



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
14.02.2018 Bulletin 2018/07

(51) Int Cl.:
B67D 1/00 (2006.01)

(21) Application number: **16721479.0**

(86) International application number:
PCT/IB2016/000410

(22) Date of filing: **01.04.2016**

(87) International publication number:
WO 2016/162740 (13.10.2016 Gazette 2016/41)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

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(30) Priority: **07.04.2015 ES 201530388 U**

(54) **PYRAMIDAL SELF-SERVICE DRINK DISPENSER**

(57) The invention relates to a self-serve beverage dispensing device, provided to allow a user to fill up a cup or glass with a predetermined amount of beverage without the intervention of an operator other than the user, controlling the amount dispensed and/or the payment of the amount dispensed and/or the user to whom the beverage is dispensed, by means of a device the top part (13) of which has a surface area less than 35% of the surface area of the base (11) of the dispensing device; and in which at least one portion of the walls (12) of the casing (10) are inclined in a converging path, an area of the cross-section parallel to the base of the dispensing device being smaller the further away it is from the base, the dispensing device having a self-standing nature accessible from different sides thereof, and where the walls of the casing, with the exception of the serving surfaces, lack horizontal or almost horizontal zones accessible from outside the casing.

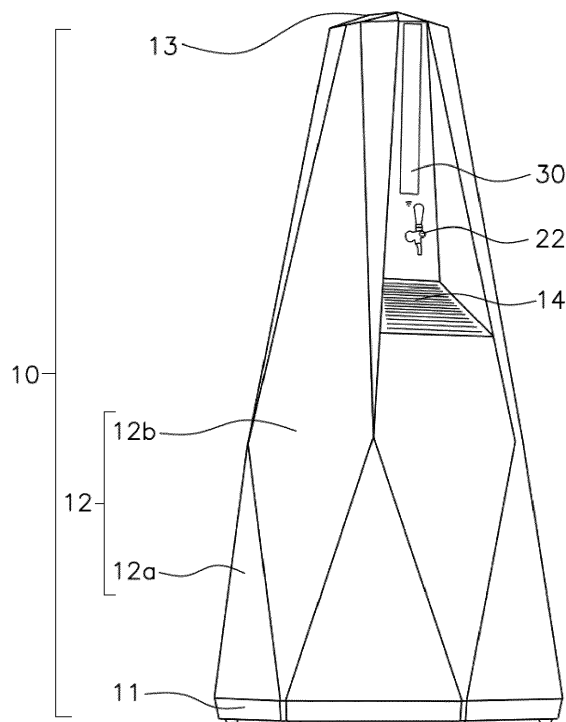


Fig. 1

Description

Technical Field

[0001] The present invention relates to a self-serve beverage dispensing device, provided to allow a user to fill a cup or glass with a predetermined amount of beverage without the intervention of an operator other than the user, controlling the amount dispensed and/or the payment of the amount dispensed and/or the user to whom the beverage is dispensed, by means of a device that is lacking or has very few horizontal or almost horizontal surfaces where cups or glasses can be placed or which are suitable for making it easier to climb on the device.

State of the Art

[0002] Self-serve beverage dispensing devices provided to allow filling up users' cups or glasses automatically without the intervention of an operator other than the user are known.

[0003] Examples of these devices are disclosed by means of patent documents GB2320488, EP2199995, GB2441995, EP2735539 and US2010125362.

[0004] All these patent documents describe devices that can dispense metered amounts of beverages to a user after making payment or after identification of said user, but none of them proposes a dispensing device that includes vandal-proof features which prevent the accumulation of cups or glasses thereon, which prevents it from being used as a platform that users can jump up onto like a platform (particularly in the case of being used in large bars, concerts or festivals), or which prevents objects from being accumulated thereon. Nor are there any proposed solutions which hinder or prevent said vandalistic users from being able to knock over the dispenser.

Brief Description of the Invention

[0005] The present invention relates to a self-serve beverage dispensing device which is provided for being located in public access areas, such as bars, restaurants, hotels, swimming pools, gyms, etc, or in areas where there are large crowds, such as concerts, festivals, sports stadiums, fairs, congresses, etc., said beverage dispenser having vandal-proof properties.

[0006] It has also been provided that they can be easily located or moved, thereby allowing use at one-time events, and then being removed. In all these situations, a self-serve beverage dispensing device offers many advantages, as it allows offering a controlled beverage service without having to be attended to by an operator, all this with the savings that it entails and the non-limited service hours provided.

[0007] The proposed dispensing device has vandal-proof features and includes a casing equipped with a

base, provided for being supported on the ground, and walls and a top part surrounding an inner empty space, the mentioned casing integrating:

- 5 • at least one tank containing a beverage to be dispensed located in the lower half of said casing and within the inner empty space;
- at least one cooling device for cooling the beverage to be dispensed arranged within the inner empty space and connected with the tank containing a beverage to be dispensed, which is at least one in number, by means of conduits;
- 10 • at least one beverage dispenser accessible from outside the casing connected with the cooling device by means of conduits, said beverage dispenser, which is at least one in number, being arranged vertically above at least one serving surface accessible from outside the casing, being located a sufficient distance from the beverage dispensers for placing a cup or glass between the serving surface and the beverage dispenser;
- 15 • at least one measuring device for measuring the amount of beverage dispensed and/or remaining;
- 20 • at least one automatic valve for opening and cutting off the mentioned at least one beverage dispenser;
- 25 • at least one payment detection device and/or a user recognition system;
- 30 • a control unit controlling the mentioned at least one automatic valve and connected to the payment detection device and/or to the user recognition system and to the measuring device for measuring the amount of beverage dispensed and/or remaining.

35 **[0008]** The casing thus contains the main components of the dispensing device inside it, protecting them from being handled by unauthorized operators. Said components include a tank containing a beverage to be dispensed, connected by means of conduits to a cooling device for cooling the beverage to be dispensed, which is in turn connected by means of conduits to at least one beverage dispenser accessible from outside the casing, which allows taking liquids from the tank to the dispenser, passing through the cooling device. Users can obtain the beverage from the beverage dispenser by filling up a cup or glass arranged under said beverage dispenser.

40 **[0009]** A serving surface is located under the vertical of the serving dispenser, which is at least one in number, at a sufficient distance to allow placing a cup or glass under the beverage dispenser. The size of the serving surface will be one that is taken up by a cup or glass located between said serving surface and the beverage dispenser.

45 **[0010]** Furthermore, the dispensing device also includes control elements. The control unit controls the automatic valve for opening and cutting off the beverage dispenser, and is connected to at least one measuring device for measuring the amount of beverage dispensed

and/or remaining inside the tanks containing a beverage to be dispensed. This allows the control unit to open the automatic valve, allowing the beverage to flow through the beverage dispensers, while at the same time controlling the amount of beverage dispensed, therefore knowing when the automatic valve must be cut off because it has dispensed a complete metered amount of beverage.

[0011] The control unit will also be connected to at least one payment detection device and/or a user recognition system, allowing it to know when a user has permission to receive a metered amount of beverage, either because payment was made or because the user was identified, which allows knowing if that user has permission to receive a beverage by means of checking the user's identity in a log that is accessible by the control unit, or allows recording the user's consumptions in a log for later payment.

[0012] The control unit can also optionally have a sensor for correct positioning of the cup or glass below the beverage dispenser, preventing erroneous dispensing, or it can also be envisaged for the beverage dispenser to have a manual dispensing valve, redundant with respect to the automatic valve, the simultaneous opening of the automatic valve by the control unit and the manual valve by the user being required to obtain a metered amount of beverage, thereby assuring that the user has correctly placed the cup or glass before starting with dispensing.

[0013] It is evidently contemplated that the automatic valve can be at any point of the conduit existing between the tank containing a beverage to be dispensed and the beverage dispenser.

[0014] It will be understood that a control unit is a preferably programmable electronic device, such as, for example, a programmable logic controller, a computer, a printed circuit, etc., equipped with a data input, a memory, calculation capabilities and a data output, optionally having an interface that allows communicating information to a user, or that allows a user to modify the configuration of the control unit.

[0015] By way of example, it is proposed that the payment detection device is a credit or debit card reader, or a coin and/or note recognition system, a contactless payment system, or a mobile telephone payment system.

[0016] Likewise, it is proposed that the user recognition system is, in a non-limiting manner, a detector of an identifier given to the user, such as a magnetic card, an RFID emitter, a wristband, a QR code or barcode, or another similar technology, or a biometric detection system detecting a biometric parameter of the user, either by means of fingerprints, iris, or voice scanning, detecting the shape of some part of the body, etc.

[0017] In a novel manner, the present invention proposes that at least one portion of the walls of the casing is inclined in a converging path, preferably at least the upper half of the walls, and that the cross-section of the dispensing device, parallel to the base, has a smaller area the further away from the mentioned base it is. It

will be understood that said converging paths can be curved, for example, forming a spherical cap, or the joining of one or various curved planes in a single axis. Preferably, said inclined portion of the walls of the casing go from the base to the top part of the dispensing device.

[0018] This feature allows the top part of the device to be smaller than the base without having horizontal or almost horizontal surfaces. It also allows the inner hollow space to have a larger size at the base, where the preferably large-sized tanks containing a beverage to be dispensed are located, than at the top, thereby optimizing the general volume of the dispensing device, being able to house a large amount of beverage to be dispensed inside a dispenser having a relatively small volume, and shifting the center of gravity towards the low part of the dispensing device, making it more stable.

[0019] Furthermore, in the event that the dispensing device is pushed horizontally by a malicious user who intends to tip it over, this geometry allows the inclination of its walls to cause a portion of said horizontal thrust to be broken down in the form of a force having a vertical component, reducing the horizontal component of the thrusting force and at the same time increasing the stability of the dispensing device, so it would be much harder to tip it over. This feature allows placing the dispensing device in a self-standing position, without having to be supported by a wall, therefore being accessible from all sides.

[0020] The inclination of the walls also discourages users from urinating on them, because an inclined plane would cause the urine to splash back onto the user's feet.

[0021] Other essential features of the proposed invention are that the top part has a surface area less than 35% of the surface area of the base of the dispenser, and that the walls of the casing, with the exception of the serving surfaces, lack horizontal or almost horizontal zones accessible from outside the casing, making it impossible to place cups or glasses in said zones, and hindering the use thereof as a support point for climbing on the dispensing device.

[0022] It will be understood that an almost horizontal zone will be all of that surface having an inclination of less than 15° with respect to the horizontal. For comprehension purposes, it will also be understood that the top part is the part of the casing covering its top, enclosing the inner space of the casing, regardless of its geometry, being able to be flat, pyramidal, a spherical cap, curved, etc. The top part will typically have an inclination of less than 45° with respect to the horizontal.

[0023] All those essential features described allow the dispensing device to be left unattended in hostile environments and at the mercy of inebriated users, such as at large sporting or music events, for example, without there being a risk of damaging the mentioned dispensing device or of the users thereof being hurt, as a result of the novel vandal-proof features described.

[0024] According to an additional embodiment, the serving surfaces lack horizontal or almost horizontal

zones having a surface area sufficient for inscribing circles 3 cm in diameter, making it impossible to place cups or glasses on said serving surfaces. This feature makes it necessary for the user to hold the cup or glass under the beverage dispenser while dispensing, and assures that no user will forget a full or empty cup or glass in that position, slowing down normal use of the dispensing device.

[0025] It is also proposed that the beverage dispenser, which is at least one in number, does not project from the convex hull of the dispenser. This prevents it from being exposed, which would make it easier to hit it, and would make vandalistic behaviors, such drinking straight from the beverage dispenser, easier. Since it is not exposed, these possibilities are avoided.

[0026] It will be understood that the convex hull is the minimum geometric shape which contains the proposed dispenser, the casing being inscribed in said minimum geometric shape, although there may be empty spaces inside said convex hull.

[0027] It is also envisaged that the serving surface does not project from said convex hull for similar reasons.

[0028] According to a preferred embodiment, said at least one beverage dispenser and its corresponding serving surface are integrated in at least one recess that is withdrawn with respect to the walls of the casing, said recess being accessible from outside the casing but being sunken into the casing and therefore preventing the mentioned elements from being exposed to vandalistic acts.

[0029] Likewise, it is proposed that said at least one serving surface has a slope greater than 30° with respect to the horizontal, which prevents placing cups or glasses thereon and assures a rapid elimination of waste that may be placed on said serving surface.

[0030] Additionally, it is considered preferable for the surface area of the horizontal or almost horizontal zone of the top part to be less than 35% of the surface area of the base of the dispenser, for example being less than 20%, 10% or even being equal to zero. It is also contemplated that the horizontal surface of the top part, without considering the almost horizontal surface, has a surface area less than 35%, or 20%, or 10% of the surface area of the base of the dispenser, even being able to be equal to zero.

[0031] Preferably said horizontal zone, or said horizontal or almost horizontal zone, will have a size such that it is not possible to inscribe a circle 25 cm in diameter, which would greatly hinder a person standing on said top part.

[0032] These novel features described above provide a beverage dispensing device on which it would be very difficult to place cups or glasses, that is very difficult to climb on and that lacks a top part with an upper surface that can be reached or on which a large object can be easily maintained or a user can easily stand.

[0033] All these features, together with the robustness of the casing, make the proposed beverage dispenser

an element with vandal-proof features, because it makes it impossible to use it as a platform that can be jumped up on, and it prevents the accumulation of cups, glasses and other elements such as jackets, purses, backpacks, etc., on the upper part thereof, or on any surface, making it ideal for large events where alcohol is served, because it allows being located in a crowd without requiring constant supervision of an operator.

[0034] The preferred use for the proposed dispensing device is dispensing beer, but other beverages, both alcoholic and non-alcoholic beverages, are also contemplated.

[0035] Additionally, it is proposed that its convex hull, the minimum geometric shape which contains the proposed dispenser, has a general geometry that is conical, frustoconical, having a circular base, or a pyramidal or frustopyramidal geometry having a polygonal base.

[0036] It will be understood that a pyramid can have any number of triangular sides greater than two.

[0037] According to a specific embodiment proposed, the geometry of the dispensing device is defined as a convex hull in the form of a regular pyramid having a hexagonal base and equipped with six inclined faces having a basic triangular shape which converge at their upper edge, the upper end of the pyramid being horizontally truncated, and the six lower corners of the pyramid, close to the six vertices of the base, being truncated by means of six vertical planes, each of them defined by a vertical line and by a line joining the center of one side of the hexagonal base with the center of another side of the contiguous hexagonal base, each of said truncations generating a triangular-shaped vertical plane, and each of the six basic triangular faces of the pyramid being cut in the form of a rhombus.

[0038] This geometry offers a casing having a general frustopyramidal shape with six faces, the lower third of which has been cut at the tips, reducing the base thereof and giving said lower third a hybrid geometry mixing a hexagonal prism with a hexagonal pyramid.

[0039] According to another embodiment of the present invention, the dispensing device has a plurality of beverage dispensers, arranged in radial symmetry, accessible from different faces of the dispenser. In other words, it has several beverage dispensers located on different faces of the dispensing device, which in this configuration could be of a self-standing nature accessible from different sides, thereby increasing the serving capacity as two, three, four or more users could be served simultaneously.

[0040] The dispensing device preferably has three beverage dispensers distributed with a regular angular separation, or four beverage dispensers distributed with a regular angular separation.

[0041] It is contemplated that all the dispensers of one and the same device dispense one and the same beverage, or that they provide different beverages, also being able to envisage that the users have a selector available that allow them to choose, from among a limited

range of beverages, the beverage to be dispensed from a specific dispenser, for example from among different types of beer. It is also envisaged that users only have access to one type of beverage, for example only to alcohol-free beer, or that they have previously selected their preferred type of beverage, and that when they identify themselves in the dispensing device they are only provided that type of beverage to which they have access or which they have previously selected. Logically, to carry out these embodiments it will be necessary for the tanks containing beverages to be dispensed to include different tanks containing different beverages.

[0042] It is also proposed that the inner empty space of the casing is distributed in three levels arranged one above another, a lower level containing at least the tank containing a beverage to be dispensed, which is at least one in number, and the upper level containing at least the control unit.

[0043] This distribution of the content allows arranging them such that the ones having the largest volume and weight are located at the base, whereas the lighter and smaller ones are concentrated at the top, thereby achieving a very low center of gravity of the dispensing device, making it very stable and hindering, for example, vandalistic users from being able to tip it over by pushing it from the sides. This distribution also allows the volume of the dispensing device to have a smaller height, being able to adopt, for example, the previously mentioned conical or pyramidal geometry, equipped with inclined walls. Another additional advantage of this distribution of the elements is that the elements that can be ruined if they get wet are all located above the elements for handling the beverage, so the control unit would not be damaged even if there was an accidental break or spillage of the beverage.

[0044] According to another preferred embodiment, the lower level also houses pressurized gas cylinders connected with the tanks containing a beverage to be dispensed for driving said beverage from the tanks containing a beverage to be dispensed to the beverage dispenser, which is at least one in number, and/or at least one tank containing overflow beverage connected to at least one filtration surface coinciding with the serving surface, for collecting the beverage that overflows while dispensing.

[0045] This arrangement allows the dispensing device to be an independent device with external connections for liquids, gas and for draining, which makes setting it in its location easier, and allows gathering the supply of consumables and the tanks containing overflow beverage that must be periodically emptied in the low part of the device, making the replacement thereof easier without having to carry weights.

[0046] The walls of the casing have at least one door providing access to said lower level of the casing, which makes access to that lower part where consumables are gathered easier, and a door providing access to the intermediate level.

[0047] According to another proposed embodiment, the lower level also houses said at least one cooling device for cooling the beverage to be dispensed which will optionally be housed inside a closed compartment separate from the rest of the inner space of the casing. Said closed compartment will have its own ventilation independent from the possible ventilation of the rest of the inner space of the dispensing device, the closed compartment therefore being equipped with an external air inlet and an external air outlet, both of which are separated from and independent of one another, which allows air circulation through the inside of the closed compartment, causing the extraction of heat from same, preferably causing forced air circulation by means of a fan, for example. Said external air inlet and outlet will preferably be located at the base of the dispensing device, therefore being protected from the entry of liquids or rain, from the insertion of foreign bodies by users, and being concealed. This allows being able to clean the dispensing device with a hose, or with pressurized water without there being any risk of the entry of water through said external air inlet and outlet.

[0048] Optionally, the inclusion of a door in the lower level providing access to the inside of said closed compartment for maintenance purposes is furthermore proposed.

[0049] It is also proposed that the dispensing device includes a door providing access to the upper level of the casing.

[0050] It is also considered that the different doors have different locks and different keys, which allows providing a specific user access to only one of the levels and not to the others, for example those which are reserved for maintenance workers.

[0051] The location of the cooling device in the lower level also contributes to physically lowering the center of gravity of the assembly, as it is a very heavy element which contains a tank that is filled water for the operation thereof.

[0052] Every time the tanks containing beverages to be dispensed run out of beverage, an operator must replace or refill them through the mentioned door, taking advantage, if needed, to replace or refill the pressurized gas cylinders and to empty or replace the tanks containing overflow beverage.

[0053] To make said operation easier in the event that the dispensing device has at least three tanks containing beverages to be dispensed, it is proposed that they are located on a rotating platform arranged at the bottom of the empty space, which allows arranging any of said tanks such that they are facing said door.

[0054] It is proposed that the intermediate level contains at least one of the following features:

- a distribution board of the dispensing device;
- at least one measuring device for measuring the amount of beverage dispensed and/or remaining;
- at least one automatic and/or manual valve for open-

ing and cutting off the mentioned at least one beverage dispenser (22);

- a bleed valve for the beverage conduits carrying the beverage to be dispensed;
- at least one fill inlet in the cooler for filling it with water.

[0055] These elements allow switching the dispensing device on and off, which requires certain maintenance operations such as, for example, emptying the conduits carrying the beverage to switch the device off, or filling the cooler with water to switch the device on, in addition to controlling the electrical switches and/or hydraulic or pneumatic valves. It is therefore proposed to centralize all these control elements in the intermediate level, being accessible through a specific door of the intermediate level accessible to operators responsible for switching the dispensing device on and off.

[0056] It is optionally proposed that where the base, the walls and the cover are attached to an inner tubular frame, and where at least a fraction of the frame coinciding with the mentioned upper level is removably attached to the rest of the frame by means of reusable, removable connectors, and supports said at least one control unit, which is electrically and electronically connected to the rest of the components of the dispensing device by means of reusable, removable connectors. The cover of the dispensing device will also be supported on said upper fraction of the frame.

[0057] It will be understood that a removable attachment is one that can be detached without requiring cutting tasks, and it will likewise be understood that reusable, removable connectors are those which can provide a connection between two elements, but which also allow being disconnected without requiring cutting operations, being able to be released to be attached again without being replaced. These reusable, removable connectors can refer to mechanical connectors transmitting stress, such as, for example, screws, pins, jaws, clamps, etc., to electrical or signal connectors, such as sockets having different formats, and also to hydraulic or pneumatic connectors, such as cylindrical quick connectors, bushings, etc.

[0058] In other words, at least the upper level of the casing has a frame that is independent of the frame of the rest of the casing and connected thereto by means of screws, for example.

[0059] The mentioned control unit housed in said upper level will also be supported on said independent portion of the frame and connected to the components housed in other levels by means of said reusable, removable, electric, electronic, hydraulic and/or pneumatic connectors.

[0060] This feature allows, in the event of a problem or malfunction of the control unit of the dispensing device, being able to remove only said defective part and replacing it with another that is operative in a short period of time, and it allows the broken part to be taken to a workshop for repair, it being much easier to take a part of the

device, which could be moved manually, than it is to take the entire dispensing device which may have such a high weight that it is difficult to handle without tools.

[0061] It is additionally contemplated that the mean cross-section of the upper level of the device has a surface that is smaller than the mean cross-section of the intermediate level and/or the mean cross-section of the lower level. It will be understood that the cross-section is that section parallel to the base.

[0062] Therefore, it is proposed that the mean section of the different levels decreases, the upper levels being narrower than the lower levels, which provides a device having a decreasing section. According to another embodiment, the control unit is connected with wireless communication means that allow transmitting relevant information to a remote terminal, the information being in relation to the amount of beverage dispensed, the amount of beverage remaining, the information received through the payment detection device and/or user recognition system, and/or that allow receiving information or control orders from said remote terminal. This allows an operator to remotely control the dispensing device and to know its state, also allowing said remote operator to modify its operating parameters, said operator being able to remotely control a plurality of dispensing devices simultaneously. This feature will allow the mentioned remote operator to know when new supplies are required and to be able to supply them before they run out, or without requiring periodic on-site supply verification operations, with the subsequent savings in terms of workers.

[0063] The casing can also integrate a battery feeding electricity to the control unit and the other devices requiring electric power for operation, the dispenser being independent of the power grid.

[0064] This allows the proposed dispensing device to be completely independent, and allows it to be located in positions far from power supply points, although it will require periodic operations to replace the dead batteries with other charged batteries, or periodic charging operations by means of connecting to the power grid. This feature offers advantages particularly at one-time events having a duration limited to a few hours, such as concerts or sporting events, for example, since the batteries can last long enough to assure the power supply for the entire duration of the mentioned one-time event.

[0065] It is also proposed that the lever integrates a detector detecting the presence of a cup below its vertical, which thereby allows dispensing the liquid only when said sensor confirms the presence of a cup, and which also allows not having to install a manual valve, or manual actuator that has to be operated by the user, with the subsequent risk that it will be misused, that excessive force will be applied or that it will break.

[0066] According to an additional proposal, the casing can further include external air inlets located below the lower level, and/or located at the base, and/or located between the base and the walls of the casing, and in that

the casing also includes air outlets located above the upper level, and/or at the top part, and/or located between the walls and the top part, the three levels being communicated, allowing air circulation from the base to the top part, passing through the three levels and cooling the components housed in the casing. Said position of the air inlets and outlets prevents the presence of openings in the walls of the device, where the users could introduce foreign elements or liquids inside the device, or where rainwater could leak in. Furthermore, the position of the inlets at the lower and upper ends assures an upward airstream by convection, since the heat dissipated inside the casing by the beverage cooling device and by the electronics, as well as the possible sun striking the casing, will heat the inner air, causing it to flow upwards and accumulate at the highest part or upper level, where it will be expelled through the external air outlet, causing an entry of renewed and fresher air through the base of the device, thereby cooling the inside of the casing.

[0067] It is optionally proposed that said upward air circulation is driven by means of at least one fan installed inside the casing. This will allow increasing the renewal of inner air and therefore allow assuring a lower temperature of said inner air, achieving a more efficient operation of the systems forming it.

[0068] It is also contemplated that at least the walls of the dispensing device are thermally insulated, which prevents excessive heating from being able to happen inside it and increases its resistance to heating in the case of direct solar incidence. It could also allow cooling the inside of the dispensing device to assure a correct temperature of the tanks containing beverage and gas, preventing dangerous overheating.

[0069] It is also proposed that the serving surface is an inclined filtration plane connected to a tank containing overflow beverage arranged inside the empty space, next to the tanks containing a beverage to be dispensed.

[0070] The base of the dispensing device can also include at least one of the following features:

- two elongated housings parallel to one another and parallel to the base, accessible from the front of the dispensing device, and provided for the insertion of forks of a forklift truck;
- a plurality of wheels to make it easier to move the dispensing device;
- a plurality of adjustable telescopic legs for stabilizing the dispensing device;
- at least one beveled front portion to allow it to access ramps.

[0071] Above the top part of the dispensing device, it is envisaged that, according to an alternative embodiment, advertising elements such as banners or posters can be included, or that elements for improving its placement, such as posts, or functional elements, such as a sunshade, for example, can be included.

[0072] It will be understood that feeding the beverage

to dispensing device from a tank outside of said dispensing device does not at all alter the proposed invention.

[0073] The addition of advertising elements or advertising displays on the surface of the walls of the dispensing device is also contemplated.

[0074] Another additional feature is to incorporate, associated with each of said beverage dispensers, an information display transmitting information to the user, said information display being connected to the control unit. The information that is shown can be related to the amount of beverage consumed by a user, to the credit introduced, to the amount of beverage remaining to be served, to the beverage dispensing start time, to the time remaining to obtain the beverage to be dispensed, etc.

[0075] It will be understood that references to geometric positions, such as, for example, parallel, perpendicular, tangent, etc., allow for deviations of up to $\pm 5^\circ$ with respect to the theoretical position defined by said nomenclature.

[0076] Other features of the invention can be seen in the following detailed description of an embodiment.

Brief Description of the Drawings

[0077] The preceding and other advantages and features will be better understood based on the following detailed description of an embodiment in reference to the attached drawings, which must be interpreted in an illustrative and non-limiting manner, in which:

Figure 1 shows a first side elevational view of the dispensing device according to a first embodiment equipped with six faces, three of them equipped with beverage dispensers;

Figure 2 shows a second side elevational view of the dispensing device according to the embodiment shown in Figure 1;

Figure 3 shows a plan view of the dispensing device according to the embodiment shown in Figure 1;

Figure 4 shows a bottom view of the dispensing device according to the embodiment shown in Figure 1;

Figure 5 shows a side elevational view of the dispensing device according to the embodiment shown in Figure 1, in which the casing has been eliminated, exposing the base and structural frame supporting the inner elements of the dispensing device;

Figure 6 shows a first side elevational view of the dispensing device according to a second embodiment, also equipped with six faces, three of them equipped with beverage dispensers;

Figure 7 shows a perspective view of the dispensing device according to the embodiment shown in Figure 6, in which two doors of the lower level of the beverage dispenser are shown to be open, providing access to the tanks containing a beverage to be dispensed, and one door of the intermediate level of the beverage dispenser is shown to be open, providing access to control and adjustment elements

(not shown) of the beverage dispensing device;
Figure 8 shows a perspective view of the dispensing device according to the embodiment shown in Figure 6, in which the tubular frame is shown to be bare, lacking walls, showing the main inner elements of the dispenser.

Detailed Description of an Embodiment

[0078] The present invention shown in the attached drawings with an illustrative and non-limiting character describes a self-serve beverage dispensing device having a general geometry, an arrangement of components and technical features that make it suitable for its independent, unattended use in locations where there are a lot of people, such as bars, restaurants, hotels, sports facilities, theaters, movie theaters, etc., and at events with large crowds, such as concerts, festivals, sporting events, fairs, congresses, etc.

[0079] The dispensing device is made up of a casing 10 formed, according to a first illustrative embodiment shown in Figure 1, and according to a second embodiment shown in Figure 6, by a hexagonal base 11 intended for being supported on the ground, walls 12 and a top part 13, said casing 10 defining an inner hollow space that houses the main components of the proposed dispensing device. Said walls 12 and top part 13 are anchored onto a tubular frame 15 integrated inside said inner hollow space.

[0080] The geometry of the casing 10 is provided to hinder a person from being able to climb on the dispensing device and sit or stand on it, while at the same time hindering the accumulation of objects on the top part 13 and the use thereof as a bar for accumulating cups or glasses, and it assures a low center of gravity and being difficult to tip over when being pushed, as a result of having inclined walls, which breaks down horizontal forces, thereby increasing its stability.

[0081] All this is achieved by preventing the existence of horizontal or almost horizontal surfaces (with an inclination of $\pm 15^\circ$ with respect to the horizontal), accessible from outside the casing 10 in the walls 12 of the casing 10, and offering a very small-sized top part 13, said top part 13 in the first and second embodiments described having a size less than 20% the size of the base 11 of the casing 10, and preferably not being planar, but rather convex.

[0082] Furthermore, the top part 13 is preferably inclined more than 15° , making it impossible to store objects or for a user to sit or stand on same.

[0083] In all the embodiments described, the walls 12 lack horizontal or almost horizontal surfaces, or surfaces on which circles more than 3 cm in diameter can be inscribed, and it therefore lacks surfaces on which cups or glasses can be stably placed.

[0084] According to both embodiments shown in the attached drawings, the casing has a hexagonal base 11, and a triangular vertical wall 12a stems from each of its

edges, whereas a rhombus-shaped inclined wall 12b stems from each of its vertexes which is laterally attached in the lower half thereof to said triangular vertical walls 12a and laterally attached in the upper half thereof with the other rhombus-shaped walls 12b. The six rhombus-shaped walls 12b have paths converging in an upper vertex, but are truncated forming the top part 13 of the casing 10.

[0085] So the general shape of the dispensing device is that of a regular pyramid having a hexagonal base with its upper vertex horizontally truncated and its six lower vertices vertically truncated by six vertical planes.

[0086] In a similar manner, it is proposed that the dispensing device has an analogous geometry having a triangular, square or octagonal base.

[0087] This geometry provides other advantages, such as an inner hollow space that is wider at the base, a lower center of gravity, etc.

[0088] Said walls 12, base 11 and top part 13 are attached to a tubular frame 15 attaching them to one another and supporting them, said tubular frame 15 being an assembly of attached tubes forming a rigid structure defining the general geometry of the dispensing device, leaving the inner space free. The walls 12 are attached and fixed to said tubular frame 15 such that their joints are sealed, preventing the entry of water or foreign bodies, and said walls 12 integrating one or more doors 16 to obtain access to the inside of the dispensing device.

[0089] The embodiment in Figure 7 shows open doors 16 intended for providing access to the tanks 20 containing beverages housed in the low part of the dispensing device, said doors being made up of two contiguous triangular vertical walls 12a connected to a lower triangular portion of a rhombus-shaped inclined wall 12b. The same drawing shows another open door 16 intended for providing access to an intermediate level N2 of the dispensing device, said door 16 being an intermediate portion of a rhombus-shaped inclined wall 12b.

[0090] In all the embodiments shown in the attached drawings, in one or more of the rhombus-shaped walls 12b there are arranged sunken recesses housing beverage dispensers 22 through which users can obtain their metered amount of beverage after making payment or after being identified, without said beverage dispensers 22 projecting from the plane formed by said rhombus-shaped walls 12b.

[0091] Said sunken recesses also house a serving surface 14 arranged such that it is vertically aligned below each beverage dispenser 22, including a filtration surface for collecting any beverage spillage. An information display 30 is also incorporated inside said sunken recess providing the user with relevant information relating to consumption.

[0092] In the first and second embodiments shown in the attached drawings of a pyramidal shape having a hexagonal base, beverage dispensers 22 are arranged in three alternating rhombus-shaped walls 12b, accessible from three different sides of the dispensing device,

which allows serving more people in less time and with shorter lines, using smaller-sized self-standing dispensing devices.

[0093] The inside of the empty space defined by the casing 10 houses the main components of the device, organized in three levels arranged one above another, as shown in Figure 5, corresponding to the first embodiment, and in Figure 8, corresponding to the second embodiment.

[0094] In both the first and the second embodiments, the tanks 20 containing a beverage to be dispensed, as well as pressurized gas cylinders 23 connected with said tanks 20 containing a beverage to be dispensed for driving the beverage to the beverage dispensers 22, are located in a lower level N1. This lower level N1 also houses tanks containing overflow beverage (not shown), where that beverage which has been dispensed through the beverage dispensers 22 but collected by said filtration surface of the serving surface 14 as it was not collected by the user is stored.

[0095] According to the second embodiment shown in Figure 8, the lower level N1 also contains a cooling device 21 for cooling the beverage to be dispensed, through which the beverage to be dispensed circulates after exiting the tank and before exiting through the beverage dispenser 22. This cooling device 21 is of the type normally used in the sector, but in the present embodiment it is proposed that it is contained in a closed compartment 21a separate from the rest of the inner space of the dispensing device and equipped with independent ventilation with respect to the rest of the dispensing device to prevent the heat generated by said cooling device from being able to heat up other components of the dispensing device. It is proposed that the mentioned independent ventilation consists of an external air inlet and an external air outlet that are independent and separated from one another, housed at the base 11, and connected to a fan causing the entry and exit of the air. It is proposed that the lower level N1 contains doors to allow changing the tanks containing a beverage to be dispensed and the gas cylinders 23, as well as an independent door for maintenance of the cooling device 21.

[0096] Alternatively, and according to the first embodiment shown in Figure 5, said cooling device 21 is located in an intermediate level N2 arranged above the lower level N1. In such case, said cooling device 21 would be cooled by means of an upward airstream going through the entire inner cavity of the dispensing device from the base 11, where it would enter through inlets or slits, to the top part 13, where it would be expelled through outlets or slits, said airstream being the same airstream responsible for cooling the rest of the elements making up the dispensing device.

[0097] In contrast, and according to the second embodiment shown in Figure 8, said intermediate level N2 would contain control and adjustment elements necessary for switching the dispensing device on and off, such as a distribution control board, which allows opening or

closing off the electric current passage to the whole of the device or to its parts independently. It can also contain hydraulic or pneumatic valves regulating the passage of beverage to be dispensed or of the gas of the gas cylinders 23, allowing opening or closing off the passage of fluid to a specific beverage dispenser 22, to all of them, or allow emptying the conduits so they can be cleaned or stored. Different sensors can also be housed in said intermediate level N2. All these elements included in the mentioned intermediate level N2 are accessible through at least one door made in the walls 12 of the dispensing device.

[0098] In both the first and second embodiments, it is proposed that an upper level N3 arranged above the intermediate level N2 houses a control unit 40, which in this embodiment will be a PLC (programmable logic controller), programmed to serve just the right amount of beverage to users who obtain permission after making payment or after being identified, by means of said payment detection device or said user identification device (not shown) connected to the control unit 40; also the different sensors and the different automatic actuators, such as electrovalves, for example, integrated in the dispensing device, will be connected to said control unit 40.

[0099] To perform such control, the PLC will be connected to an automatic valve for opening and cutting off each of the beverage dispensers 22, allowing or preventing the passage of beverage through each of them. It will also be connected to a measuring device for measuring the amount of beverage dispensed or remaining to allow a precise metering of the dispensed metered amount, and to one or more payment detection devices and/or user recognition systems, preferably one for each beverage dispenser.

[0100] As an alternative embodiment, a user recognition system by means of a detector detecting RFID wristbands previously supplied to accredited users either by means of pre-payment or by means of recording consumption for later payment, is proposed. Means of payment through electronic devices, such as for example, through a mobile telephone, or by means of biometric detection, for example, are also envisaged.

[0101] This also allows, in the event of dispensing alcoholic beverages, only dispensing to those who have been found to meet age requirements, for example, by means of a prior registration before giving them said wristbands or before registering them in the system.

[0102] The preferred use of the proposed dispensing device is for dispensing beer.

[0103] In the two embodiments shown in the attached drawings, the control unit 40 is also connected to displays 30 located above each of the beverage dispensers and visible from outside the casing, on which information is provided to users about their beverage consumption, about the amount of money spent or remaining, or advertising information.

[0104] The walls 12, base 11 and top part 13 are attached and supported by means of a tubular frame 15

defining a rigid structure. A portion of said tubular frame 15 corresponding to the upper level N3 is independent from the rest of the tubular frame 15 and is removably attached thereto by means of reusable, removable connectors, such as screws or clamps, for example.

[0105] The control unit 40 will be supported in said removable portion of the tubular frame 15, and electrically and electronically connected to the rest of the components by means of reusable, removable connectors, for example, current or data sockets. This allows, if needed, said upper portion of the tubular frame 15, together with the control unit 40, to be quickly removed for repair or replacement with an operating control unit 40. The top part 13 and the portions of the walls 12 covering said removable portion of the tubular frame 15 can be also replaced with said removable portion of the frame, or separated from the frame and again placed on the replacement after it is placed.

[0106] It is also proposed, as shown in Figures 6 to 8 corresponding to the second embodiment, but also applicable to the first embodiment or others, to include one or all of the following features:

the base 11 of the dispensing device integrates three wheels 41 projecting from the lower face, arranged in a triangle, at least one of them being able to be self-aligning;

the base 11 of the dispensing device integrates three adjustable telescopic legs 42 arranged in a triangle that allow the seating of the dispensing device, the fixing and leveling thereof, said telescopic legs 42 being able to be arranged sandwiched between the mentioned wheels and equidistant from same;

a beveled front portion 43 is included at one end of the lower face of the base 11, such that the access of the dispensing device to ramps is made easier; two elongated housings 44 parallel to one another and parallel to the base, accessible from the front of the dispensing device and provided for the insertion of forks of a forklift truck are included.

Claims

1. A self-serve beverage dispensing device with vandal-proof features, including a casing (10) equipped with a base (11), provided for being supported on the ground, and walls (12) and a top part (13) surrounding an inner empty space, the mentioned casing integrating:

- at least one tank (20) containing a beverage to be dispensed located in the lower half of said casing and within the inner empty space;
- at least one cooling device (21) for cooling the beverage to be dispensed arranged within the inner empty space and connected with the tank (20) containing a beverage to be dispensed,

which is at least one in number, by means of conduits;

- at least one beverage dispenser (22) accessible from outside the casing (10) connected with the cooling device (21) by means of conduits, said beverage dispenser (22) which is at least one in number being arranged vertically above at least one serving surface (14) accessible from outside the casing (10), being located a sufficient distance from the beverage dispensers (22) for placing a cup or glass between the serving surface (14) and the beverage dispenser (22);

- at least one measuring device for measuring the amount of beverage dispensed and/or remaining;

- at least one automatic valve for opening and cutting off the mentioned at least one beverage dispenser (22);

- at least one payment detection device and/or a user recognition system;

- a control unit (40) controlling the mentioned at least one automatic valve and connected to the payment detection device and/or to the user recognition system and to the measuring device for measuring the amount of beverage dispensed and/or remaining;

characterized in that

- the top part (13) has a surface area less than 35% of the surface area of the base (11) of the dispensing device; and

- at least one portion of the walls (12) of the casing (10) are inclined in a converging path, an area of the cross-section parallel to the base of the dispensing device being smaller the further away it is from the base;

- the dispensing device has a self-standing nature accessible from different sides;

- the walls (12) of the casing (10), with the exception of the serving surfaces (14), lack horizontal or almost horizontal zones accessible from outside the casing (10), such that climbing on the dispensing device is hindered.

2. The dispensing device according to claim 1, wherein at least one of the following additional features is further included:

- said at least one beverage dispenser (22) does not project from the convex hull of the dispensing device;

- said at least one serving surface (14) does not project from the convex hull of the dispensing device;

- said at least one beverage dispenser (22) and said at least one serving surface (14) are inte-

- grated in at least one recess that is withdrawn with respect to the walls (12) of the casing (10);
- said at least one serving surface (14) lacks horizontal or almost horizontal zones having a surface area sufficient for inscribing circles 3 cm in diameter;
 - said at least one serving surface (14) has a slope greater than 30° with respect to the horizontal.
3. The dispensing device according to claim 1 or 2, wherein
- the convex hull of said dispensing device has a general geometry selected from: conical or frustoconical having a circular base, pyramidal or frustopyramidal having a polygonal base; or wherein
 - the casing has a hexagonal base (11), and a triangular vertical wall (12a) stems from each of its edges, whereas a rhombus-shaped inclined wall (12b) stems from each of the hexagonal base vertices, being said rhombus-shaped inclined wall laterally attached in the lower half thereof to said triangular vertical walls (12a) and laterally attached in the upper half thereof with the other rhombus-shaped walls (12b), the six rhombus-shaped walls (12b) having paths converging in an upper vertex but being truncated, forming the top part (13) of the casing (10).
4. The dispensing device according to any one of the preceding claims, wherein a plurality of beverage dispensers (22) are arranged around the dispensing device with a regular angular separation, being accessible from different faces of the dispensing device.
5. The dispensing device according to any one of the preceding claims, wherein the inner empty space of the casing (10) is distributed in a lower level (N1), an intermediate level (N2) and an upper level (N3) arranged one above another, at least the lower and intermediate levels being equipped with independent access doors, and wherein said lower level (N1) contains said at least one tank (20) containing a beverage to be dispensed; and wherein the mentioned upper level (N3) contains at least said control unit (40).
6. The dispensing device according to claim 5, wherein the base (11), the walls (12) and the cover (13) are attached to an inner tubular frame, and wherein at least a fraction of the frame coinciding with the mentioned upper level (N3) is removably attached to the rest of the frame by means of reusable, removable connectors, and supports said at least one control unit (40), which is electrically and electronically connected to the rest of the components of the dispensing device by means of reusable, removable connectors.
7. The dispensing device according to claim 5 or 6, wherein said lower level (N1) further contains at least one of the following features:
- at least one pressurized gas cylinder (23) connected with the tanks (20) containing a beverage to be dispensed;
 - at least one tank containing overflow beverage connected to at least one filtration surface coinciding with the serving surface (14);
 - at least one access door provided in the lower level walls (12);
 - at least one cooling device (21) for cooling the beverage to be dispensed;
 - at least one cooling device (21) for cooling the beverage to be dispensed housed inside a closed compartment (21a), separate from the rest of the inner space of the casing, equipped with an external air inlet and an external air outlet separated from one another and exclusive for said closed compartment (21a);
 - at least one cooling device (21) for cooling the beverage to be dispensed housed inside a closed compartment (21a), separate from the rest of the inner space of the casing, equipped with an external air inlet and an external air outlet separated from one another and exclusive for said closed compartment (21a), said external air inlet and external air outlet being housed at the base of the dispensing device.
8. The dispensing device according to claim 5, 6 or 7, wherein the intermediate level (N2) includes at least one of the following features:
- a distribution board of the dispensing device;
 - at least one measuring device for measuring the amount of beverage dispensed and/or remaining;
 - at least one automatic and/or manual valve for opening and cutting off the mentioned at least one beverage dispenser (22);
 - a bleed valve for the beverage conduits carrying the beverage to be dispensed;
 - at least one fill inlet in the cooling device for filling it with water.
9. The dispensing device according to any one of the preceding claims, **characterized in that** the control unit (40) is connected with wireless communication means that allow receiving relevant information from and transmitting relevant information to a remote terminal, said relevant information being selected from: the amount of beverage dispensed, the amount of

beverage remaining, information received through the payment detection device and/or through the user recognition system, control orders.

10. The dispensing device according to any one of the preceding claims, **characterized in that** the beverage dispenser integrates a detector detecting the presence of a cup below its vertical. 5

11. The dispensing device according to claim 5, **characterized in that** the casing includes external air inlets located below the lower level (N1), and/or located at the base (11) and/or located between the base (11) and the walls (12) of the casing, and **in that** the casing also includes air outlets located above the upper level (N3), and/or in the top part (13), and/or located between the walls (12) and the top part (13), the three levels being communicated, allowing air circulation from the base to the top part, passing through the three levels and cooling the components housed in the casing. 10
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12. The dispensing device according to claim 14, **characterized in that** said air circulation is driven by means of at least one fan installed inside the casing generating an upward airflow inside the casing. 25

13. The device according to any one of the preceding claims, wherein at least the walls of the dispensing device are thermally insulated. 30

14. The dispensing device according to any one of the preceding claims, **characterized in that** the base of the dispensing device includes at least one of the following features: 35
 - two elongated housings (44) parallel to one another and parallel to the base, accessible from the front of the dispensing device, and provided for the insertion of forks of a forklift truck; 40
 - a plurality of wheels (41) to make it easier to move the dispensing device;
 - a plurality of adjustable telescopic legs (42) for stabilizing the dispensing device;
 - at least one beveled front portion (43) to allow it to access ramps. 45

15. The dispensing device according to any one of the preceding claims, wherein associated with each of said beverage dispensers there is an information display transmitting information to the user, said information display being connected to the control unit (40). 50

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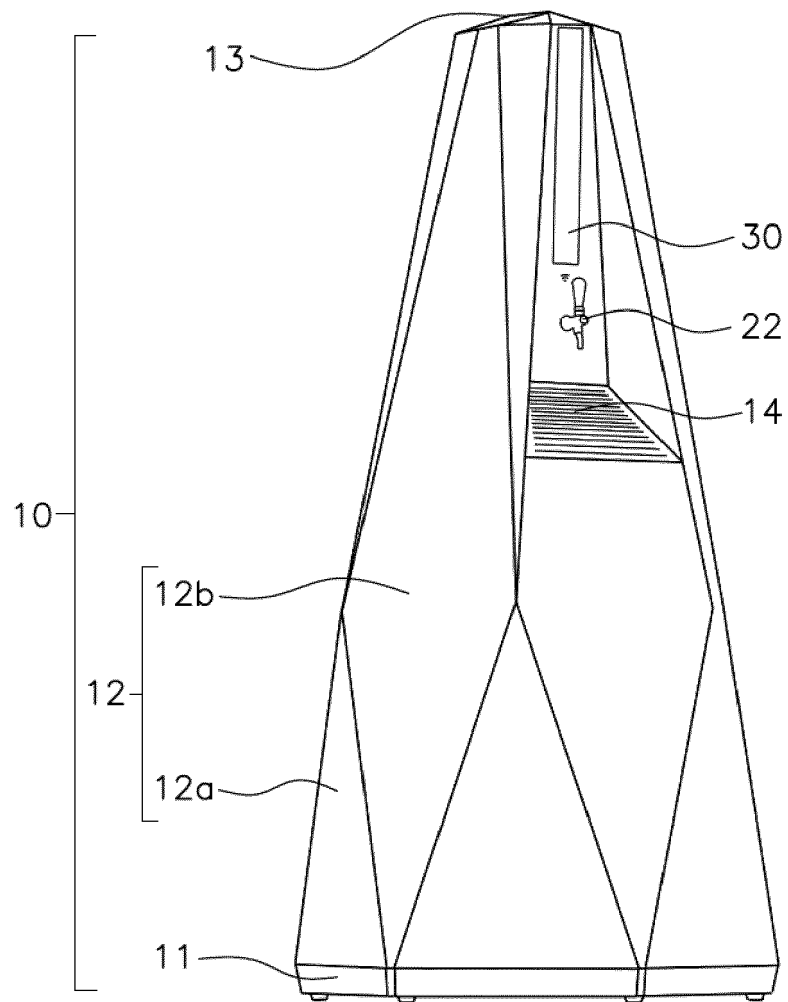


Fig. 1

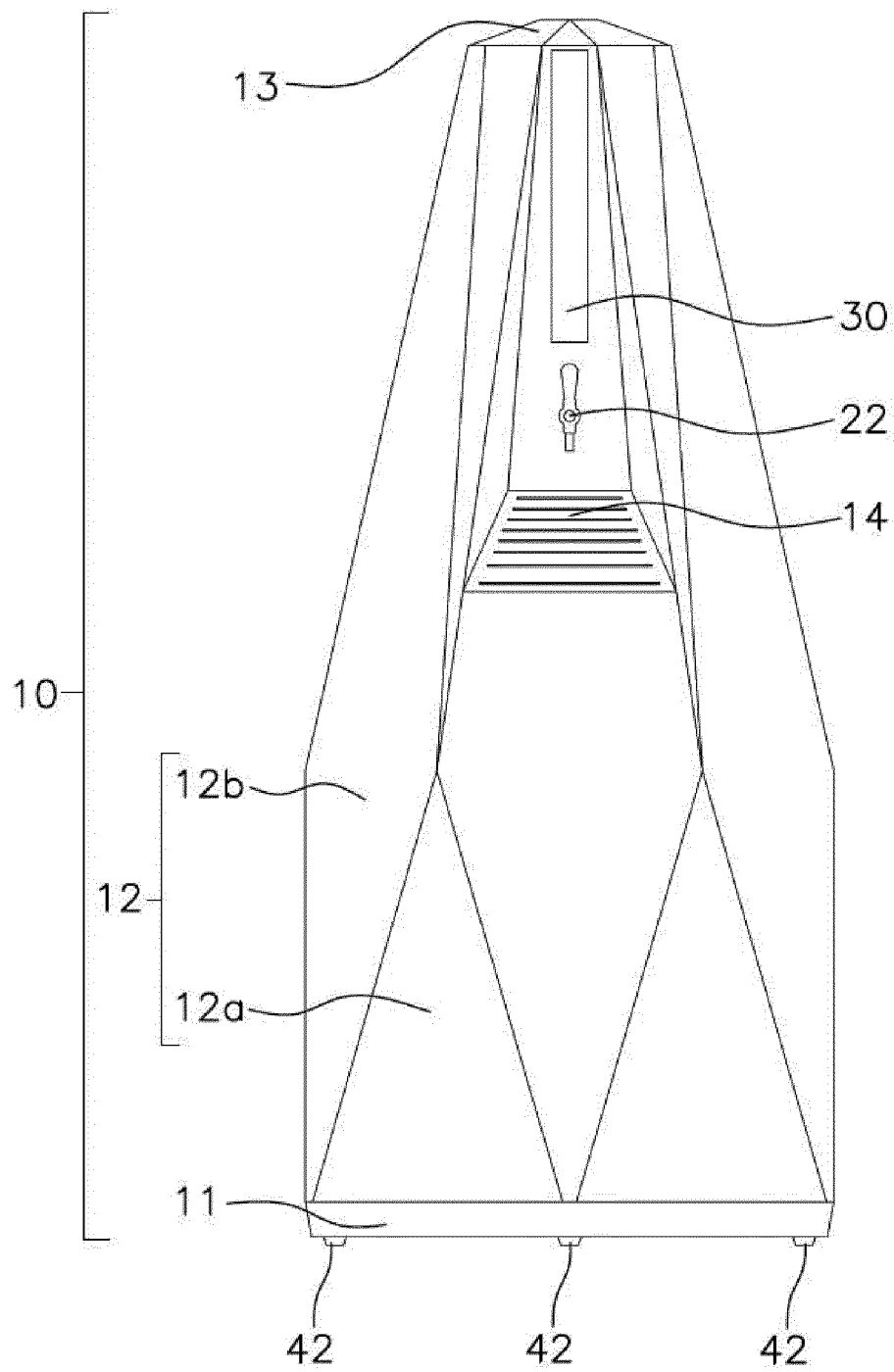


Fig.2

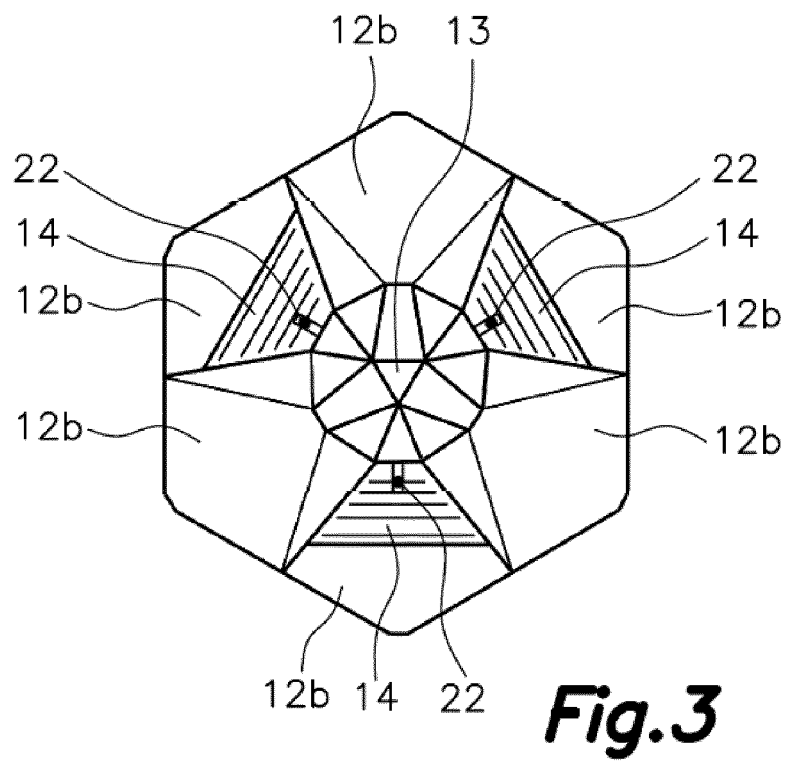


Fig. 3

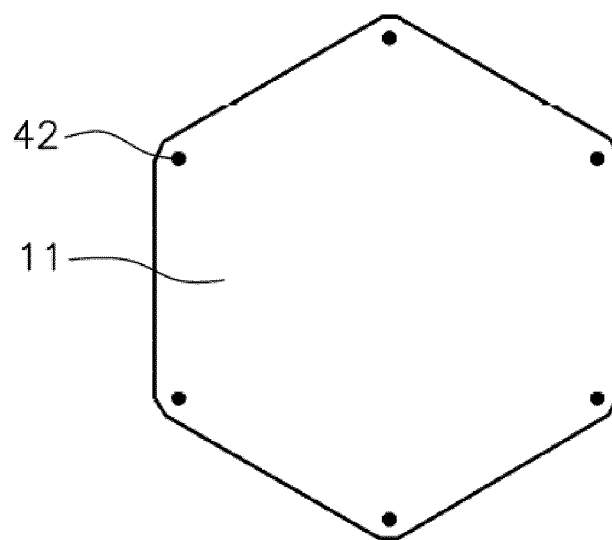


Fig. 4

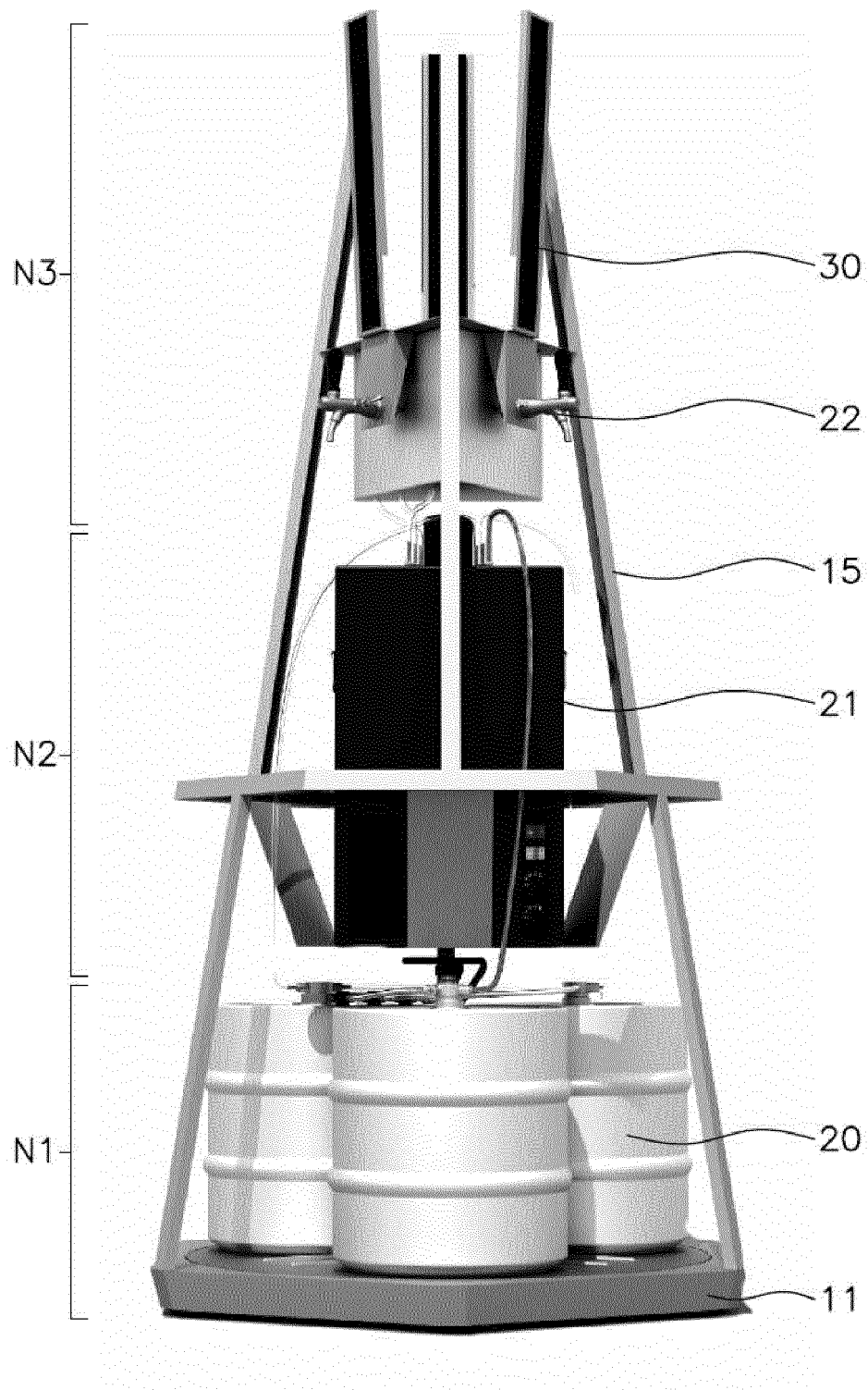


Fig.5

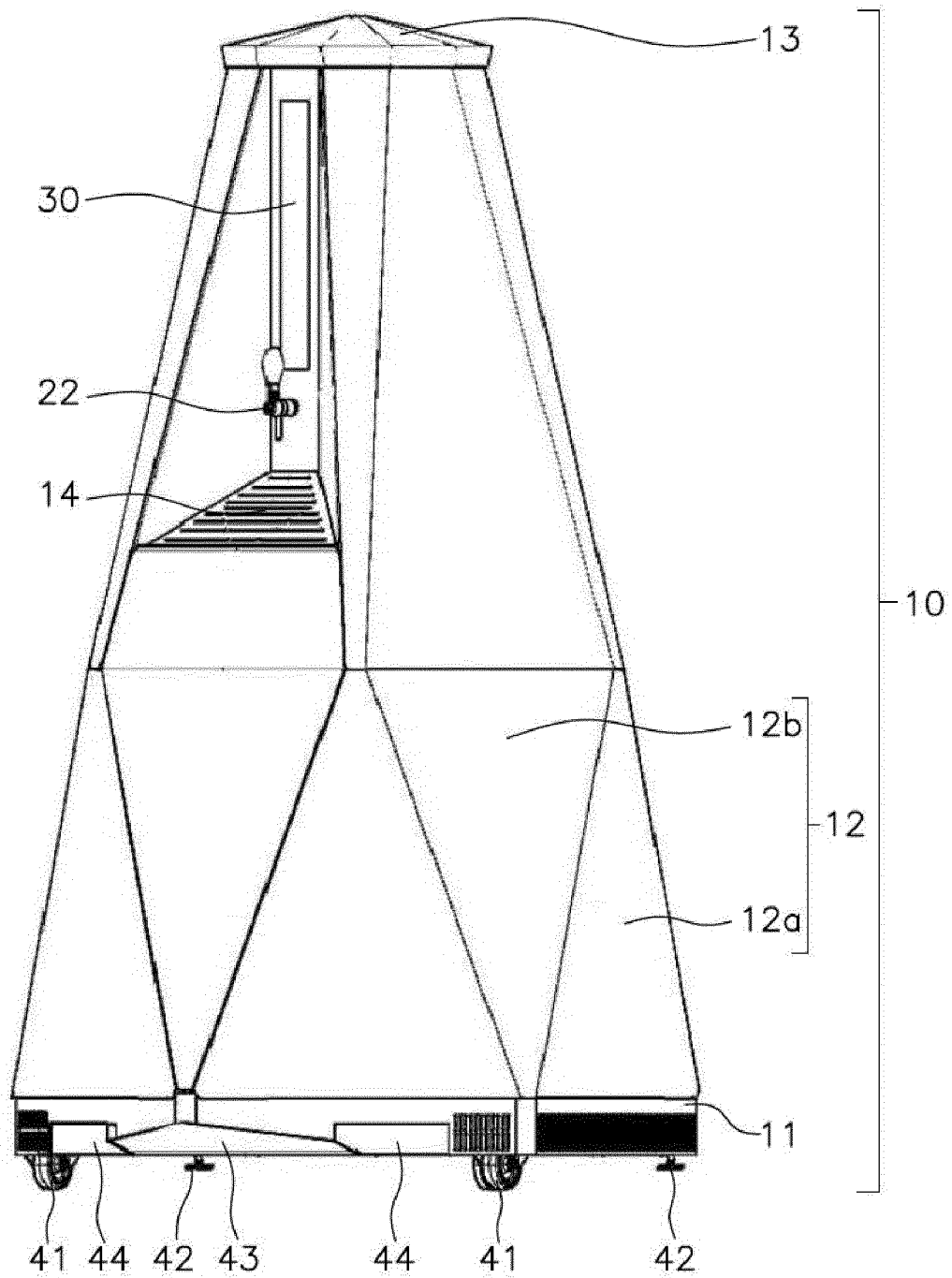


Fig.6

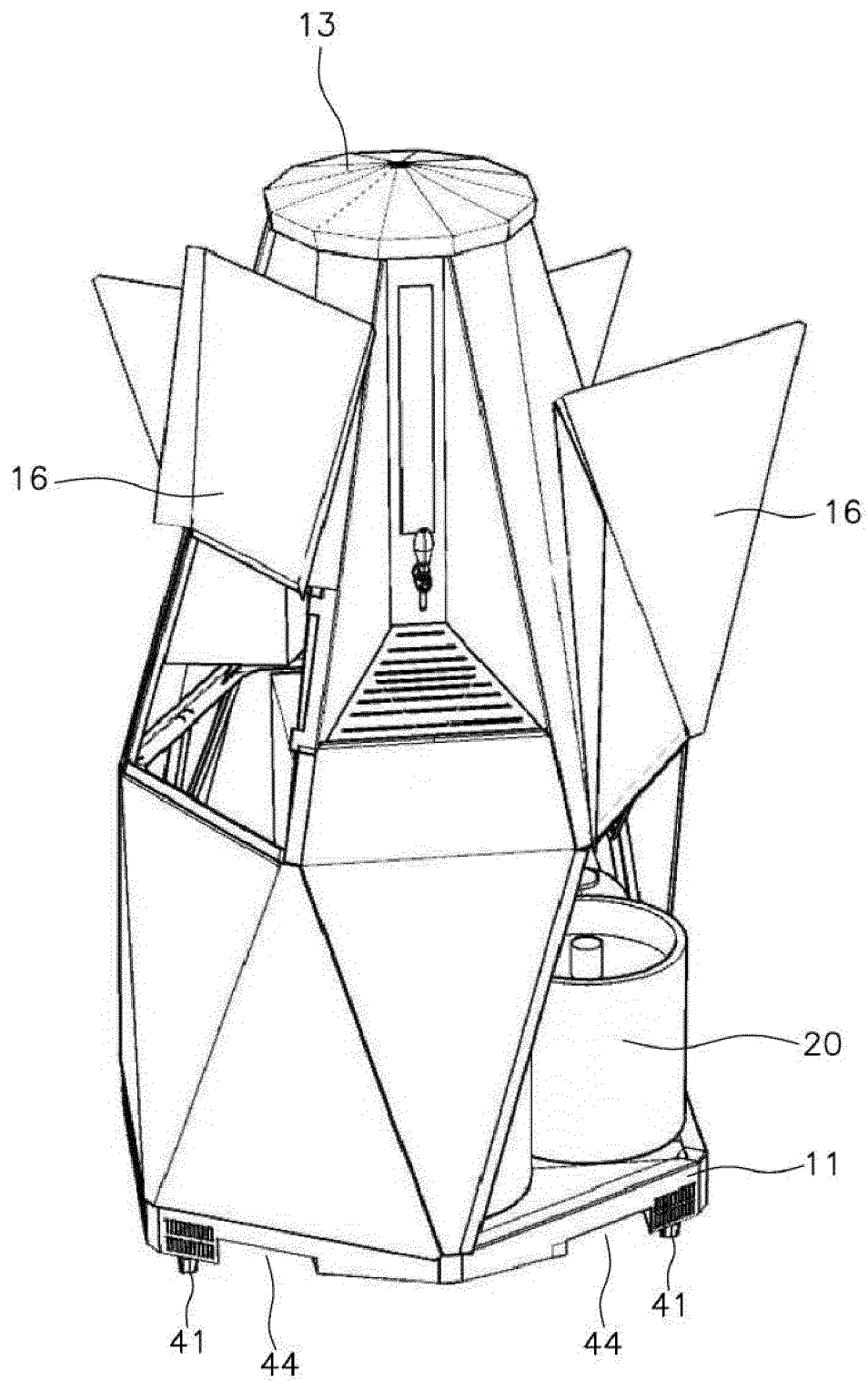


Fig. 7

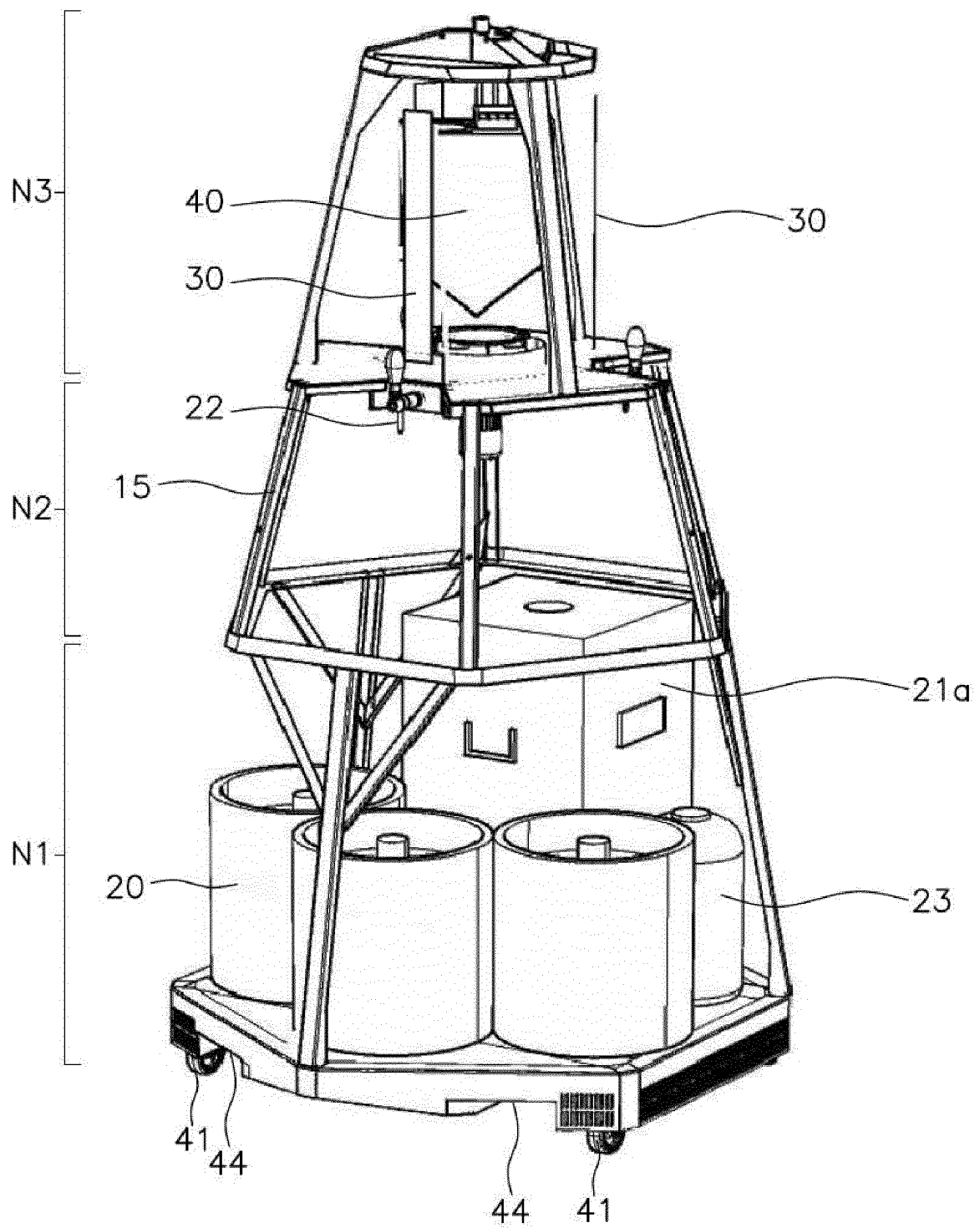


Fig.8

INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional N°

PCT/IB2016/000410

A. CLASIFICACIÓN DEL OBJETO DE LA SOLICITUD

INV. B67D1/00

De acuerdo con la Clasificación Internacional de Patentes (CIP) o según la clasificación nacional y CIP.

B. SECTORES COMPRENDIDOS POR LA BÚSQUEDA

Documentación mínima buscada (sistema de clasificación seguido de los símbolos de clasificación)

B67D

Otra documentación consultada, además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda

Bases de datos electrónicas consultadas durante la búsqueda internacional (nombre de la base de datos y, si es posible, términos de búsqueda utilizados)

EP0-Internal, WPI Data

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones N°
Y	GB 2 458 373 A (FILUP LTD [GB]) 23 Septiembre 2009 (2009-09-23) pagina 4, linea 14 - linea 21 pagina 9, linea 17 - linea 29 pagina 10, linea 8 - linea 18	1-15
Y	DE 20 2006 019039 UI (MAYER MARTIN [DE]; TASONICOS NICOLAS [DE]) 8 marzo 2007 (2007-03-08) párrafos [0021] , [0025] , [0027]	1-15

☐ En la continuación del Recuadro C se relacionan otros documentos
 ☒ Los documentos de familias de patentes se indican en el Anexo

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"P" documento publicado antes de la fecha de presentación internacional pero con posterioridad a la fecha de prioridad reivindicada.		

Fecha en que se ha concluido efectivamente la búsqueda internacional.

01 Septiembre 2016

Fecha de expedición del informe de búsqueda internacional

08/09/2016

Nombre y dirección postal de la Administración encargada de la búsqueda internacional

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Formulario PCT/ISA/210 (segunda hoja) (Enero 2015)

INFORME DE BÚSQUEDA INTERNACIONAL

Información relativa a miembros de familias de patentes

Solicitud internacional N°

PCT/IB2016/000410

Documento de patente citado en el informe de búsqueda	Fecha de publicación	Miembro(s) de la familia de patentes	Fecha de publicación
GB 2458373 A	23-09-2009	GB 2458373 A	23-09-2009
		WO 2009115774 A2	24-09-2009
DE 202006019039 U1	08-03-2007	NINGUNO	

Formulario PCT/ISA/210 (anexo_familia de patentes) (Enero 2015)

REFERENCES CITED IN THE DESCRIPTION

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