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(54) **BLEED VALVE WITH AUTOMATABLE PURGE**

(57) Bleed valve with automated purge, as used for beverage kegs in installations with automated keg changeover, comprising a solenoid valve connected to the drain port of the bleed valve, with outlet to a drain pipe, to allow automated purging operated from an external electronic control module.

The main advantage of the present invention is that the external electronic control module, in addition to automatically controlling the opening and closing of multiple bleed valves depending on the level of beverage in their kegs, allows switching from one to another when they are running low, and can automatically purge the valves without manual intervention, with the consequent improvement in their operability, avoiding the accumulation of beverage residues in the valve after use, which could cause hygiene problems.

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Description

[0001] As its title indicates, the present description refers to a bleed valve of the type used for beverage kegs in installations with automated keg changeover, comprising a solenoid valve connected to the drain port of the bleed valve, with outlet to a drain pipe, to allow automated draining controlled from an external electronic control module.

Field of the invention

[0002] The present invention belongs to the sector of the industry dedicated to the manufacture of devices for the distribution of pressurised and bulk cold carbonated beverages distributed in kegs, such as beer, and more specifically to installations with automated keg changing.

State of the art

[0003] Today, the storage of beverages, both alcoholic and non-alcoholic, in kegs or similar is an economical and reliable solution, widely used in public establishments such as bars, restaurants and cafeterias.

[0004] The main disadvantage of this arrangement in barrels or similar lies in changing the container, which necessarily has to be done by an operator who will have to stop the work he is doing at that moment to change the barrel and then enable the liquid outlet to check that the system is working properly.

[0005] Solutions have been sought to solve the problem of automating the automatic change of the beverage keg or receptacle when the beverage has run out. For example, patent GB2415952 "*Liquid supply changeover system*" describes a beverage dispensing system with automatic container changeover, of the type used in at least two beverage containers or kegs, a beverage cooling system and a series of drain and service solenoid valves, all connected to the dispensing tap, and where in turn, arranged in the keg is at least one valve connected to a gas dispensing system, all operated by a control module. It also incorporates a flow meter, a pressure gauge and valves, which can be pneumatic or hydraulic. The gas dispensing system comprises a valve and a gas bottle, incorporating a system for sanitising unused devices.

[0006] This invention has the disadvantage that it does not specify carrying out the automatic barrel change, leaving in a not very concise way the possibility of the replacement of the barrel, but it is not clear to a person skilled in the art how such a change could take place automatically, i.e. without the presence and involvement of at least one operator. Similarly, as to the means of puncturing the barrel, it is not clearly defined how such action can occur. Also, no means other than manual operation are foreseen for the purging and cleaning of the valve.

[0007] Another solution can be found described in patent ES2547497 "*Beverage distribution system with automatic container change*", which describes a beverage distribution system for containers or barrels comprising a combination of different devices that guarantee the automatic change of barrels, containers or kegs without interruption and without the need for handling when the liquid in each corresponding container or keg is exhausted, with the drawback that the main or tapping valve of the keg is not described in its entirety, nor are there any purging means provided.

[0008] There are also known installations such as the one recommended by patent EP3336054 *"Extractor valve for beverage dispensing"* which uses a bleed valve with the feature that it provides for automatically changing the beverage kegs without interruption and without the need for manipulation by an operator when the liquid in the corresponding keg or container runs out. This comprises connections for the gas inlet, electrical connections governed from a control panel, connection of flooding pipes for the conduction of the liquid content of the kegs together with chilled water, wherein these pipes are connected to a linking device which allows the distribution of the liquid towards the dispensing tap through a flooding hose or a contact hose. This invention, in spite of its correct operation and high level of automation, still requires manual operation for the purging of the valves when changing the barrel.

[0009] Furthermore, none of these embodiments has provision for the use of a protective casing, or a handle to facilitate removal, displacement and insertion.

Description of the invention

[0010] In order to solve the existing problem of valves for automated barrel extraction installations, improving the current state of the art, the bleed valve with automated purge, object of the present invention, has been devised, which also provides the known valves with the possibility of automating the purge. For this purpose, the bleed valve with automated purge, in addition to comprising a coupling for the beverage keg, an inlet for the supply of carbon dioxide gas, a beverage outlet, a drain port, beverage level detection means, means of opening and closing the beverage flow, and means of electrical connection with an external electronic control module capable of automatically controlling the opening and closing of multiple bleed valves depending on the beverage level, also includes

- a solenoid valve connected at its inlet to the drain port of the bleed valve and at its outlet to a drain pipe, and
- means of electrical connection of the solenoid valve to the external electronic control module.

[0011] This allows the external electronic control module, in addition to automatically controlling the opening and closing of multiple bleed valves depending on the

level of beverage in your kegs, allowing switching from one to another as they run out, to automatically purge these valves without manual intervention.

[0012] It is also foreseen that the solenoid valve and at least the upper part of the bleed valve are housed in a protective casing to prevent the deposit of dirt on it and to protect it against shocks. This protective housing can optionally be fitted with a handle to facilitate assembly and disassembly of the valve assembly on the barrel.

Advantages of the invention

[0013] This bleed valve with automated purge provides multiple advantages over currently available devices, the most important being that it allows the external electronic control module, in addition to automatically controlling the opening and closing of multiple bleed valves depending on the level of beverage in the kegs, allowing switching from one to another when they are running low, to automatically purge the valves without manual intervention, thus improving their operation and avoiding the accumulation of beverage residues in the valve after use, which could cause hygiene problems.

[0014] Another important advantage is that the valves can be housed in a protective casing to prevent the deposit of dirt and to protect them against shocks. In addition, an optional handle facilitates the assembly and disassembly of the valve assembly on the barrel.

Description of the figures

[0015] In order to better understand the object of the present invention, a preferential practical embodiment of it has been represented in the attached drawing.

Figure -1- shows a front and a side view of the invention in its basic version.

Figure -2- shows a front view and a side view of the invention in its alternative version with protective casing.

Preferred embodiment of the invention

[0016] The constitution and characteristics of the invention may be better understood with the following description made with reference to the attached figures.

[0017] As can be seen in Figure 1, it is illustrated that the automated bleed valve (1), of the type used for beverage kegs, comprises a coupling (2) for the beverage keg, an inlet (3) for the supply of carbon dioxide gas, an outlet (4) for the beverage, a drain port, means of detecting the beverage level, means of opening and closing the beverage flow, and means of electrical connection with an external electronic control module (13) capable of automatically controlling the opening and closing of multiple bleed valves depending on the beverage flow rate, and further comprising

- a solenoid valve (7) connected at its inlet to the drain port of the bleed valve (1) and at its outlet to a drain pipe (8), and
- electrical connection means (11) of the solenoid valve (7) with the external electronic control module (12).

[0018] The inlet of the solenoid valve (7) is connected to the drain port of the bleed valve (1) by means of a tube (6) which ends in a connector (1) located in the drain port of the bleed valve (1), although an alternative embodiment is provided in which the connection of the solenoid valve (7) to the drain port of the bleed valve (1) is direct, the inlet of said solenoid valve (7) being in this case mounted on the drain port of the bleed valve (1).

[0019] This allows the external electronic control module (13), in addition to automatically controlling the opening and closing of multiple bleed valves depending on the level of beverage in its kegs, allowing switching from one to another when they are running low, to automatically perform the purging of these valves without manual intervention.

[0020] Another alternative embodiment is provided, combinable with the previous ones, illustrated in Figure 2, in which the solenoid valve (7) and at least the upper part of the bleed valve (1) are housed in a protective casing (9), to prevent the deposit of dirt on it and to protect it against shocks. This protective casing (9) can optionally be provided with a handle (10) to facilitate assembly and disassembly of the valve assembly on the barrel.

[0021] Experts in the art will easily understand that the characteristics of different embodiments can be combined with characteristics of other possible embodiments whenever such a combination is technically possible.

[0022] All the information referring to examples or modes of embodiment, form part of the description of the invention.

Claims

1. - Bleed valve with automated purge (1), comprising a coupling (2) for a beverage keg, an inlet (3) for the supply of carbon dioxide gas, an outlet (4) for the beverage, a drain port, beverage level detection means, means for opening and closing the beverage flow, and means for electrical connection with an external electronic control module (13) capable of automatically controlling the opening and closing of multiple bleed valves according to the beverage level, **characterized in that it** comprises

- a solenoid valve (7) connected at its inlet to the drain port of the bleed valve (1) and at its outlet to a drain pipe (8), and
- electrical connection means (11) of the solenoid valve (7) with the external electronic control module (12).

2. - Bleed valve with automated purge, according to the preceding claim, **characterized in that** the connection of the solenoid valve (7) with the drain port of the bleed valve (1) is direct, the inlet of said solenoid valve (7) being mounted on the drain port of the bleed valve (1).

3. - Bleed valve with automated purge, according to claim 1, **characterized in that** the inlet of the solenoid valve (7) is connected to the drain port of the bleed valve (1) by means of a tube (6) which ends in a connector (1) located in the drain port of the bleed valve (1).

4. - Bleed valve with automated purge, according to any of the preceding claims, **characterized in that** the solenoid valve (7) and at least the upper part of the bleed valve (1) are housed in a protective casing (9).

5. - Bleed valve with automated purge, according to claim 4, **characterized in that** the protective housing (9) has a handle (10).

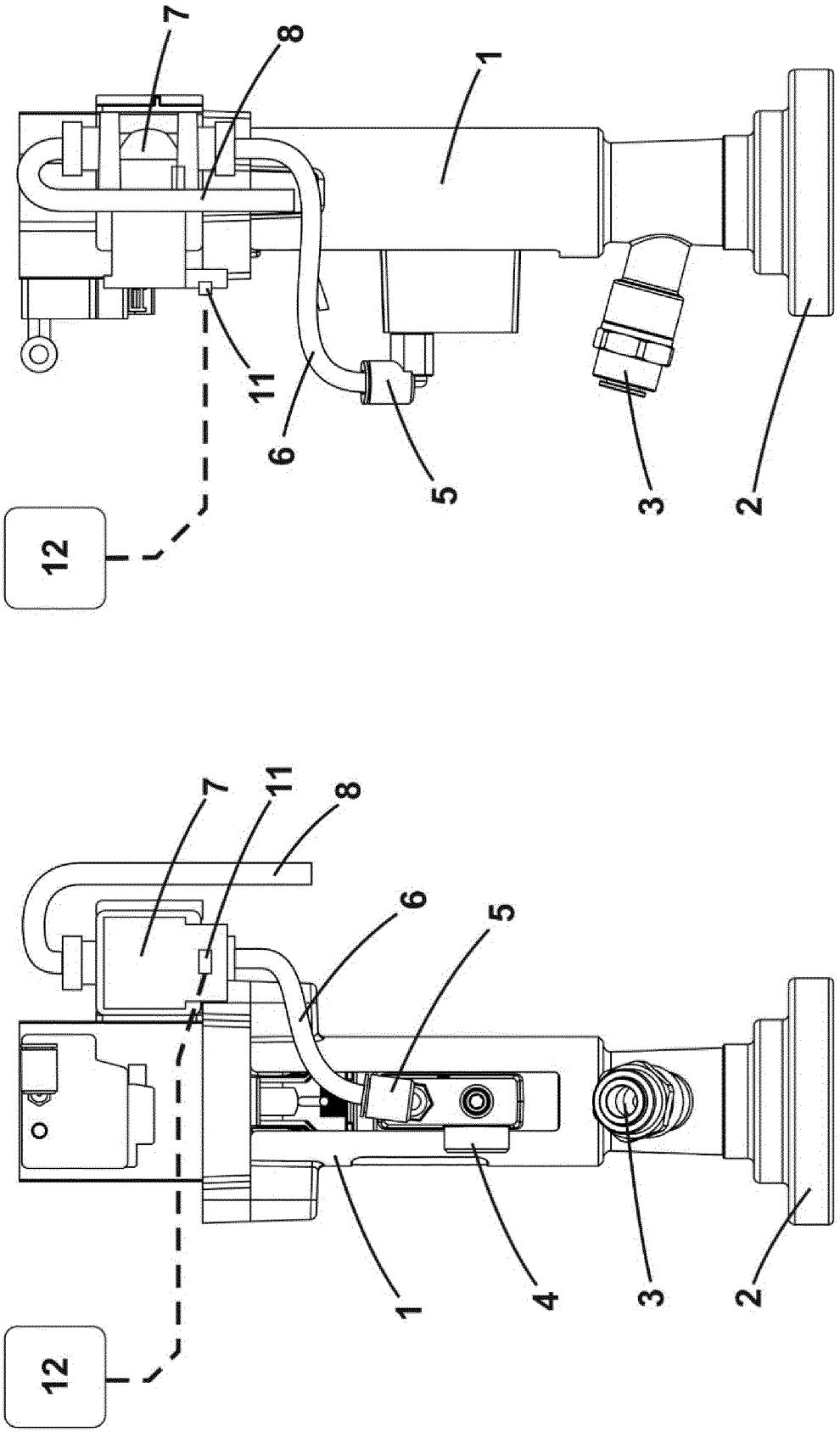


Fig. 1

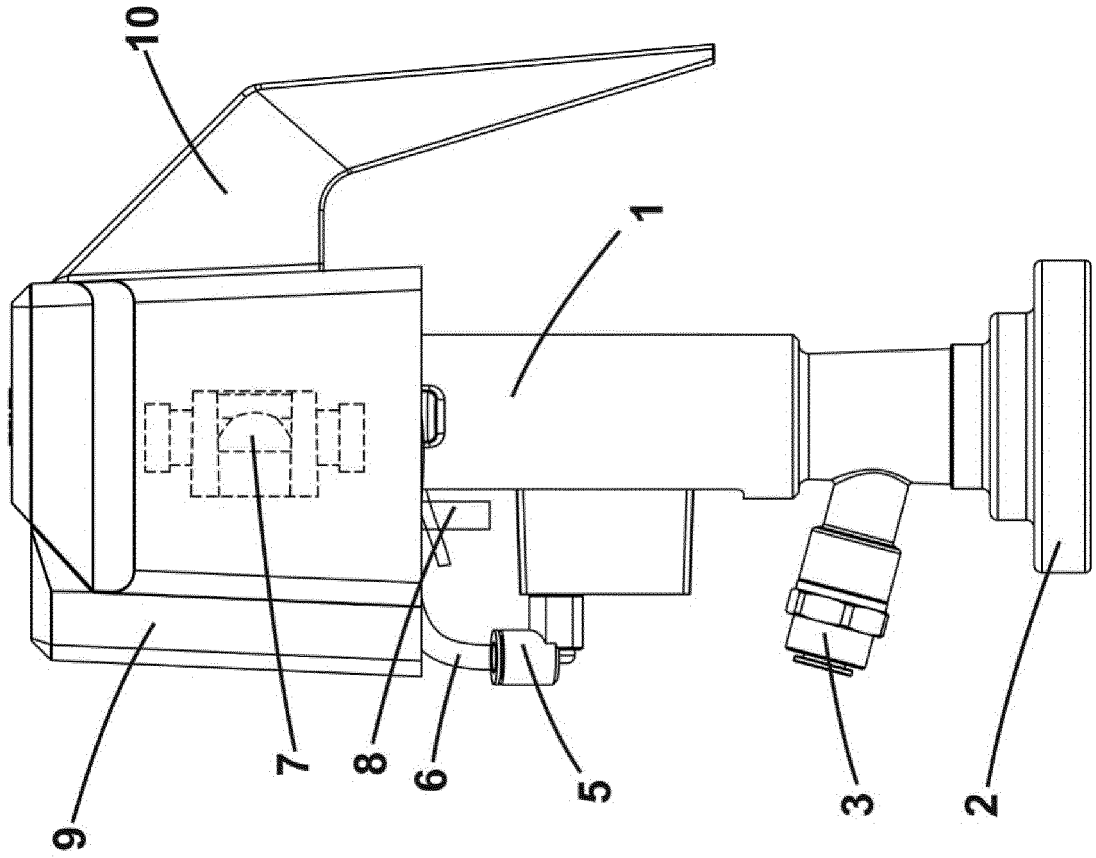
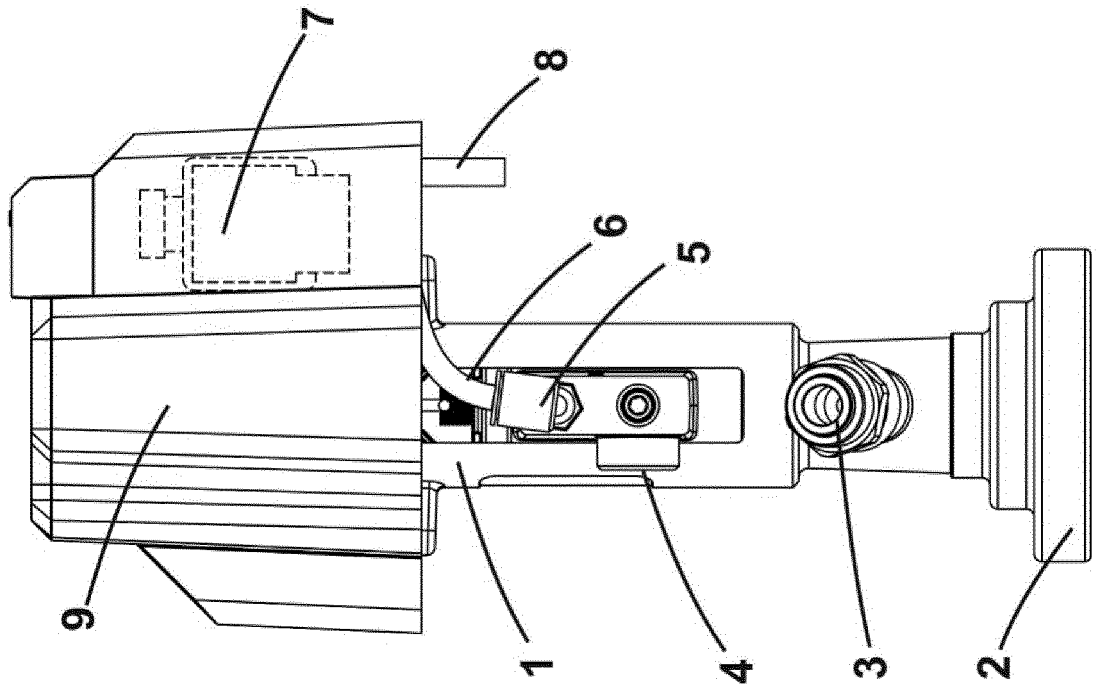


Fig. 2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2022/070155

A. CLASSIFICATION OF SUBJECT MATTER

B67D1/12 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B67D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	ES 2673052 A1 (DOMINGUEZ RODRIGUEZ FERNANDO) 19/06/2018, page 7, line 5 - page 11, line 23; figures 1-10.	1-4 5
Y	SK 542012U U1 (FEDAK JAN ET AL.) 02/10/2012, description; figure 11 & Abstract from DataBase EPODOC. Retrieved from Epoque; Accession Number: ES-2673052-A1.	1-4
A	ES 1210038U U (REDUCTORES Y VARIADORES DEL SUR S A U) 16/04/2018, page 5, line 19 - page 9, line 4; figures 1, 2.	1-4

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance.
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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Date of the actual completion of the international search	Date of mailing of the international search report
02/06/2022	**(06/06/2022)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer D. Hermida Cibeira Telephone No. 91 3493026

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INTERNATIONAL SEARCH REPORT

International application No.
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C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ES 2547497 A1 (DOMINGUEZ RODRIGUEZ FERNANDO) 06/10/2015, page 10, line 4 – page 13, line 18; figures 1-5.	1-3
A	ES 2241439 A1 (REDUCTORES Y VARIADORES DEL SU) 16/10/2005, column 4, line 34 – column 8, line 31; figures 1-7.	1-3
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A	NL 1024139C C2 (MASTER TRAIN INTERNAT N V) 22/02/2005, description; figures 1-6 & Abstract from DataBase EPODOC. Retrieved from Epoque; Accession Number: NL-1024139-C.	1-3
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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REFERENCES CITED IN THE DESCRIPTION

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- ES 2547497 **[0007]**
- EP 3336054 A **[0008]**