

Batching Machine

Technical Field

The present disclosure relates to, but is not limited to, the field of food processing mechanical technology, and in particular to a batching machine.

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Background

Milk tea is a beverage with various ingredients. In the general preparation process of milk tea, various ingredients are generally weighed by pure hand, and then the ingredients are mixed together to complete the selection of ingredients of milk tea. This approach requires training for the personnel first, so that the relevant personnel can remember the recipes of milk tea, which is labor intensive and inefficient.

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Summary

The following is a summary of the subject matter described in detail herein. This summary is not intended to limit the protection scope of the claims.

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An embodiment of the present disclosure provides a batching machine, which is disposed to prepare a beverage. The batching machine includes a material bucket, a discharge head and a pump. A plurality of material buckets are provided, and the material buckets are disposed to load materials. At least one discharge head is provided, and the discharge head and the material bucket are disposed separately. A plurality of pumps are provided, the pumps are disposed in one-to-one correspondence with the material buckets, and the pumps are disposed to extract materials in the material buckets and convey the materials to the discharge head, so that the materials are output from the discharge head.

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Other aspects will become apparent after reading and understanding the drawings and detailed description.

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Brief Description of Drawings

Accompanying drawings are used for providing an understanding of technical solutions of the present disclosure, and constitute a part of the specification. They are used together with embodiments of the present disclosure to explain the technical solutions of the present disclosure, and do not constitute a restriction on the technical solutions of the present disclosure.

FIG. 1 is a schematic diagram of a three-dimensional structure of a batching machine according to an embodiment of the present disclosure.

FIG. 2 is a schematic diagram of a structure of a batching machine according to another embodiment of the present disclosure.

FIG. 3 is a schematic diagram of a structure of a batching machine according to yet another embodiment of the present disclosure.

FIG. 4 is a schematic diagram of a structure of a batching machine according to an embodiment of the present disclosure.

Reference numerals are as follows:

1000- batching machine, 100- material bucket, 200- discharge head, 21- discharge nozzle, 300- pump, 400- storage platform, 41- bracket, 42- display, 43- image recognition device, 500- feed tube, 51- filter device, 600- freezer cabinet, 2000- cup.

Detailed Description

Embodiments of the present disclosure are described in detail below and examples of the embodiments are shown in the drawings, wherein identical or similar reference numerals throughout denote identical or similar elements or elements with identical or similar functions. The embodiments described below by referring to the accompanying drawings are exemplary and are intended to explain the present disclosure only, and cannot be understood as limitation on the present disclosure.

In the description of the embodiments of the present disclosure, orientations or positional relationships indicated by the terms “center”, “longitudinal”, “transverse”, “length”, “width”, “thickness”, “up”, “down”, “front”, “back”, “left”, “right”, “vertical”, “horizontal”, “top”,

“bottom”, “inside”, “outside”, “clockwise”, “counterclockwise” and the like are based on the orientations or positional relationships illustrated by the drawings, which are intended for ease of the description of the embodiments of the present disclosure and simplification of the description only, and are not intended to indicate or imply that the devices or elements indicated must have a specific orientation, are constructed and operated in a specific orientation, and therefore cannot be construed as a limitation on the present disclosure. Furthermore, the terms “first” and “second” are used for descriptive purposes only and cannot be understood as indicating or implying relative importance or implying the quantity of technical features indicated. Thus, features defined with “first” or “second” may explicitly or implicitly include one or more of said features. In the description of the embodiments of the present disclosure, “a plurality of” means two or more than two, unless expressly defined otherwise.

In the description of the embodiments of the present disclosure, unless otherwise expressly specified and defined, the terms “mounting”, “connection”, “connecting” should be understood in a broad sense. For example, they may be fixed connection, detachable connection or integrated connection; they may be mechanical connection, electrical connection or mutual communication; they may be direct connection, indirect connection through an intermediary, an internal communication between two elements, or interactive relationship between two elements. For those of ordinary skills in the art, meanings of the above terms in the present disclosure can be understood according to specific situations.

In the present disclosure, a first feature being located “above” or “below” a second feature may include a direct contact of the first feature and second feature, or may include the first feature and second feature being contacted through additional features between them, rather than direct contact, unless otherwise expressly specified and defined. Also, a first feature being located “above” or “top of” or “on” a second feature includes the first feature being located directly above and obliquely above the second feature, or simply indicates that the horizontal height of the first feature is greater than that of the second feature. The first feature being located “below” or “bottom of” or “underneath” the second feature includes the first feature being located directly below and obliquely below the second feature, or simply indicates that the horizontal height of the first feature is less than that of the second feature.

The following disclosure provides many different implementations or examples for implementing different structures of the present disclosure. In order to simplify the present disclosure, components and arrangements of specific examples are described below. Obviously, they are only examples and are not intended to limit the present disclosure. Further, reference numbers and/or reference letters in different examples may be repeated in the embodiments of the present disclosure for the purposes of simplicity and clarity, and such repetition itself does not indicate a relationship among the various embodiments and/or arrangements discussed. In addition, examples of various specific processes and materials are provided in the embodiments of the present disclosure, but those ordinary skilled in the art will be aware of the application of other processes and/or the use of other materials.

Referring to FIGS. 1 and 2, an embodiment of the present disclosure provides a batching machine 1000 disposed to prepare a beverage, and the batching machine 1000 includes a material bucket 100, a discharge head 200, and a pump 300. The material bucket 100 is disposed for loading material(s), and a plurality of material buckets 100 are provided. The quantity of the discharge head 200 is at least one, and the discharge head 200 and the material bucket 100 are disposed separately. A plurality of pumps 300 are provided, and the pumps 300 are disposed in one-to-one correspondence with the material buckets 100. The pumps 300 are disposed to extract the materials in the material buckets 100 and convey the materials to the discharge head 200 so that the materials are output from the discharge head 200.

In the batching machine 1000 according to an embodiment of the present disclosure, material(s) is/are extracted by the pump 300, and the operating parameters of the pump 300 can be controlled, so that the extracted material(s) is/are quantified, thereby realizing the batching automation of beverages, reducing labor costs and improving efficiency.

Milk tea, as a new beverage in recent years, is widely preferred, thus a large number of milk tea shops are opened in streets. Due to the difference of brands, different milk tea shops have different recipes, and milk tea shops often sell dozens of beverages corresponding to dozens of recipes. However, in most shops, various ingredients are generally weighed by pure hand in the preparation process of milk tea, and then the ingredients are mixed together to complete the selection of ingredients of milk tea. This approach requires training for the

personnel first, so that the relevant personnel can remember the recipes of milk tea, which is labor intensive and inefficient.

In this regard, the batching machine 1000 provided in an embodiment of the present disclosure is used for collecting the materials contained in all recipes into one machine, and is provided with devices such as a discharge head 200 and a pump 300, which facilitates extracting raw materials for preparing milk tea. Moreover, the operating parameters of the pumps 300 can be controlled, and the materials can be extracted with determined amount, so that the preparation process of milk tea can be automated and the labor cost can be reduced.

The batching machine 1000 according to an embodiment of the present disclosure can be used for commercial production and home production.

The batching machine 1000 may include a material bucket 100 for loading material(s), and a plurality of material buckets 100 may be provided, so that such a batching machine 1000 may be provided with materials for a plurality of beverages with different recipes, and the material may be tea powder, milk powder, creamer, saccharin, fruit powder and the like. The materials loaded in the material buckets 100 may be all solid, so that the beverage can be brewed after the materials of the beverage are completely prepared, without affecting the taste of the beverage.

The material for the material bucket 100 can be food-grade plastic, so that the material bucket 100 manufactured is safe and non-toxic, does not affect the health of users, and the material bucket 100 is light in weight and low in cost. For example, the material for the material bucket may be PET (polyethylene glycol terephthalate) plastics, PP (polypropylene) plastics, HDPE (High Density Polyethylene) plastics, and PC (Polycarbonate) plastics and the like. Alternatively, the material bucket 100 can also be made of other safe and non-toxic materials, such as food-grade stainless steel composite buckets and the like.

The batching machine 1000 also includes a discharge head 200, the discharge head 200 and the material bucket 100 are disposed separately, so that the material bucket 100 can be replaced independently when the material(s) in the material bucket 100 is/are used up; or the discharge head 200 can be replaced independently when the discharge head 200 is worn out.

The shape of the discharge head 200 may be rectangular, oval, triangular or other regular or irregular shapes. The material of the discharge head 200 can also be plastic, or alloy, which can make the discharge head 200 more durable.

5 The batching machine 1000 also includes a pump 300 which serves as a power component for extracting the material from the material bucket 100 and conveying the material to the discharge head 200, so that the material is output from the discharge head 200 and conveyed into a container for containing the material, such as a cup 2000.

10 In order to improve the batching efficiency of the batching machine 1000, when the batching machine 1000 includes a plurality of material buckets 100, the batching machine 1000 may be mounted with a plurality of pumps 300, and the pumps 300 are disposed in one-to-one correspondence with the material buckets 100, so that a plurality of ingredients can be simultaneously extracted when batching according to recipe. Further, a plurality of discharge heads 200 may be provided in order to synchronously output the plurality of ingredients.

15 In addition, the batching machine 1000 provided in an embodiment of the present disclosure can control the operating parameters of the pump 300, for example, a extraction time of the pump 300, so as to accurately extract sufficient ingredients according to the recipe. Therefore, the material is extracted with determined amount by controlling the operating parameters of the pump 300, so that the batching process is more accurate, avoiding the cost loss caused by manual operation errors.

20 Referring to FIGS. 1 and 2, in some embodiments, the batching machine 1000 may include a storage platform 400 that may be used to place the cup 2000, and the discharge head 200 may be disposed above the storage platform 400. In this way, the materials can be output to the cup 2000 placed on the storage platform 400 through the discharge head 200 disposed above the storage platform 400.

25 The batching machine 1000 is further provided with a storage platform 400, and the storage platform 400 may be made of stainless steel which is corrosion resistant and easy to clean. Alternatively, the storage platform 400 may also be made of other materials. The storage platform 400 can provide a stable environment for placing the cup 2000. When the cup 2000 is

placed on the storage platform 400, the discharge head 200 can be disposed above the storage platform 400 in order to output material to the cup 2000.

Referring to FIGS. 1-4, in some embodiments, the batching machine 1000 may include a bracket 41 disposed on the storage platform 400, and the discharge head 200 may be disposed on the bracket 41. In this way, the bracket 41 supports the discharge head 200, and the discharge head 200 can be disposed at a height from the storage platform 400, which facilitates outputting the materials to the cups 2000 with different heights.

In embodiments of the present disclosure, "above" refers to a direction away from the carrier (e.g. ground) carrying the batching machine, and "below" refers to a direction close to the carrier (e.g. ground) carrying the batching machine.

In order to dispose the discharge head 200 above the storage platform 400, it is needed to provide a stable environment for supporting the discharge head 200. Therefore, the batching machine 1000 further includes a bracket 41 disposed on the storage platform 400, and the bracket 41 can be integrally formed with the storage platform 400. The bracket 41 can also be welded to the storage platform 400 to make the connection therebetween firmer. In this case, the bracket 41 can be made of the same material as the storage platform 400, so as to facilitate the weld of the bracket 41 to the storage platform 400. The discharge head 200 may be disposed on the bracket 41, so that the discharge head 200 may be positioned above the cup 2000, and the discharge head 200 may output the materials for the cup 2000.

In addition, the discharge head 200 can be manufactured while the bracket 41 is manufactured, so that the discharge head 200 and the bracket 41 are integrally formed. Alternatively, the discharge head 200 may be manufactured separately from the bracket 41, and then the discharge head 200 may be detachably mounted with the bracket 41, thus facilitating maintenance or replacement of the discharge head 200 in case of wear and tear.

Referring to FIGS. 1-4, in some embodiments, the bracket 41 may be provided with a display 42. In this way, the provision of the display 42 can make the materials required for the recipe be clear at a glance, and facilitate checking for the correctness of the output materials; and the information, such as the remaining material capacity of the material bucket 100, can

also be displayed on the display 42 to facilitate the addition of materials.

For example, the display 42 may be touch controlled, that is, an operator may check relevant information by touching an icon button on the screen of the display 42. For example, information, such as an estimated batching completion time, a real-time temperature of the freezer cabinet, a remaining material volume within the material bucket 100 and the like, may
5 be displayed on the display 42.

In some embodiments, the display 42 may also display a recipe table of the beverage currently prepared, thus facilitating an operator to confirm the accuracy of the batched material while waiting for the batching of the batching machine 1000. The recipe table may be
10 downloaded to the batching machine 1000 in advance, and then the operator clicks the corresponding beverage on the beverage list on the display 42 according to the printed customer order to display the corresponding recipe table. In this way, the display 42 can assist in automatic batching, which facilitates real-time confirmation of whether the recipe is correct and whether the batching is performed according to the correct recipe. Automatic batching also
15 avoids problems, such as operator's operation error or wrong batching of materials due to confused memory of recipe.

Referring to FIGS. 1 and 2, in some embodiments, the material bucket 100 may be disposed below the storage platform 400. The material bucket 100 is disposed below the storage platform 400. On the one hand, the height of the material bucket 100 from the ground is
20 relatively low, which is convenient for the operator to take the material bucket 100 for operations such as addition, replacement and the like. On the other hand, the space below the storage platform 400 can be properly utilized, and the overall structure of the batching machine 1000 becomes more compact.

Referring to FIGS. 1 and 2, in some embodiments, the batching machine 1000 may
25 include a freezer cabinet disposed below the storage platform 400, and at least some of the material buckets 100 may be disposed within the freezer cabinet. In this way, the quality of the materials stored in the material buckets 100 can be guaranteed.

The fact that at least part of the material buckets 100 are disposed in the freezer cabinet

represents that all of the material buckets 100 may be stored in the freezer cabinet, or only some of the material buckets 100 may be disposed in the freezer cabinet for storage.

Whether the material bucket 100 is disposed within the freezer cabinet may depend on whether the material in the material bucket 100 can be stored in a low temperature environment.

5 When some materials are stored in the freezer cabinet, due to their sensitivity to temperature, they may be damped and crystallized due to problems such as poor humidity treatment of the freezer cabinet. Therefore, the material bucket 100 in which these materials are stored is preferably placed in a normal temperature environment to avoid problems such as material deterioration.

10 Referring to FIGS. 1 and 4, in some embodiments, the discharge head 200 may include a plurality of discharge nozzles 21 disposed in one-to-one correspondence with the pumps 300. In this way, the waiting time is greatly reduced when a plurality of materials are required for the recipe of the beverage, and the batching efficiency of the batching machine 1000 is improved.

15 In an example, the shape of the discharge nozzle 21 may be of a thin tube, and the material is not easy to spread when being outputted through the discharge nozzle 21. Alternatively, the discharge nozzle 21 may be of other shapes.

Preparing a cup of beverage generally requires a plurality of ingredients, in order to improve the batching efficiency of the batching machine 1000. The discharge head 200 can provided with a plurality of discharge nozzles 21, and one discharge nozzle 21 is disposed in
20 correspondence with one pump 300. Since the pump 300 is disposed in one-to-one correspondence with the material bucket 100, the materials can be synchronously output to the cup 2000 through the plurality of discharge nozzles 21, thus greatly reducing the batching time.

Referring to FIGS. 1 and 2, in some embodiments, a plurality of discharge heads 200 may be provided, and the plurality of discharge heads 200 are arranged at intervals. In this way,
25 providing a plurality of discharge heads 200 can satisfy the condition for synchronously batching a plurality of cups of beverages, thereby improving the operation efficiency of the batching machine 1000.

In an example, a plurality of brackets 41 may be mounted on the storage platform 400,

and each bracket 41 may be provided with one discharge head 200, and the plurality of brackets 41 are arranged at intervals, so that the plurality of discharge heads 200 are arranged at intervals.

During the business process of the shop, especially in hot sell period, the shop often
5 receives orders for a plurality of cups of beverages. In order to save cost and improve efficiency, the batching machine 1000 may be provided with a plurality of discharge heads 200 to satisfy the condition of synchronously batching a plurality of cups of beverages.

Alternatively, the number of discharge head 200 can also be one, and only a cup of beverage can be prepared at one time by the batching machine 1000.

10 Referring to FIGS. 1-3, in some embodiments, the batching machine 1000 may include an image recognition device 43 for collecting an identification code image. In this way, automatic batching can be performed by collecting the identification code image by the image recognition device 43, thereby avoiding problems such as wrong batching of materials caused by personnel's confused memory of recipe and saving training costs.

15 The image recognition device 43 may be a camera, a scanner, a code scanner, or the like. For example, in the case where the batching machine 1000 includes the display 42, as shown in FIG. 1, the image recognition device 43 may be mounted on the bracket 41 as a camera with a scanning function, for example, may be mounted at a side of the bracket 41. Alternatively, the image recognition device 43 may be mounted at a plurality of positions close to the bottom of
20 the bracket or the like. In another example, as shown in FIG. 2, the image recognition device 43 may be a code scanner mounted at a side of the bracket 41. Alternatively, in the embodiment of the present disclosure, the form of the image recognition device 43 and the mounting position thereof on the bracket 41 are not intrinsically limited.

A plurality of image recognition devices 43 may be provided and the image recognition
25 device 43 may be used for collecting an identification code image. In one embodiment, after the customer orders, the clerk can paste the automatically printed identification code, such as bar code or QR code, on the cup 2000, and place the identification code pasted on the cup 2000 in front of the image recognition device 43, so that the image recognition device 43 scans and

collects the identification code image.

Further, the identification code image can be analyzed by a processor in the control system of the batching machine 1000 to obtain beverage information in the order, thereby finding a recipe table corresponding to the beverage. The recipe table can be downloaded to the batching machine 1000 in advance. The batching machine 1000 can then batch according to the recipe table, and the materials in the corresponding material buckets 100 are extracted by the pumps 300 and output to the cup 2000. In the case where the batching machine 1000 is provided with the display 42, the recipe table may be displayed on the display 42 for a shop assistant to check whether the recipe table is accurate and whether the batching of the batching machine 1000 is accurate.

In this way, the identification code image can be collected by the image recognition device 43 for automatic batching, thus avoiding problems such as wrong batching of materials caused by personnel's confused memory of recipe, and saving the training cost.

Referring to FIG. 3, in some embodiments, the batching machine 1000 may include a feed tube 500 and a filter device 51. The filter device 51 may be disposed on the feed tube 500, one end of the feed tube 500 may be connected to the pump 300, and the other end of the feed tube 500 may extend into the material bucket 100. In this way, the pump 300 can extract the material through the feed tube 500 and convey it to the discharge head 200. The filter device 51 is configured so that large-particle materials in the material bucket 100 can be filtered to avoid blockage of the feed tube 500.

In an example, the feed tube 500 may be a food-grade plastic tube and is non-toxic to human body. The feed tubes 500 are disposed in one-to-one correspondence with the pumps 300. One end of the feed tube 500 is connected with the pump 300, and the other end of the feed tube 500 extends into the material bucket 100, so that the pump 300 can extract the material through the feed tube 500 and convey it to the discharge head 200. The filter device 51 may be disposed at one end of the feed tube 500 extending into the material bucket 100, so that the filter device 51 can filter out the crystallized bulk material during the material extraction and prevent the feed tube 500 from being blocked.

In summary, the batching machine 1000 in an embodiment of the present disclosure may be composed of a material bucket 100, a discharge head 200, a pump 300, a display 42, an image recognition device 43 and other important parts. In one embodiment, the user may place all the materials in the material bucket 100, and the material bucket 100 may be directly replaced after the materials are used up, or the material bucket 100 may be replenished, then the user may place the material bucket 100 in the freezer cabinet 600 under the storage platform 400 for standby. Subsequently, the user places one end of the feed tube 500 connected with the pump 300 containing the filter device 51 into the material bucket 100, and fixes the other end of the pump 300 at a discharge port, thereby completing the basic mounting of the batching machine 1000.

When starting the batching machine 1000 for automatic batching, the user can align the identification code on the cup 2000 with the image recognition device 43 to scan the code, place the cup 2000 under the discharge head 200 after the code scanning is completed, and wait for the automatic batching of the batching machine 1000. Moreover, the user can also control the operating parameters of the pump 300 to make the extracted material quantitative, thereby realizing the automatic batching of beverages, reducing labor costs and improving efficiency.

In the description of the present specification, descriptions of the reference terms “one embodiment”, “certain embodiments”, “illustrative embodiment”, “example”, or “some examples” and the like mean that the features, structures, materials, or characteristics described in conjunction with the embodiments or examples are included in at least one embodiment or example of the present disclosure. In the present specification, schematic illustration of the above terms does not necessarily refer to the same embodiments or examples. In addition, the features, structures, materials or characteristics described may be combined in any one or more embodiments or examples in a suitable manner.

While embodiments of the present disclosure have been shown and described, it will be understood by those ordinary skilled in the art that various changes, modifications, substitutions and variations may be made to these embodiments without departing from the principles and purposes of the present disclosure, and the scope of the present disclosure is defined by claims and the equivalents thereof.

Claims

1. A batching machine disposed to prepare a beverage, wherein the batching machine comprises:

a plurality of material buckets disposed for loading materials;

5 at least one discharge head, wherein the discharge head and the material buckets are disposed separately;

a plurality of pumps disposed in one-to-one correspondence with the material buckets, wherein the pumps are disposed to extract the materials in the material buckets and convey the materials to the discharge head so that the materials are output from the discharge head.

10 2. The batching machine according to claim 1, wherein, the batching machine comprises a storage platform disposed for placing a cup, and the discharge head is disposed above the storage platform.

3. The batching machine according to claim 2, wherein, the batching machine comprises a bracket disposed on the storage platform, and the discharge head is disposed on the bracket.

15 4. The batching machine according to claim 3, wherein, the bracket is provided with a display.

5. The batching machine according to claim 2, wherein, the material buckets are disposed below the storage platform.

20 6. The batching machine according to claim 5, wherein, the batching machine comprises a freezer cabinet disposed below the storage platform, and at least some of the material buckets are disposed within the freezer cabinet.

7. The batching machine according to claim 1, wherein, the discharge head comprises a plurality of discharge nozzles, and the discharge nozzles are disposed in one-to-one correspondence with the pumps.

25 8. The batching machine according to claim 1, wherein, a plurality of discharge heads are provided, and the plurality of discharge heads are arranged at intervals.

9. The batching machine according to claim 1, wherein, the batching machine comprises

an image recognition device disposed for collecting an identification code image.

10. The batching machine according to claim 1, wherein, the batching machine comprises a feed tube and a filter device disposed on the feed tube, one end of the feed tube is connected with a pump, and the other end of the feed tube extends into a material bucket.