 501 of cutter unit 500 of Fig. 6A. As seen in Fig. 6B, frame block 501 comprises two electric motors 506 respective operative to move back and forth each of the two perpendicular sets of cutting wires of frame block 501. It may therefore be appreciated that by activating motors 506 and simultaneously lifting and/or lowering frame block 501, cutter device 500 is operative to cut an object such as a vegetable item placed onto table 504 into chip-shape pieces. The thickness of the chip-shape pieces is determined by the distances between the cutting wires of frame block 501. In accordance with a preferred embodiment of the present invention, a cutter unit comprises a frame block providing an adjustable distance between its cutting wires. It may therefore be appreciated that a cutter unit in accordance with the said embodiment of the present invention is operative to cut a vegetable item into chip-shape pieces of selectable thickness.

Reference is now made to Fig. 6C, which is a schematic illustration of wire saw 502 of cutter unit 500 of Fig. 6A. As seen in Fig. 6C, wire saw comprises an electric motor 507 operative to slide a cutting wire 508 wrapped through coil 509. It may be appreciated that through activating motor 507 and simultaneously sliding wire saw 502 along track 503, cutter unit 500 is operative to cut a slice of a vegetable item
placed onto table 504. The thickness of the said slice is determined by the distance
between of the surface of table 504 and cutting wire 508, which distance may be
adjusted through lifting and/or lowering track 503 with regard to a fixed construction of
cutter unit 500.

Reference is now made to Fig. 6D, which is a schematic illustration of
cutting table 504 and receptacle 505 of cutter unit 500 of Fig. 6A. Turning to Fig. 6D it
is seen that cutting table 504 is fixed to a shaft 510 operative to rotate clockwise. It may
therefore be appreciated that cutter unit 500 is operative to pass into receptacle 505 one
or more cut vegetable items that are placed on table 504.

Reference is now made to Figs. 6E, 6F, 6G and 6H, which are four
schematic illustrations respectively showing 4 successive stages of the cutting
functionality of cutter unit 500 of Fig. 6A. Turning to Fig. 6E it is seen that a vegetable
item is placed on table 504. Frame block 501 is a lower position so that its wires are
below the surface of table 504, and wire saw 502 is at the beginning of its cutting track.
This construction represents the starting point of a cutting procedure of cutter unit 500.

Turning to Fig. 6F it is seen that wire saw 502 has slid through most of
track 503, and is therefore cutting a slice of the vegetable item placed on table 504. The
thickness of the slice equals the distance between the surface of table 504 and cutting
wire 508 of wire saw 502.

Turning to Fig. 6G, it is seen that frame block 501 has been lifted to its
upper position where its cutting wires are typically above the level of cutting wire 508
of wire saw 502. It may therefore be appreciated that slice previously cut via wire saw
502 has now been cut via frame block 501 into chip-shape pieces. It may also be
appreciated that the combination of slice cutting and chip-shape cutting results in
cutting the said slice into cube-shape pieces. As also seen in Fig. 6G, table 504 has
rotated so that the said cube-shape pieces have fallen into receptacle 505. The yet uncut
part of the vegetable now rests on the two sets wires of frame block 501.

Turning to Fig. 6H, it is seen that frame block 501 has been lowered so
that its cutting wires are below the surface of table 504. The yet uncut part of the
vegetable item now rests directly on table 504. The process of Figs. 6E, 6F, 6G and 6H
can now be repeated with wire saw 502 cutting another slice by sliding back into its
initial position. It is appreciated that the process of Figs. 6E, 6F, 6G and 6H can be repeated until the entire vegetable item has been cut into cube-shape pieces.

Reference is now made to Fig. 7, which is a table illustrating a recipe database record 700, provided and employed in accordance with a preferred embodiment of the present invention. Recipe database record 700 is typically provided and employed in a salad chef system such as the salad chef system of Figs. 1-3. A computer within a salad chef system, such as computer 205 of Fig. 2, typically stores a plurality of recipe database records such as database record 700. As seen in Fig. 7, recipe database record 700 comprises three versions 701-703 of a salad designation, "Greek Salad" in the present example, and in addition a user determined version 704. Each recipe version comprises a list 7011 of salad items, a list 7012 of corresponding salad item amounts, and a list 7013 of corresponding cutting modes for the salad items which are to be provided for a container unit such as container unit 201 to a cutter unit such as cutter unit 202. It is appreciated that each amount indication on list 7012 signifies an amount that is measured in accordance with a corresponding salad item, and which a container outlet of a container storing the said salad item is operative to provide. Thus, for example, in response to a "full serving" indication with relation to tomatoes, computer 205 instructs a tomatoes container within container unit 201 to provide the maximal predetermined amount of tomatoes, whereas in response to a "full unit" indication with regard to olive oil, computer 205 instructs an olive oil container outlet to provide a maximal amount of oil, which is typically different from the said maximal amount of tomatoes. Computer 205 preferably also stores a database record detailing the weights of the various amounts for each salad item. This allows computer 205 to determine whether a given collection of salad item amounts have been provided to receptacle 231, based, for example, on a reading via a weight sensor on receptacle 231.

Recipe version 701 preferably includes additional salad making instruction such as, for example, whether or not to blend the salad items contained in a salad serving, and/or any other salad making instruction that a salad chef system if operative to carry out. Each recipe version 701-703 also comprises a fanciful designation 7014, which is provided to a user via an output unit such as output unit 241, and which typically designates the various salad items included in the said recipe.
version. In user determined version 704, salad item list 7011 includes optional items which a user may select from a list of items presented to the user via output unit 241. In addition, amount list 7012 comprises limit indications, between which a user may select a definite amount indication via input unit 242. In addition, the user may determine a corresponding cutting mode, by specifying a cutting mode indication via input unit 242. Preferably, if a user selects a user determined version for recipe 700, a screen display resembling table 704 is presented to the user via output unit 242, and the user inputs the aforementioned details via, for example, suitable push buttons on input unit 243. Preferably, a default procedure is provided which automatically determines any recipe data not provided by the user. For example, the data provided in accordance with version 701 of the said salad designation are used wherever the user has not provided a user determined detail.

Reference is now made to Figs. 8A and 8B, which are simplified flowchart illustrations of salad making functionality of the system of Figs. 1, 2 and 7. Fig. 8A illustrates a procedure of recipe selection by a user. A menu comprising a plurality of salad designations is presented to a user via output unit 241. Upon reception of a selection of a salad designation by a user via input unit 242, payment is requested from the user. Upon reception of payment via payment reception unit 243, a list of recipe versions for the selected salad designation is presented to the user. Typically the list of versions comprises a list of fanciful designations, and does not necessarily include all the information included within recipe database record 700. If the user selects one of the standard versions, such as standard versions 701-703 of Fig. 7, the recipe selection stage is completed and the system is ready for salad making in accordance with the user's request. If the user selects the "user determined" option, an optional recipe such as recipe 704 of Fig. 7 is presented to the user. Upon reception of the user determined part of the recipe, the system is ready for salad making.

Having completed the recipe selection stage of the procedure as described above with reference to Fig. 8A, the salad chef system advances to the salad making stage illustrated in Fig. 8B. For each salad item on list 7011, computer 205 instructs the container storing the said item to provide an amount of the said item as detailed in the previously selected salad recipe. If the salad item in question requires cutting, the proper amount of the said item is provided to cutter unit 202, which is
subsequently instructed by computer 205 to perform cutting in accordance with a cutting mode and size indicated in the selected recipe. Cutter unit 202 is then instructed to provide the processed amount of salad item to receptacle 231. If the salad item in question does not require a cutting process, the proper amount of the said item is typically provided to receptacle 231 from the container directly.

Thereafter computer 205 preferably receives a sensor reading via a weight sensor on receptacle 231. Based on the said weight sensor reading computer 205 determines whether all the salad items on a currently performed recipe have been provided to receptacle 231. If computer 205 determines that at least one of the items has not been provided, computer 205 provides an indication of a system malfunction, via output unit 241 for example, and the process is halted. Otherwise, based on the recipe currently being performed, computer 205 decides whether to instruct blender 232 to blend the salad item within receptacle 231. Thereafter, computer 205 instructs plate server 234 to provide a plate onto plate stand 233. Alternately, a plate is provided by a user. Based on a reading of one or more touch sensors on plate stand 233, computer 205 then determines whether a plate has been properly placed on plate stand 233. If computer 205 determines that a plate has not been properly placed, a malfunction indication to that effect is provided, via output unit 241 for example, and the process is halted until a different sensor reading is received. Otherwise, computer 205 instructs receptacle 231 to drop the salad serving that has been collected within receptacle 231 into the plate, and the process is completed.

Reference is now made to Fig. 9, which is a table illustrating a salad item database record 900, provided and employed in accordance with a preferred embodiment of the present invention. Database record is typically provided and employed in accordance with a networked salad chef system like the system of Figs. 1-3. Database record 900 is preferably stored on a computer controlling a salad chef system such as computer 205 of Fig. 2. As seen in Fig. 9, for each container number on column 901, database record 900 provides on column 902 the salad item stored therein. Preferably, all salad item containers in a salad chef system are listed on column 901. For each container on column 901, database record 900 further provides on column 903, a first minimal amount M1 of each salad item that is required for a normal functioning of the system, and a second minimal amount M2 that is required for a single serving.
Typically, when the amount of a salad item in a container drops below the M1 amount designated for the said item, a salad chef system enters an economy mode wherein the said item is consumed in lower amounts. Typically, when the amount of a salad item in a container drops below the M2 amount designated for the said item, the system ceases to consume the said item, and all salad designations of salads that include the salad item in question are deleted from the system's menu until the container in question is refilled. In addition, for each salad item, database record 900 provides on column 904 a corresponding maximal storage period, measured, for example, in days (D1 for storage in room temperature, and D2 for storage in a refrigerated container). Further, for each salad item container, database record 900 provides on column 905 the number of days that have passed since the last refill of the said container.

Reference is now made to Fig. 10, which is a simplified flowchart illustration of freshness control and menu adjustment functionalities of the salad chef system of Figs. 1, 2, 3 and 9. A salad chef system preferably performs a freshness control and menu update procedure after every salad making procedure performed by the system. For each salad item container, a salad chef system receives a reading of quantity sensor, indicating the quantity of a salad item within the said container. An example of a quantity sensor is described above with reference to Fig. 2. If the quantity drops below the minimal quantity for normal mode, yet not below the minimal quantity for a single serving, the system enters an economy mode wherein the salad item in question is consumed in lower amounts. For example, any amount indication for the said salad item in a recipe database record is taken to signify 50% of the amount it signifies for the said salad item in normal mode. If the quantity also drops below the minimal quantity for a single serving, all salad designations of salads that include the salad item in question are deleted from the system's menu. In both of the above cases, a message is sent, typically via the Internet, to a suitable supplier, such as supplier 320 of Fig. 3, requesting refill of the container storing the salad item in question.

Thereafter, if a salad item's quantity has not dropped below the minimal quantity for a single serving, a freshness control procedure is performed. If the number of days since the last refill for the salad item in question is not lower that the maximal storage period, all relevant salad designations are deleted from the system's menu in the aforementioned fashion, and a message is sent, typically via the Internet, to a suitable
supplier, such as supplier 320 of Fig. 3, requesting refill of the container storing the salad item in question.

Reference is now made to Fig. 11, which is a table illustrating a user database record 1100, provided and employed in accordance with a preferred embodiment of the present invention. Database record 1100 is provided and employed in accordance with a salad chef system such as the salad chef system of Figs. 1 and 2, and in particular a salad chef system that serves a population of permanent members, such as employees in a particular work place, for example, an office building. Turning to Fig. 11, it is seen that database record 1100 comprises a list 1101 of user ID's which ID's may be identical with employee numbers of employees at a particular work place. For each ID number on column 1101, database record 1100 provides on column 1102 a corresponding user name, on column 1103 a corresponding list of a user's favorite salad designations, and on column 1104 a corresponding accumulated bill of the user, for the current month for example. The salad designations on column 1103 may comprise standard versions for which a recipe record is provided, such as recipe record 700 of Fig. 7. The salad designations on column 1103 may also comprise user determined versions, for which a special recipe record is preferably provided in conjunction with database record 1100. This allows serving to user her/s favorite salad over and over again without having to receive from the user a user determined recipe each time.

Reference is now made to Fig. 12, which is a simplified flowchart illustration of personalized menu functionality of the salad chef system of Figs. 1, 2 and 11. A user inserts a user card into a suitable reception unit within a salad chef system, such as payment reception unit 243 of salad chef system 200 of Fig. 2. Upon reading a user ID via the user card, the system checks whether user database record 1100 includes a favorite salad designation for the user in question. In a case where one or more favorite items are available, the system asks the user, typically via output unit 241, whether user wishes to have one of his favorite salads. The user can selects one of his favorite salads or request a regular menu. On choosing from a menu, a user is offered to update the current selection her/s record on user database record 1100. Once a salad designation is agreed upon, user record 1100 is updated with the user's bill for the currently provided salad. Thereafter, a suitable recipe is provided via recipe record such
recipe record 700 and a salad is provided for the user typically in accordance with the procedure of Fig. 8B.

Reference is now made to Fig. 13, which is a schematic illustration of a salad chef system 1300 provided and employed in accordance with a preferred embodiment of the present invention. As seen in Fig. 13, salad chef system 1300 comprises a plurality of typically spiral containers 131, 134, typically comprising containers made of a transparent material, and respectively comprising a plurality of typically solid salad items. Spiral containers 131 respectively comprise refill openings 135 enabling the said containers to be refilled with salad-items, typically manually.

Salad chef system 1300 comprises a plurality of tubes 133, typically of a transparent material, respectively associated with spiral containers 131 and operative to pass on an amount of salad item provided via containers 131. As seen in Fig. 13, a salad item 132 is being provided via container 131 to be passed on via tube 133.

Salad chef system 1300 comprises a plurality of containers 136, comprising containers made of a transparent material, and respectively comprising a plurality of typically liquid and/or gooey salad items including salad dressing of various types.

Salad chef system 1300 typically comprises another set of tube-like containers (not shown in Fig. 13), which are operative to respectively store and provide measured amounts of semi-solid salad items such as cheese. Typically, a screw-like blender within each such container is operative to advance a cylindrical chunk of a semi-solid item such as cheese, and a suitable lever is activated so as to grate and provide the amount of the said item that has been advanced beyond a container’s edge. A cheese grater unit for a salad chef system is described below with reference to Fig. 20.

Salad chef system 1300 comprises a plurality of cutter units 1310, typically respectively associated with spiral containers 131. Cutter unit 1310 is operative to cut, typically in a plurality of cutting modes, a salad item provided via container 131 and passed on to cutter unit 1310 via tube 133. Cutter unit 1310 may be identical to cutter unit 500 described above through reference to Fig. 6A-6H. Preferably, cutter unit 1310 comprises a casing made of a transparent material, providing a view of a cutting procedure performed via cutter unit 1310.
Salad chef system 1300 preferably comprises at least two typically similar salad-blending units 1312 and 1313, both units being operative to receive salad items via cutter units 1310 and/or containers 133 (salad-blending 1312 is partly hidden in Fig. 13). As seen in Fig. 13, salad-blending unit 1313 comprises a receptacle 1319 preferably comprising a transparent area 1320, typically allowing a view of a salad-blending drum within unit 1313, and an outlet 1321 operative to pass on blended salad items. Salad-blending unit 1312 typically comprises components identical to components 1319, 1320 and 1321.

As also seen in Fig. 13, cutter units 1310 comprise three sets of outlets operative to pass on cut salad items: outlets 1311 respectively associated with cutter units 1310 which are operative to pass on cut salad items into salad-blending receptacle 1312; outlets 1315 respectively associated with cutter units 1310 which are operative to pass on cut salad items into salad-blending receptacle 1313; and outlets 1324 respectively associated with cutter units 1310 which are operative to pass on cut salad items directly, thereby to bypass both salad-blending receptacles 1312 and 1313.

In a similar manner, salad chef system 1300 comprises three sets of outlets associated with containers 136 and operative to pass on typically liquid salad items respectively stored therein: outlets 1317 respectively associated with containers 136 and operative to pass on liquid salad items into salad-blending receptacle 1313; a similar set of outlets (not seen in Fig. 13) respectively associated with containers 136 and operative to pass on liquid salad items into salad-blending receptacle 1312; and outlets 1325 respectively associated with containers 136 and operative to pass on liquid salad items directly, thereby to bypass both salad-blending receptacles 1312 and 1313. As seen in Fig. 13, outlets 1317 and 1325 respectively comprise valves 1316 and 1326 operative to set an amount of liquid salad item to be provided via containers 136.

It is appreciated that the inclusion of two salad-blending receptacles and three sets of outlets for cut and/or liquid salad items within salad chef system 1300 is advantageous in that it allows for a greater variety of combinations of salad items and servings. Within this system, a salad serving may comprise two separate collections of blended solid and/or liquid salad items as well as a collection of unblended items. The two separate collections of blended items are respectively provided via blending units 1312 and 1313, whereas the unblended items are provided directly via outlets 1324.
and/or 1325. It is also appreciated that within salad chef system 1300, two separate collections of bended salad items intended for the same salad serving are typically simultaneously blended utilizing blending units 1312 and 1313.

Salad chef system 1300 comprises a plate device 1318 comprising a plurality of typically disposable salad plates 1314, and operative to provide a single plate at a time.

Salad chef system 1300 comprises an upper board 1322 and a salad-plate stand 1328 typically comprising a magnet and operative to be dragged on the surface of upper board 1322. A motor 1329 within plate stand 1328 is operative to rotate a salad plate 1327 placed thereon. Salad chef system 1300 also comprises a lower board 1323 and a moveable platform 1331 operative to move along lower board 1323 by means of, for example, an electric motor. Platform 1331 comprises a magnetic plate 1330 operative to move along platform 1331 by means of, for example, an electric motor. By moving platform 1331 and magnetic plate 1330 into any position on lower board 1323, system 1300 may cause plate stand 1328 to be dragged into the parallel position on upper board 1322, namely the position right above the position where magnetic plate 1330 has been moved into. It may therefore be appreciated that salad chef system 1300 is operative to move a salad plate such as plate 1327 in Fig. 13 into any position upon board 1322. In addition, by means of motor 1329 it is also possible to determine the rotational position of plate 1327 at each position and to alter the said rotational position while and/or otherwise in conjunction with moving plate 1327 from one position to another upon board 1322.

This feature of determining the exact position of plate 1327 is particularly appropriate for the system of two blending units 1312, 1313 and the bypassing outlets 1324, 1325 described above. A possible utilization of this plate motion feature proceeds as follows: Plate 1327 is placed under outlet 1321 of blending unit 1313, and a first collection of blended items is provided via the said blending unit into plate 1327. Then plate 1327 is rotated by 120 degrees and placed under the respective outlet of blending unit 1312. This allows providing a second collection of blended salad items via blending unit 1312 into plate 1327 without mixing it with the first collection of blended items. Then plate 1327 is rotated once more by 120 degrees and placed under one or more of outlets 1324 and/or 1325. This allows providing into
plate 1327 unblended solid or liquid items without mixing the said items with the collections of blended items previously provided into plate 1327. Alternately, plate 1327 is placed under one or more of outlets 1324, 1325 without being rotated, so that one or more unblended items are added on top of a collection of blended items previously provided into plate 1327.

Salad chef system 1300 typically comprises one or more washer units, operative to wash and/or disinfect one or more parts of system 1300. Preferably, each of blending units 1312 and 1313 comprises a washing unit built within the blending unit and operative to automatically wash away, for example by means of a splash of water, remaining salad items, preferably following each operation of the blending unit. This washing unit operation following each blending unit operation prepares the blending unit for a subsequent blending operation of possibly different salad items, without remaining items from a previous salad serving being blended into a subsequent serving. This enables salad chef system 1300 to continuously provide salad servings one right after another regardless of the salad combination/s required for each salad serving.

Washing units are preferably also provided within other components of system 1300 including spiral containers 131, cutter units 1310, tubes 133 and/or containers 136. These washing units are automatically and/or manually activated, for example, prior to refilling containers 131 and 136 with fresh salad items. Preferably, salad chef system 1300 also includes an overall washing and/or disinfecting operation that is also performed periodically, such as, for example, at the end of each working day.

As also seen in Fig. 13, salad chef system 1300 comprises a user interface comprising a screen 137, preferably comprising a fanciful color screen, a set of pushbuttons 138, and typically also a payment slot 139. Salad chef system 1300 is operative to present to a user a selection of salad servings via screen 137, to receive a request by a user via pushbuttons 138, and to receive payment by the user via the said payment slot. In addition, a speaker is typically provided within user interface 139 or elsewhere within system 1300. Via the said speaker, salad chef system 1300 is operative to provide to a user one or more voice announcements that describe the various stages of a process of salad making that are currently being performed by system 1300. For example, an announcement describes a stage of cutting and/or blending of certain salad
items that is being performed and directs the user to the component of system 1300, wherein the said stage is being performed. This enhances the interactivity and enjoyment of using such a salad chef system.

Referring back to Fig. 13, several refrigerated or unrefrigerated containers 134, 135, 136 of cut or uncut vegetables 132 and/or various salad dressings, spices or other salad components such as cheese, croutons and nuts, may be provided. A singulation channel or other feeding channel 133 typically connects at least some of the containers to at least one corresponding cutting devices 1310, which may have several cutting options. At least one outlet 1315 is provided downstream of each cutting device.

Preferably the at least one outlet comprises at least one outlet 1311, 1315 leading to a mixing container 1312, 1313 having an outlet 1321 leading to a supplied salad container. Preferably, each mixing container and exiting outlet 1321 is flushable immediately after each use thereof to allow consecutive use of the same mixing container and outlet for different types of salad. Preferably, all mixing containers and outlets are flushed thoroughly periodically e.g. once a day.

Preferably there is a plurality of outlets, such as two outlets, leading to a corresponding plurality of mixing devices such as two mixing devices 1312 and 1313 so as to allow a plurality of separate mixtures, such as two separate mixtures, to be provided on the same salad container 1327. Preferably, the at least one outlet downstream of the cutting devices comprises an outlet 1324, 1325 direct to the salad container 1327, as opposed to leading to the salad container, e.g. plate, via the mixing device/s, in order to allow a vegetable to be purchased in isolation, unmixed with any other vegetable. The direct route to the plate also allows a vegetable such as parsley, or other topping, to be added as a topping and not as part of a mixture, to a plate of mixed salad.

Plates typically are fed onto a simple conveyor conveying in a single direction, which is operative to position a plate under each of several outlets depending on which vegetable or other options are selected by the purchase. Preferably, plates are fed onto an x-y table which is operative to position a plate under each of several outlets arranged in a matrix or in several columns e.g. in order to allow more than one mixture to be concocted on a single plate or in order to allow layered preparation of salad e.g. preparation of a mixture topped by parsley or sesame seeds or cheese. Preferably, the
conveyor or x-y table conveying the plates are operative to rotate the plate typically at designated locations, in order to allow an ingredient e.g. parsley to be distributed evenly throughout the azimuth of the plate.

Payment may be provided in advance as in conventional vending machines. Alternatively, payment may be computed by the device of the present invention and marked on the product as it is supplied, e.g. as a barcode. Payment may then be made to a cashier, e.g. in a supermarket setting.

A customer salad ordering interface 139, one example of which is described below with reference to Figs. 22A - 26, is provided which allows a customer to input the details of the salad which s/he wishes to order. Preferably, salads can be ordered by selecting ingredients thereof, and preferably by selecting the relative quantities thereof. Alternatively, salads can be ordered by indicating the type of salad (e.g. Waldorf salad, Caesar salad, coleslaw, potato salad, tuna salad), responsive to which the system of the present invention accesses a salad database matching to each such selection, an ingredient and quantity list, and prepares the desired type of salad accordingly. It is appreciated that the particular salad ordering GUI of Figs. 22A - 26 is described merely by way of example and is not intended to be limiting.

A particular feature of a preferred embodiment of the present invention is that mixing of the salad ingredients, and preferably also cutting of the salad ingredients takes place only responsive to a customer's order and not prior thereto, to maximize freshness. Preferably, at least some of the salad preparing components of the system described above operate behind a transparent partition so as to allow customers to view at least a portion of the salad preparation process. Optionally, a screen display and/or voice output indicates the current stage of salad preparation.

Preferably, salad preparation and vending systems as described in Fig. 13 are interconnected to a communications network such as the Internet, to allow central control of and updating of recipes, status and inventory.

The screen 137 of Fig. 13 typically provides a video image of various salad types, preferably using conventional "real depth" 3-dimensional imaging techniques for presenting three-dimensional video content for users who do not have special 3D-viewing spectacles.

The screen 137 creates a visual impression of real objects hanging in
front of a user. It is appreciated that the inclusion of Real Depth 3D imaging provides several considerable benefits for a salad chef system in accordance with the present invention: Firstly, a 3D image that jumps off the screen, as it were, is particularly effective in attracting peoples' attention, and can therefore direct potential users who may otherwise ignore the chef system. This is especially advantageous for a chef system located in a public place, such as a shopping center, that may be crowded with many other points of sale, fast-food vending machines and restaurants. Equipped with a 3D display, the salad-chef system is operative to attract users who may be streaming into the shopping center in great numbers, for example, during lunch break.

Also, a Real Depth 3D display can provide a considerably more genuine, reality-congruent representation of a salad serving, exactly as it is on coming out of salad chef system. Such an authentic representation of its product is important for any automatic vending machine that is expected to serve users in a reliable fashion with the absence of a human operator; it is also obviously beneficial for a chef system that is intended to provide truly quality salads, and accentuates the difference that prevails between the present salad chef system and all other food vending machines which provide, as a rule, plastic wrapped or otherwise previously prepared items. The combination of impressive representation and actual quality products enhances the reliability of the chef system and help create a client base of satisfied users.

The present chef system provides salad servings produced from fresh, separately stored ingredients that are blended just prior to being provided to a user. It may be added here, that this feature of a salad chef system assures not only the quality of a salad's taste but also the quality of its visual appearance, which is known to be an important factor in inducing appetite and enhancing the enjoyment of eating. 3D images of the various salad servings produced by the chef system would capture their actual visual quality just as they are on being provided to a user. Technology for generating real-depth screen displays is available from Floating Images, Inc., Dimensions Technologies Inc, or Stereographics Corporation.

Reference is now made to Fig. 14, which is a schematic illustration of a nut container unit 1400, provided and employed in accordance with a preferred embodiment of the present invention. Nut container unit 1400 is typically intended for use within a nut vendor system such as nut vendor system 1500 described below with
reference to Fig. 15. Turning to Fig. 14 it is seen that nut container unit 1400 comprises a container 1410 suitable for storing nuts, seeds and/or pieces of dried fruit of a particular type. Container 1410 comprises a refill cover 1401, typically to be activated manually, and a view pane 1411, allowing a user to view the nuts stored within the said container.

As also seen in Fig. 14, nut container unit 1400 also comprises a heater 1412 built within container 1410, and typically activated in conjunction with a temperature control unit so as to keep the nuts stored within the said container at a temperature that is suitable for storage and/or serving. It is appreciated that the temperature maintained within container 1410 via heater 1412 may be determined in accordance with the particular type of nuts stored within the said container.

As further seen in Fig. 14, nut container unit 1400 comprises a vent outlet 1402, typically comprising a small electro-activated fan, and operative to vent aroma air out of container 1410, thereby to provide to a user the aroma of the nuts contained therein. It is appreciated that the aroma venting feature of unit 1400 is particularly appropriate for an automatic vending machine wherein nuts and/or other types of dried fruits are stored within otherwise closed receptacles and can otherwise be only seen by a user. For example, the aroma provided via vent outlet 1402 attracts one or more users' attention to a vending machine and assist the said one or more users in assessing the freshness of the nuts provided by the said machine.

In a preferred embodiment of the present invention, a vent outlet for a nut container comprises a smaller container storing a sample of the nuts stored within the said larger container. In addition, a second heater is provided so as to keep the said sampled nuts at a different, typically higher temperature than that which prevails within the larger container. This allows venting out a stronger aroma, thereby to provide to a user a stronger and therefore a more distinct sensation of the aroma of the nuts in question. The venting out of stronger nut-aroma may also be used in order to attract users, for example, at a public place at a rush hour. Typically, the sampled nuts are not used in order to be provided to a user within this system, and are replaced by a subsequent sample of nuts, for example, once at a predetermined length of time.

As seen in Fig. 14, nut-container unit 1400 comprises an outlet 1403 and a screw-like blender 1409, operative to pass on and provide a predetermined amount of
nuts out of container 1410 via outlet 1403. For example, screw-like blender 1409 is
actuated via a servo-motor that causes blender 1409 to rotate a predetermined number of
degrees previously calibrated so as to roughly provide the required amount of nuts.

As also seen in Fig. 14, nut-container unit 1400 comprises a paper bag
pack 1408 comprising a multiplicity of typically paper bags 1407 suitable for serving
nuts. A vacuum clip 1404 is provided, which is operative to attach to the one side of a
paper bag (paper bag 1405 in Fig. 14) and to pull the said paper bag open by means of
vacuum pressure. Typically a stream of air is provided from above into paper bag 1405
so as to prevent the other side of paper bag from being pulled via vacuum clip 1404
together with the side to which vacuum clip 1404 is attached. It is appreciated that the
joint operation of vacuum clip 1404 and the said stream of air is operative to open paper
bag 1405 and hold the said bag in an open position.

Nut-container unit 1400 typically also comprises a weigh-scale device,
which is operative, for example, to indicate the weight of the whole construction of
paper bag pack 1408 including both the multiplicity of paper bags 1407 and paper bag
1405 that is to be filled with nuts. It is appreciated that subsequent weight readings via
the said weigh-scale device, typically prior to and after an activation of screw-like
blender 1409, allow determination of the net weight of the nuts that have been provided
into paper bag 1407. Once the said net weight approximately equals a required weight,
paper bag 1407 is released into a serving basket 1406 via which it may be received by a
user. Preferably, nut-container unit 1400 is also operative to perform a sample
procedure wherein a small amount of nuts is provided to a user, for example, via outlet
1403 directly into serving basket 1406. The functionality of nut-container 1400 may be
more fully appreciated with reference to Fig. 21 described below.

Reference is now made to Fig. 15, which is a schematic illustration of a
nut vendor system 1500 in accordance with a preferred embodiment of the present
invention. Turning to Fig. 15 it is seen that nut vendor system 1500 comprises a vending
machine 1510 which may be located in a public place such as a shopping center. Nut
vendor system 1500 comprises a plurality of container units 1501, 1502, which may be
identical to nut-container unit 1400 of Fig. 14. Typically, each container unit 1501,
1502 stores a different type of nut or dried fruit, preferably including sunflower seeds,
peanuts, almonds, cashew nuts, Brazil nuts, hazelnuts, walnuts, pecan nuts and the like.
As also seen in Fig. 15, nut vendor system 1500 comprises a plurality of outlets 1508 respectively associated with the plurality of nut container units 1501, and a plurality of serving baskets 1509, likewise respectively associated with the plurality of nut container units 1501. Each container unit 1501 is operative to provide a nut serving, typically within a paper bag (not shown in Fig. 18) via an outlet 1508 and into a serving basket 1509, which outlet and serving basket are associated with the said container unit.

As further seen in Fig. 15, nut vendor system 1500 comprises a user interface 1503, comprising a video screen and/or a speaker 1504, a set of pushbuttons 1505, and a payment reception slot 1506. A plurality of additional sets of pushbuttons 1507 is provided, respectively associated with the plurality of container units 1501. Nut vendor system 1500 is operative to present to a user one or more nut serving designations via screen and/or speaker 1504; to receive a request by a user for a nut serving via pushbuttons 1505; to present to the user a request for payment via screen and/or speaker 1504; to receive payment by the user via payment reception slot 1506. In addition, nut vendor system 1500 is preferably operative to provide an announcement to a user via screen and/or speaker 1504, informing the user of an operation being performed by system 1500 and directing the user to the user to a relevant section of system 1500 such as, for example, one of serving baskets 1509, where a nut serving is to be provided to the user. The functionality of nut vendor system 1500 is described below with reference to Fig. 21.

Reference is now made to Fig. 16, which is a schematic illustration of a multi-container system 1600 provided and employed in accordance with a preferred embodiment of the present invention. Multi-container system 1600 is typically intended for use within a nut vendor system such as nut vendor system 1700 described below with reference to Fig. 17. Turning to Fig. 16 it is seen that multi-container system 1600 comprises a plurality of containers 1602 respectively suitable for storing a plurality of types of nuts and/or dried fruits. Each container 1602 may be identical to container 1410 described above with reference to Fig. 14.

As also seen in Fig. 16, respectively in association with the plurality of containers 1602, multi-container system 1600 comprises a plurality of refill covers 1611, heaters 1607, vent outlets 1606, screw-like blenders 1608 and outlets 1609. Refill cover 1611 is typically identical to refill cover 1401 of Fig. 14. Heater 1607, typically
identical to heater 1412 of Fig. 14, is operative, typically in conjunction with a temperature-control system, to keep the nuts stored within the associated container 1602 in a temperature suitable for storage and/or serving. It is appreciated that the temperature provided via each heater 1607 may vary in accordance with the types of nuts stored within the container 1602 associated with the said heater. Vent outlet 1606, typically identical to vent outlet 1402 of Fig. 14, is operative to vent out aromas from the container 1602 with which it is associated, thereby to provide to a user the aroma of the nuts stored within the said container. Screw-like blender 1608, typically identical to screw-like blender 1409 of Fig. 14, is operative to pass on nuts within the container 1602 which it is associated and to provide a predetermined amount of nuts via outlet 1609 (typically identical to outlet 1403 of Fig. 14) which is likewise associated with the said container 1602.

It is, therefore, appreciated that multi-container system 1600 is operative to store a plurality of types of nuts, possibly in different temperatures, and to provide an approximately predetermined amount of nuts of any of the said types.

As also seen in Fig. 16, multi container system 1600 comprises a paper bag pack 1603 comprising a multiplicity of paper bags including a paper bag 1604 ready to be filled with nuts. In addition, multi container system 1600 comprises a vacuum clip 1612, and a serving basket 1605 associated with paper bag pack 1603.

Vacuum clip 1612, typically identical to vacuum clip 1404 of Fig. 14, is operative to attach to paper bag 1604 thereby to pull the said paper bag 1604 open, typically in conjunction with a stream of air provided from above as described with reference to Fig. 14. Multi container system 1600 typically also comprises a weigh-scale device (not shown in Fig. 16) operative to provide a weight reading of the entire paper bag pack 1603 including paper bag 1604 with the nuts included therein. It is appreciated that via successive weight readings provided the said weigh-scale device, the net weight of nuts within paper bag 1604 may be obtained. Once the net weight of nuts within paper bag 1604 approximately equals a required weight, paper bag pack 1603 (typically identical to paper bag pack 1408 of Fig. 14) is operative to release paper bag 1604 into serving basket 1605, which is typically identical to serving basket 1406 of Fig. 14.
It is appreciated, therefore, that multi-container system 1600 is operative to prepare a paper bag for serving nuts, to provide nuts into the said paper bag, to determine the net weight of nuts within the said paper bag, and to release the said paper bag into a serving basket, upon the said net weight being approximately equal to a required predetermined weight.

As further seen in Fig. 16, multi-container system 1600 comprises a tube device 1601 comprising a plurality of interconnected tubes 1610, respectively associated with containers 1602. Tube device 1601 is therefore operative to receive nuts provided via any of containers 1602 via outlets 1609 respectively associated therewith, and to provide the said nuts to a single paper bag 1604. It is appreciated that within multi-container system 1600 nuts of different types provided via different containers may be served via a single paper bag. This feature distinguishes multi-container system 1600 from nut-container unit 1400 and nut vendor system 1500, wherein only nuts of the same type provided via the same container are typically provided via the same paper bag. Thus a user of a nut-and-seed system based on multi-container system 1600 may request, for example, a combination of cashew nuts, pecans and almonds in a total weight of 100 grams. The functionality of multi-container system 1600 is described below with reference to Fig. 21.

Reference is now made to Fig. 17, which is a simplified schematic illustration of nut vendor system 1700 in accordance with a preferred embodiment of the present invention. As seen in Fig. 17, nut vendor system 1700 comprises a vending machine case 1750, typically to be located in a public place such as a shopping center. Nut vendor system 1700 comprises a container cavity 1705, suitable for holding a plurality of nut containers (not shown in Fig. 17). As also seen in Fig. 17, nut vending system 1700 comprises a tube device 1701, typically identical to tube device 1601 of Fig. 16, a paper bag pack 1702, typically identical to paper bag pack 1603 of Fig. 16, a vacuum clip 1703, typically identical to vacuum clip 1612 of Fig. 16, and a serving basket 1704, typically identical to serving basket 1605 of Fig. 16.

It is appreciated that tube device 1701, paper bag pack 1702, vacuum clip 1703, and serving basket 1704 are shown in Fig. 17 in a disassembled position. It is also appreciated that tube device 1701, paper bag pack 1702, vacuum clip 1703, and serving basket 1704 taken together with a plurality of nut containers (not shown in Fig. 17)
comprise a multi container system that is typically identical to multi container system 1600 described above with reference to Fig. 16.

As also seen in Fig. 17, nut vendor system 1700 comprises a serving outlet 1712, wherein serving basket 1704 is typically assembled, and via which a nut serving may be provided to a user. Nut vendor system 1700 also comprises a plurality of view panes 1709, typically respectively associated with a plurality of nut containers (not shown in Fig. 17) which provide to a user a view of the nuts provided via one or more nut containers into tube device 1701.

As further seen in Fig. 17, nut vendor system 1700 comprises a user interface 1706 comprising a preferably video screen and/or speaker 1707, a set of pushbuttons 1708, a payment reception slot 1710 and a change slot 1711. It is appreciated that nut vendor system 1700 is operative to present to a user one or more nut serving designations via screen and/or speaker 1707; to receive a request for a nut serving by a user via pushbuttons 1708; to present to the user a payment request via screen and/or speaker 1707; to receive payment from a user via payment reception slot 1710; and to provide adequate change to the user via change slot 1711. Preferably, in the course of providing a nut serving to a user, nut vendor system 1700 is also operative to provide an announcement to the user via screen and/or speaker 1707, informing the user of the operation being performed and directing the user to a relevant section of system 1700 such as, for example, a view pane 1709.

It is appreciated that nut vendor system 1700 is operative to provide to a user in a single paper bag a nut serving comprising a combination of one or more different types of nuts respectively provided via one or more nut containers. The functionality of nut vendor system 1700 is described below with reference to Fig. 21.

Reference is now made to Fig. 18, which is a schematic illustration of a nut vendor system 1800 in accordance with a preferred embodiment of the present invention. As seen in Fig. 18, nut vendor system 1800 comprises a nut vending machine 1850 typically located in a public place such as shopping center. As also seen in Fig. 18, nut vendor system 1500 comprises a plurality of nut container units 1805 respectively storing a plurality of types of nuts and/or dried fruits. Nut container unit 1805 is typically identical to nut container unit 1400 described above with reference to Fig. 14. Nut container unit 1805 (as shown in Fig. 18 in a disassembled position) comprises a
container 1801, a paper bag pack 1802, and a serving basket 1804. Container 1801, paper bag pack 1802 and serving basket 1804 are typically respectively identical to container 1414, paper bag pack 1408 and serving basket 1406 of Fig. 14.

As also seen Fig. 18, nut vendor system 1800 comprises a plurality of serving baskets 1810 respectively associated with the plurality of container units 1805. In addition, a plurality of view panes 1803 is provided, also respectively associated with the plurality of container units 1805, and providing to a user a view of the passage of nuts via one or more of the associated containers 1805 into one or more paper bags.

As further seen in Fig. 18, nut vendor system 1800 comprises a user interface comprising a preferably video screen and/or speaker 1806, a set of pushbuttons 1807, a payment reception slot 1808 and a change slot 1809. It is appreciated that nut vendor system 1800 is operative to present to a user one or more nut serving designations via screen and/or speaker 1806; to receive a request for a nut serving by a user via pushbuttons 1807; to present to the user a payment request via screen and/or speaker 1806; to receive payment from a user via payment reception slot 1808; and to provide adequate change to the user via change slot 1809. Preferably, in the course of providing a nut serving to a user, nut vendor system 1800 is also operative to provide an announcement to the user via screen and/or speaker 1806, informing the user of the operation being performed and directing the user to a relevant section of system 1800 such as, for example, a view pane 1803.

Reference is now made to Fig. 19, which is a simplified section view illustration of a nut vendor system 1900 in accordance with a preferred embodiment of the present invention. Nut vendor system 1900 may be identical to nut vendor system 1700 described above with reference to Fig. 17. Turning to Fig. 19 it is seen that nut vendor system 1900 comprising a nut vending machine case 1950, typically located in a public place such as a shopping center.

As also seen in Fig. 19, nut vendor system 1900 comprises a multi-ledge heater (comprising a plurality of heating ledges 1901 and 1902), a vent outlet 1903, a view pane 1904 and a screw-like blender 1905. It is appreciated that heating ledges 1901 and 1902, vent outlet 1903, view pane 1904 and screw-like blender 1905 are associated with a nut container (typically identical to nut container 1602 of Fig. 16), one
of a plurality of nut containers comprised by nut vendor system 1900 respectively storing a plurality of typically different types of nuts.

As further seen in Fig. 19, nut vendor system 1900 comprises a tube device 1906 (typically identical to tube device 1701 of Fig. 17), a paper bag pack 1911 (typically identical to paper bag pack 1702 of Fig 17), a paper bag 1910, a vacuum clip 1908 (typically identical to vacuum clip 1703 of Fig. 17), a serving outlet 1909 (typically identical to serving outlet 1712 of Fig. 17) and a payment reception slot 1907 (typically identical to payment slot 1710 of Fig. 17). It is therefore appreciated that nut vendor system 1900 is operative to provide nuts from one or more containers via tube device 1906 into a single paper bag 1910, and to provide the said paper bag 1910 to a user via serving outlet 1907. The functionality of nut vendor system 1900 is described below with reference to Fig. 21.

Reference is now made to Fig. 20, which is a simplified schematic component illustration of a cheese grater unit 2000 for a salad chef system, provided and employed in accordance with a preferred embodiment of the present invention. Cheese grater unit 2000 is typically included within a salad chef system such as salad chef system 1300 of Fig. 13 or any other automatic food vending machine that requires freshly grated cheese and/or a similar gooey item. As seen in Fig. 20, a piece of cheese 2001 is filled into a compatibly rectangle tube 2002, which is operative to pass on the cheese, for example by gravitation, into a cylindrical section comprising a cylindrical grater 2003 suitable for grating cheese for a salad serving. Cylindrical grater 2003 rotates thereby to grate a piece of cheese provided via tube 2002 and to provide piece of grated cheese typically into the cylindrical cavity of grater 2003.

As also seen in Fig. 20, cheese grater unit 2000 comprises a screw-like blender 2004 operative to rotate within cylindrical grater 2003. Screw-like blender 2004 rotates and collects pieces of grated cheese provided via grater 2003, thereby to prevent grater 2003 from being blocked with cheese and to pass on the said pieces of grated cheese along the cylindrical section of grater unit 2000. As further seen in Fig. 20, grater unit 2000 comprises a sill 2005, typically comprising a perforated plate, and a handle 2006 attached at the outlet of the cylindrical section of grater unit 2000. Once pieces of grated cheese passed on via screw-like blender 2004 come out of grater unit 2000 via sill 2005, handle 2006 is operative to rotate so as to cause the said pieces of
gated cheese to drop into a salad plate, a blending receptacle or into any other suitable section of a salad chef system.

Reference is now made to Fig. 21, which is a simplified flowchart illustration of the functionality of a nut vendor system in accordance with a preferred embodiment of the present invention. The procedure of Fig. 21 describes the functionality of a nut vendor system which might be identical with nut vendor system 1500 of Fig. 15 or nut vendor system 1800 of Fig. 18, which systems comprise a plurality of nut-container units typically identical to container unit 1400 of Fig. 14. Alternately, the procedure of Fig. 21 describes the functionality of a nut vendor system which might be identical to nut vendor system 1700 of Fig. 17 or nut vendor 1900 of Fig. 19, which systems typically comprise a multi-container system such as multi container system 1600 of Fig. 16.

A user inputs a request for a serving of nuts via an appropriate user interface, for example, via pushbuttons such as pushbuttons 1505 of the user interface of nut vendor system 1500. Typically, the user's request comprises a total weight designation R and one or more designations of types of nuts N1, N2... Nn. If the system in question is operative to serve only a single type of nuts within a single paper bag, such as system 1500 of Fig. 15, then n = 1. If the system is operative to serve nuts of several types into the same paper bag, as in the case of system 1700 of Fig. 17, then n is possibly larger than 1.

Based on the user's request, the nut vendor system calculates the price of the proposed serving. In the general case, the price is provided by the formula:

\[ P = \sum P_i \frac{R}{n} \quad (i = 1 \text{ to } n), \]

wherein R is the total weight of the serving, n is the number of different nut types, and Pi the price per weight unit of nuts of type i. It is appreciated that the price per weight unit may be different for nuts of different types. The total price is then presented to the user via an appropriate user interface such as, for example, via video screen and/or speaker 1504 of system 1500. The user provides the required payment via a suitable payment reception device such as payment slot 1506 of system 1500.

Thereafter, the nut vendor system determines the total weight Wo of a paper bag pack prior to providing nuts into a paper bag. This is performed, for example, by means of a weigh-scale device as described above with reference to Fig. 14. A paper
bag is prepared to be filled with nuts, typically by means of vacuum clip and a stream of air as also described above with reference to Fig. 14.

Once a paper bag is ready to be filled with nuts, the nut vendor system enters the following routine: for each of the nut types Ni, the system provides a predetermined amount of nuts into the paper bag at each round of the routine. This is typically performed by means of a screw-like blender as described above with reference to Fig. 14. The said predetermined amount of nuts is typically considerably lower then the expected total weight of a nut serving. For example, a servo-motor that activates the said screw-like blender is calibrated so as to cause the lever to provide an amount of approximately 5 grams of nuts at each round of the routine, whereas the minimal weight for serving is set to 50 grams. This ratio of approximately 1/10 assures that the system performs several successive rounds for a single nut serving. If the nut serving in question consists of only a single type of nuts (n = 1), then the same predetermined amount of nuts is added into the bag at each round of the routine until the net weight of nuts in the paper bag (Wj - Wo) approximately equals the requested amount. In case the nut serving in question comprises a combination of several types of nuts, then at each round of the system's routine a predetermined amount of nuts of each of the requested nut types is added into the paper bag. In other words, the entire combination of nut types as requested by the user is added into the paper bag at each round of the system, until the net weight approximately equals the requested total weight of the serving. It may therefore be appreciated that nuts of the various types requested by the user accumulate in the paper bag at several successive layers so that the resulting nut serving is fairly mixed.

Once the net weight of nuts within the paper bag approximately equals the requested amount, the paper bag is released into a serving basket and an announcement is typically provided to the user, preferably via both a speaker and a screen as provided by system 1500, informing the user that the requested nut serving is ready and directing the user to the said serving basket.

Figs. 22A - 26, taken together, are an example of a suitable graphic salad ordering interface. A screen display 2200 of Fig. 22A is an example of a main screen allowing a customer to select a type of salad. Fig. 23 is an example of a screen which is presented to the customer if the customer selects the tuna salad option 2206 of Fig. 22A.
Preferably, the customer views one or more of the following: information regarding ingredients, information regarding calorie content, options such as size of salad and optional ingredients, price information, and a confirming option 2314. Selection of the "proceed" option in Fig. 23 results in the system presenting to the customer the screen display of Fig. 24, which prompts the customer to provide payment. Preferably at any stage the customer can cancel his order.

As is seen in Fig. 23, a screen 2300 preferably comprises a salad designation 2301, an ingredients heading 2302, a list of ingredient designations 2303, and a list of nutrition values 2304 related to salad designation 2301. Screen 2300 preferably also comprises a salad picture 2315 comprising a large, preferably 3D image, showing a salad serving in accordance with the salad designation 2301. As also seen in Fig. 23, screen 2300 preferably comprises two serving size icons 2307 and 2308 referring to "Small" and "Large" serving, and two price designations 2305 and 2306 respectively associated therewith. Screen 2300 preferably also comprises a plurality of addition item designations 2309 with price designations 2312 respectively associated therewith; and a plurality of selection icons 2310 and 2311, labeled "no" and "Yes", respectively associated with designations 2309. Preferably, Icons 2307, 2308, 2310 and 2311 are to allow a user to determine a salad serving size and the addition items to go with it, thereby to determine the final variety of a salad serving. Screen 2300 preferably also comprises a "Cancel" icon 2313 and a "Proceed" icon 2314, whereby respectively to allow a user to either abort or complete a salad order procedure. Typically upon selection of "Cancel" icon 2313, the user is provided with an initial order form as shown on screen 2200 of Fig. 22.

Fig. 24 shows a screen 2400, preferably comprising a payment heading 2401, a payment designation 2403, and a payment request announcement 2404 which instructs a user to employ one of the payment reception devices provided by a salad chef system, preferably including coin slot, credit card or a prepayment card slot. Screen 2400 preferably also comprises a salad picture 2402 which may be identical to picture 2315 on screen 2300 of Fig. 23, and which comprises a large picture of a salad serving in accordance with payment heading 2401. Screen 2400 preferably also comprises a "Cancel" icon 2405, whereby to allow a user to abort a salad order procedure; Typically upon selection of "Cancel" icon 2405, the user is provided with an initial order form as
shown on screen 2200 of Fig. 22. Once the customer has provided payment by interacting as prompted by the screen display of Fig. 24, the system of the present invention preferably prepares the salad.

While the salad is being prepared, a feedback screen is preferably presented to the user such as a feedback screen 2600 of Fig. 26. The feedback screen 2600 display may offer an incentive for interacting therewith such as a coupon or immediate return of a portion of the salad's price via the vending machine. Preferably, information on customer preferences provided by interaction of customers with the feedback screen 2600 of Fig. 26 is displayed to customers within the main salad ordering screen display as shown at reference numeral 2212 in the screen display of Fig. 22A. Preferably, customers' suggestions e.g. as provided by interaction with the suggestion selection area 2607 in Fig. 26, are sent to a central database to which a population of salad vending or preparation devices are connected. The database is operative to process the customers' suggestions and update salad preparation instructions and recipe details to the population of salad vending or preparation devices, accordingly.

Preferably, the main screen of Fig. 22A includes a "my choice of salad" option 2208 which, if selected, prompts presentation to the customer of a screen display, such as a screen display 2500 of Fig. 25, which allows a customer to customize his own individual salad. Preferably, some ingredients are included within a basic salad price and other ingredients are not included as indicated. Once the customer has completed his interaction with the screen display 2500 of Fig. 25, a payment elicitation screen display similar to the screen display 2400 of Fig. 24 is typically presented to the customer as when the customer selects a conventional salad type.

Alternately or in addition, screen 2500 of Fig. 25 or a similar combination form, is preferably presented to users via a computer network, for example, as a webpage over the Internet. An Internet user preferably fills in the "My Choice" form and submits it over the Internet, typically coupled with a user ID, to a central computer or to one or more computerized salad chef systems. Upon arrival at a salad chef system, the user submits a user ID, and the chef system uploads the "My Choice" form previously submitted by the user. In a preferred embodiment of this invention, a salad chef system stores users' salad orderings coupled with users' ID's, keeps track of
changes in users' appetites, and is operative to offer to a user an updated favorite salad choice upon submission of a user ID.

Screen 2500 preferably comprises a plurality of "Main Ingredients" designations 2501, and a plurality of selection icons 2502 labeled "Yes" and 2503 labeled "No" respectively associated with item designations 2501.

Screen 2500 preferably also comprises a plurality of item designations including, in the present example, "Salad Herbs" designations 2506, "Cheese" designations 2507, "Meat/Fowl" designations 2508, "Oils" designations 2509 and "Fish" designations 2510. Screen 2500 preferably comprises "Yes" and "No" selection icons which are respectively associated with designations 2506-2510.

Screen 2500 preferably also comprises a plurality of "Addition" designations 2504 specifying addition items for a salad serving including in the present example: Beans, Avocado, Greens, Olives and Nuts. Screen 2500 preferably comprises a plurality of price designations 2505 respectively associated with "Addition" designations 2504. Fig 25. preferably also comprises a plurality of selection icons labeled "Yes" and "No", which are likewise respectively associated with "Addition" designations 2505.

As also seen in Fig. 25, screen 2500 comprises two serving size icons 2516 and 2517, respectively referring to "Small" and "Large" serving, and two price designations respectively associated therewith.

Icons 2502, 2503, 2516 and 2517 allow a user to determine the ingredients for a salad serving and its size, thereby to determine the final variety of a salad serving.

Screen 2500 of Fig. 25 preferably also comprises a "Cancel" icon 2518 and a "Proceed" icon 2519, thereby respectively to allow a user to either abort or complete a salad order procedure. Typically upon selection of "Cancel" icon 2518, the user is provided with an initial order form as shown on screen 2200 of Fig. 22; upon selection of "Proceed" icon 2519, and subject to previous selection of relevant icons on screen 2300, a user is provided with screen 2400 of Fig. 24, showing a payment request that is appropriate to the said selection by the user.

As also seen in Fig. 26, screen 2600 preferably comprises: a list of salad designations 2602, wherein a user may specify the type of salad previously ordered; a
list of quality measures 2605, wherein the user may specify rating of the salad; and a list of suggestions 2607 for the user to choose from. It is appreciated that list 2607 may comprise a plurality of lists of suggestions that are relevant for different types of salads, and may be updated upon a user selecting a salad name on list 2602. For example, for a salad that normally includes tomatoes, list 2607 may includes a suggestion for more tomatoes.

It is appreciated that the feedback form of Fig. 26 may be used in a variety of ways for improving the functioning of a salad chef system. Preferably, submitted feedback forms are tracked and processed from time to time. If, for example, a salad has been rated "bad" for the majority of entries for the same particular salad, then the salad is deleted from the main order form; alternately the recipe for the said salad is altered in accordance with users' suggestions as derived from the same feedback forms; alternately or in addition, an inspection of the entire salad chef system by a human operator is called for, with specification of the salad in question. Typically the salad that has been rated "excellent" by the greatest number of users, appears with the "Rated Number 1 Choice" designation 2212 on the order form of screen 2200 of Fig. 22.

A salad order and payment procedure in accordance with a preferred embodiment of the present invention is now described with reference to Figs. 22-26.

A salad chef system comprising a preferably 3D display screen is typically placed at public, commercial site such as a shopping center or an office building lobby. The screen typically shows the salad order form of screen 2200 of Fig. 22, including salad pictures 2201, preferably comprising Real Depth 3D images, which attract users and provide a reality-congruent representation of salad servings. A user preferably selects either a salad name or a "My Choice" salad. Based on the user's selection, the screen shows to the user either an order form of screen 2300 or a free order form of screen 2500. The user selects a serving size, ingredients and additions in accordance with the salad type in question. Upon selection of "Proceed" icon, and subject to previous completion of an order form by the user, the screen shows the user the payment request of screen 2400 with payment detail appropriate to the salad serving previously determined by the user. The user pays by means of one of the payment reception devices provided by the system preferably including coin slot, credit card or a
prepayment card slot. Upon payment reception the salad system commences producing a salad serving and the user interface provides for the user a plurality of content items including the feedback form of screen 2600. Alternately or in addition, the user is provided via the user interface with audiovisual content related to the salad that is being prepared in the meantime. Such salad related content preferably includes historical details with regard to the origin of the salad's recipe, the first chef who introduced it and the like; culinary information regarding the customs of dining related to the said salad; nutrition data with regard to values of the various ingredients of the salad and their benefits for various parts and systems of the human body or for curing ailments; and/or directions to the simultaneous operation of the salad chef system itself.

Any suitable input device may be employed to allow the customer to navigate between the option areas on the screen displays, such as the input device of Fig. 22B which allows the user to navigate to a desired location on a screen display, using arrows 2213, 2214, 2215 and 2216 to enter the desired location, and once reached, by pressing select button 2217. The input device may comprise keys or may be itself displayed on the screen.

It is appreciated that the software components of the present invention may, if desired, be implemented in ROM (read-only memory) form. The software components may, generally, be implemented in hardware, if desired, using conventional techniques.

It is appreciated that various features of the invention which are, for clarity, described in the contexts of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment may also be provided separately or in any suitable subcombination.

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 hereinabove. Rather, the scope of the present invention is defined only by the claims that follow:
CLAIMS

1. A salad making device comprising:
   a plurality of salad ingredient bins for storing a corresponding plurality
   of salad ingredients;
   a plurality of salad ingredient feeders respectively associated with the
   plurality of salad ingredient bins;
   a salad defining interface allowing a customer to define a desired salad;
   at least one cutters;
   at least one mixers;
   at least one salad container suppliers; and
   a controller operative to coordinate operations of the salad ingredient
   feeders, cutters, mixers and salad container suppliers in order to provide a salad, in an
   individual one of the salad containers, which has been cut and mixed in accordance with
   a desired salad defined by a customer.

2. A device according to claim 1 wherein the salad defining interface allows
   a customer to define at least one salad by a salad name and wherein the controller
   comprises a database associating each salad name with a sequence of operations of at
   least some of said salad ingredient feeders, cutters, mixers and salad container suppliers,
   which sequence of operations results in a salad of the type defined by said salad name.

3. A network of salad making devices, including:
   a multiplicity of interconnected salad making devices, each salad making
   device comprising:
   a plurality of salad ingredient bins for storing a corresponding
   plurality of salad ingredients;
   a plurality of salad ingredient feeders respectively associated with
   the plurality of salad ingredient bins;
   a salad defining interface allowing a customer to define a desired
   salad;
   at least one cutters;
at least one mixers;

at least one salad container suppliers; and

a controller operative to coordinate operations of the salad ingredient feeders, cutters, mixers and salad container suppliers in order to provide a salad, in an individual one of the salad containers, which has been cut and mixed in accordance with a desired salad defined by a customer, and

a central network server operative to send at least one message to at least one of the interconnected salad making devices.

4. A device according to claim 1 and also comprising vending apparatus for accepting payment and responsively activating the controller.

5. A device according to claim 1 and also comprising price computation apparatus for computing a price of a salad provided by the controller and for associating an indication of the price with said salad.

6. Apparatus according to claim 1 or claim 3 and wherein said salad defining interface is operative to accept a customer's ID and salad defining input and to store, upon request, said salad defining input for later retrieval using the customer's ID as a retrieval key.

7. Apparatus according to claim 6 wherein said salad defining interface communicates with the controller via the Internet.

8. Apparatus according to claim 1 and also comprising a customer satisfaction recording unit operative to prompt the customer to indicate his level of satisfaction with the salad and to record the customer's response to the prompt.

9. Apparatus according to claim 8 and wherein said customer satisfaction recording unit is operative to prompt a customer to select at least one complaint and to reprogram the controller in accordance with accumulated complaints.
10. Apparatus according to claim 1 and also comprising a customer selection recording unit operative to record each salad ordered and to generate summarizing statistics accordingly.

11. A vending system for nuts, the system comprising:
   a plurality of bins for storing a corresponding plurality of nut types;
   a plurality of feeders respectively associated with the plurality of bins for channeling said nuts into a nut container;
   a customer interface operative to receive from a customer a desired nut combination including a desired amount of at least one of the plurality of nut types; and
   a feeder controller operative to control the plurality of feeders in accordance with a desired nut combination received by the customer interface, to supply the desired amount of at least one of the plurality of nut types into the nut container.

12. A system according to claim 11 wherein said feeder controller is operative to control at least one feeder to selectably provide different quantities of nut from its associated bin.

13. A system according to claim 11 wherein said feeder controller comprises a nut container scale operative to weigh said nut container as it is filled and to control supply of nuts into the nut container responsive to accumulated weight.

14. A vending system for nuts, the system comprising:
   a plurality of bins for storing a corresponding plurality of nut types;
   a plurality of feeders respectively associated with the plurality of bins for channeling said nuts into a nut container;
   a customer interface operative to receive from a customer a desired nut combination including a plurality of nut types; and
   a feeder controller operative to control the plurality of feeders in accordance with a desired nut combination received by the customer interface, to supply the desired amount of a plurality of nut types into the nut container.
15. A vending system for nuts, the system comprising:
   a plurality of bins for storing a corresponding plurality of nut types;
   a plurality of feeders respectively associated with the plurality of bins for
   channeling said nuts into a nut container;
   a customer interface operative to receive from a customer a desired nut
   combination including at least one of the plurality of nut types;
   a feeder controller operative to control the plurality of feeders in
   accordance with a desired nut combination received by the customer interface, to supply
   the desired amount of at least one of the plurality of nut types into the nut container; and
   an aroma generator operative to generate an aroma of roasting nuts,
   thereby to encourage passersby to approach the vending system.

16. A system according to any of claims 11 - 15 wherein the nut container
   comprises a paper bag and also comprising a paper bag dispenser operative to supply
   and open paper bags for filling with nuts.
FIG. 4B
FIG. 5

INITIATE PROCESS: PROVIDE N ITEMS.

i = 1.

PUSH LEVER 403 BY 1 UNIT.

YES

SENSOR 404 INDICATES ITEM/S?

NO

PLATFORM 403 AT TOP LEVEL?

YES

REPORT: CONTAINER 401 EMPTY.

NO

LIFT PLATFORM 402 BY 1 UNIT.

END.

NO

SENSE ITEM AT OUTLET 407?

YES

END.

NO

REACH MAXIMUM PRESSURE AT LEVER 403?

REPORT: CONTAINER 401 MALFUNCTION

END.

LOCK LEVER 403.

RAISE TRAY 405.

OPEN OUTLET 407.

RETURN OUTLET 407, TRAY 405 AND LEVER 403 INTO THEIR INITIAL POSITIONS.

NO

SENSE ITEM PROVIDED VIA OUTLET 408?

YES

i = i + 1.

END.

NO

i = N ?
FIG. 6D
FIG. 6E
### FIG. 7

#### VERSION 1

<table>
<thead>
<tr>
<th>SALAD ITEMS</th>
<th>AMOUNT</th>
<th>CUTTING MODE &amp; SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATOES</td>
<td>FULL SERVING</td>
<td>BIG CUBES</td>
</tr>
<tr>
<td>CUCUMBERS</td>
<td>HALF SERVING</td>
<td>SMALL CUBES</td>
</tr>
<tr>
<td>BULGARIAN CHEESE</td>
<td>FULL SERVING</td>
<td>ROUGH GRATING</td>
</tr>
<tr>
<td>OLIVES</td>
<td>HALF UNIT</td>
<td></td>
</tr>
<tr>
<td>OLIVE OIL</td>
<td>FULL UNIT</td>
<td></td>
</tr>
</tbody>
</table>

#### VERSION 2

<table>
<thead>
<tr>
<th>SALAD ITEMS</th>
<th>AMOUNT</th>
<th>CUTTING MODE &amp; SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATOES</td>
<td>FULL SERVING</td>
<td>BIG CUBES</td>
</tr>
<tr>
<td>SPINACH LEAVES</td>
<td>SMALL UNIT</td>
<td>NO CUTTING</td>
</tr>
<tr>
<td>BULGARIAN CHEESE</td>
<td>FULL SERVING</td>
<td>ROUGH GRATING</td>
</tr>
<tr>
<td>OLIVES</td>
<td>FULL UNIT</td>
<td></td>
</tr>
<tr>
<td>OLIVE OIL</td>
<td>FULL UNIT</td>
<td></td>
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</tbody>
</table>

#### VERSION 3

<table>
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<tr>
<th>SALAD ITEMS</th>
<th>AMOUNT</th>
<th>CUTTING MODE &amp; SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

#### USER DETERMINED

<table>
<thead>
<tr>
<th>SALAD ITEMS</th>
<th>AMOUNT</th>
<th>CUTTING MODE &amp; SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATOES</td>
<td>HALF -- FULL</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>OPTIONAL VEGS</td>
<td>SMALL -- FULL</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>BULGARIAN CHEESE</td>
<td>NONE -- FULL</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>OLIVES</td>
<td>NONE -- FULL</td>
<td></td>
</tr>
<tr>
<td>OLIVE OIL</td>
<td>NONE -- FULL</td>
<td></td>
</tr>
<tr>
<td>OPTIONAL SAUCE</td>
<td>SMALL -- FULL</td>
<td></td>
</tr>
</tbody>
</table>
FIG. 8A

DISPLAY MENU

RECEIVE USER SELECTION OF A SALAD DESIGNATION.

REQUEST PAYMENT BASED ON USER SELECTION.

RECEIVE PAYMENT.

DISPLAY VERSIONS FOR SALAD DESIGNATION SELECTED BY THE USER.

THE USER SELECTS ONE OF THE STANDARD VERSIONS.

ACTIVATE SALAD CHEF ACCORDING TO THE RECIPE SELECTED BY THE USER.

CONTINUE TO FIG. 8B

THE USER SELECTS THE "USER DETERMINED" OPTION.

DISPLAY OPTIONAL MENU FOR THE SALAD DESIGNATION SELECTED BY THE USER.

RECEIVE RECIPE SETTING BY THE USER.

ACTIVATE SALAD CHEF ACCORDING TO THE RECIPE SET BY THE USER.
FIG. 8B

FOR ITEMS i = 1 ON A SALAD RECIPE:

CONTINUE FROM FIG. 8A

DOES ITEM i REQUIRE CUTTING?

YES

ACCORDING TO RECIPE: PROVIDE AN AMOUNT OF ITEM i VIA CONTAINER UNIT 201 TO CUTTER UNIT 202.

ACCORDING TO RECIPE: CUT AN AMOUNT OF ITEM i VIA CUTTER UNIT 202.

PROVIDE AN AMOUNT OF CUT ITEM i TO RECEPTACLE 231.

PROVIDE INDICATION OF A SYSTEM MALFUNCTION.

NO

ACCORDING TO RECIPE: PROVIDE AN AMOUNT OF ITEM i VIA CONTAINER UNIT 201 TO RECEPTACLE 231.

LAST ITEM ON RECIPE?

i = i + 1

NO

RECEIVE INDICATION THAT ALL NECESSARY ITEMS ARE WITHIN RECEPTACLE 231?

YES

SHAKE RECEPTACLE 231 VIA BLENDER 232.

DOES THE RECIPE REQUIRE BLENDING?

YES

THE USER PROVIDES A PLATE.

NO

SENSE A PLATE'S PRESENCE VIA PLATE STAND 233?

PROVIDE INDICATION: MISPLACED PLATE!

YES

PROVIDE SALAD VIA RECEPTACLE 231 TO PLATE.
### FIG. 9

<table>
<thead>
<tr>
<th>CONT. #</th>
<th>SALAD ITEM</th>
<th>MIN AMOUNT FOR NORMAL MODE</th>
<th>MIN AMOUNT FOR SERVING</th>
<th>MAX STORAGE PERIOD ROOM / FRIDGE</th>
<th># OF DAYS SINCE LAST REFILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TOMATO</td>
<td>M1,1 / M2,1</td>
<td></td>
<td>D1,1 / D2,1</td>
<td>D1</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>/</td>
<td>...</td>
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</tr>
</tbody>
</table>
FIG. 10

INITIATE FRESHNESS CONTROL PROCEDURE: SET i = 1.

RECEIVE AMOUNT READING Mi FROM CONTAINER #i.

NO  MI < M1i?

YES  Mi < M2i?

ENTER ECONOMY MODE.

SEND A MESSAGE TO A SUPPLIER REQUESTING REFILL OF CONTAINER #i.

NO  Di < D1i?

YES  i < N?

NO  i = i+1

DELETE FROM MENU ALL SALADS THAT INCLUDE THE SALAD ITEM OF CONTAINER #i.

SEND A MESSAGE TO A SUPPLIER REQUESTING REFILL OF CONTAINER #i.

END FRESHNESS CONTROL PROCEDURE.
## FIG. 11

<table>
<thead>
<tr>
<th>USER ID</th>
<th>USER NAME</th>
<th>USER'S FAVORITE RECIPES</th>
<th>USER'S CURRENT BILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>10001</td>
<td>DAN LN</td>
<td>NELSON SALAD: STANDARD VERSION #2&lt;br&gt;GREK SALAD: USER RECIPE # 100011&lt;br&gt;FRUIT SALAD: STANDARD VERSION # 4</td>
<td>$15</td>
</tr>
<tr>
<td>10002</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
FIG. 12

DISPLAY PAYMENT OPTIONS.

A USER INSERTS A USER CARD.

READ USER ID VIA USER CARD.

DOES DATABASE 1100 INCLUDE A FAVORITE RECIPE OF THE USER?

YES

DISPLAY THE USER'S FAVORITE RECIPES.

NO

OUTPUT: "HI DAN, WOULD YOU LIKE TO HAVE ONE OF YOUR USUAL SALADS?"

YES

THE USER CHOOSES ONE OF HIS USUAL RECIPES.

NO

THE USER REQUESTS A MENU.

PROVIDE THE STANDARD MENU.

THE USER SELECTS A SALAD DESIGNATION.

OUTPUT: "WOULD YOU LIKE TO UPDATE YOUR RECORD WITH THIS SALAD SELECTION?"

NO

THE USER REJECTS RECORD UPDATE OPTION.

YES

THE USER REQUESTS RECORD UPDATE.

UPDATE USER RECORD.

UPDATE USER RECORD.

UPLOAD RECIPE.

ACTUATE SALAD CHEF SYSTEM.
FIG. 16
30/40

FIG. 17
FIG. 21

RECEIVE A REQUEST BY A USER: TOTAL WEIGHT R, NUTS OF TYPE/S N_i (i=1 TO n).

CALCULATE EXPECTED PRICE:
P = SUM (P_i*R/n), i = 1 TO n.

PRESENT PRICE P TO THE USER
RECEIVE PAYMENT BY THE USER.

DETERMINE WEIGHT W_0 OF PAPER BAG DEVICE PRIOR TO PROVIDING ANY NUTS.

SET i,j = 1;
OPEN PAPER BAG.

PROVIDE INTO PAPER BAG A PREDETERMINED AMOUNT OF NUTS OF TYPE N_i.

YES

i = n？

NO

i = i + 1

DETERMINE TOTAL WEIGHT W_j AFTER ROUND j.

YES

W_j - W_0 < R ?

NO

MOVE TO NEXT ROUND: j = j + 1;
RESET i = 1.

RELEASE PAPER BAG INTO BASKET;
INFORM THE USER.

END.
FIG. 22B
Salad Name: Tuna

INGREDIENTS:
Tuna, Tomatoes, Cucumber, Avocado, Onion, Lettuce, Mushrooms, Lemon Juice, Parsley, Olive oil

For 100g:
Energy: 235 Kcal
Vitamin A: 200 IU
Beta Carotene: 500 IU
Vitamin C: 120mg
Calcium: 25 mg

Price: $4 $6
Size: Large Small
Extra Tomatoes: 50c NO YES
Additional Goat Cheese: 50c NO YES
Additional Nuts: 50c NO YES
Roquefort Dressing: Free NO YES

CANCEL PROCEED
TUNA SALAD PAYMENT:

Tuna Salad
Large Picture

Your Total is:
$5.5

Please insert Coins / Bills / Credit card to proceed or select CANCEL

CANCEL
While your salad is being prepared, you can fill this FEEDBACK FORM and receive 50¢ discount on your order.

Feedback Form:

Last time I have ordered:

Green
Cesar
Arabic
Tuna
French
....

The Salad was:

Excellent
Good
Bad

I suggest it should:

Be More Spicy
Have more tomatoes
Have more cheese
...
...

Thank You