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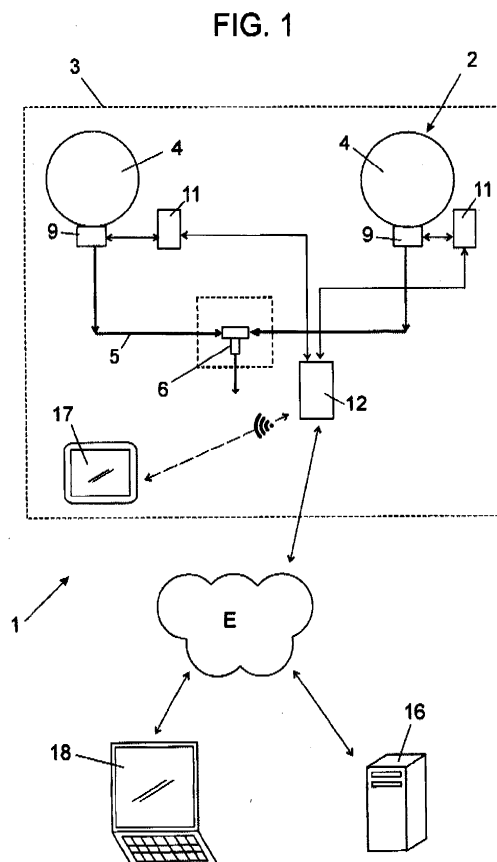
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(54) **AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS**

(57) AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, with tanks (4) for product, refrigerated pipe circuit (5), tap handle (6), pressurised air circuit (7) and pneumatic tap (9) in each tank (4), is configured based on an electronic system comprising tank switchboards (11), one for each tank (4), connected to each other and to a main switchboard (12), controlling the operation and power supply of an actuation and back-pressure assembly (13), magnetic valves (14, 14') and regulators (15) of tank pressure (4), and the pneumatic system. The main switchboard (12) includes a management software and is connected, via WiFi, to an electronic device (17) as a remote user interface in the establishment (3) and preferably, also via Ethernet (E) to a computer server (16) accessed, through a remote computer (18), by the distributor of the product to receive information.



Description

Object of the invention

[0001] The invention, as stated in the title of the present specification, relates to an automated equipment for beer dispensing installations, that provides a series of advantages and features, which will be described in more detail later, which are a remarkable improvement of the current state of the art within its field of application.

[0002] More particularly, the object of the invention focuses on a equipment of control and automatic management applicable to beer dispensing installations from two or more tanks at a point of consumption, which, through a set of electronic, electromechanical and computer components, provides an optimized system which allows the restaurateur that has installed the dispenser and the tanks, to carry out said control, operation and management in an automatic and remote manner through an electronic device with touch screen acting as a interface as well as the supplier of brewing tanks, receive remotely and in real time information on the status of installation.

Field of application of the invention

[0003] The field of application of the present invention is within the sector of the brewing industry, in particular that includes, in bars, restaurants and other points of consumption, beer dispensing installations by tanks.

Background of the invention

[0004] As is known, in some hotel and restaurant establishments the volume of beer served and consumed is very high, making dispenser taps, instead of connecting to a system of barrels, are connected directly to one or more tanks the capacity of which is much higher, typically 250, 500, or 1000 litres, which prevents the continuous transfer of barrels and the continuous exchange of the same.

[0005] The advantage of this type of installations are at logistical, economic and marketing level for the supplier of beer, benefits in terms of prevention of labour risks since there is no handling of barrels and therefore handling of weights as well as a service of beer dispensing more carefree due to the large capacity of the tanks.

[0006] The drawback, however, is that not all of the restaurateurs are willing to mount on their establishments such an installation since they have in their hands a series of operations that are not always easy to be carried out.

[0007] Thus, these tanks have standard outputs provided with a manual stopcock, refrigerated pipes that transport beer towards the tap handle, located at the bar and a series of pneumatic taps enabling to carry out the necessary operations to be able to make use of the tank to be used for the dispensing.

[0008] Currently, the steps to carry out the use and, where appropriate, the change of a tank to another, are

carried out manually. It is, therefore, an operation that must be performed by the restaurateur every time a tank is exhausted and to make use of another tank, contemplating the following steps:

- closing the product output stopcock of the exhausted tank;
- closing the pneumatic backpressure tap of the exhausted tank;
- moving the beer output distributor head of the exhausted tank to the new tank to be used, for which it is necessary the use of tools to unscrew and screw the corresponding coupling fittings;
- opening the product output stopcock of the new tank to be used;
- opening the pneumatic backpressure tap of the tank to be used.

[0009] In addition, these tanks, most of the time, are installed in high areas, in preferential areas of the establishment so that they are visible to customers or in poorly accessible areas. This means that the restaurateur has to carry out the previous operations at situations of risk if they are done in height, and also causing inconvenience to customers if tanks are installed in a preferential area of the establishment and is needed an access to them.

[0010] On the other hand, the supplier that provides the tanks has no direct control or constant of the level of their beer consumption, since it is subject to what the restaurateur reports it or the forecast made, such that errors in supply occurs which may affect for the benefit of both the company and the restaurateur, as well as other aspects on which the supplier can not have direct control either, such as the maintenance of the product conditions.

[0011] The aim of the present invention is therefore to develop an equipment that allows automating the operation of the installation, so that it frees the restaurateur from concerns about the installation as much as possible and, on the other hand, the supplier may have a greater control over all its installations.

[0012] Finally, as a reference to the current state of the art, it should be noted that, at least by the applicant, the existence of any automated equipment for beer dispensing installations is unknown as well as other invention that discloses something similar and has technical, structural and constituent characteristics similar to those of the equipment here proposed, as claimed.

Explanation of the invention

[0013] Thus, the automated equipment for beer dispensing installations proposed by the invention is configured as a noteworthy novelty within its field of application, since, in the light of its implementation and exhaustively, the objectives indicated above are successfully achieved, the characterizing details that make it possible being conveniently collected in the end claims that ac-

company the present description.

[0014] Specifically, the invention is applicable to an beer dispensing installation of the type which includes between two to four tanks with outputs connected to refrigerated pipes that transport beer towards at least a tap handle at the bar of the establishment of consumption and with a series of pneumatic taps that allow the operations required for using the tank to be used for the dispensing, said equipment being formed from a series of electronic, electromechanical and computer elements and components, connected to said installation and designed to allow the automatic and/or remote operation of the installation, specifically, for opening and closing the pneumatic taps and for automatically changing from one tank to another, allowing the actuation for product output and remote change of tank, by the hoteliers from a touch screen interface as well as the control of level, temperature, pressure, or other parameters of tanks, allowing, in addition, in an embodiment option more advanced of the equipment, that such information on the status of the installation can also be known remotely through a remote computer server that hosts the management software and the data generated by installations.

[0015] To this end, the equipment of the invention essentially involves an electronic system comprising a series of tank switchboards, one for each tank of the installation, and a main switchboard, that control the operation and power supply of a actuation and backpressure assembly in each tank, formed by magnetic valves and regulators for the operations of opening of product and backpressure in tank, as well as the operation of the pneumatic system acting on said actuation and backpressure assembly, as well as on the air inlet regulator assembly and the actuator of the outlet tap of each tank to carry out the operations of actuating the opening and closing of product stopcock and make backpressure inside the tank for the exit of product.

[0016] With the particularity that, in addition, the aforementioned main switchboard is provided with a management software, programmable to adapt the needs of the equipment to each type of installation and acts as a mini web server, allowing, through a router, its connection via internal WiFi network to an electronic device with touch screen, for example an electronic tablet or smartphone, to be able to interact with the equipment remotely.

[0017] It should be noted that the cited management software is a dedicated software, that is, specific for said management, being designed both to connect and disconnect the flow of product to the dispenser tap(s), and change the tanks and know the status or level of content thereof at any time. Likewise, it allows knowing temperature and pressure parameters of the product inside the tanks, through the existence of a series of temperature sensors and level and pressure transducers set for that purpose in the tanks and conveniently connected to the switchboards of each tank.

[0018] It is also intended the programming of said management software so that it runs in a completely auton-

omous manner and the change of tanks occurs on the basis of the parameters set so that, upon reaching certain level threshold, the passage of product moves to another tank, and can even set the order of opening of tanks, so that it will always follow a rotation preventing any unnecessary consumption extension. It is worth mentioning that these options are only accessible by the installation technicians, leaving the conventional management of the equipment once implemented to the user/restaurateur.

[0019] In addition, preferably, but not as a limitation, the main switchboard is also connected, through Ethernet network to a remote computer server that, as stated above, gives access to information on the status of the installation remotely.

[0020] Even so, the benefits that brings the equipment are, essentially, as follows:

- It allows the restaurateur to carry out the automatic change of tanks remotely.
- Change of tanks can be set automatically, in such a way that the restaurateur must not be aware of changing the tank, since the change is automatically carried out once product level detected is almost non-existent in the tank in service.
- It provides information relating to the storage temperature of the beer and the pressure existing inside each of tanks, as well as of the possible alarms that can be generated in the installation with respect to these parameters measured.
- It reports on the litres remaining in each tank.
- It reports on the situation of each of the equipment tanks to know at any time if it is in service, empty or idle.
- It allows communication with the installation by means of a touch screen and wireless for its configuration and local management.

[0021] Optionally, the information collected on each brewery or establishment is reported to the Factory, to be treated and exploited for maintenance, logistics, etc., purposes, through a dedicated software application that collects and displays all these data and allows a processing of them.

[0022] Finally, it should be mentioned that, although the equipment has been defined as to dispense beer, it must be understood that, logically, if there is other type of beverage or product capable of being dispensed in such installations, the equipment will be equally applicable to the same.

[0023] The described automated equipment for beer dispensing installations therefore represents an innovative structure of structural and constitutive characteristics unknown up to now for said purpose, reasons that, together with its practical use, give it the sufficient grounds to obtain the privilege of exclusiveness being requested.

Description of the drawings

[0024] In order to complement the description that is being carried out and with the object to help to a better understanding of the invention, a set of drawings is accompanied to the present specification as an integral part thereof, in which with an illustrative and non-limiting character, the following has been represented:

FIG. 1 shows a schematic representation of the automated equipment for beer dispensing installations, being appreciated in it the main parts that comprises and the relationship of linking between them.

FIG. 2 shows a schematic view of one of the installation tanks and the tank and main switchboards, having represented in it the schemes of the electronic system and pneumatic system as well as the output of the product, being appreciated the linking of each element in the same.

FIGs. 3 and 4 show both front and top views respectively, one of the tank switchboards that the equipment includes, according to the invention, and that are connected to each tank of the installation, being appreciated the main elements that comprises.

FIGs. 5 and 6 show both front and side views respectively of the main switchboard of the equipment of the invention, being also appreciated the main elements that comprises.

FIG. 7 shows a schematic and enlarged view of the actuation and backpressure assembly incorporating the equipment, being appreciated in more detail the different magnetic valves and regulators and their connection to the electrical system and pneumatic system.

FIG. 8 shows a schematic view of the air inlet assembly to the tank that the equipment has in each tank, being appreciated its elements in more detail.

FIG. 9 shows an enlarged view of the connector and the actuator that each tank of the installation incorporates in the product outlet.

Preferred embodiment of the invention

[0025] In light of the figures mentioned, and in accordance with the numbering adopted, it is possible to observe in them an example of not limited embodiment of the automated equipment for beer dispensing installations proposed, which comprises the parts and elements indicated and described in detail below, having been used the references to designate each element, according to the following list:

1. Equipment
2. Installation (for beer dispensing)
3. restaurant establishment (where the installation is located)
4. tanks
5. refrigerated pipes (of product)
6. tap handle (that dispenses beer)
7. pressurised air circuit (of the pneumatic system)
8. compressor
9. pneumatic taps. 9a actuator. 9b connector.
10. air inlet regulator assembly (to the tank)
11. tank switchboards
12. main switchboard
13. actuation and backpressure assembly
14. actuating magnetic valves. 14' backpressure magnetic valves
15. pressure regulators
16. remote computer server
17. electronic device (user interface of the establishment)
18. remote computer
19. temperature sensors
20. level transducers
21. pressure transducers
22. backpressure opening and closure button (tank switchboard (11))
23. product opening and closure button (tank switchboard (11))
24. end-of-product-refill button (tank switchboard (11))
25. LED indicator tank in use (tank switchboard (11))
26. LED indicator empty tank (tank switchboard (11))
27. air inlet
28. connector for magnetic valves (14), level transducer (20) and temperature probe (19)
29. RJ45 communication ports
30. power connection of the main switchboard (12)
31. Ethernet cable connector
32. USB connectors
33. stop button
34. manual change button of tank (4),
35. LED indicators of the equipment status (on and connected to the network)
36. manometer
37. electrical connections of the electronic system

[0026] Thus, as shown in the scheme in FIG. 1, the equipment (1) concerned is designed to be applicable to an installation (2) for dispensing beer that, located in a restaurant establishment (3), comprises at least two tanks (4) for product, with outputs connected to a refrigerated pipe circuit (5) that transport said product towards at least one tap handle (6) located at some distance from the tanks (4) in the same establishment (3), in addition, there is a pressurised air circuit (7), through pneumatic system powered by a compressor (8), which causes backpressure inside the tank so that the product exits being connected to the pneumatic tap (9) provided in the

output of each tank (4) and to an air inlet regulator assembly (10) thereof.

[0027] From said configuration already known of the installation (2), the equipment (1) is configured based on an electronic system comprising a series of tank switchboards (11), one for each tank (4) of the installation, connected to each other and to a main switchboard (12) and controlling, provided with the necessary electronic boards and microprocessors, the automatic operation and power supply of an actuation and backpressure assembly (13), formed by the magnetic valves (14, 14') and regulators (15) of tank pressure (4), the opening and closing of which determines the output of product and backpressure in tank, as well as the operation of the pneumatic system that also acts on said actuation and backpressure assembly (13), as well as on the air inlet regulator assembly (10) and the actuator of the pneumatic tap (9) for output from tank (4).

[0028] In FIG. 2, it can be seen the electrical connections (37) of the electronic system, represented by thick lines with continuous section and connections of air circuit (7) of the pneumatic system, represented by thick lines with discontinuous section, being appreciated in them the linking of each of the elements described in each tank (4) of the installation (2).

[0029] Likewise, the main switchboard (12), is connected, via internal WiFi network and the corresponding router device (not shown in Figures), to an electronic device (17) with touch screen, which acts as a remote user interface, to carry out triggering, stop, and change of tank functions as well as control of other parameters, by the restaurateur in the establishment (3), scrolling through the different menus and options of the pre-recorded and programmable management software, according to the needs in each case, in such main switchboard (12).

[0030] Said management software is a dedicated software, that is, specific for said management, being designed both to connect and disconnect the flow of product to the tap handle(s) (6), and change the tanks (4) and know the status or level of content thereof at any time. Likewise, it allows knowing temperature and pressure parameters of the product inside the tanks, for which, within each tank (4), it is contemplated the existence of temperature sensors (19), level transducers (20) and pressure transducers (21) (schematically represented in FIG. 9) conveniently connected to the tank switchboards (11).

[0031] Moreover, in the preferred embodiment of the invention, the main switchboard (12) is also connected, via Ethernet network (E), to a computer server (16) which controls the specific management software, and to which the supplier of the product and tanks accesses, from a device or remote computer (18), and which enables it to receive information and data on the status of the different elements of the installation (2).

[0032] It should be noted, moreover, that the tank switchboards (11) are prepared to allow the manual operation of the same and the control of the opening or

closing of the output of product from tank (4) corresponding to which they are connected. To that end, as shown in FIGs. 3 and 4, these tank switchboards (11) has buttons for backpressure opening and closure (22), product opening and closure (23) and end-of-product-refill (24). In addition, each tank switchboard (11) also has LED indicators of use status (25) or empty tank (26) (contemplating that the turning on of both LED indicates that the tank is off), air inlet (27), connectors (28) for the magnetic valves (14, 14') of the actuation and backpressure assembly (13) and for the level probe or transducer (20) and temperature (19), as well as at least two RJ45 communication ports (29) to connect with the main switchboard (12) and the switchboard (11) of the next tank (4).

[0033] For its part, as shown in figures 5 and 6, the main switchboard (12), in addition to the power connection (30), has a RJ45 communication port (29) for data entry from the tank switchboards (11), an Ethernet cable connector (31) for connection to the network, and USB connectors (32) for Wifi connection with the electronic device (17). Furthermore, this main switchboard (12) also has stop button (33) to disconnect the equipment and manual change button (34) for manually triggering the change of service of tanks (4) where necessary, as well as LED indicators of the equipment status (35) which show, in different colours, whether the equipment is turned on and connected to the network).

[0034] According to FIG. 7, it can be seen in detail the elements of each actuation and backpressure assembly (13) of the tanks (4), essentially comprising an actuating magnetic valve (14), and a backpressure magnetic valve (14') which, associated with corresponding regulators (15) with high and low pressure gauge (36), are linked to the tank switchboard (11) through the electrical connections (37) of the electronic system, and to the pressurised air circuit (7) of the pneumatic system, in such a way that, when the signal is received from the switchboard (11), they act to allow or not the outflow of product and provide backpressure through the pneumatic tap (9) coupled to the output of the tank (4) and to which said circuit (7) of the pneumatic system is linked.

[0035] FIG. 8 shows the air inlet regulator assembly (10) that each tank (4) has and including, having a manometer (37) for said regulation and being connected to the air circuit (7) of the pneumatic system between the backpressure magnetic valve (14') and tank switchboard (4), so that they only actuate when said switchboard sends signal for that, an incoming connection (38) with check valve (39) connected to a ball valve (40) provided with silencer (41).

[0036] Finally, FIG. 9 shows a detail of the pneumatic tap (9) of the product output from the tank (4). Preferably, this tap envisages an actuator (9a) with fittings for connection to air circuit (7) for input and output of pressure, and a connector (9b) that, actuated by said actuator (9a) to which is linked, constitutes the valve for opening and closing the tank (4) that opens and closes the product passage towards the tap handle (6), in this Figure, as in

FIG. 2 said product has been represented as a thick lines with discontinuous sections, being understood, logically that it circulates inside the aforementioned refrigerated pipes (5).

[0037] It should be also mentioned that in this FIG. 9, in order to be able to highlight them, a temperature sensor (19), level transducer (20) and pressure transducer (21) have been represented, on the understanding that its location is only representative.

[0038] Finally, it should be noted that the tanks (4) of the installation (2), preferably no more than four, have a capacity of 250, 500 or 1000 litres, being these the more standardized dimensions more common in this type of product.

[0039] Having sufficiently described the nature of the present invention, as well as the way of putting it into practice, it is not considered necessary to further extend its description for any person skilled in the art to understand its scope and the advantages derived therefrom, stating that, within its essence, it can be put into practice in other embodiments which differ only in detail from the one indicated by way of example, and which are also covered by the protection which is sought provided that its fundamental principle is not altered, changed or modified.

Claims

1. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, in particular for an installation (2) comprising, located in a establishment (3), at least two tanks (4) for product, with outputs connected to a refrigerated pipe circuit (5) which transport it to at least one tap handle (6), in addition, there is a pressurised air circuit (7), through pneumatic system powered by a compressor (8), which causes backpressure inside the tank so that the product exits, being connected to a pneumatic tap (9) provided in the output of each tank (4) and to an air inlet regulator assembly (10) thereof, **characterised in that** it is configured based on an electronic system comprising a series of tank switchboards (11), one for each tank (4) of the installation (2), connected to each other and to a main switchboard (12) so as to control the automatic operation and power supply of an actuation and backpressure assembly (13), formed by the magnetic valves (14, 14') and regulators (15) of tank pressure (4) as well as the operation of the pneumatic system connected to the pneumatic tap (9) of the output of each tank (4) and to the air inlet regulator assembly (10); **in that** the main switchboard (12) incorporates a pre-recorded and programmable management software; **in that** the management software is a dedicated software, and specific for the management and control of the equipment, being designed both to connect and disconnect the flow of product to the tap handle(s) (6) and

change the tanks (4) and know the status or level of content thereof at any time; and **in that** the main switchboard (12) is connected, via internal WiFi network, to an electronic device (17) with touch screen, which acts as a remote user interface.

2. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to claim 1, **characterised in that** the main switchboard (12) is also connected, via Ethernet network (E), to a computer server (16) which controls the specific management software, to receive information and data on the status of the different elements of the installation (2).

3. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to claim 2, **characterised in that** the computer server (16) is accessed from a device or remote computer (18) of the supplier that provides the product tanks.

4. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to any of claims 1-3, **characterised in that** in each tank (4) it is provided for the existence of temperature sensors (19), level transducers (20) and pressure transducers (21) connected to the tank switchboards (11) to know parameters of temperature, pressure and level of product inside the tanks.

5. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to any of claims 1-4, **characterised in that** the tank switchboards (11) have Rj45 communication ports (29) to connect with the main switchboard (12) and the switchboard (11) of the next tank (4) as well as with the air inlet (27) to connect to the pneumatic system.

6. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to any of claims 1-5, **characterised in that** the tank switchboards (11) have buttons for backpressure opening and closure (22), product opening and closure (23), and end-of-product-refill (24) for manual operation and control of the opening or closing of the output of product from the tank (4) corresponding to which are connected.

7. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to any of claims 1-6, **characterised in that** each tank switchboard (11) has LED indicators of use status (25) or empty tank (26).

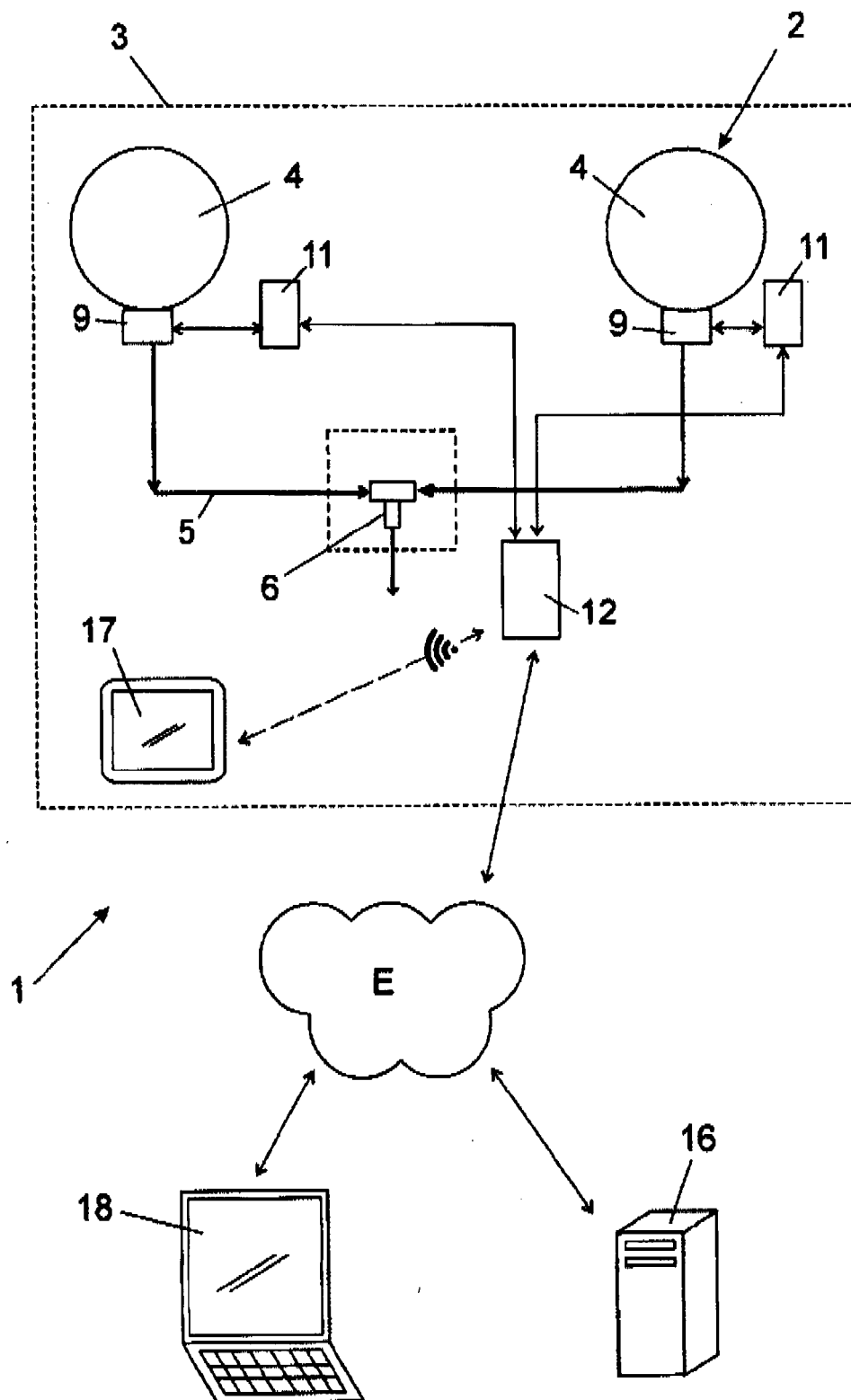
8. AUTOMATED EQUIPMENT FOR BEER DISPENSING INSTALLATIONS, according to any of claims 1-7, **characterised in that** each tank switchboard (11) has connectors (28) for the magnetic valves (14, 14') of the actuation and backpressure assembly

(13) and to probes and transducers.

9. AUTOMATED EQUIPMENT FOR BEER DISPENS-
ING INSTALLATIONS, according to any of claims
1-8, **characterised in that** the main switchboard 5
(12), in addition to the power connection (30), has a
RJ45 communication port (29) for data entry from the
tank switchboards (11), an Ethernet cable connector
(31) and USB connectors (32). 10
10. AUTOMATED EQUIPMENT FOR BEER DISPENS-
ING INSTALLATIONS, according to any of claims
1-9, **characterised in that** the main switchboard
(12) has stop button (33) to disconnect the equip- 15
ment and manual change button (34) for manually
triggering the change of service of tanks (4).
11. AUTOMATED EQUIPMENT FOR BEER DISPENS-
ING INSTALLATIONS, according to any of claims
1-10, **characterised in that** the main switchboard 20
(12) has LED indicators of the equipment status (35)
which show, in different colours, whether it is turned
on and connected to the network.
12. AUTOMATED EQUIPMENT FOR BEER DISPENS- 25
ING INSTALLATIONS, according to any of claims
1-11, **characterised in that** each actuation and
backpressure assembly (13) of the tanks (4) com-
prises an actuating magnetic valve (14), and a back-
pressure magnetic valve (14') which, associated with 30
corresponding regulators (15) with high and low
pressure gauge (36), are linked to the tank switch-
board (11) through the electrical connections (37) of
the electronic system, and to the pressurised air cir-
cuit (7) of the pneumatic system. 35
13. AUTOMATED EQUIPMENT FOR BEER DISPENS-
ING INSTALLATIONS, according to any of claims
1-12, **characterised in that** the air inlet regulator
assembly (10) of each tank (4) is connected to the 40
air circuit (7) of the pneumatic system between the
backpressure magnetic valve (14') and the switch-
board of tank (4).
14. AUTOMATED EQUIPMENT FOR BEER DISPENS- 45
ING INSTALLATIONS, according to any of claims
1-13, **characterised in that** the pneumatic tap (9)
from the product outlet of the tank (4) envisages an
actuator (9a) with connection to the air circuit (7) and
a connector (9b) which, actuated by said actuator 50
(9a) to which is linked, forms the valve for opening
and closing the tank (4) that opens and closes the
product passage towards the tap handle (6).

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FIG. 1



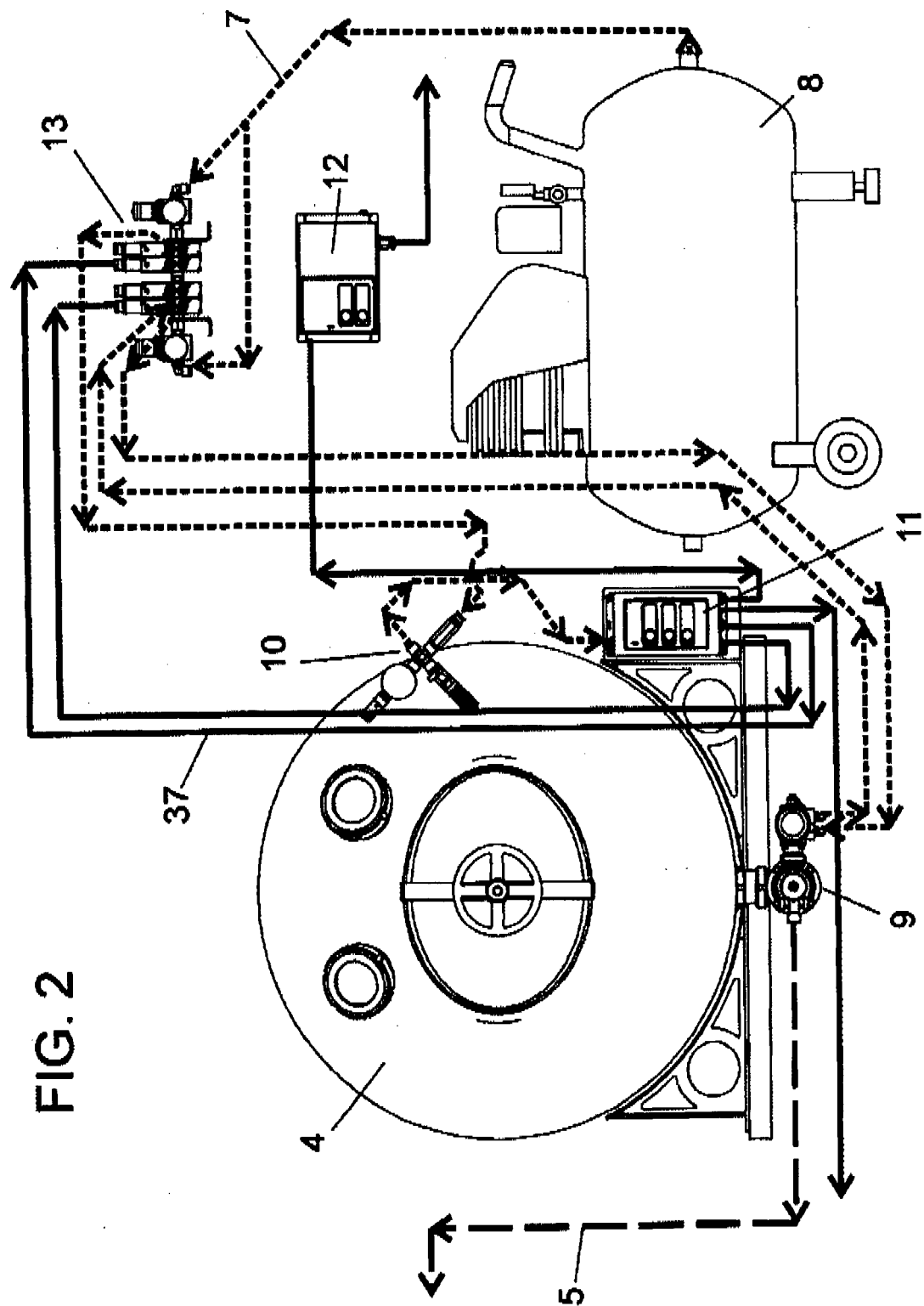


FIG. 2

FIG. 3

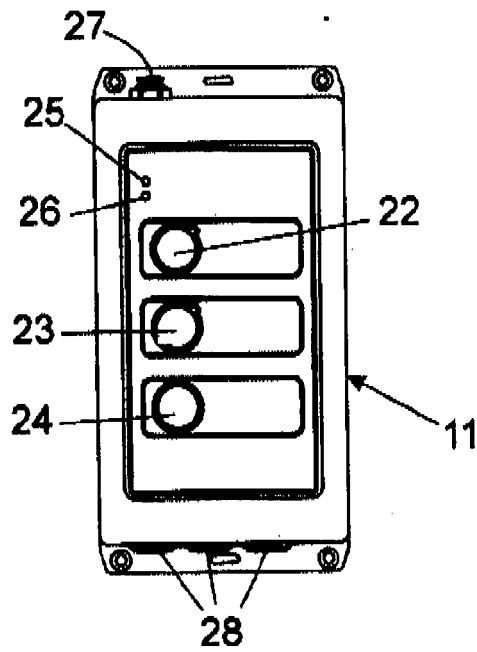


FIG. 4

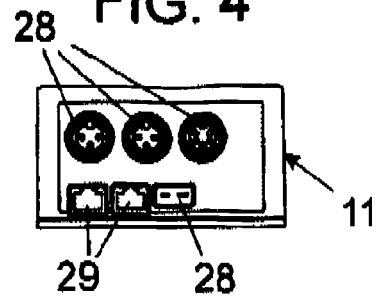


FIG. 5

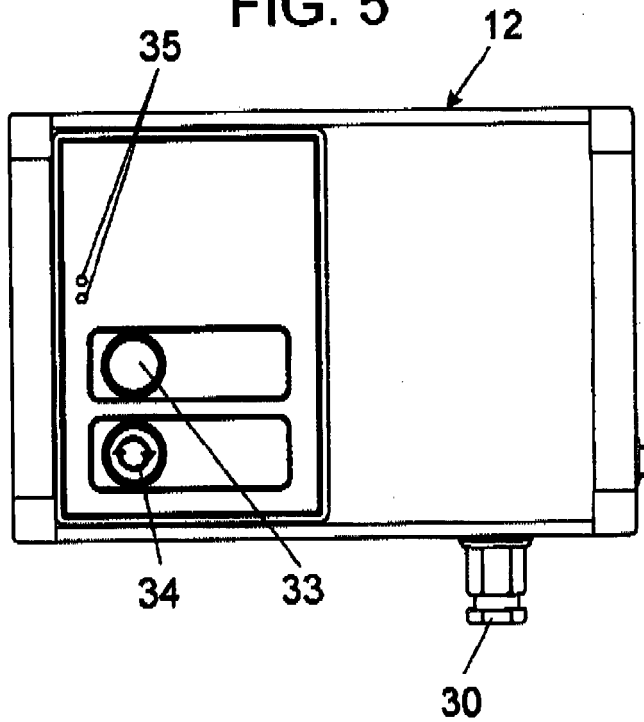
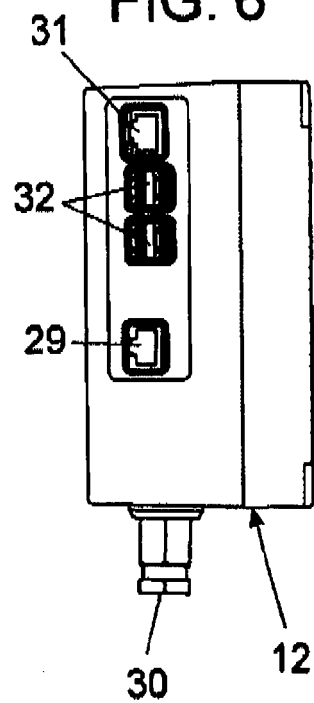
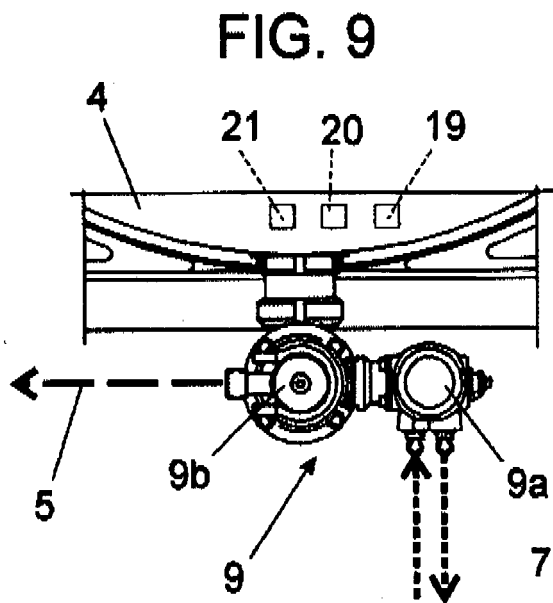
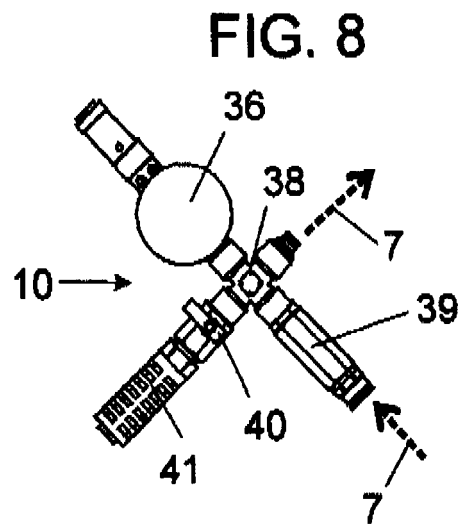
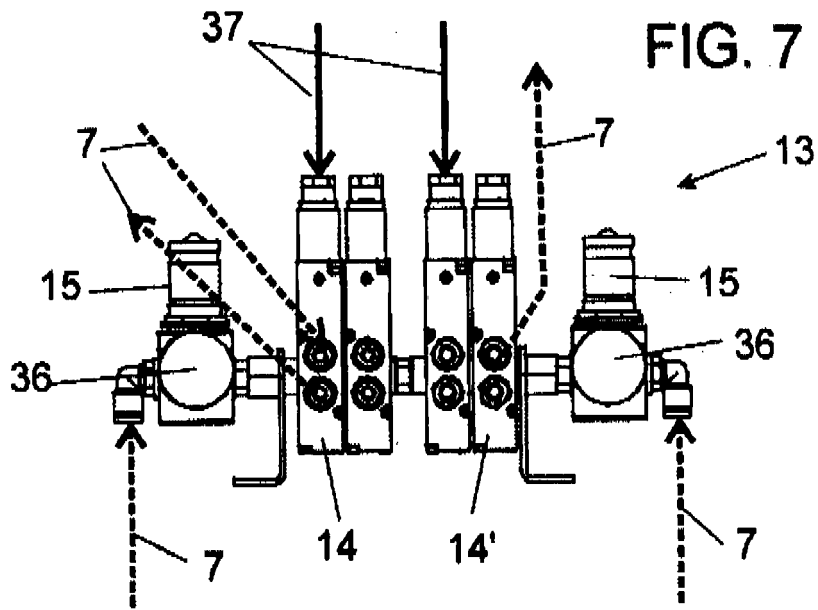


FIG. 6







EUROPEAN SEARCH REPORT

Application Number
EP 15 00 3221

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2008/147199 A2 (HEINEKEN SUPPLY CHAIN BV [NL]; SEGERS ROELOF ANTON [NL]) 4 December 2008 (2008-12-04) * page 8, line 17 - line 20 * * page 13, line 1 - page 14, line 21 * -----	1	INV. B67D1/08 B67D1/12 B67D1/04
A	US 4 377 246 A (MCMILLIN JOHN R ET AL) 22 March 1983 (1983-03-22) * column 2, line 26 - line 35 * * column 3, line 15 - line 34 * -----	1	
A	DE 21 45 432 A1 (ESAU KLAUS) 22 March 1973 (1973-03-22) * page 4, line 5 - line 20 * -----	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B67D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 June 2016	Examiner Desittere, Michiel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

 1
EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 00 3221

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008147199 A2	04-12-2008	EP 2164796 A2	24-03-2010
		NL 1033913 C2	02-12-2008
		US 2010170916 A1	08-07-2010
		WO 2008147199 A2	04-12-2008

US 4377246 A	22-03-1983	NONE	

DE 2145432 A1	22-03-1973	NONE	

EPO FORM P0459

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