

Method and System for Code Generation

Field of Invention

The present invention relates generally to a method for storing and printing recipes. More particularly the present invention relates to a method and system for recipe capture, codification, printing and retrieval.

Background

It is widely accepted that while individual food items may share a common name, each of the individual food items may have a different combination of flavors as well as a different proportion of each flavor. An example of such a food item is ice cream, which can have a wide variety of flavors. Some commonly known flavors of ice cream include chocolate, strawberry, vanilla, mint and even fruit-flavors such as banana, mango and peach. It is also common to find ice cream having a combination of two or more flavors, for example, chocolate and mint or chocolate and mint with banana. Furthermore, it is increasingly popular to adjust the proportion of each flavor to best suit an individual customer's taste preferences and whims.

Existing ice cream retail outlets typically allow a customer to select from a range of available ice cream flavors. The existing ice cream retail outlets also commonly allow the customer to select a combination of ice cream flavors in his purchased product. However, the range of available ice cream flavors provided by most existing ice cream retail outlets is often limited. Additionally, there is usually little or no option for allowing the customer to select a different proportion of each of his selected ice cream flavors. Therefore, the existing ice cream retail outlets are typically only able to offer the customer a limited range of flavor combination and proportion in his purchased product.

A culinary or food recipe is often defined as a record of a combination of different ingredients or flavors that are found within a food item, together with proportions of the ingredients or flavors within that food item. Preparation methods, for example, boiling, frying and steaming, are also typically found in the food recipe. Traditionally, food

recipes are described in books and magazines or on recipe cards. Individuals who are recognized as skilled at producing a particular food item commonly generate the food recipe for that particular food item. However, it is often argued that every individual has an ability to discern between food items that they enjoy and food items that they do not enjoy. When presented with a choice of food items, the individual would normally choose to consume a food item from which he derives a greater enjoyment.

Consequently, food and beverage retail outlets are increasingly exploring avenues that allow for generation of individually customized food items. Enabling on the spot customization of food items, such as on the spot selection of flavor combinations and/or flavor proportions, will significantly enhance the customer's choice and the customer's experience.

Having different combinations of flavors and different proportions of individual flavors alters the taste and appearance of the food item. An important function of food recipes is to allow a person to reproduce a previously produced food item that he has previously enjoyed. Without the food recipe, one often finds that he is unable to exactly recall the combination of different flavors previously selected and/or the different proportion of each of the different flavors selected. At present, food and beverage retail outlets do not provide customers with a hard copy of the food recipe of their ordered food item. This is because it is often not necessary, not possible or too time consuming to generate the hard copy of the food recipe. Additionally, recording and storing every flavor input and their proportions frequently require a significant amount of paper or computer memory space. This represents a significant gap in the food retail business because customers are often unable to order and re-savor an exact reproduction of a food item that he has previously enjoyed.

From the foregoing, it will be apparent that there is a need to provide customers with a greater selection and variety of food items including, but not limited to, ice cream. In addition, there is also a need for an ability to capture and store the customers' food recipes, thereafter providing the customers with a copy of their food recipe.

Summary

In accordance with a first aspect of the invention, there is disclosed a computing device implemented method comprising providing a plurality of flavors and receiving a selection of at least one of the plurality of flavors. The computing device implemented method further comprises generating a code associated with the selected at least one of the plurality of flavors. The code is translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser. The computing device implemented method also comprises generating a machine-readable representation of the code. The at least one of the code and the machine-readable representation of the code determines the at least one of the plurality of flavors.

In accordance with a second aspect of the invention, there is disclosed a method comprising providing a plurality of flavors, receiving a selection of at least one of the plurality of flavors and generating a code associated with the selected at least one of the plurality of flavors. The code is translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser, wherein the at least one of the plurality of flavors is determinable from the code.

In accordance with a third aspect of the invention, there is disclosed a system comprising a storage device containing a plurality of flavors and a user interface operable for selecting at least one of the plurality of flavors. The system further comprises a controller for generating a code associated with the selected at least one of the plurality of flavors. The code is translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser, wherein the at least one of the plurality of flavors is determinable from the code.

In accordance with a fourth aspect of the invention, there is disclosed a machine-readable medium having stored therein a plurality of programming instructions. The execution of the programming instructions cause the machine to receive a selection of at least one of a plurality of flavors and generate a code associated with the selected at least one of the

plurality of flavors. The code is translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser, wherein the at least one of the plurality of flavors is determinable from the code.

5 **Brief Description of Drawings**

FIG. 1 shows a flowchart illustrating steps in a method for recipe capture, codification, printing and retrieval as provided by an embodiment of the present invention;

10 FIG. 2 shows a sample receipt that is provided to a customer comprising a code as generated by the method of FIG. 1;

FIG. 3 gives a schematic overview of a system in which the method of FIG. 1 is implemented therein; and

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FIG. 4 shows an example of the code as generated by the method of FIG. 1.

Detailed Description

Existing methods of confectionery retail are unable to provide customers with an almost
20 limitless range of selectable flavor combination and proportion. Additionally, customer generated recipes for food items including confectionery are typically neither stored nor provided to the customer. Therefore, the customer is often unable to savor a food item having the a flavor combination and proportion as a previously produced food item. Consequently, there is a need to allow reproduction of food items having the same flavor
25 combination and proportion as the previously produced food item.

As shown in the diagrams for purposes of illustration, the invention is embodied in a method of recipe capture, codification, printing and retrieval in which a code generated is provided to the customer on a receipt. The method according to an embodiment of the
30 present invention allows an almost limitless range of flavor combination and proportion to be condensed into a code. The code captures or represents the customer's selected

flavor combination and proportion (hereinafter referred to as a recipe). The code is translatable into instructions that are used to control dispensing of mixes from a dispenser. The code is provided to the customer on a receipt. Dispensed mixes from the dispenser are associated with flavors selected by the customer and/or captured in the code. A future input of the code facilitates production of a finished product having a same recipe as a previously produced product, the recipe of the previously produced product captured by the inputted code.

For purposes of brevity and clarity, descriptions of embodiments of the invention are limited hereinafter to apparatuses for confectionery preparation. This however does not preclude various embodiments of the invention from other applications that require similar operating performance. The fundamental operational and functional principles of the embodiments of the invention remain common throughout the various embodiments.

An exemplary embodiment of the invention is described in greater detail hereinafter in accordance to illustrations provided in FIG. 1 to FIG. 4 of the drawings, in which like elements are identified with like reference numerals.

An embodiment of the invention, a method 20 for recipe capture, codification, printing and retrieval, is described hereinafter with reference to FIG. 1 to 3. In a step 22, a customer activates an input console 110 by touching the user interface 112, thereby starting an order. The customer then chooses between an option of selecting from a “favorites” list and an option of product customization (“Your choice”). In a step 24, the customer chooses from the “favorites” list. The “favorites” list provides a selection of frequently requested finished product flavor combinations and proportions. The product customization (“Your choice”) option allows the customer to select a specific flavor combination and a proportion of each selected flavor.

Following the product customization (“Your choice”) option, the customer selects flavor combination in a step 26. The flavor combination comprises at least one flavor. The range of available flavor combinations is dependent on number of available flavors. Based on

an availability of thirty-two different flavors, a finished product can have over six hundred thousand different flavor combinations. In a step 28, the customer selects a proportion of each of the flavors selected in the step 26. Enabling customer choice regarding the proportion of each selected flavor increases possible flavor combinations and proportions of the finished product by many folds, thereby providing the customer with an almost limitless range of flavor combinations and proportions. This ability of allowing the customer to specifically select the flavor combination and proportion greatly enhances customer choice, customer experience and customer satisfaction.

10 In a step 30, the customer selects a serve size of the finished product. The serve size of the finished product is specifiable to the nearest milliliter. The customer can optionally select toppings, add-ons and/or wrap-types in a step 32. The selected flavor combination, the proportion of each of the selected flavors, the serve size, together with the toppings, add-ons and/or wrap-types are collectively termed a recipe of the finished product. In a
15 step 34 of the method 20, the customer's recipe or order is confirmed.

If the recipe is confirmed, a code for the recipe is generated in a step 36. The code exactly captures or represents specific instructions of the recipe. Examples of the code include alphanumeric codes, numeric codes and barcodes. The code and its corresponding recipe
20 can be derived from a flavor standards database. In a step 38 of the method 20, the code is transferred and stored in a database.

The code is printed on a receipt in a step 40. The customer is supplied with the code by issuance of the receipt to the customer. The code printed on the receipt is machine-readable. Upon subsequent visits, the customer may opt to directly input the code by
25 using a code reader 114. The direct input of the code using the code reader 114 is performed in a step 42. Preferably the code reader 114 is a scanning device that is able to scan and thereby read the code, the code presented as the barcode. The direct input of the code allows the steps 24 to 36 to be omitted.

As mentioned previously, the code exactly captures or represents the recipe. The input of the code allows the recipe to be decoded from the code. The recipe represents the customer's instructions for a specific flavor combination and proportion. The code is translatable into instructions for controlling dispensing of mixes, thereby controlling the specific flavor combination and proportion of the finished product.

Providing the customer with a hard copy of the code on the receipt allows the customer to be able to reorder and enjoy the finished product with a same flavor combination and proportion that he has previously enjoyed. The customer is also able to share his code and its corresponding recipe with others. The code that is stored in the database is accessible by a third party for purposes including, but not limited to, marketing intelligence gathering and promotional opportunities for increment of sales revenue.

FIG. 2 shows a sample of the receipt issued to the customer that comprises the code, which is represented by the barcode 50. The barcode exactly captures or represents a specific recipe. A name of retail outlet 52 is printed on the receipt, facilitating recall of the receipt's origin. A breakdown of product component flavors 54 and flavor proportions 56 are optionally printed on the receipt. Selected product serving size is also specified on the receipt 58. Optionally selected toppings 60 such as chocolate chips and hazel nuts are also reflected on the receipt. The customer can keep the receipt, thereby keeping a copy of the code for future usage. The code, as represented by the barcode 50 as shown in FIG. 2, is readable using the code reader 114. Upon reading of the code, the code-represented or code-captured recipe is decoded from the code, thereby allowing the production of the finished product as per recipe instructions.

As shown in FIG. 3, the method 20 provided by an embodiment of the present invention can be implemented by a system 100. The system 100 comprises an electronic control system 116. Optionally, the electronic control system is a computing device. The electronic control system 116 comprises the input console 110. The input console 110 receives instructions for producing the finished product. The user interface 112 of the input console 110 is preferably presented on a touch screen user interface. The user

interface of the input console can also be a keyboard or an electronic device. The user interface 112 facilitates execution of the steps 22 to 34 of the method 20 of FIG. 1 as provided by the present invention. The electronic control system 116 preferably comprises a storage device or a flavor database that stores a range of available flavors.

- 5 The customer's instructions, also known as the recipe, are transmitted from the input console 110 to a microprocessor system 118. The microprocessor system 118 performs the step 36 of the method 20, thereby generating the code that exactly captures or represents the customer's instructions or recipe. The microprocessor system 118 also performs the step 38 of the method 20, in which the code is stored in the database 120.
- 10 The code can also be printed on the receipt and provided to the customer.

The input console 110 of the electronic control system 116 also comprises the code reader 114. The code reader 114 of the system 100 performs the step 42 of the method 20. The code reader 114 reads the code that is printed on the customer's receipt, thereby

15 enabling the input of the code into the electronic control system 116. The code reader is optionally a transponder that is able to generate signals being representative of the code. The code is then transferred to the microprocessor system 118. The microprocessor system 118 optionally comprises a transceiver (not shown) for receiving signals from the transponder containing the code. The transceiver is also able to receive an interrogation

20 response from the transponder. The microprocessor system 118 decodes the code into its corresponding captured recipe. The microprocessor system 118 relays the customer's instructions or the recipe to a programmable logic controller (PLC) 122. The PLC couples the microprocessor system 118 and the valve assembly 124, thereby controlling operation of the valve assembly 124. The recipe relayed to the valve assembly 124

25 controls the operation of the valve assembly 124, thereby facilitating production of the finished product with the specific flavor combination and proportion as specified by the recipe.

FIG. 4 shows an example of the code as generated by the method 20 of FIG. 1. The code

30 200 as shown in FIG. 4 is an alphanumeric code. The code 200 consists of a series of alphanumeric characters. The first three characters 210 of the code 200 specify a flavor,

provided by the flavor database, selected by the customer. First two characters 212 of the code 200 represent the flavor and a third character 214 represents a flavor subgroup code. A fourth character 216 of the code 200 represents a proportion of the flavor. In a sixteen-valve system with each flavor selected, the total recipe combination will produce an alphanumeric code having a total of sixty-four characters. The code 200 can be printed on the receipt as the alphanumeric code. The code is also convertible into the barcode and thereafter printed on the receipt. The barcode is readable by the code reader 114.

The code is translatable into instructions for dispensing of mixes. The dispensed mixes are of specific flavor combination and proportion as defined by the code. The code thereby determines composition of the finished product. The present invention allows the customer to reorder and repeatedly enjoy a same finished product that he has enjoyed previously.

From the foregoing it will be appreciated that the method and system for code generation as provided by the present invention offers significant novel advantages. Such a method and system allow for provision of almost limitless flavor combinations and proportions in the finished product. This redefines boundaries of customer choice and represents a significant potential enhancement of customer experience. The method as provided by the present invention also facilitates condensing of a potentially complicated and multi-step recipe into a simplified code. The code exactly captures or represents the recipe. The code is provided to the customer, preferably on the receipt. The input of the code into the input console using the code reader facilitates the decoding of the code into its corresponding captured recipe. The code controls the flavor combination and proportion of the finished product. The method and system of code generation as provided by the present invention provide customers with a timeless enjoyment of their favorite finished product. The present invention also allows customers to share their recipe with others.

In the foregoing manner, a method and a system for code generation are disclosed.

Although exemplary embodiments of the invention has been described and illustrated, the

invention is not to be limited to the specific forms or arrangements of parts so described and illustrated.

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Claims

1. A computing device implemented method comprising:
 - providing a plurality of flavors;
 - 5 receiving a selection of at least one of the plurality of flavors;
 - generating a code associated with the selected at least one of the plurality of flavors, the code being translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser;
 - and
 - 10 generating a machine-readable representation of the code,
 - wherein the at least one of the plurality of flavors is determinable from at least one of the code and the machine-readable representation.
2. The computing device implemented method as in claim 1, generating a code associated with the selected at least one of the plurality of flavors comprising:
 - 15 generating a code defining the selected at least one of the plurality of flavors
3. The computing device implemented method as in claim 2, further comprising:
 - receiving definition of at least one proportion corresponding to the at least
 - 20 one of the plurality of flavors; and
 - generating the code and the machine-readable representation further from the at least one proportion.
4. The computing device implemented method as in claim 3, further comprising:
 - 25 generating at least one flavor code segment being representative of the at least one of the plurality of flavors; and
 - generating at least one proportion code segment being representative of the at least one proportion,
 - wherein the code comprises the at least one flavor code segment and the at
 - 30 least one proportion code segment.

5. The computing device implemented method as in claim 2, further comprising:
receiving definition of at least one quantity corresponding to the at least
one of the plurality of flavors; and
generating the code and the machine-readable representation further from
the at least one quantity.
6. The computing device implemented method as in claim 1, wherein the selection
of at least one of the plurality of flavors is performed via an input console.
7. The computing device implemented method as in claim 6, wherein the input
console further comprises means for allowing selection of at least one of serving
size, add-ons, toppings and wrap-types for the prepared confectionary.
8. The computing device implemented method as in claim 1, wherein the machine
readable representation is at least one of a numeric code, an alphanumeric code
and a barcode.
9. The computing device implemented method as in claim 1, further comprising:
printing the machine-readable representation on a receipt.
10. The computing device implemented method as in claim 1, further comprising:
providing a transponder for generating signals being representative of the
code.
11. The computing device implemented method as in claim 1, further comprising:
storing the code and the at least one of the plurality of flavors associated
therewith on a database,
wherein the at least one of the plurality of flavors is retrieval when the
machine-readable representation of the code is provided.

12. A method comprising:

providing a plurality of flavors;

receiving a selection of at least one of the plurality of flavors; and

generating a code associated with the selected at least one of the plurality of
5 flavors, the code being translatable into instructions for controlling dispensing of
liquid mixes having the at least one of the plurality of flavors from a dispenser;

wherein the at least one of the plurality of flavors is determinable from the
code.

10 13. The method as in claim 12, generating a code associated with the selected at least
one of the plurality of flavors comprising:

generating a code defining the selected at least one of the plurality of flavors

14. The method as in claim 13, further comprising:

15 receiving definition of at least one proportion corresponding to the at least
one of the plurality of flavors; and

generating the code further from the at least one proportion.

15. The method as in claim 14, further comprising:

20 generating at least one flavor code segment being representative of the at
least one of the plurality of flavors; and

generating at least one proportion code segment being representative of
the at least one proportion,

25 wherein the code comprises the at least one flavor code segment and the at
least one proportion code segment.

16. The method as in claim 12, further comprising:

receiving definition of at least one quantity corresponding to the at least
one of the plurality of flavors; and

30 generating the code further from the at least one quantity.

17. The method as in claim 12, wherein the selection of at least one of the plurality of flavors is performed via an input console.

18. The method as in claim 17, wherein the input console further comprises means for allowing selection of at least one of serving size, add-ons, toppings and wrap-types for the prepared confectionary.

19. The method as in claim 12, wherein the code is at least one of a numeric code, an alphanumeric code and a barcode.

20. The method as in claim 12, further comprising:
printing a representation of the code on a receipt.

21. The method as in claim 12, further comprising:
providing a transponder for generating signals being representative of the code.

22. The method as in claim 12, further comprising:
storing the code and the at least one of the plurality of flavors associated therewith on a database,
wherein the at least one of the plurality of flavors is retrieval when the code is provided.

23. A system comprising:
a storage device containing a plurality of flavors;
a user interface operable for selecting at least one of the plurality of flavors;
and
a controller for generating a code associated with the selected at least one of the plurality of flavors, the code being translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser;

wherein the at least one of the plurality of flavors is determinable from the code.

24. The system as in claim 23, wherein the code defines the selected at least one of the plurality of flavors

25. The system as in claim 24, the user interface further being operable for receiving definition of at least one proportion corresponding to the at least one of the plurality of flavors; and

wherein the code is further generatable from the at least one proportion.

26. The system as in claim 23, further comprising:

at least one flavor code segment being representative of the at least one of the plurality of flavors; and

at least one proportion code segment being representative of the at least one proportion.

27. The system as in claim 24, the user interface further being operable for receiving definition of at least one quantity corresponding to the at least one of the plurality of flavors; and

wherein the code is further generatable from the at least one quantity.

28. The system as in claim 23, wherein the user interface is an input console in data communication with the controller.

29. The system as in claim 23, further comprising:

a dispenser for operable by the controller for dispensing the liquid mixes having the at least one of the plurality of flavors associated with the code.

30. The system as in claim 23, wherein the code is at least one of a numeric code, an alphanumeric code and a barcode.

31. The system as in claim 23, further comprising:
a printer for printing a representation of the code on a receipt.
32. The system as in claim 23, further comprising:
5 transceiver for receiving one of signals and an interrogation response from a transponder containing the code.
33. The system as in claim 23, the storage device further for storing the code and the
at least one of the plurality of flavors associated therewith on a database,
10 wherein the at least one of the plurality of flavors is retrieval when the code is provided.
34. A machine-readable medium having stored therein a plurality of programming instructions, which when executed, the instructions cause the machine to:
15 receive a selection of at least one of a plurality of flavors;
generate a code associated with the selected at least one of the plurality of flavors, the code being translatable into instructions for controlling dispensing of liquid mixes having the at least one of the plurality of flavors from a dispenser;
wherein the at least one of the plurality of flavors is determinable from the
20 code.
35. The machine-readable medium as in claim 34 wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:
25 generate a code defining the selected at least one of the plurality of flavors
36. The machine-readable medium as in claim 35, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:
30 receive definition of at least one proportion corresponding to the at least one of the plurality of flavors; and

generate the code further from the at least one proportion.

37. The machine-readable medium as in claim 36, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:

generate at least one flavor code segment being representative of the at least one of the plurality of flavors; and

generate at least one proportion code segment being representative of the at least one proportion,

wherein the code comprises the at least one flavor code segment and the at least one proportion code segment.

38. The machine-readable medium as in claim 35, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:

receive definition of at least one quantity corresponding to the at least one of the plurality of flavors; and

generate the code further from the at least one quantity.

39. The machine-readable medium as in claim 34, wherein the selection of at least one of the plurality of flavors is performed via an input console.

40. The machine-readable medium as in claim 34, wherein the input console further comprises means for allowing selection of at least one of serving size, add-ons, toppings and wrap-types for the prepared confectionary.

41. The machine-readable medium as in claim 34, wherein the code is at least one of a numeric code, an alphanumeric code and a barcode.

42. The machine-readable medium as in claim 34, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:

print a representation of the code on a receipt.

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43. The machine-readable medium as in claim 34, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:

provide a transponder for generating signals being representative of the code.

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44. The machine-readable medium as in claim 34, wherein the plurality of programming instructions, which when executed, the instructions cause the machine to:

store the code and the at least one of the plurality of flavors associated therewith on a database,

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wherein the at least one of the plurality of flavors is retrieval when the code is provided.

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