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(54) **Beverage dispenser with pierceable ingredient containers**

Getränkespender mit durchstechbaren Konzentratbehältern

Distributeur de boissons utilisant des conteneurs d'ingrédients perçables

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Description

[0001] The present invention relates to a machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in box-like refills. A machine of the kind is disclosed in document WO 9 937 577 A, according to the preamble of claim 1.

[0002] Machines for instantly producing and dispensing beverages composed of a part of concentrate of flavor-providing substance, and a part of dilution liquid, generally constituted by water, have long been used.

[0003] The concentrated substances are packaged during production in conventional box-like packages, usually made of cardboard, which are used on the machines by an operator who, before starting operation of said machines, opens the packages and transfers their content into appropriately provided containment tanks.

[0004] Each tank can be paired with a second tank which contains dilution water or is connected, by means of an appropriate duct, to a dispenser tap, upstream of which there is also provided a second water feed pipe being directly connected to the normal user supply line.

[0005] This prior art suffers from a substantial drawback, consisting of the fact that handling of the box-like packages by the assigned operators provides no assurance as to the overall hygiene of the beverage: bacterial contaminations of various kinds can in fact occur during the opening and transfer operations.

[0006] Moreover, said handling requires availability of time on the part of the operator, who has to perform a number of required actions in order to feed each time the machines when the concentrate packages are used up.

[0007] The aim of the present invention is to solve the above-noted drawbacks of the conventional art, by providing a machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in pierceable box-like refills, which requires minimal handling on the part of the operators, without such handling being in any case able to cause bacterial contamination, such handling being completed in an extremely short time.

[0008] This aim and this and other objects are achieved by a machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in pierceable box-like refills, said machine being constituted by a box-like frame which is divided into at least two regions, a first region for containing cooling elements and a second one for accommodating said refills of concentrated components, wherein the machine has, in said second region, at least one modular support for inserting said box-like refills which is provided with means for retaining said refills by contact characterized in that said modular support is also provided with piercing means which cooperate with said retention means and are connected to a suction element which is interconnected to a mixing tank arranged upstream of a conventional dispensing tap, at least one second duct for feeding dilution water or the like leading into said tank.

[0009] Further characteristics and advantages will become better apparent from the description of a preferred embodiment of a machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in pierceable box-like refills, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a sectional side view of the instant producing and dispensing machine according to the invention;

Figure 2 is a corresponding front sectional view thereof;

Figure 3 is an enlarged-scale detailed view of a stirring and shredding element with which the machine according to the invention is equipped.

[0010] With reference to the figures, 1 designates a machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in pierceable box-like refills 2.

[0011] The machine 1 is constituted by a box-like frame which is divided into at least two regions 1a and 1b: a first region for containing conventional cooling elements and a second one for accommodating the refills 2 of concentrated components.

[0012] In said second region 1b, the machine 1 has at least one modular support 3 for inserting the box-like refills 2; said support is provided with means 4 for retaining the refills by contact, and with piercing means 5 which functionally cooperate with the retention means 4 and are connected to a suction element 6 being connected, by means of a first duct 7, to a mixing tank 8 being provided with a dispensing port 8a in a downward region; a second duct 9 for feeding dilution water or a similar liquid also leads into the tank 8.

[0013] The base 3a of the modular support 3 is slightly inclined in order to insert and rest the refills 2 in a slightly reclined position in order to make their content flow towards a lower edge, and is substantially constituted by a box-like receptacle which is composed of said base 3a and two side walls 3b; its shape substantially duplicates the shape of the box-like refills 2, and it is provided with a front wall which is open to allow the insertion or extraction of said refills.

[0014] The means 4 for retaining the box-like refills 2 are constituted by a lid 3c which is provided with means 10 for adjustable coupling to the walls 3b of the receptacle 3 and has, on its lower face for contact with said refills 2, at least one sucker element 11 for hermetic resting on the opposite upper faces of said refills 2; the sucker element 11 is provided with a short neck 11a which protrudes upwards, passes through the lid 3c and is axially

traversed by a through channel 11b.

[0015] The piercing means 5 are constituted by a rigid tube 12 which is slightly longer than the height of the refills 2; an end 12a of said tube adapted to pierce said refills has a sharp tapering portion, and the opposite end is fitted onto a duct 13 for connection to said suction element 6.

[0016] The tube 12 can be inserted hermetically in the through channel 11b of the neck 11a and can be inserted through said neck into the box-like refill 2 after piercing the wall of the refill.

[0017] The suction element 6 is constituted, in the preferred embodiment of the invention, by a pump 6a of the peristaltic type.

[0018] The mixing tank 8 can be removably fitted on the frame of the machine 1, by interposing quick-coupling means 14 which are substantially constituted by a coupling of the so-called bayonet type between the inlet of said tank and the frame.

[0019] An element 15 for stirring and shredding the lumps and pulp of the concentrated components is also fitted inside the mixing tank 8; said element 15 is constituted by a shaft 16 which protrudes from a motor drive assembly 17 of its own which is arranged in an upward region, and a plurality of cutters 18 with radial blades 18a and a rotor 19 with vanes are mounted at the free end and coaxially in succession on said shaft; the rotor is mounted at the tip.

[0020] A tank 20 for accumulating water for dilution or a similar liquid is fitted in the second region 1b of the frame, in a rearward position with respect to the receptacle 3; the tank 20 is provided with means 21 for constantly maintaining the static head of the dilution water or the like.

[0021] Said means 21 are constituted by a second open-top tank 22 which is rigidly fitted in the internal upper region of said tank 20 and is provided, in a downward region, with a discharge port 23 which leads into the mixing tank 8 through the second duct 9; the end of a duct 24 for feeding dilution water or the like also leads into the second tank 22.

[0022] The tank 20 is also provided with coil-shaped cooling means 25 which can be immersed in the dilution water or the like.

[0023] The adjustable coupling means 10 are constituted by corresponding knobs 26 which can be tightened in vertical slotted seats 27 formed in the side walls 3b of the receptacle 3.

[0024] The operation of the invention is as follows: an operator places a box-like refill 2 in the receptacle 3, inserting it snugly between the walls 3b of said receptacle.

[0025] Advantageously, the inclination of the base 3a allows to keep the concentrate collected towards the edge of the refill 2 that is directed towards the inside of the machine 1 even when said concentrate decreases to a small amount.

[0026] The operator then applies the lid 3c on top of the walls 3b, lowering it until the sucker element 11 rests and adheres against the upper face of the refill 2.

[0027] Once this position has been reached, the lid 3c is coupled by acting on the knobs 26.

[0028] Then the operator inserts the rigid tube 12 in the through channel 11b, whose diameter is advantageously calibrated so that said tube 12 forms a seal in sliding; through the channel 11b, the tube reaches and pierces the box-like refill 2 with its own sharp end 12a.

[0029] The operator then completes insertion, without however making contact with the contents of the refill 2, until said end reaches the bottom of the refill 2, or more specifically arrives proximate to the internal edge towards which the concentrate collects.

[0030] In this manner, the machine 1 is ready to dispense the beverage with the maximum assurance of hygiene.

[0031] When a consumer requests it, the operator activates the peristaltic pump 6a, which produces suction in the duct 13 connected to the tube 12 and draws through it a preset dose of concentrate which is sent towards the mixing tank 8.

[0032] At the same time, the equally preset amount of dilution water is drawn from the normal user mains or from the tank 20 by way of a conventional electric valve 29 which reaches the mixing tank 8 by means of the second duct 9.

[0033] The amalgamation of the components of the beverage then occurs within said tank; this operation is completed by the rotation of the shaft 16 and the intervention of the blades 18a and of the vane-fitted rotor 19, which provide the actual mixing and breaking up of the pulp of the concentrate (which is usually very dense) and of any lumps or pieces of natural substance that were present in it from packaging.

[0034] The beverage is then dispensed through the appropriately provided port 8a.

[0035] It is noted that the dilution water can arrive directly, as mentioned, from the normal user line or can also be contained in the tank 20 after being transferred into it.

[0036] However, in order to maintain a constant static head and ultimately maintain the correct stoichiometric composition between the concentrate and the dilution water, it is possible to install inside the tank 20 an open-top tank 22 into which the duct 24 that arrives from a conventional submersed pump 28 leads; the volume of water inside said tank 22 is thus kept substantially constant even during the dispensing of the beverage, and the static head, which is also constant, ensures that the beverage has no imbalances between the volumes of the two components that reach the mixing tank 8.

[0037] It is also possible to arrange in the tank 20 a cooling coil 25 in order to keep the dilution water, and ultimately the dispensed beverage, pleasantly cool.

[0038] In practice it has been found that the described invention achieves the intended aim and objects.

[0039] All the details may be replaced with other technically equivalent elements, as far as they fall under the

scope of the appended claims.

[0040] In practice, the materials used, as well as the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0041] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A machine for instantly producing and dispensing beverages having premixable concentrated components which can be diluted with water and the like, pre-packaged in pierceable box-like refills (2), said machine (1) being constituted by a box-like frame which is divided into at least two regions (1a, 1b), a first region (1a) for containing cooling elements and a second one (1b) for accommodating said refills (2) of concentrated components, wherein the machine has, in said second region (1b), at least one modular support (3) for inserting said box-like refills (2) which is provided with means (4) for retaining said refills (2) by contact, **characterized in that** said modular support is also provided with piercing means (5) which cooperate with said retention means (4) and are connected to a suction element (6) which is interconnected, by means of a first duct (7), to a mixing tank (8) provided with a dispensing port (8a), at least one second duct (9) for feeding dilution water or the like leading into said tank (8).

2. The machine according to claim 1, **characterized in that** said modular support (3) has a slightly inclined base (3a) in order to insert and rest said refills (2) in a slightly reclined position.

3. The machine according to claims 1 and 2, **characterized in that** said modular support (3) is constituted by a box-like receptacle which substantially duplicates the shape of said box-like refills (2) and has a front wall which is open for the insertion or extraction of the refills (2).

4. The machine according to claims 1, 2 and 3, **characterized in that** said means (4) for retaining the box-like refills (2) are constituted by a lid (3c) provided with means (10) for adjustable coupling to the walls (3b) of said receptacle and is provided, on its lower contact face, with at least one sucker element (11) for resting hermetically on the opposite upper faces of the box-like refills (2), said sucker element (11) being provided with a short neck (11a) which protrudes upwards, passes through said lid (3c), and is axially crossed by a through channel (11b).

5. The machine according to claims 1 and 4, **characterized in that** said piercing means (5) are constituted by a rigid tube (12) which is slightly longer than the height of said box-like refills (2), an end (12a) of said tube (12) meant to pierce said refills (2) having a sharp tapering portion, the opposite end being fitted on a pipe (13) for connection to said suction element (6).

6. The machine according to claims 4 and 5, **characterized in that** said tube (12) can be fitted hermetically in said through channel (11b) of the neck (11a) of the sucker element (11) and can be inserted through it into the box-like refill (2) after piercing the wall of said refill (2).

7. The machine according to the preceding claims, **characterized in that** said suction element (11) is constituted by a pump of the peristaltic type.

8. The machine according to claim 1, **characterized in that** said mixing tank (8) can be installed removably on said frame by interposing quick coupling means (14).

9. The machine according to claim 8, **characterized in that** said quick coupling means (14) are constituted by a coupling of the so-called bayonet type.

10. The machine according to claims 1, 8 and 9, **characterized in that** an element (15) for stirring and shredding the lumps and pulp of said concentrated components is installed inside said mixing tank (8).

11. The machine according to claim 10, **characterized in that** said stirring and shredding element (15) is constituted by a shaft (16) which protrudes from its own motor drive unit (17) accommodated in an upward region, a series of cutters (18) with radial blades (18a) and a rotor (19) with vanes being fitted coaxially in succession at the free end of said shaft (16), the rotor (19) being arranged at the tip.

12. The machine according to the preceding claims, **characterized in that** a tank (20) for accumulating dilution water or the like is fitted in said second region (1b) of said frame.

13. The machine according to claim 12, **characterized in that** said tank (20) is provided with means (21) for maintaining a constant static head of the dilution water or the like.

14. The machine according to claim 13, **characterized in that** said means (21) for maintaining a constant

static head are constituted by a second open-top tank (22) which is rigidly installed in the internal upper region of said tank (20) and is provided, in a downward region, with a discharge port (23) which leads, through said second duct (9), into said mixing tank (8), the end of a duct (24) for feeding dilution water or the like leading into said second tank (22).

15. The machine according to claim 12, **characterized in that** said tank is provided with cooling means (21) which are shaped like a coil which can be immersed in said dilution water or the like.

16. The machine according to claim 4, **characterized in that** said adjustable coupling means (10) are constituted by corresponding knobs (26) which can be tightened in vertical slotted seats (27) formed in the side walls (3b) of said receptacle (3).

Patentansprüche

1. Maschine für die Herstellung und Ausgabe von Schnellgetränken, die aus vormischbaren konzentrierten Komponenten bestehen, die mit Wasser oder dergleichen verdünnt werden können und in anstechbaren, box-ähnlichen Nachfüllpackungen (2) abgepackt werden können, wobei die Maschine (1) aus einem kasten-artigen Rahmen besteht, der in mindestens zwei Bereiche (1a, 1 b) unterteilt ist, nämlich in einen ersten Bereich (1a) zur Aufnahme von Kühlelementen und einen zweiten Bereich (1 b) zur Aufnahme der Nachfüllbehälter (2) für konzentrierte Komponenten, wobei die Maschine in dem genannten zweiten Aufnahmebereich mindestens einen modular aufgebauten Träger (3) zum Einsetzen der box-artigen Nachfüllbehälter (2) hat, der mit durch ihren Anlagekontakt wirksamen Haltern (4) für die Nachfüllbehälter (2) versehen ist, **dadurch gekennzeichnet, dass** der modular aufgebaute Träger (3) auch mit Anstechelementen (5) versehen ist, die mit Rückhalteelementen (4) zusammenwirken, versehen ist und mit einem Saugelement (6) verbunden sind, das mittels einer ersten Leitung (7) mit einem Mischtank (8) verbunden ist, der mit einem Ausgabe-Auslass (8a) versehen ist, wobei mindestens eine zweite Leitung (9) vorgesehen ist, über die Wasser oder dergleichen zur Verdünnung in den Tank (8) einleitbar ist.

2. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** der modular aufgebaute Träger (3) eine leicht geneigt verlaufende Basis (3a) hat, mittels derer die Nachfüllbehälter (2) in einer leicht geneigten Position einführbar und abstützbar sind.

3. Maschine nach Anspruch 1 oder Anspruch 2, **dadurch gekennzeichnet, dass** der modulare Träger (3) durch einen kastenähnlichen Aufnahmebehälter gebildet ist, der im wesentlichen dieselbe Form wie die box-förmigen Nachfüllbehälter (2) hat und mit einem zur Einführung sowie zur Entnahme der Nachfüllbehälter (2) offenen Frontbereich versehen ist.

4. Maschine nach den Ansprüchen 1, 2 und 3, **dadurch gekennzeichnet, dass** die Halterungen (4) für die Fixierung der box-artigen Nachfüllbehälter (2) durch eine Klappe (3c) mit Mitteln (10) zur einstellbaren Verbindung mit den Wänden (3b) des Aufnahmebehälters gebildet sind und an ihrer unteren Anlageseite mit mindestens einem Saug-Element (11) für eine unmittelbare Abstützung an der gegenüberliegenden Oberseite der boxähnlichen Nachfüllbehälter versehen sind, wobei dieses Saug-Element (11) mit einem kurzen Hals (11a) versehen ist, der nach oben ragt, durch den Deckel (3c) hindurch tritt und axial von einem Durchtrittskanal (11 b) durchsetzt wird.

5. Maschine nach den Ansprüchen 1 und 4, **dadurch gekennzeichnet, dass** die Anstech-Einrichtungen (5) durch ein starres Rohr (12) gebildet sind, das geringfügig länger ist als die Höhe der box-ähnlichen Nachfüllbehälter (2), wobei ein Ende (12a) des genannten Rohrs (12) das zum Durchstechen der Nachfüllbehälter (2) gedacht ist, einen scharfen spitz zulaufenden Abschnitt hat, und das gegenüberliegende Ende an einem Rohr (13) zur Verbindung mit dem Saugelement (6) befestigt ist.

6. Maschine nach den Ansprüchen 4 und 5, **dadurch gekennzeichnet, dass** das Rohr (12) hermetisch dicht in dem Durchtrittskanal (11b) des Halses (11a) des Saugelements (11) befestigbar ist und durch dieses hindurch nach dem Durchstechen der Wand des Nachfüllbehälters (2) in den box-ähnlichen Nachfüllbehälter (2) einführbar ist.

7. Maschine nach den vorhergehenden Ansprüchen, **dadurch gekennzeichnet, dass** das Saugelement (11) als eine Schlauchquetschpumpe ausgebildet ist.

8. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** der Mischtank (8) auch mittels einer Schnell-Schließ-Kupplung (14) lösbar befestigbar ist.

9. Maschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schnell-Schließ-Kupplung (14) als eine sogenannte Bajonett-Kupplung ausgebildet ist.

10. Maschine nach den Ansprüchen 1, 8 und 9, **dadurch gekennzeichnet, dass** innerhalb des Mischtankes (8) ein Element (15) zum Rühren und Zerkleinern von Klumpen und Fruchtfleisch der konzentrierten

Komponenten installiert ist.

11. Maschine nach Anspruch 10, **dadurch gekennzeichnet, dass** das Rühr- und Zerkleinerungselement (15) durch eine Welle (16) gebildet ist, die von ihrer eigenen Motorantriebseinheit (17) ausgeht, die in einem oberen Bereich angeordnet ist, eine Anzahl von Schneidvorrichtungen (18) mit radialen Schneidklingen (18a) und einen Rotor (19) umfasst, wobei diese Flügel, koaxial und aufeinander folgend am freien Ende der Welle (16) angeordnet sind und der Rotor (19) an der Spitze angeordnet ist.

12. Maschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in dem zweiten Bereich (1b) des Rahmens ein Tank (20) als Speicher für zum Verdünnen vorgesehenes Wasser oder dergleichen befestigt montiert ist.

13. Maschine nach Anspruch 12, **dadurch gekennzeichnet, dass** der Tank (20) mit einer Einrichtung (21) zur Einhaltung eines konstanten Pegels des zur Verdünnung benutzten Wassers oder dergleichen versehen ist.

14. Maschine nach Anspruch 13, **dadurch gekennzeichnet, dass** die Einrichtung (21) zur Aufrechterhaltung eines konstanten hydrostatischen Flüssigkeitsspiegel durch einen zweiten nach oben offenen Tank (22) gebildet ist, der fest im inneren oberen Bereich des Tanks (20) montiert ist und in einem unteren Bereich mit einem Auslass (23) versehen ist, der durch die zweite Leitung (9) hindurch in den genannten Mischtank (8) führt, wobei das Ende einer Leitung (24) zur Zuführung von Verdünnungswasser oder dergleichen in den genannten zweiten Tank (22) führt.

15. Maschine nach Anspruch 12, **dadurch gekennzeichnet, dass** der Tank mit Kühleinrichtungen (21) versehen ist, die in der Art einer Spule ausgebildet sind, die in das Verdünnungswasser oder dergleichen eingetaucht werden kann.

16. Maschine nach Anspruch 4, **dadurch gekennzeichnet, dass** einstellbare Kopplungsmittel (10) durch entsprechende Knöpfe (26) gebildet sind, die in vertikal verlaufende Schlitze (27) eingepasst einspannbar sind, die in Seitenwänden (3b) des Behälters (3) eingearbeitet sind.

Revendications

1. Machine pour la production et la distribution instantanées de boissons à base de composants concentrés pré-mélangeables qui peuvent être dilués avec de l'eau et similaire, pré-emballés dans des recharges (2) de type boîte pouvant être percées, ladite machine (1) étant constituée d'un bâti de type caisson qui est divisé en au moins deux zones (1a, 1b), une première zone (1a) destinée à contenir des éléments réfrigérants et une deuxième zone (1b) destinée à recevoir lesdites recharges (2) de composants concentrés, dans laquelle la machine comprend, dans ladite deuxième zone (1b), au moins un support modulaire (3) pour l'insertion desdites recharges (2) de type boîte, support qui est muni de moyens (4) pour retenir lesdites recharges (2) par contact, ***caractérisée en ce que*** ledit support modulaire est également muni de moyens de perçage (5) qui coopèrent avec lesdits moyens de retenue (4) et sont raccordés à un élément d'aspiration (6) qui est interconnecté, au moyen d'un premier conduit (7), avec une cuve de mélange (8) munie d'un orifice distributeur (8a), au moins un deuxième conduit (9) d'alimentation en eau de dilution ou similaire menant à l'intérieur de ladite cuve (8).

2. Machine selon la revendication 1, ***caractérisée en ce que*** ledit support modulaire (3) possède une base (3a) légèrement inclinée de manière à insérer et faire reposer lesdites recharges (2) dans une position légèrement inclinée.

3. Machine selon les revendications 1 et 2, ***caractérisée en ce que*** ledit support modulaire (3) est constitué par un réceptacle de type caisson qui duplique sensiblement la forme desdites recharges de type boîte (2) et possède une paroi avant qui est ouverte pour l'insertion ou l'extraction des recharges (2).

4. Machine selon les revendications 1, 2 et 3, ***caractérisée en ce que*** lesdits moyens (4) de retenue des recharges (2) de type boîte sont constitués par un couvercle (3c) muni de moyens (10) pour un couplage réglable avec les parois (3b) dudit réceptacle et est muni, sur sa face de contact inférieure, d'au moins un élément d'aspiration (11) destiné à prendre appui de manière hermétique sur les faces supérieures opposées des recharges (2) de type boîte, ledit élément d'aspiration (11) étant muni d'un court goulot (11a) qui fait saillie vers le haut, traverse ledit couvercle (3c) et est axialement traversé par un canal traversant (11b).

5. Machine selon les revendications 1 et 4, ***caractérisée en ce que*** lesdits moyens de perçage (5) sont constitués d'un tube rigide (12) qui est légèrement plus long que la hauteur desdites recharges (2) de type boîte, une extrémité (12a) dudit tube (12) destinée à percer lesdites recharges (2) ayant une portion en pointe affilée, l'extrémité opposée étant fixée à un tuyau (13) de raccordement audit élément d'aspiration (6).

6. Machine selon les revendications 4 et 5, ***caractérisée en ce que*** ledit tube (12) peut être inséré de manière hermétique dans ledit canal traversant (11b) du goulot (11a) de l'élément d'aspiration (11) et peut être inséré à travers lui dans la recharge (2) de type boîte après perçage de la paroi de ladite recharge (2).

7. Machine selon les revendications précédentes, ***caractérisée en ce que*** ledit élément d'aspiration (11) est constitué d'une pompe de type péristaltique.

8. Machine selon la revendication 1, ***caractérisée en ce que*** ladite cuve de mélange (8) peut être installée de manière amovible sur ledit bâti en interposant des moyens de couplage rapide (14).

9. Machine selon la revendication 8, ***caractérisée en ce que*** lesdits moyens de couplage rapide (14) sont constitués par un couplage du type dit à baïonnette.

10. Machine selon les revendications 1, 8 et 9, ***caractérisée en ce qu'un*** élément (15) destiné à agiter et désagréger les grumeaux et la pulpe desdits composants concentrés est installé à l'intérieur de ladite cuve de mélange (8).

11. Machine selon la revendication 10, ***caractérisée en ce que*** ledit élément agitateur et désagrégateur (15) est constitué par un arbre (16) qui fait saillie de sa propre unité d'entraînement par moteur installée dans une zone supérieure, une série de couteaux (18) avec des lames radiales (18a) et un rotor (19) avec des palettes étant fixés coaxialement en succession sur l'extrémité libre dudit arbre (16), le rotor (19) étant installé au bout.

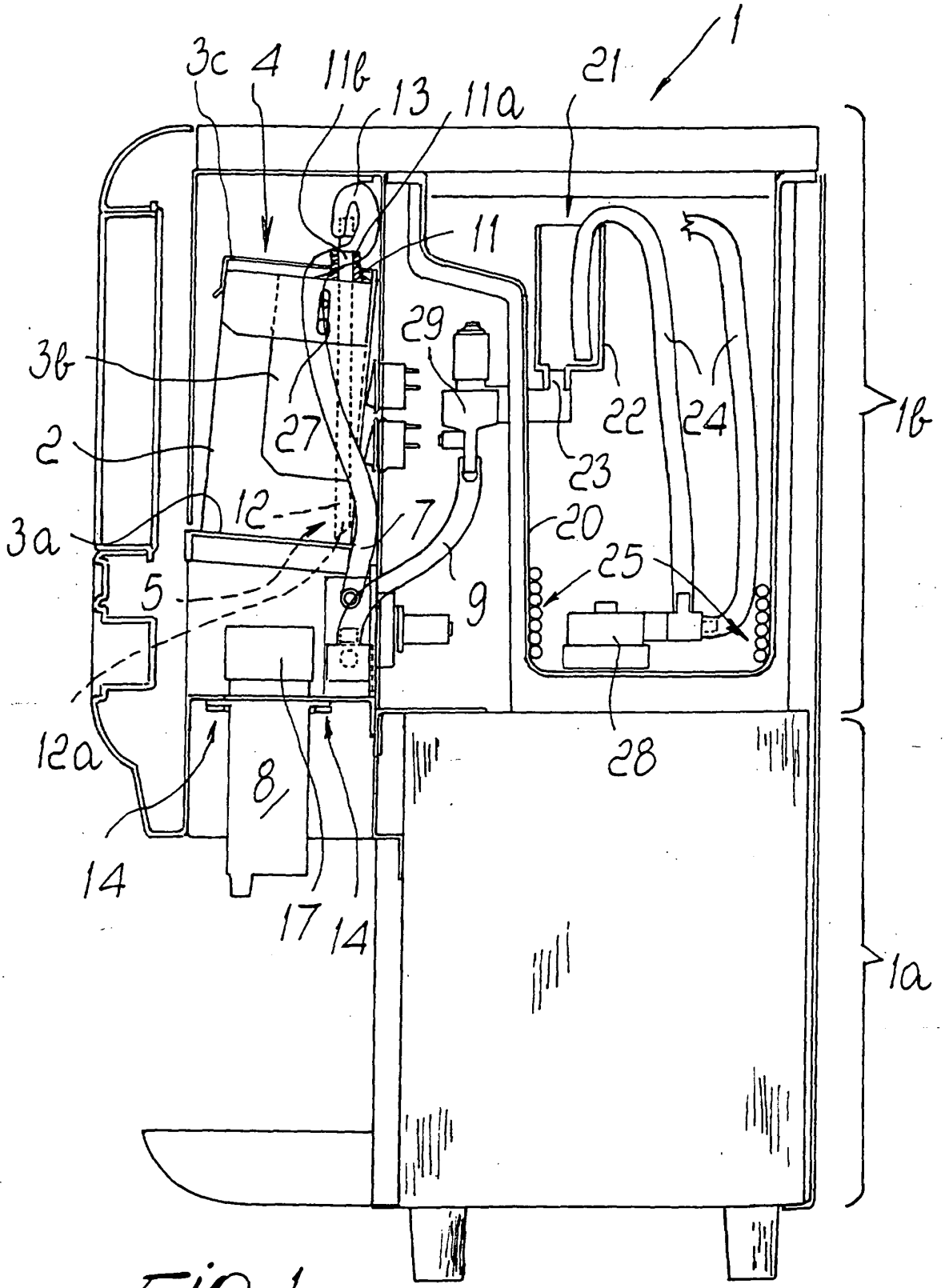
12. Machine selon les revendications précédentes, ***caractérisée en ce qu'***une cuve (20) destinée à stocker de l'eau de dilution ou similaire est installée dans ladite deuxième zone (1b) dudit cadre.

13. Machine selon la revendication 12, ***caractérisée en ce que*** ladite cuve (20) est équipée de moyens (21) destinés à maintenir une pression statique constante pour l'eau de dilution ou similaire.

14. Machine selon la revendication 13, ***caractérisée en ce que*** lesdits moyens (21) de maintien d'une pression statique constante sont constitués par une deuxième cuve (22) sans couvercle qui est installée de manière rigide dans la zone intérieure supérieure de ladite cuve (20) et est munie, dans une zone inférieure, d'un orifice de décharge (23) qui conduit, via ledit deuxième conduit (9), dans ladite cuve de mélange (8), l'extrémité d'un conduit (24) pour l'alimentation en eau de dilution ou similaire menant dans ladite deuxième cuve (22).

15. Machine selon la revendication 12, ***caractérisée en ce que*** ladite cuve est munie de moyens réfrigérants (25) qui adoptent la forme d'un serpentin qui peut être immergé dans ladite eau de dilution ou similaire.

16. Machine selon la revendication 14, ***caractérisée en ce que*** lesdits moyens (10) de couplage réglable sont constitués par des boutons correspondants (26) qui peuvent être vissés dans des sièges en forme de fente verticale formés dans les parois latérales (3b) dudit réceptacle (3).


1
3c
4
11b
13
11a
21
11
29
3b
27
2
22
24
23
1b
12
7
20
3a
25
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9
12a
28
8
14
17
14
1a

Fig. 1

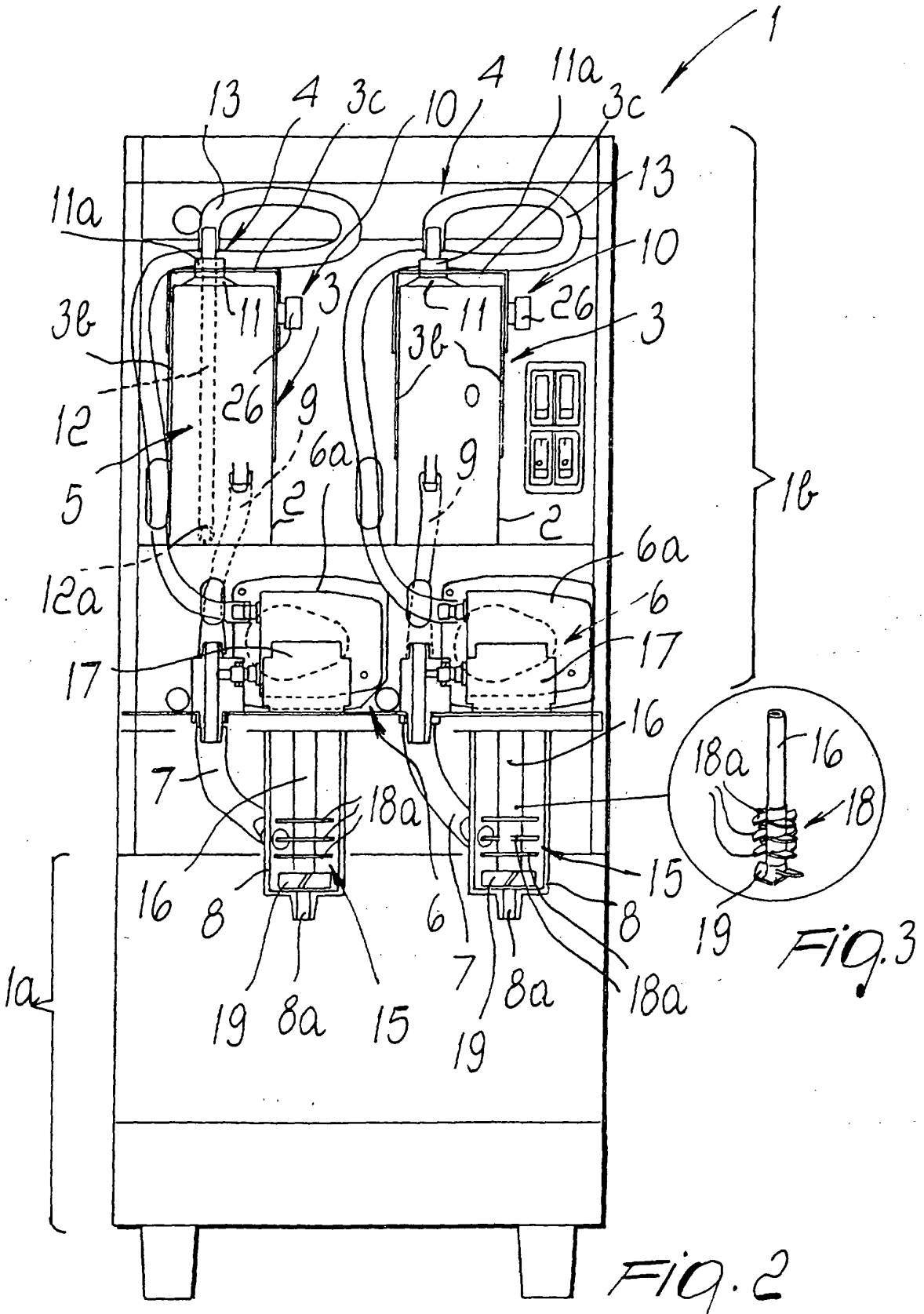
1
13
4
3c
10
4
11a
3c
11a
13
10
3b
11
3
11
26
3
3b
12
26
9
6a
9
5
2
2
1b
12a
6a
6
17
17
16
7
18a
16
8
6
8
19
15
1a
19
8a
15
7
8a
18a
19
18a
16
18

Fig. 3

Fig. 2