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(54) MACHINE FOR PROCESSING MIXTURE-BASED COMPOUND PRODUCTS AND PROCESSING METHOD

MASCHINE ZUR VERARBEITUNG VON MISCHUNGSBASIERTEN VERBINDUNGSPRODUKTEN UND VERARBEITUNGSVERFAHREN

MACHINE DE TRAITEMENT DE PRODUITS COMPOSITES À BASE DE MÉLANGES, ET PROCÉDÉ DE TRAITEMENT CORRESPONDANT

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Description

OBJECT OF THE INVENTION

[0001] The present invention, a machine for processing mixture-based compound products and a processing method, relates to a machine that, by means of at least the mixing and dispensing thereof, processes products such as food, cosmetics, construction materials (cement, concrete), chemical products (paints, resins, etc.), and generally any product for which the mixture thereof inside a machine has a risk of contamination of the same, corrosion of the components thereof, blockage or difficulty of cleaning said components. Said products, preferably food products, are made up of a basis of two or more ingredients, at least one of them being a liquid with a greater or lesser degree of thickness, for example two liquids or a liquid and one or more powder solids, optionally adding air or other gases, for example yogurts. The machine is distinguished by the fact that it is structured so that the mixture of said ingredients is carried out outside of the inner circuits of the machine and inside a recipient in which the mixed product is collected, at least one of the ingredients, liquid, gas or solid, being the one that acts as mechanical mixing means through the dispensing thereof at pressure. A second aspect of the invention is the processing method of the machine with the aforementioned step wherein said mixture is carried out by said mixing ingredient outside of the circuits of the machine.

[0002] The field of application of the present invention falls within the industrial sector of manufacturing machines for processing products, in particular food products, without excluding other products, made up of mixed ingredients and which include at least liquid injectors.

BACKGROUND OF THE INVENTION

[0003] The state of the art includes many machines with different solutions for mixing a powder and a liquid or a liquid with another liquid, however, in all of them, these processes take place inside the circuits of the machine. It is a drawback that the machine must be cleaned on a highly frequent basis and/or that there is a risk of a cross contamination of the ingredients before the mixture thereof.

[0004] Thus, the main steps of the processing method of said products in said type of machine comprises at least a prior step of dispensing the products, a step of mixing said products inside the machine and, subsequently, a final step of dispensing the already mixed product inside the final container, in which the processed product is sold and in which it is often consumed.

[0005] The object of the present invention is, therefore, to develop a new type of machine for processing said type of products in which the step of mixing the ingredients does not take place inside the circuits thereof in order to avoid the aforementioned drawbacks, said mixing taking place externally and directly in a container, which can be a final container from which the product is directly consumed, or an intermediate recipient, in which the mixture in said recipient goes on to a subsequent step of a process, the previous mixing process being an intermediate step in a process.

[0006] On the other hand, and as a reference to the current state of the art, it should be noted that, although as previously mentioned there are many types of processing machines of the type that are relevant to this field which are known on the market, as far as the applicant is concerned, the applicant is not aware of the existence of any invention that presents technical, structural and constituent characteristics similar to those of the invention advocated herein, as claimed.

[0007] US8593634B1 discloses a processing machine according to the preamble of claim 1. WO2006/024962A2, US2014/355372A1 and US2126911A disclose similar processing machines.

DESCRIPTION OF THE INVENTION

[0008] Thus, the machine for processing mixture-based compound products and the method of said process proposed by the invention relates to a machine provided with devices for processing products, in particular food products, such as yogurts, or a mixture of resins, or even cement, made up of two or more ingredients or components, at least one of them being a liquid with a greater or lesser degree of thickness, for example two liquids, or one liquid and one or more powder solids, optionally adding air or other gases, being provided with devices and means for carrying out at least the dispensing of said ingredients and the mixture of the same, and which is distinguished from already known machines of this type due to the fact that it is structured with said means and said devices arranged and formed so that the mixture of the ingredients is done outside of the circuits of the machine and inside a mixing recipient, in which the product is collected and which, preferably, is the final container in which the collected processed product will be sold and/or consumed, although it could also be an intermediate recipient from which the mixture will pass to another step of an industrial process or procedure.

[0009] Examples of products that are able to be used are yogurt powder, juice powder, horchata powder, powdered milk, powdered eggs, albumin powder, powdered products with probiotics or bifidobacterium which, in order to prolong the useful life thereof when ingested, must be mixed with hyaluronic acid powder, collagen powder, pastes or adhesives with two or more components or mortars, among others.

[0010] Depending of the products to be mixed, the machine could be used in different paces, for example in beauty salons, food vending stands or hospitals, allowing mixtures to be made for obtaining products according to the needs (food in hospitals) tastes of users.

[0011] Thus, the essential advantage of the machine of

the invention is to be able to mix the ingredients that make up the product inside a mixing recipient that is situated outside of the circuits of the machine and, preferably, but without being limitative, said mixing recipient directly being the container in which the product is sold and in which it is consumed (cup, bowl, mug, etc.), or the recipient that goes on to a subsequent step in a production process.

[0012] With the aforementioned aim, a first object of the invention is a machine for mixture-based compound products according to claim 1. Likewise, additional characteristics of the machine are included in claims 2 to 9.

[0013] For achieving this aim, the machine is designed to use at least one of its own powdered, liquid or solid ingredients as a mixing ingredient, optionally mixing air, by means of the Venturi effect or another method, as a main mechanical means for carrying out the mixture, projecting it at pressure into the rest of the ingredients that make up the product, meaning the powder ingredient or ingredients to be diluted in another liquid ingredient or other liquid ingredients which an operator or the machine places in the mixing recipient.

[0014] As was previously mentioned, with regard to the Venturi effect, we must establish that it could be used, according to the invention, for introducing a gas, powder or liquid in the mixing ingredient before projecting it into the rest of the ingredients. The air or gas added to the mixing ingredient allows the volume to be expanded and the mechanical effect of the mixture to be prolonged (normally limited by the liquid/solid ratio) when the content of bubbles created is convenient or irrelevant in the resulting solution, or the low viscosity allows for a fast escape of the bubbles projected when the same is undesirable.

[0015] The pressure, temperature and volume/time of the ingredients can be regulated according to the mixture one would like to achieve in each case and to the characteristics of the ingredients, viscosity, solubility, etc. based on the type of product to be processed.

[0016] Therefore, the machine of the invention has one or more needles or injectors, which can even consist of a solid piece with holes passing through the same and which simulate the effect of the needle, of different diameters and lengths, which project the liquid or solid ingredient at high pressure, which we will call mixing ingredient, optionally adding gas, inside the recipient, said liquid or solid ingredients coming from one or more containers through independent needles and circuits that preferably, yet optionally, have Venturi tubes for previously mixing air with the liquids or solids or another gas to be projected.

[0017] In parallel, the recipient is arranged in the machine such that it is situated externally in relation to the aforementioned independent circuits and under the needles that inject the liquid or solid mixer, said recipient containing the rest of liquid or powder ingredients, which we will call mixing ingredients. The machine preferably has means for supplying, in said recipient, at the same time or one after another, said ingredients to be ingredients to be mixed, in turn coming from containers arranged in the machine, preferably independently for each ingredient, which will be easily placed and removed by the operator of the machine.

[0018] Optionally, the machine also has a pneumatic circuit for projecting air or another gas into the mixture at different pressures and with injectors or needles of different diameters and lengths, likewise acting as a second mechanical mixing means.

[0019] The base of the assembly of needles or injectors can be coupled to rotate on itself, as can the support on which the recipient placed in which the mixing ingredient is mixed with the ingredients to be mixed.

[0020] The needles can be joined in an adjustable way with the goal of being able to independently aim them in relation to the base on which they are arranged, to thereby cover the different areas of the mixing recipient.

[0021] In turn, the mixing ingredient and the ingredient or ingredients to be mixed, made up of one or more liquids or solids, optionally adding gas, as previously stated, will be able to be cooled or heated to different temperatures before being projected or dispensed in the recipient.

[0022] The proportions of said ingredients or ingredients may be determined by the user or by analog or digital means.

[0023] Additionally, stirring means can be used to help the mixture of the products, which stir the liquid and solid (preferably powder) mixture. Said stirring means can be, for example, a spoon or straw, which, in addition to stirring the mixture, remain in the mixing recipient to be used as a utensil for consuming the product once the mixture is finished. Likewise, it is possible to use a bar of ice to stir the mixture and cool it at the same time, which dissolves in the mixing recipient. To be able to use these elements, the machine has suitable fastening means such as grippers or claws, with the option of being rotational, able to further incorporate a storage or container in which the straws or spoons are located. The ice can be directly supplied from a refrigerated container which preferably produces said ice.

[0024] The dimensions of the machine, object of the invention, will depend on the materials to be mixed, which may vary from smaller sizes, such as for food products, to larger sizes for construction products, such as concrete.

[0025] A second object of the invention is a method for processing products in a machine such as the one described and in accordance with claim 10.

[0026] Additional characteristics of the process are established in claims 11-13.

[0027] Specifically, the processing method for compounds based on two or more ingredients by means of the described machine comprises:

- at least a step of mixing said ingredients which envisages the use of at least one of the liquid or solid ingredients of the machine as the main mechanical mixer, projecting it at pressure into the rest of the

ingredients which make up the product incorporated inside a mixing recipient which is situated outside the circuits of the machine; and

- optionally, another step of projecting air or another gas at pressure into the mixture contained in the mixing recipient as a second mechanical mixing means, applied at different pressures by means of needles or injectors of different diameters and lengths.

DESCRIPTION OF THE DRAWINGS

[0028] To complement the description of the invention, and for the purpose of helping to make its characteristics more readily understandable, the present specification is accompanied by a set of figures constituting an integral part of the same, which by way of illustration and not limitation represent the following.

Figure 1 shows a schematic view, which is not a design and not drawn to scale, of a schematic example of the machine for processing mixture-based compound products, object of the invention, in which the main parts and elements comprised by the machine can be seen, as well as the configuration and arrangement of the same.

Figures 2, 3, and 4 show a detailed schematic view of the container of the machine object of the invention, in which an element is incorporated for stirring the mixture, figure 3 showing the stirring element centered with respect to the axis of the mixing recipient and figure 4 showing said stirring element in a different position with respect to the aforementioned axis of the recipient.

PREFERRED EMBODIMENT OF THE INVENTION

[0029] In light of said figures, the machine (1) in question comprises at least distributor means (2), from a pump and/or a network and/or a container, of a liquid mixing ingredient, which are connected, by means of internal circuits (3), which could envisage the existence of tubes with the Venturi effect (4) to pressurized dispenser means (5) preferably formed by one or more injection needles (51), which can optionally be aimed, and which pour said ingredient at pressure, optionally mixing air, into a mixing recipient (6) which is situated outside of the circuits of the machine (1) and contains the rest o the ingredients to be mixed that make up the product, the of pressure of said ingredient itself determining the mechanical mixture of ingredients with others inside the mixing recipient.

[0030] Preferably, the machine also has, at least a container (7) of ingredients to be mixed provided with dispenser means (8) which pour the content thereof into the mixing recipient (6) before or at the same time as the pouring of the mixing ingredient at pressure by the injection needles (51) which make up the pressure dispenser means (5).

[0031] In the preferred embodiment, the machine (1) has pressure dispenser means (5) that are coupled to a rotating head (9), moved by a motor or pulley mechanism (10) and/or, also preferably, but without being limitative, has a support (11) for the mixing recipient (6) which is associated with a vibration and/or rotation mechanism (12), for example, actuated by means of a motor.

[0032] Lastly, the machine has, also optionally, a pneumatic system (13), preferably linked to one of the pressure dispenser means (5), which projects air or another gas at pressure into the mixture of ingredients of the mixing recipient (6), acting as a second mechanical mixing means. Likewise, the pneumatic system can project air or gas at pressure from the bottom or base, or from the walls of the mixing recipient, for which integrated pneumatic circuits (131) are arranged which connect the pressure dispenser means (5) to the wall or bottom of the mixing recipient.

[0033] Furthermore, in any case, the machine (1) can be provided with heating and/or cooling devices (14) for any of the ingredients conveniently inserted in the internal circuits (3) of the machine (1), through which the same passes from the distributor means (2) to the pressure dispenser means (5).

[0034] One specific example of the preparation of a dairy product of yogurt consists of 180 ml of water being mixed as the mixing ingredient at a pressure of 4 bars through two injectors, one with a diameter of 1.3 mm and another with a diameter of 1.5 mm, with 35 g of a dairy product of powdered yogurt arranged on the mixing recipient. The water/powder ratio is therefore 5.14 ml/gr. The water is supplied in less than 4 seconds to achieve a solution in the homogenization thereof equivalent to that achieved by a manual method that requires stirring the mixture of water and a dairy product with a spoon for 3 minutes. Additionally, the mixing recipient rotates with respect to the axis thereof during the injection of the mixing ingredient at 160 rpm. The rotational speed of the recipient depends of the dimensions of the recipient itself and on the amount of ingredients introduced which must be the ones necessary to prevent the centrifugal force from causing the spilling of the mixture. For the previous example, a recipient has been used with a base, the diameter of which is 5 cm, with a height of 10 cm, and a mouth with a diameter of 7 cm. Likewise, the set of the two needles or injectors rotates at 230 rpm, each one with an inclination, one of them perpendicularly to the base of the recipient and the other at 20° with respect to the first, in other words, with the free end moving away from the first needle.

[0035] The work temperatures can be different based on the product or products to be mixed, such that they can be low temperatures for products to be consumed cold, such as yogurts, cold drinks or cocktails, or high, or relatively high temperatures for products to be consumed hot, such as soaps or creams. In the previous example, mixtures were made at temperatures between 4° and 20° with good results.

[0036] To obtain a homogenous mixture between the liquid and the powder the pressure must be combined with the diameters of the needles as well as the proportions of liquids and solids. In other words, the pressure can be greater or smaller based on the amounts to be mixed, the time required, the diameters of the needles and the properties of the ingredients to be mixed.

[0037] Additionally, stirring means can be used to help the mixture of the products, which stir the liquid and solid (preferably powder) mixture. Said stirring means can be, for example, a spoon or straw (21), which, in addition to stirring the mixture, remain in the mixing recipient (6) to be used as a utensil for consuming the product once the mixture is finished. For this application, the machine can incorporate a container or storage (22) that contains the straws (21) to be used which come out into a gripper (23) with the form of a funnel which allows the straws (21) to fall from the container (22) to the recipient (6), holding them at one end before they fall into the recipient (6). This way, when the straw (21) is going to be used as an additional stirring element, the gripper (23) will hold the straw (21) and thanks to a motor (24) connected to the gripper (23) the straw (21) will rotate and vibrate inside the recipient (6). During the rotation thereof, the straw (21) deforms inside the recipient (6) due to the centrifugal force, such that it is bent toward the walls of the recipient (6). The support (11) of the recipient (6) can also fasten the same such that the recipient (6) also rotates at the same time as the straw (21) in the same or opposite direction. Instead of a straw (21), a spoon could also be used.

[0038] The gripper (23) can be centered with respect to the central axis of the mixing recipient (6), as shown in figures 2 and 3, or off-centered with respect to said central axis, as shown in figure 4, depending on the conditions of the mixture and the material of the straw (21) or spoon.

[0039] Likewise, it is possible to use a bar of ice to stir the mixture and cool it at the same time, which dissolves in the mixing recipient. To be able to use these elements, the machine has suitable fastening means, such as grippers or claws, with the option of being rotational.

Claims

1. A machine for processing mixture-based compound products, which, by means of at least the mixing and dispensing thereof, processes compound products based on two or more ingredients which comprises distributor means (2) for ingredients linked by means of internal circuits (3) to dispenser means that pour said ingredients in a mixing recipient (6) wherein in said distributor means, dispenser means and circuits are independent with regard to one another, at least one of said dispenser means (5) being a pressure dispenser means, made up of one or more injection needles (51), that pours at least one mixing ingredient at pressure into the mixing recipient (6) which is situated outside of the circuits of the machine (1) and in which the different ingredients to be mixed are poured to make up the final product, wherein the pressure of said mixing ingredient determines the mechanical mixture of the ingredients inside the mixing recipient (6) **characterized in that** the pressure means (5) are able to be aimed and/or connected to a rotating head (9).

2. The machine, according to claim 1, **characterized in that** it comprises at least a container (7) of ingredients to be mixed provided with dispenser means (8) which pour the content thereof into the mixing recipient (6) before or at the same time as the pouring at pressure of the mixing ingredient by the pressure dispenser means (5).

3. The machine, according to claims 1 to 2, **characterized in that** it has a support (11) for the mixing recipient (6) which is associated with a rotation mechanism (12).

4. The machine, according to any of claims 1 to 3, **characterized in that** it has a pneumatic system (13) which projects air or another gas at pressure into the mixture of ingredients of the mixing recipient (6), acting as a second mechanical mixing means.

5. The machine, according to claim 4, **characterized in that** the pneumatic system (13) which projects air or another gas at pressure into the mixture of ingredients of the mixing recipient (6) is linked to the pressure dispenser means (5).

6. The machine, according to claim 4, **characterized in that** it comprises at least an integrated pneumatic circuit (131) that connects the pneumatic system (13) to at least the mixing recipient (6).

7. The machine, according to claim 1, **characterized in that** it comprises stirring means that contribute to the mixture in the mixing recipient (6).

8. The machine, according to claim 7, **characterized in that** the stirring means are made up of a straw, or a plastic spoon or a bar of ice.

9. The machine, according to claim 1, **characterized in that** it comprises an additional container in which the stirring means are stored.

10. A processing method of a machine for processing mixture-based compounds, according to claims 1 to 9, **characterized in that**:

a) at least one ingredient is poured into a mixing recipient (6) from the distributor means, circuits and containers of the machine, and

b) at least one mixing ingredient is projected at pressure into the mixing recipient (6) from the pressure dispenser means (5), acting as the main mechanical mixer,
c) the mixture is produced from at least one ingredient and the ingredient at pressure in the mixing recipient (6) situated outside the circuits of the machine (1).

11. The method, according to claim 10, **characterized in that** it additionally projects air or another gas at pressure into the mixture of the mixing recipient (6), by means of a pneumatic system (13), which acts as a second mechanical mixer.

12. The method, according to claim 11, **characterized in that** the air or gas that is projected at pressure is applied by means of the pressure dispenser means (15).

13. The method, according to claim 11, **characterized in that** the air or gas that is projected at pressure is applied in the mixing recipient (6) through an integrated pneumatic circuit (131) that connects the pneumatic system (13) to the mixing recipient (6).

Patentansprüche

1. Maschine zum Verarbeiten von mischungsbasierten Verbindungsprodukten, die mindestens mittels des Mischens und des Ausgebens davon Verbindungsprodukte auf Basis von zwei oder mehr Bestandteilen verarbeitet und Verteilungsmittel (2) für Bestandteile, die mittels interner Kreise (3) verbunden sind, mit Ausgabemitteln umfasst, die die Bestandteile in einen Mischbehälter (6) gießen, wobei die Verteilungsmittel, die Ausgabemittel und die Kreise mit Bezug aufeinander unabhängig sind, wobei mindestens eines der Ausgabemittel (5) ein Druckausgabemittel ist, das aus einer oder mehreren Injektionsnadeln (51) besteht und mindestens ein Mischungsbestandteil unter Druck in den Mischbehälter (6) gießt, der sich außerhalb der Kreise der Maschine (1) befindet und in den verschiedene zu mischende Bestandteile gegossen werden, um das Endprodukt zu ergeben, wobei der Druck des Mischungsbestandteils die mechanische Mischung der Bestandteile im Mischbehälter (6) bestimmt, **dadurch gekennzeichnet, dass** die Druckmittel (5) auf einen rotierenden Kopf (9) gerichtet oder mit demselben verbunden werden können.

2. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** sie mindestens ein Behältnis (7) mit zu mischenden Bestandteilen umfasst, das mit Ausgabemitteln (8) versehen ist, die den Inhalt davon vor dem Gießen unter Druck des Mischungsbestandteils durch das Druckausgabemittel (5) oder gleichzeitig mit demselben in den Mischbehälter (6) gießen.

3. Maschine nach den Ansprüchen 1 bis 2, **dadurch gekennzeichnet, dass** sie eine Stütze (11) für den Mischbehälter (6) aufweist, die mit dem Rotationsmechanismus (12) verknüpft ist.

4. Maschine nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** sie ein Pneumatiksystem (13) aufweist, das Luft oder ein anderes Gas unter Druck in die Mischung von Bestandteilen des Mischbehälters (6) projiziert und als ein zweites mechanisches Mischmittel fungiert.

5. Maschine nach Anspruch 4, **dadurch gekennzeichnet, dass** das Pneumatiksystem (13), das Luft oder ein anderes Gas unter Druck in die Mischung von Bestandteilen des Mischbehälters (6) projiziert, an das Druckausgabemittel (5) gekoppelt ist.

6. Maschine nach Anspruch 4, **dadurch gekennzeichnet, dass** sie mindestens einen integrierten Pneumatikkreis (131) umfasst, der das Pneumatiksystem (13) mindestens mit dem Mischbehälter (6) verbindet.

7. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** sie Rührmittel umfasst, die zur Mischung im Mischbehälter (6) beitragen.

8. Maschine nach Anspruch 7, **dadurch gekennzeichnet, dass** die Rührmittel aus einem Strohhalm oder einem Kunststofflöffel oder einer Stange Eis bestehen.

9. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** sie ein zusätzliches Behältnis umfasst, in dem die Rührmittel gelagert sind.

10. Verarbeitungsverfahren einer Maschine zum Verarbeiten von mischungsbasierten Verbindungen nach den Ansprüchen 1 bis 9, **dadurch gekennzeichnet, dass**:

a) mindestens ein Bestandteil von den Verteilungsmitteln, Kreisen und Behältnissen der Maschine in einen Mischbehälter (6) gegossen wird und
b) mindestens ein Mischungsbestandteil unter Druck aus dem Druckausgabemittel (5), das als der mechanische Hauptmischer fungiert, in den Mischbehälter (6) projiziert wird,
c) die Mischung aus mindestens einem Bestandteil und dem Bestandteil unter Druck im Mischbehälter (6) produziert wird, der sich außerhalb der Kreise der Maschine (1) befindet.

11. Verfahren nach Anspruch 10, **dadurch gekennzeichnet, dass** es mittels eines Pneumatiksystems (13), das als ein zweiter mechanischer Mischer fungiert, zusätzlich Luft oder ein anderes Gas unter Druck in die Mischung des Mischbehälters (6) projiziert.

12. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** die Luft oder das Gas, die bzw. das unter Druck projiziert wird, mittels des Druckausgabemittels (5) eingebracht wird.

13. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** die Luft oder das Gas, die bzw. das unter Druck projiziert wird, über einen integrierten Pneumatikkreis (131), der mit dem Pneumatiksystem (13) mit dem Mischbehälter (6) verbunden ist, in den Mischbehälter (6) eingebracht wird.

Revendications

1. Machine pour le traitement de produits composés à base de mélanges, qui, au moyen d'au moins leur mélange et leur administration, traite des produits composés basé sur deux ingrédients ou plus qui comprend des moyens de distributeur (2) pour des ingrédients reliés au moyen de circuits internes (3) à des moyens d'administrateur qui versent lesdits ingrédients dans un récipient de mélange (6) dans laquelle dans lesdits moyens de distributeur, les moyens d'administrateur et les circuits sont indépendants les uns des autres, au moins l'un desdits moyens d'administrateur (5) étant un moyen d'administrateur sous pression, constitué d'une ou plusieurs aiguilles d'injection (51), qui verse au moins un ingrédient de mélange sous pression dans le récipient de mélange (6) qui est situé à l'extérieur des circuits de la machine (1) et dans lequel sont versés les différents ingrédients à mélanger pour constituer le produit final, dans laquelle la pression dudit ingrédient de mélange détermine le mélange mécanique des ingrédients à l'intérieur du récipient de mélange (6) **caractérisée en ce que** les moyens de pression (5) sont en mesure d'être orientés et/ou raccordés à une tête rotative (9).

2. Machine, selon la revendication 1, **caractérisée en ce qu'**elle comprend au moins un contenant (7) d'ingrédients à mélanger muni de moyens d'administrateur (8) qui en versent le contenu dans le récipient de mélange (6) avant ou en même temps que le versement sous pression de l'ingrédient de mélange par les moyens d'administrateur sous pression (5).

3. Machine, selon les revendications 1 à 2, **caractérisée en ce qu'**elle a un support (11) pour le récipient de mélange (6) qui est associé à un mécanisme de rotation (12).

4. Machine, selon l'une quelconque des revendications 1 à 3, **caractérisée en ce qu'**elle a un système pneumatique (13) qui projette de l'air ou un autre gaz sous pression dans le mélange d'ingrédients du récipient de mélange (6), agissant comme un second moyen de mélange mécanique.

5. Machine, selon la revendication 4, **caractérisée en ce que** le système pneumatique (13) qui projette de l'air ou un autre gaz sous pression dans le mélange d'ingrédients du récipient de mélange (6) est relié au moyen d'administrateur sous pression (5).

6. Machine, selon la revendication 4, **caractérisée en ce qu'**elle comprend au moins un circuit pneumatique intégré (131) qui raccorde le système pneumatique (13) au moins au récipient de mélange (6).

7. Machine, selon la revendication 1, **caractérisée en ce qu'**elle comprend des moyens d'agitation qui contribuent au mélange dans le récipient de mélange (6).

8. Machine, selon la revendication 7, **caractérisée en ce que** les moyens d'agitation sont constitués d'une paille, ou d'une cuillère en plastique ou d'une barre de glace.

9. Machine, selon la revendication 1, **caractérisée en ce qu'**elle comprend un contenant supplémentaire dans lequel sont stockés les moyens d'agitation.

10. Procédé de traitement d'une machine pour le traitement de composés à base de mélanges, selon les revendications 1 à 9, **caractérisé en ce que** :

a) au moins un ingrédient est versé dans un récipient de mélange (6) à partir du moyen de distributeur, les circuits et les contenants de la machine, et
b) au moins un ingrédient de mélange est projeté sous pression dans le récipient de mélange (6) par le moyen d'administrateur sous pression (5), agissant comme le principal mélangeur mécanique,
c) le mélange est produit à partir d'au moins un ingrédient et de l'ingrédient sous pression dans le récipient de mélange (6) situé en dehors des circuits de la machine (1).

11. Procédé, selon la revendication 10, **caractérisé en ce qu'**il projette de plus de l'air ou un autre gaz sous pression dans le mélange du récipient de mélange (6), au moyen d'un système pneumatique (13), qui agit comme un second mélangeur mécanique.

12. Procédé, selon la revendication 11, **caractérisé en ce que** l'air ou le gaz qui est projeté sous pression est appliqué au moyen du moyen d'administrateur sous pression (5).

13. Procédé, selon la revendication 11, **caractérisé en ce que** l'air ou le gaz qui est projeté sous pression est appliqué dans le récipient de mélange (6) par l'intermédiaire d'un circuit pneumatique intégré (131) qui raccorde le système pneumatique (13) au récipient de mélange (6).

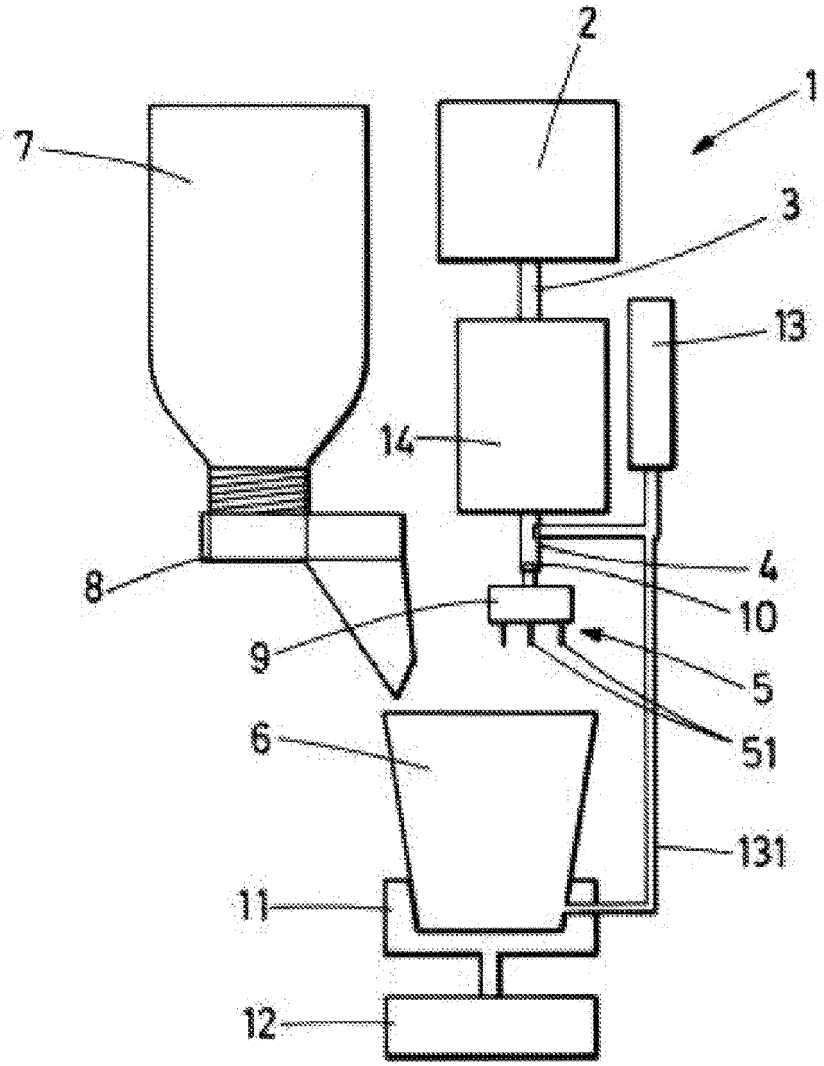

FIG. 1

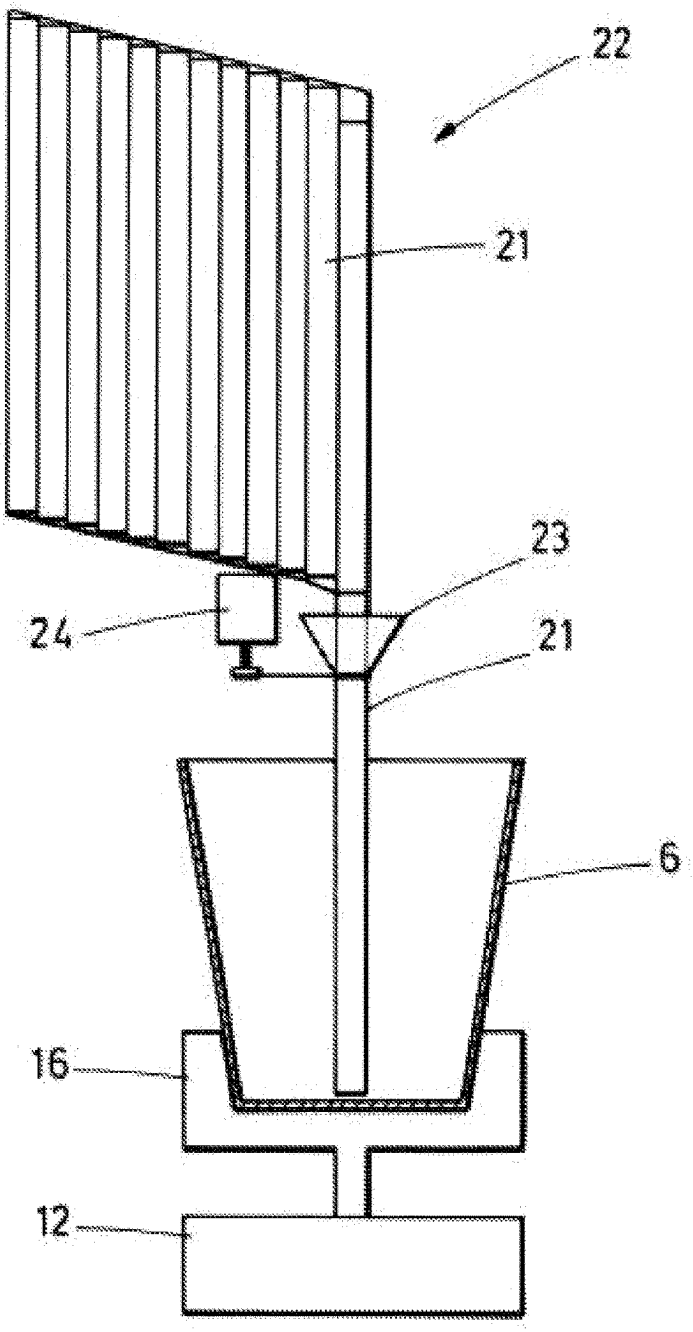

FIG. 2

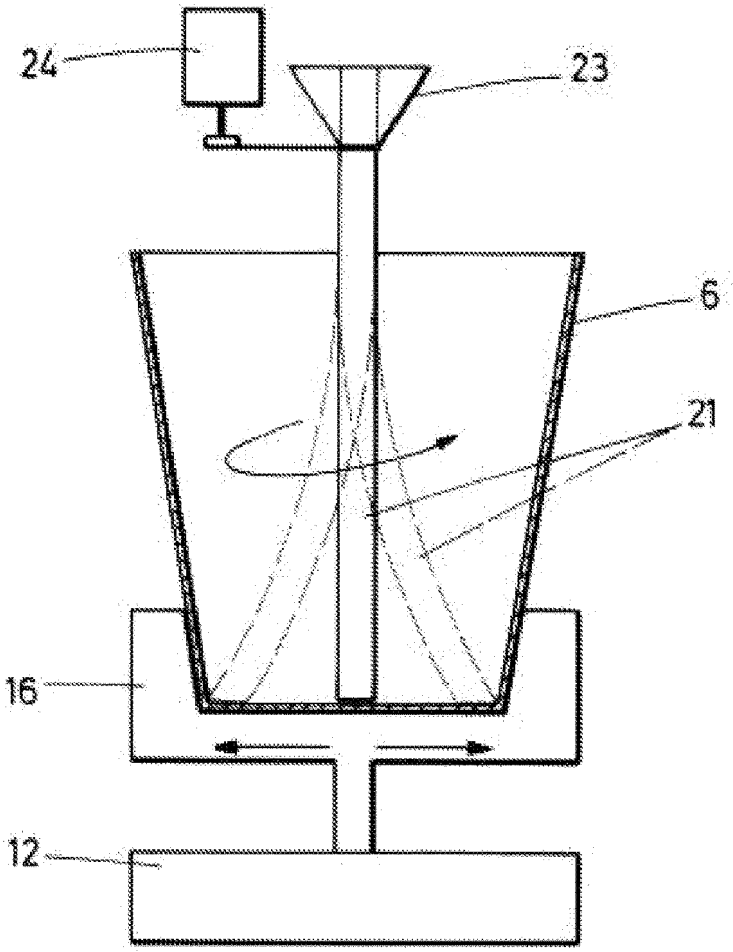

FIG.3

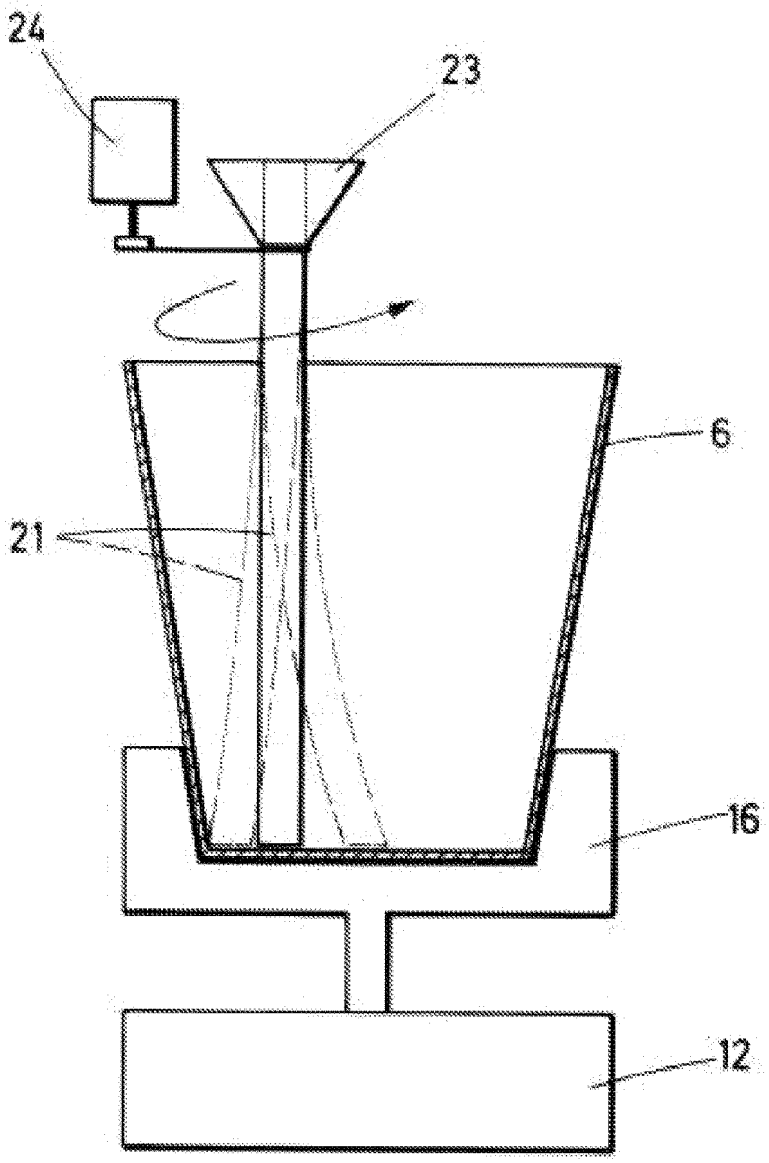

FIG.4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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