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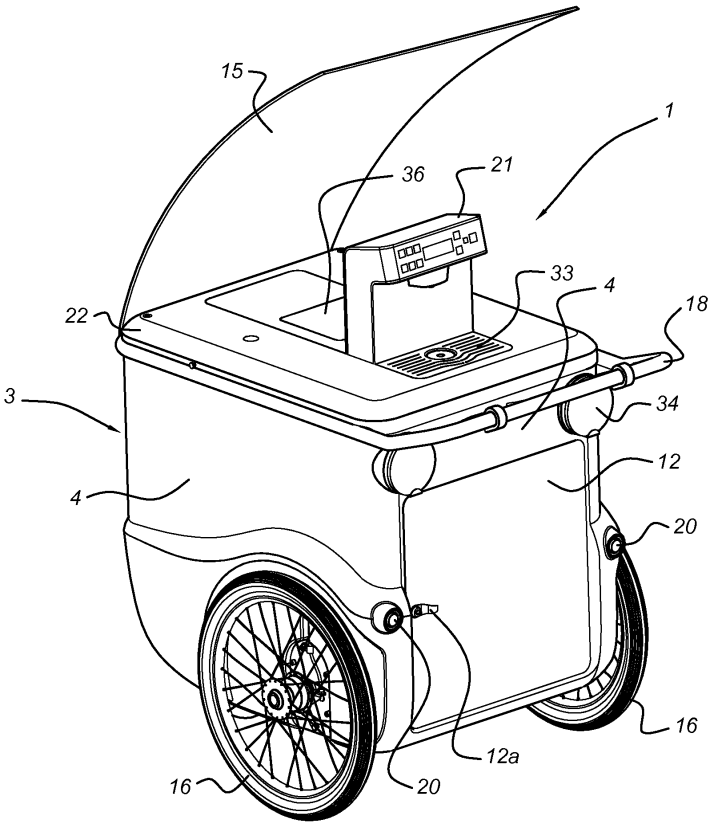
(54) **Vehicle for beverage preparation**

(57) Vehicle comprising a beverage preparation assembly (2) for local beverage preparation. The vehicle (1) has a frame body (3) with a plurality of walls (4) providing structural strength to the vehicle (1). The frame body (3) also forms a main internal space (5) for accommodating at least one main beverage ingredient package (6), and the plurality of walls (4) comprise thermally insulating material.

Fig. 2



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Description

Field of the invention

[0001] The present invention relates to a vehicle for the preparation of beverages.

Prior art

[0002] International patent publication WO2012/134296 discloses a sales outlet for vending beverages, and a method for monitoring a supply chain. In one embodiment, the sales outlet is part of a mobile vehicle, such as a small truck, a motor or scooter.

Summary of the invention

[0003] The present invention seeks to provide a convenient implementation for a vehicle enabling the sale of locally prepared beverages.

[0004] According to the present invention, a vehicle is provided comprising a beverage preparation assembly for local beverage preparation, the vehicle comprising a frame body, the frame body having a plurality of walls providing structural strength to the vehicle and forming a main internal space for accommodating at least one main beverage ingredient package (such as a bag-in-box container, e.g. filled with a dairy product such as milk), wherein the plurality of walls comprise thermally insulating material. By combining these functionalities in one frame body, a very cost-effective assembly of the vehicle can be accomplished.

[0005] In an embodiment, additional vehicle components are directly connected to the frame body. The additional vehicle components e.g. comprise one or more wheel assemblies (i.e. a wheel directly attached to the frame body, or via an axle, via a steering pinion, etc.), a handle bar, access doors, a shading device, etc. As the additional components can be attached directly to the frame body, no additional or separate structure is needed to make the vehicle a complete, road legal vehicle.

[0006] The frame body comprises a holding assembly disposed in the main internal space for holding at least two (e.g. four) main beverage ingredient packages. This allows to carry sufficient quantities of the main beverage ingredient, e.g. milk in liquid form, to be able to operate independently during a major part of the day. In a further embodiment the frame body comprises a cooling element disposed in the main internal space, allowing to keep the main beverage ingredient cool during a sufficiently long period. The cooling element can be a passive cooling element (e.g. based on a cooling liquid or ice), and alternatively is an active cooling element (e.g. powered by a battery).

[0007] The frame body comprises a first door mounted on one of the plurality of walls and providing access to the main internal space. This can be implemented as a back wall which is accessible to a distributor only, not to the actual vendor or operator of the vehicle. This allows to provide a controlled logistic environment, ensuring that only authorized personnel can fill the vehicle with the main beverage ingredient packages. The frame body may comprise a second door providing access to a secondary space, which is then accessible for the operator, and e.g. positioned parallel to the first door. The secondary space then allows storage of consumables, e.g. cups, or personal items of the operator.

[0008] The beverage preparation assembly further comprises a beverage dispensing unit attached to the frame body and positioned external to the main internal space. This allows to have direct access to the beverage dispensing unit, e.g. to fill cups with the prepared beverage.

[0009] The frame body in a further embodiment comprises a closeable lid element providing access to a first connection unit, the first connection unit being arranged to connect the at least one beverage ingredient package to the beverage dispensing unit of the beverage preparation assembly. The closable lid allows access, e.g. to change from an empty package to a new filled package.

[0010] Furthermore, the frame body may comprise additional beverage ingredient containers in communication with the beverage dispensing unit. This allows to mix additional ingredients, such as sweetener, flavours, colours, structuring agents, etc. to the main beverage ingredient for preparing the beverage. The beverage preparation assembly comprises a pressurized air source, e.g. a pump, compressor, or a pressurized container, which can be used advantageously to obtain a foaming effect during preparation of the beverage.

[0011] The vehicle in an even further embodiment, has a beverage preparation assembly comprising a control unit connected to a mixing unit and one or more sensor elements. The mixing unit (including pumps and valves in communication with the various packages and containers) is used to prepare beverages under control of the control unit, and sensor elements (e.g. temperature) may be used to ensure safe, reliable and hygienic operation of the beverage preparation assembly. In one specific embodiment, the one or more sensor elements comprise a load cell, positioned to weigh a cup being filled with the beverage. This allows a continuous or periodic check that the proper amount of beverage is being dispensed, and when needed, periodic calibration thereof can be performed.

[0012] In a further embodiment, the vehicle further comprises a shading device attached to the frame body, providing protection to the operator against sun and possible other weather or other influences.

[0013] The vehicle may further comprises one or more of the following components attached to the frame body: at least two wheels; a battery pack; a handle bar; a wheel brake; and (front/back/side) lighting components.

Short description of drawings

[0014] The present invention will be discussed in more detail hereinafter based on a number of exemplary embodiments with reference to the drawings, in which

Fig. 1 shows a schematic view of major components of an embodiment of a beverage preparation assembly according to the present invention;
Fig. 2 shows a perspective view of an embodiment of a vehicle according to the present invention;
Fig. 3 shows a cross sectional view of an embodiment of a vehicle according to the present invention;
Fig. 4 shows a perspective view of an embodiment of a frame body according to the present invention.

Detailed description of exemplary embodiments

[0015] The present invention relates to a solution of providing mobile delivery of beverages, such as dairy based beverages, to customers. The goal is of course to make sure the beverage is prepared properly, and to make sure that all ingredients are kept sufficiently cool and hygienic until consumption by the customer.

[0016] Fig. 1 shows a schematic view of major components of an embodiment of a beverage preparation assembly 2 according to the present invention, comprising a beverage preparation assembly 2 for local beverage preparation, e.g. using a small vehicle 1 (see also Fig. 2-4). The vehicle 1 comprising a frame body 3, the frame body 3 having a plurality of walls 4 providing structural strength to the vehicle 1 and forming a main internal space 5 for accommodating at least one main beverage ingredient package 6. The plurality of walls 4 comprise thermally insulating material, in order to keep the contents of the main beverage ingredients 6 in the main internal space 5 cool during a long period.

[0017] In the schematic view as shown, the beverage preparation assembly 2 comprises a cooling element 8 disposed in the internal space 5 for cooling the internal space 5 and its contents, i.e. the at least one main beverage ingredient package 6, during actual operation. In an embodiment, the cooling element 8 comprises a cooling liquid, known as such, or even blocks of ice, and passively cools the internal space 5. In another embodiment, the cooling element 8 may be an active component using e.g. electric power for actively cooling the internal space 5.

[0018] A first connection unit 23 is provided in the frame body 3, e.g. on the top side thereof, and is connected to the at least one main beverage ingredient package 6. The at least one main beverage ingredient package 6 may comprise a bag containing a main beverage ingredient and a cassette holding the bag ('bag-in-box'). The first connection unit 23 may therefore be referred to as a "bag-in-box" connector (BIB). Typically, the at least one main beverage ingredient package 6 stores a dairy product such as milk in liquid form, but other liquid ingredients are conceivable. Also other types of containers, cans or even tanks may be used as the main beverage ingredient package 6 in the beverage preparation assembly 2 of the present invention.

[0019] The beverage preparation assembly 2 is further provided with a pump 23a disposed between the first connection unit 23 and a mixing unit 31, the pump 23a being arranged for pumping ingredients from the at least one main beverage ingredient package 6 to the mixing unit 31, e.g. implemented as a peristaltic pump. The advantage is that in such a type of pump, the hose used is easily replaceable.

[0020] Furthermore, additional beverage ingredient containers 25 are provided and connected the mixing unit 31 via associated pumps 25a disposed between said containers 25 and mixing unit 31. In typical embodiments the additional beverage ingredient containers 25 comprise main ingredient additives such as sweeteners, flavours, colours, structuring agents, viscosity agents and the like.

[0021] The beverage preparation assembly 2 is further provided with a pressurized air source 26 connected to the mixing unit 31. The pressurized air source 26 may be a pre-pressurized canister, or a regular air pump.

[0022] The mixing unit 31 comprises specially arranged apertures for injecting air (in the form of jets or bubbles) into a beverage being prepared in the mixing unit 31 for serving in a cup 35.

[0023] The beverage preparation assembly 2 is also provided with sensor elements 32, such as a thermometer 32 disposed in the internal space 5, and a load cell 33 disposed external to the internal space 5. The load cell 33 is positioned in the frame body 3 such that the weight (or weight increase) of the cup 35 can be monitored during operation

[0024] A control unit 30 is further provided as part of the beverage preparation assembly 2 and is connected to control the pump 23a of the main beverage ingredient, the one or more pumps 25a associated with the additional beverage ingredient containers 25, and the pressurized air source 26. Furthermore, the control unit 31 is connected to the sensor elements 32 and load cell 33.

[0025] The pump 23a and one or more pumps 25 a may be any type of pump suitable for pumping the associated fluid or liquid, and e.g. comprise an electrically driven pump. Alternatively, the liquid or fluid in the main beverage ingredient package 6 and additional beverage ingredient containers 25 are pressurized (e.g. using pumps) and the amount delivered to the mixing unit is controlled using appropriate and associated valves.

[0026] In actual operation, the beverage preparation assembly 2 is part of a vehicle 1 which is operated by an operator. Customers can order a cup 35 holding a customer specific beverage such as a cold, whipped, milk-based beverage having a specific viscosity and flavour. The cup 35 rests on the load cell 33 next to the mixing unit 31 and below an outlet of the mixing unit 31. Based on customer specifications, the beverage comprises a

certain mixture of main and additional ingredients from the at least one main beverage ingredient package 6 and additional beverage ingredient containers 25, and air bubbles or foam injected by the pressurized air source 26. The control unit 30 is responsible for the optimum beverage mixing and delivery by controlling the one or more pumps 23a, 25a based on predetermined parameters and measured signals from the sensor elements 32 and load cell 33. For example, the load cell 33 delivers a weight increase signal to the control unit 30 such that the amount of beverage in the cup 35 can be determined. The control unit 30 further controls the amount of additional ingredients to be mixed and the amount of air to be injected into the beverage.

[0027] In an advantageous embodiment, the beverage preparation assembly 2 is further provided with a battery pack 17 which is disposed on or in the frame body 3 external to the internal space 5. The battery pack 17 is arranged for powering one or more electrical components of the beverage preparation assembly 2, e.g. the control unit 30, pumps 23a, 25a and sensor elements 32.

[0028] Fig. 2 and 3 respectively show a perspective and a cross-sectional view of a vehicle 1 according to present invention embodiments, comprising a beverage preparation assembly 2 for local beverage preparation as discussed above. Fig. 4 shows a perspective view of The vehicle 1 comprises a frame body 3, the frame body 3 having a plurality of walls 4 providing structural strength to the vehicle 1 and forming a main internal space 5 for accommodating at least one main beverage ingredient package 6, wherein the plurality of walls 4 comprise thermally insulating material. Typical insulation materials may comprise, for example, polymer foams, insulating gels, fibreglass, natural fibres, cellulose, mineral wools and the like. In an embodiment, the plurality of walls 4 may also comprise structural composite materials having good thermal insulation properties.

[0029] The plurality of walls 4 may form a cube like structure for the frame body 3, but depending on the material used, other curved forms may also be used, such as the ones shown in the embodiment of Fig. 2, 3 and 4.

[0030] The vehicle 1 further comprises additional vehicle components, wherein the additional vehicle components are directly connected to the frame body 3. In an embodiment, the additional vehicle components comprise one or more wheel assemblies having wheels 16. In advantageous embodiments, the additional vehicle components comprise one or more steerable wheels, such as a swivel wheel 16a steerable around a pivot axle 16c at the front side of the vehicle 1 as shown in Fig. 3. In a further embodiment, the additional vehicle components comprise a handle bar 18 fixedly connected to the upper side of the frame body 3, enabling safe handling (e.g. steering) of the vehicle 1. In an even further embodiment, the vehicle 1 further comprises a shading device 15 attached to the frame body 3, thereby protecting the beverage preparation assembly 2 and/or an operator of the vehicle 1 against sun, rain, dust, wind, and various other weather conditions.

[0031] Other embodiments of additional vehicle components comprise one or more wheel brakes provided with e.g. brake levers 19a of hand brakes attached to the handle bar 18. Alternatively, brake levers of foot brakes are attached to a lower part of the frame body 3 near the wheels 16.

[0032] For further safety, the additional vehicle components may comprise various lighting components 20 to improve visibility. The lighting components 20 may be positioned at the back, side and/or front of the frame body 3.

[0033] In advantageous embodiments, the additional vehicle components comprise at least one battery pack 17 accommodated in and attached to the frame body 3 for powering some or all electrical components of the vehicle 1, such as the lighting components 20 and various electrical components of the beverage preparation assembly 2. In other embodiments, the additional vehicle components may further comprise a power cable should the battery pack 17 run low, so that a local wall socket may supply electricity from a main electricity grid. Typically, the power cable can be used to charge the battery pack 17 and/or directly power all electrical components of the vehicle 1.

[0034] Thus in a group of embodiments, the vehicle 1 further comprises one or more of the following components directly attached to the frame body 3: at least two wheels 16; a battery pack 17; a handle bar 18; a wheel brake; and lighting components 20.

[0035] The beverage preparation assembly 2 further comprises a beverage dispensing unit 21 attached to the frame body 3 and positioned external to the main internal space 5. For maximum accessibility, the beverage dispensing unit 21 may be disposed at the top of the frame body 3 as depicted in the embodiments of Fig 2 and 3. The beverage dispensing unit 21 is typically operated by an operator of the vehicle 1.

[0036] According to the invention, the frame body 3 comprises a holding assembly 7 disposed in the main internal space 5 for holding the at least one (e.g. four) main beverage ingredient package 6 in position. In particular, the at least one main beverage ingredient package 6 holds the main (or base) ingredient of a beverage, such as milk in liquid form. In other embodiments, the at least one main beverage ingredient package 6 is provided with a bag in a cassette, also known as a bag-in-box container (BIB).

[0037] In an embodiment, the frame body 3 comprises a closeable lid element 22 at its top, providing access to a first connection unit 23, the first connection unit 23 being arranged to connect the at least one main beverage ingredient package 6 to the beverage dispensing unit 21 of the beverage preparation assembly 2. In an embodiment, the first connection unit 23 comprises a package or cassette rotator allowing the operator to switch main beverage ingredient packages 6, such as disconnecting an empty main beverage ingredient package 6 and con-

necting a full main beverage ingredient package 6 to the beverage dispensing unit 21. In an embodiment, the package or cassette rotator is manually operated by means of a single hand gesture of the operator. In another embodiment the package or cassette rotator can be automated, thus merely requiring the use of an electric switch or button without manually engaging the package or cassette rotator.

[0038] In an embodiment, the frame body 3 comprises additional beverage ingredient containers 25 in communication with the beverage dispensing unit 21. The additional beverage ingredient containers 25 comprise, for example, main ingredient conditioners such as sweeteners, flavours, colours, viscosity agents and the like. This results in a large number of different beverages that can be prepared by the beverage preparation assembly 2.

[0039] In an embodiment, the frame body 3 comprises at least one cup storage compartment 34 arranged for storing a plurality of cups 35, wherein the cups 35 are used to hold a beverage ordered by a customer.

[0040] In an embodiment, the frame body 3 comprises a cooling element 8 disposed in the main internal space 5. The cooling element 8 typically holds a cold substance such as ice or a cooling fluid for passively cooling the main internal space 5. The cooling element 8 can also be powered by electricity for actively cooling the internal space 5. In an embodiment the cooling element 8 may be conveniently disposed at the bottom of the main internal space 5, e.g. under the holding assembly 7as depicted in Fig. 3. In other embodiments the cooling element 8 is disposed at another location in the internal space 5. In yet another embodiment the cooling element 8 is distributed and e.g. disposed at the bottom, side and top of the internal space 5, or any other combination thereof.

[0041] The thermal insulation material of the plurality of walls 4 is particularly advantageous when the at least one main beverage ingredient package 6 contains perishable ingredients and should remain cool for an extended period of time, e.g. the majority of day time. The vehicle 1 of the present invention is therefore particularly suitable for use in hot countries, where temperatures are generally high and perishables (e.g. dairy products) tend to spoil rather quickly in such warm environments.

[0042] The frame body 3 may further comprise a first door 11 mounted on one of the plurality of walls 4 and providing access to the main internal space 5. In an embodiment, the first door 11 is disposed at the back of the frame body 3 and arranged to be accessible to a distributor only (e.g. using a dedicated key and lock). That is, only the distributor of the at least one main beverage ingredient package 6 is authorized to access the content of the internal space 5 and not the actual daily operator of the vehicle 1. This results in a first authorization level for controlling and monitoring the contents of the internal space 5 for each vehicle 1.

[0043] In an advantageous embodiment, the first door 11 is disposed in a recessed position D with respect to a second door 12 attached to the frame body 3 and forming a back side thereof, see the embodiment in Fig. 3. The frame body 3 thus comprises a second door 12 providing access to a secondary space 11a, wherein the secondary space 11a is disposed between the first and second door 11, 12. The second door 12 is substantially parallel to the first door 11 and flush with a back wall 4 of the frame body 3, providing the operator and distributor access to the secondary space 11a. This results in a second authorization level for controlling an monitoring the contents of the secondary space 11a, which is accessible to both the operator and distributor, e.g. using a key lock 12a provided on second door 12. The secondary space 11a can be used for storing valuable items of the operator and/or additional supplies such as consumables, cups, spoons, spare parts and the like. The second door 12 is made of the same material providing (thermal) insulation, and thus the secondary space 11a is also a chilled area. Alternatively, the first door 11 is made of thermally insulating material, and the second door 12 can then be of thinner material, still allowing to create the secondary space 11a.

[0044] In an advantageous embodiment, the beverage preparation assembly 2 comprises a pressurized air source 26. The pressurized air source is connected to the beverage dispensing unit 21, which is arranged to inject air from the pressurized air source 26 into the beverage after the main and additional ingredients have been mixed. The injected pressurized air causes the beverage to be foamed or whipped, yielding a smooth foam-like beverage, e.g. a beverage comprising milk foam. In an embodiment, the preparation assembly 2 further comprises a suitable compressor or pump connected to the pressurized air source 26 that compresses air into e.g. a pressurized air container having an outlet connected to the beverage dispensing unit 21.

[0045] According to a further embodiment, the beverage preparation assembly 2 comprises a control unit 30 connected to a mixing unit 31 and one or more sensor elements (e.g. pressure, temperature), which is also accommodated in the frame body 3.

[0046] In an embodiment, the control unit 30 only comprises the necessary electronics for controlling the beverage preparation process (e.g. ingredient sequencing), and the beverage preparation assembly 2 further comprises additional hardware such as pumps, valves, pipes and fittings, which are accommodated in the frame body and interconnect the various components discussed above. In a further embodiment, the one or more sensor elements comprise a load cell 33, which sends a load or weight signal to the control unit 30 representing the combined weight (or weight increase) of the cup 35 and the prepared beverage inside the cup 35. Based on this load signal, the control unit 30 is arranged to determine, for example, whether the beverage preparation has been completed or not. Also, the timing of the beverage preparation process can be monitored by the control unit 30, and e.g. be regularly calibrated.

[0047] In an embodiment, the mixing unit 31 unit com-

prises various tube fittings for combining the main ingredients from the at least one main beverage ingredient package 6 and additional ingredients from the additional beverage ingredient containers 25, as well as pressurized air from the pressurized air source 26. The tube fittings may be made of e.g. injection moulded plastics.

[0048] Fig. 4 shows a perspective view of an embodiment of a frame body 3 according to the present invention. Many features of the frame body 3 have already been described in foregoing paragraphs, such as the plurality of walls 4, the main internal space 5, one or more cup storage compartments 34 and the secondary space 11a.

[0049] In the embodiment shown, the frame body 3 further comprises a partition wall 27 separating the main internal space 5 and a secondary internal space 28, wherein the secondary internal space 28 accommodates, for example, the first and second connection unit 23, 24, the pressurized air source 26, the battery pack 17, the control unit 30, and various other pipes, pumps, hoses, valves, fittings, and electric wiring. The secondary internal space 28 is closed off in the assembled form of the vehicle 1 by the closeable lid 22 connected to the frame body 3, while providing space for the beverage dispensing unit 21, a further closable lid 36 providing access to the first connection unit 23, and load cell 33 (provided with an additional rack).

[0050] The frame body 3 also comprises a partition wall aperture 29 providing room for the first connection unit 23. The frame body 3 further comprises wheel mounts 9, comprising slots, holes, grooves and the like for mounting wheel assemblies 16 on the frame body 3.

[0051] In advantageous embodiments, the frame body 3 is made of composite structural material providing thermal insulation for keeping the contents of the main internal space 5 sufficiently cold in warm environments. The plurality of walls 4, partition wall 27 and second door 12 provide the sufficient thermal insulation in the embodiment shown since they define the main internal space 5. The thermal insulation of the upper part of the frame body 3, i.e. the part extending above the partition wall 27, is less critical.

[0052] In an embodiment, the frame body 3 is a single molded piece. In a further embodiment, the frame body 3 comprises a minimum of separately molded pieces that can be easily assembled. Advantageously, the frame body 3 of the present invention provides structural stiffness and does not require a separate frame for mounting e.g. the wheel assemblies and additional vehicle components. This results in a reduced weight and simplifies the manufacturing of the vehicle 1.

[0053] The present invention embodiments have been described above with reference to a number of exemplary embodiments as shown in the drawings. Modifications and alternative implementations of some parts or elements are possible, and are included in the scope of protection as defined in the appended claims.

Claims

1. Vehicle comprising a beverage preparation assembly (2) for local beverage preparation,
the vehicle (1) comprising a frame body (3), the frame body (3) having a plurality of walls (4) providing structural strength to the vehicle (1) and forming a main internal space (5) for accommodating at least one main beverage ingredient package (6), wherein the plurality of walls (4) comprise thermally insulating material.

2. Vehicle according to claim 1, wherein additional vehicle components (11, 12, 15, 16, 17, 18, 19, 20) are directly connected to the frame body (3).

3. Vehicle according to claim 1 or 2, wherein the frame body (3) comprises a holding assembly (7) disposed in the main internal space (5) for holding at least two main beverage ingredient packages (6).

4. Vehicle according to any one of claims 1-3, wherein the frame body (3) comprises a cooling element (8) disposed in the main internal space (5).

5. Vehicle according to any one of claims 1-4, wherein the frame body (3) comprises a first door (11) mounted on one of the plurality of walls (4) and providing access to the main internal space (5).

6. Vehicle according to any one claims 1-5, wherein the frame body (3) comprises a second door (12) providing access to a secondary space (11a).

7. Vehicle according to any one of claims 1-6, wherein the beverage preparation assembly (2) further comprises a beverage dispensing unit (21) attached to the frame body (3) and positioned external to the main internal space (5).

8. Vehicle according to claim 7, wherein the frame body (3) comprises a closeable lid element (22; 36) providing access to a first connection unit (23), the first connection unit (23) being arranged to connect the at least one beverage ingredient package (6) to the beverage dispensing unit (21) of the beverage preparation assembly (2).

9. Vehicle according to claim 7 or 8, wherein the frame body (3) comprises additional beverage ingredient containers (25) in communication with the beverage dispensing unit (21).

10. Vehicle according to any one of claims 1-9, wherein the beverage preparation assembly (2) comprises a pressurized air source (26).

11. Vehicle according to any one claims 1-10, wherein

the beverage preparation assembly (2) comprises a control unit (30) connected to a mixing unit (31) and one or more sensor elements (32, 33).

12. Vehicle according to any one of claims 1-11, wherein the one or more sensor elements (32, 33) comprise a load cell (33).

13. Vehicle according to any one of claims 1-12, wherein the vehicle (1) further comprises a shading device (15) attached to the frame body (3).

14. Vehicle according to any one of claims 1-13, wherein the vehicle (1) further comprises one or more of the following components attached to the frame body (3): at least two wheels (16); a battery pack (17); a handle bar (18); a wheel brake (19); and lighting components (20).

Fig. 1

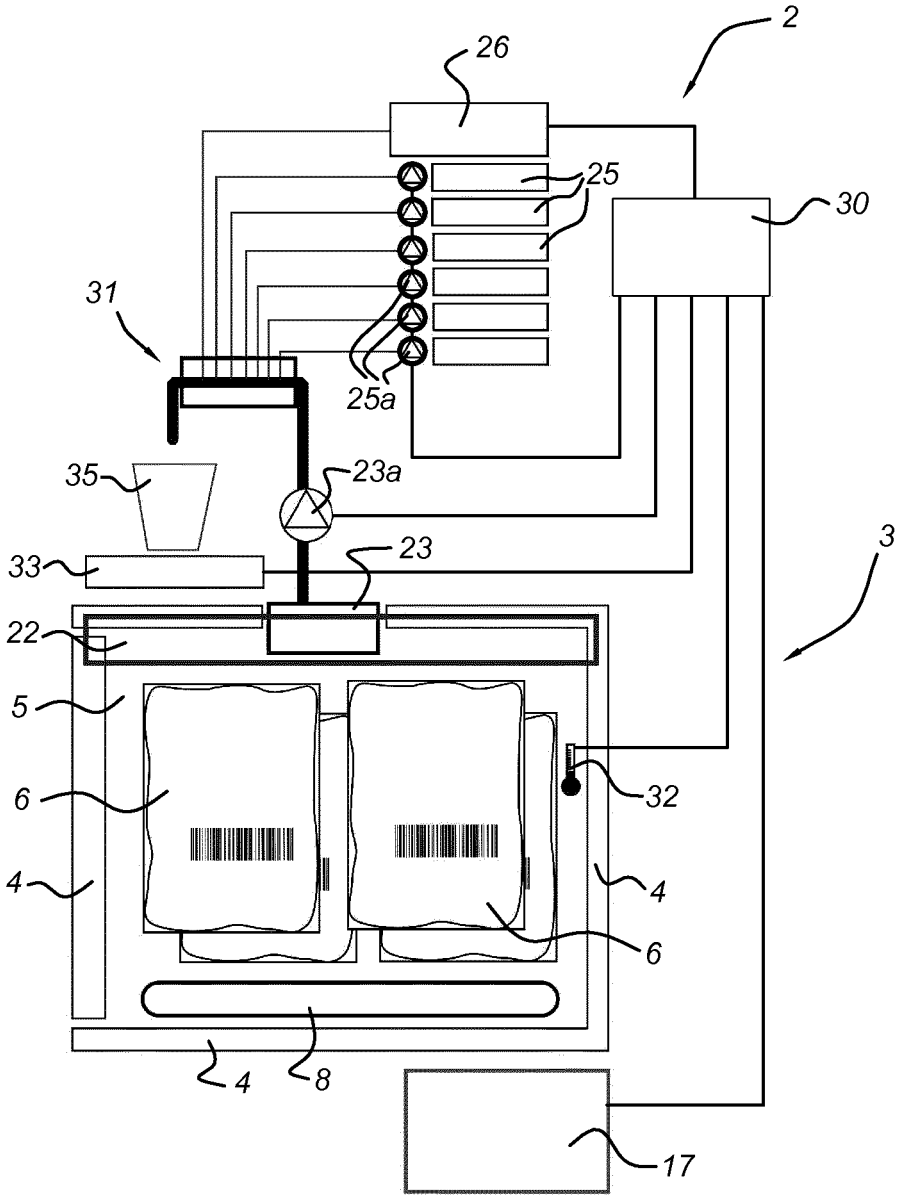

Fig. 2

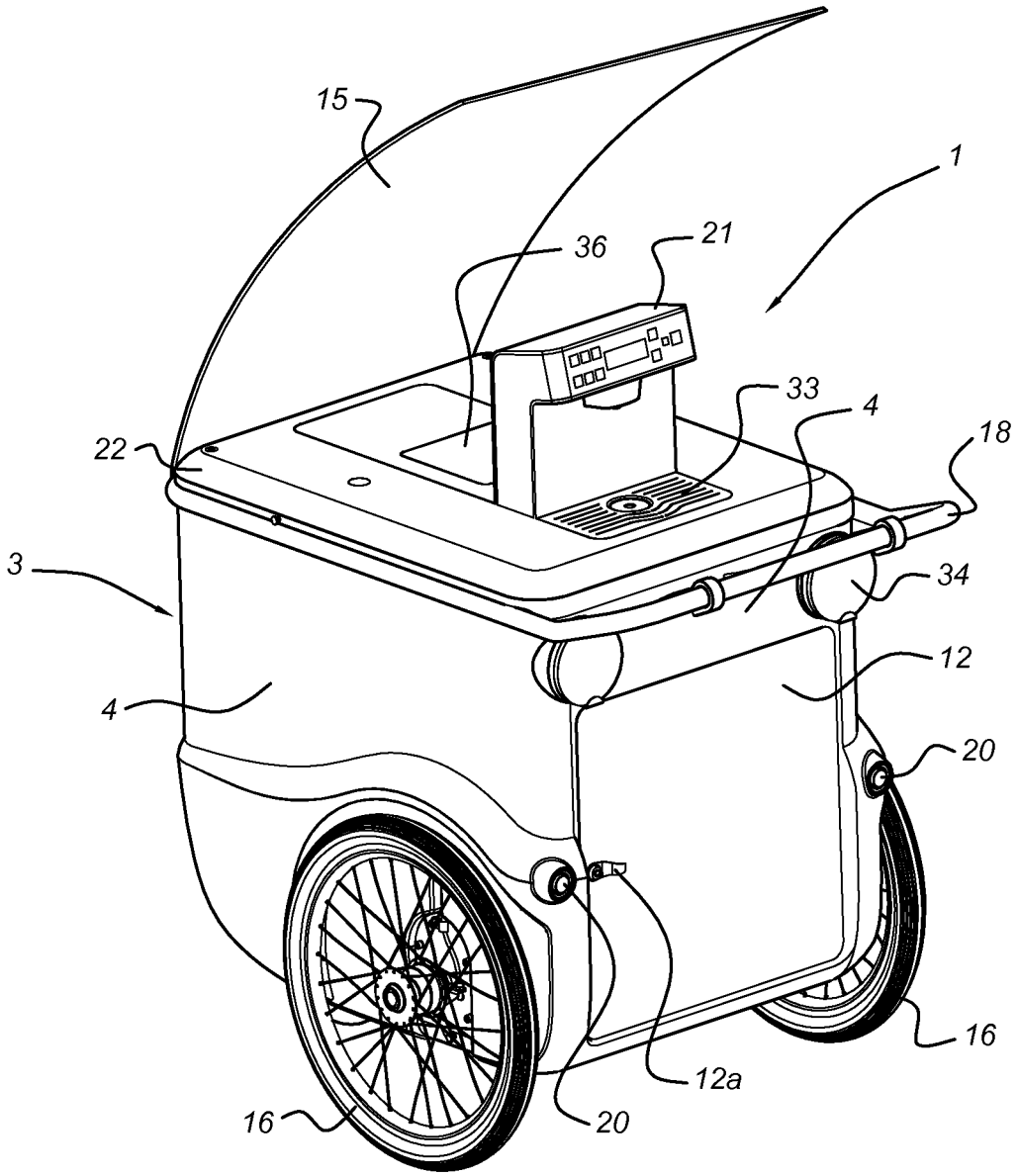

Fig. 3

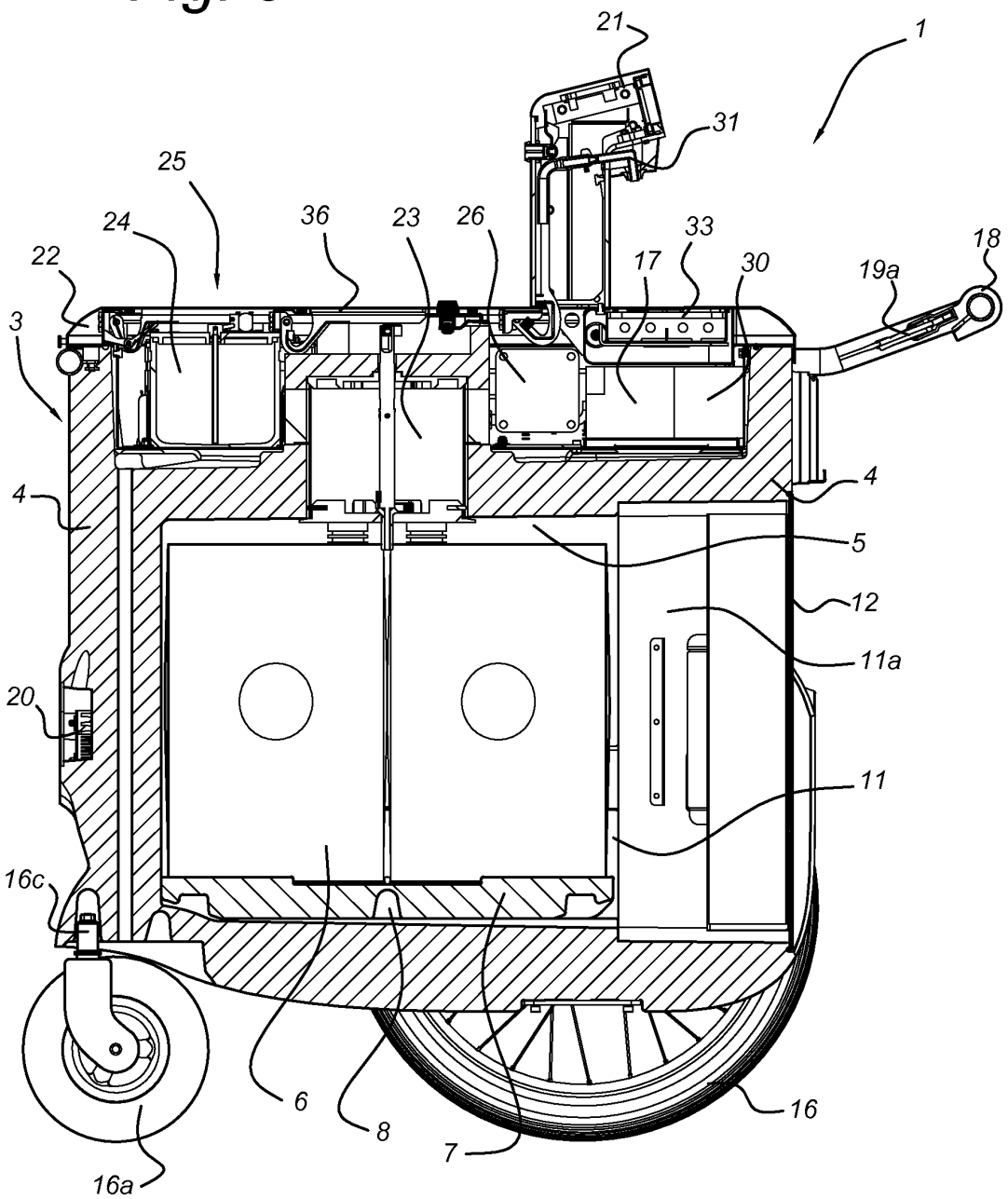
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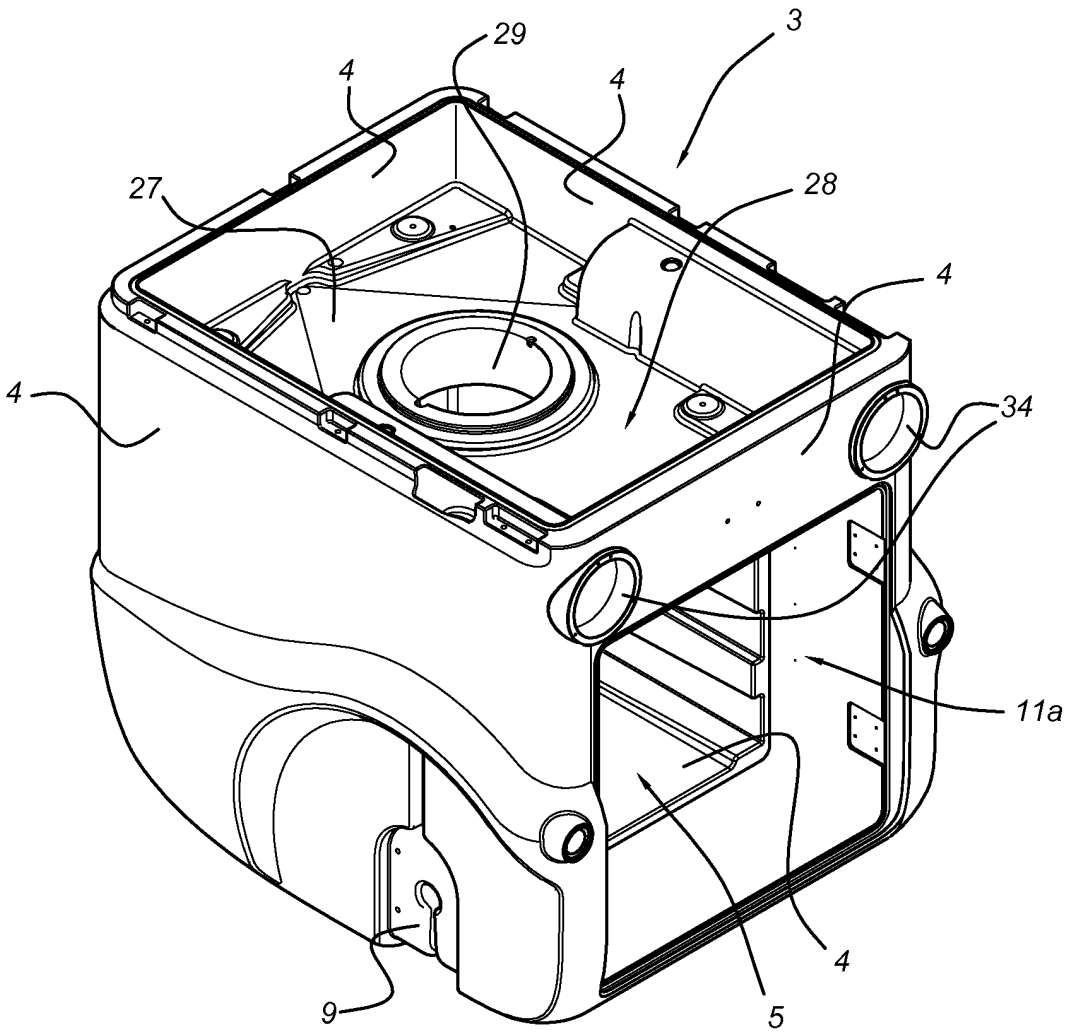
Fig. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 13 15 2666

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 626 353 A (CAMPBELL CRAIG [US]) 6 May 1997 (1997-05-06) * abstract * * figures 1-30 * * column 1, line 43 - column 2, line 47 * * column 4, line 32 - column 13, line 49 * -----	1-14	INV. G07F13/06 A47B31/02 B67D1/00
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X	US 2012/318822 A1 (STRAUSS ANDREAS [DE]) 20 December 2012 (2012-12-20) * the whole document * -----	1-14	
			TECHNICAL FIELDS SEARCHED (IPC) G07F A47B B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 July 2013	Diepstraten, Marc

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 15 2666

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05-07-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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