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(54) **Dispensing system for chilled beverages**

System zur Abgabe von gekühlten Getränken

Système pour la distribution de boissons réfrigérées

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(56) References cited:
**EP-A2- 1 717 190** **DE-U1-202005 019 217**

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## Description

**[0001]** The present invention relates to an improved beverages dispensing system.

**[0002]** More specifically, the invention concerns a system for beverages dispensing plants, such as beer and the like, which allows cooling by thermal conduction both the pipe within which the beverage to be dispensed flows to the tap, as well as the same tap, without the generation of condensation on the surrounding surfaces.

**[0003]** In the following, the description will be directed to beverages dispensing plants or columns, but it is clear that the same should not be considered limited to this specific use.

**[0004]** As it is well known, currently there are several systems capable of dispensing beverages. Typically, such systems provide a plurality of containers, part of which contain different kinds of syrups or beverages, such as beer and the like, and the other containers containing carbonated and non-carbonated water, each connected through suitable conduits and respective pumps to the dispensing taps.

**[0005]** The beverages to be dispensed are generally cooled by appropriate means, so as to be maintained at a suitable temperature before being conveyed through said conduits, to be then consumed.

**[0006]** However, when the beverages reaches the tap, after each dispensing, a certain quantity of said beverage to be dispensed remains in it, so it warms and being therefore then dispensed in a subsequent dispensing at a not correct temperature. This can generate excessive foam, in particular in case of beer, and the proliferation of bacteria.

**[0007]** Also, when the temperature difference between the conduit or the tap, through which the beverage is dispensed, and the wall of the column is high, it is possible that condensation occurs on the surface of the latter, with the consequence of dispersing energy and an unpleasant unaesthetic effect.

**[0008]** The patent application EP 1717190 A2 describes a beverage dispensing system according to the preamble of claim 1.

**[0009]** In light of the above, it is, therefore, object of the present invention to propose a system for dispensing beverages capable to overcome the limits of the prior art.

**[0010]** Another object of the invention is to propose a system capable to cool the tap from which the beverage is dispensed.

**[0011]** It is also object of the present invention to provide a technical solution which allows to fix the delivery system to the plants, to the columns or to the supports on which it is installed, by means of screws or external fastening means, thus allowing the application also in plants or columns, where it is impossible accessing the internal compartment with common clamping tools.

**[0012]** It is therefore a specific object of the present invention a beverage dispensing system installable on the wall of a support or column, said system comprising a dispensing tap of said beverage, a heat exchanger, arranged in contact with said dispensing tap, a dispensing assembly, arranged straddling said wall of said support or column, said heat exchanger being arranged through said dispensing assembly, said dispensing assembly having insulating means, suitable to isolate said heat exchanger with respect to said wall, and at least one duct of said beverage to be dispensed, passing through said heat exchanger and in communication with said dispensing tap, and cooling means of said heat exchanger.

**[0013]** Always according to the invention, said dispensing assembly could comprise a fixing front bushing, arranged on the front face of said wall of said support or column, and said insulation means could comprise a fixing rear bushing, arranged on the rear face of said wall of said support or column, said rear bushing being made of thermally insulating material, such as plastic and the like, coupled with said front bushing and adapted to isolate said heat exchanger from said wall.

**[0014]** Still according to the invention, said insulating means could comprise an insulator element, made of thermally insulating material, such as plastic or the like and adapted to isolate said heat exchanger from said wall.

**[0015]** Further according to the invention, said heat exchanger could comprise a cylindrical portion, internally threaded for coupling with said tap, and said insulator element could have a cylindrical shape and it could be arranged outside said cylindrical portion.

**[0016]** Advantageously according to the invention, said system could comprise fixing means adapted to fix said dispensing assembly by acting from the outer face of said wall of said support or column.

**[0017]** Always according to the invention, said front bushing could be provided with at least one hole, preferably two holes, said rear bushing is provided with at least one hole, preferably two holes, said heat exchanger is provided with at least one hole, preferably two holes, and said wall of a support or column could have at least one hole, preferably two holes, and said fixing means could comprise at least one screw, preferably two fixing screws, said fixing screws being able to be inserted in the holes of said front bushing, of said rear bushing, of said heat exchanger and of said wall of said support or column, for their mutual fixing.

**[0018]** Still according to the invention, said heat exchanger could comprise a through channel through which said duct is arranged.

**[0019]** Further according to the invention, said system could comprise a sealing gasket, arranged within said heat exchanger, and a head for fixing said duct to said heat exchanger, said head being arranged within said heat exchanger.

**[0020]** Advantageously according to the invention, said cooling means could comprise a cooling duct, in which a heat exchange fluid flows, such as water, other refrigerating fluid, gas and/or the like, passing externally in contact with said heat exchanger.

**[0021]** Always said heat exchanger could have an external perimeter channel in which said cooling duct is housed.

**[0022]** Still said passage duct of the beverage to be dispensed and cooling duct could be arranged near or adjacent to each other and immersed into an expanded foam jacket.

**[0023]** The present invention will be now described, for illustrative but not limitative purposes, according to its preferred embodiments, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 shows a view of the interior of a beverage dispensing column, in which a system for dispensing beverages according to the present invention is installed;
figure 2 shows a front view of a portion of a beverage dispensing column;
figure 3 shows a rear view of a portion of a beverage dispensing column;
figure 4 shows an exploded view of the beverage dispensing system according to figure 1;
figure 5 shows a side section of the beverages dispensing system according to figure 1;
figure 6 shows the interior of a second beverage dispensing column, in which two systems for dispensing beverages according to the present invention are installed.

**[0024]** In the various figures, similar parts will be indicated by the same reference numbers.

**[0025]** Referring to figures 1-5, it is possible to observe a system S for dispensing beverages according to the present invention.

**[0026]** The beverage dispensing system S comprises in particular a delivery assembly 1, installed on the wall 2' of a column 2 or of a support, to which a valve 3 is fixed (which is not part of the solution according to the invention). From said tap 3 the beverage is dispensed, which is channeled to it by means of a duct 4.

**[0027]** In particular, said column 2 has, on the metal sheet wall 2', a hole 21, through which said dispensing assembly 1 is installed, which is then located straddling said wall 2'. Said column 2 also has two holes 22' and 22", respectively arranged above and below said hole 21, for the passage of the fixing means (which will be described below) of the dispensing assembly 1.

**[0028]** The dispensing assembly 1 comprises a fixing front bushing 11, preferably made of metal. Said front bushing 11 is shaped so as to fit the shape of the outer sheet wall 2' of the column 2 or support, which may be flat or possibly curved. Said front bushing 11 is provided with two holes 11' and 11" corresponding to said holes 22', 22" of said wall 2'.

**[0029]** Said dispensing assembly 1 also includes an inner fixing rear bushing 12, shaped so as to fit the shape of the inner face surface of the wall 2' of the column 2 and also provided with two holes 12' and 12", made so as to be arranged in correspondence of said holes 22', 22". Said rear bushing 12 is made of thermally insulating material, such as plastic and the like.

**[0030]** The dispensing assembly 1 further provides an insulator element 14, having a cylindrical shape and made of thermally insulating material, such as plastic or the like, which will be housed, when the assembly 1 is assembled, within said bushings 11 and 12.

**[0031]** Said dispensing system S further comprises a heat exchanger 5, provided with a through channel 51, through which passes said duct 4, through which flows the beverage to be dispensed, and a external perimeter channel 52, substantially perpendicular to said through channel 51, in which a cooling pipe 6 is housed, through which a heat exchange fluid flows, preferably a liquid such as cold water or other refrigerant, or possibly a gas refrigerant.

**[0032]** Anteriorly, toward the outside of the dispensing system, said heat exchanger 5 provides a cylindrical portion 53, internally threaded (the thread is not visible in the figure), for fixing said tap 3, which, in this way, is in thermal contact with said heat exchanger 5. Said cylindrical portion 53 of said heat exchanger 5 is concentrically and internally arranged to said insulator element 14.

**[0033]** Said heat exchanger 5 also includes two holes 5' and 5", such that, when said front bushing 11 and said rear bushing 12 are coupled, respectively, to the inner and outer walls of the metal sheet of said column 2, said holes 11' and 11" of said front bushing 11, said holes 12' and 12" of said rear bushing 12, said two holes 22' and 22" of said column 2 and said two holes 5' and 5" of said heat exchanger 5 are arranged so as to allow appropriate fastening means, which in this embodiment are fixing screws, respectively designated by the reference numbers 13' and 13", to fix them each other. It is seen that said screws can be tightened from the outside of said column 2 or support, in which said dispensing system S is installed, so as to keep together the assembly of the dispensing assembly 1, securing it to the column 2 in correspondence of said hole 21. In this way, it is possible to fix the system S by means of the two outer screws 13' and 13", allowing the installation of the system S itself also in columns 2, where the access to the internal part with tightening tools is not possible.

**[0034]** The dispensing system S also includes a sealing gasket 16, arranged within said through channel 51 of said heat exchanger 5, and a head 17 for blocking said duct 4 to said heat exchanger 5. Said head 17 is also arranged within said through channel 51 of said heat exchanger 5.

**[0035]** Said duct 4 and said cooling duct 6 are arranged, also, close each other and immersed in an expanded foam jacket 7.

**[0036]** The operation of the beverages dispensing system S described above is as follows.

**[0037]** When dispensed, said beverage, such as beer or the like, flows in said duct 4. The cooling duct 6, which, as mentioned, is arranged alongside said duct 4, so as

to perform a first maintenance of the temperature of said beverage while flowing in said duct 4, cools said heat exchanger 5. Heat exchanger 5, as it is made of conductive material and it is fixed and in thermal contact with said tap 3, cools the latter. In this way, the beverage is maintained at an appropriate temperature, even during the dispensing from said tap 3. Moreover, system S, cooling the tap 3, prevents the heating of the beverage, in which it remains during periods of nonuse.

**[0038]** Moreover, at the same time, the insulating means of the dispensing assembly 1, i.e. insulator element 14, which lines and isolates said cylindrical portion 53 of said heat exchanger 5, and the rear bushing 12, which is made, as said, of an insulating material, prevent condensation to form, isolating the dispensing assembly 1 from column 2.

**[0039]** Figure 6 shows the application of the beverage dispensing system S according to the present invention in a beverage dispensing plant 8, provided with two taps 3. In particular, it is observed how each dispensing assembly 1 is coupled with a respective tap 3 is reached by a respective duct 4. It is seen, then, as the cooling tube 6 is housed on the perimeter channels 52 of the two heat exchangers 5 of each dispensing assembly 1, cooling both of them simultaneously.

**[0040]** The present invention has been described for illustrative but not limitative purposes, according to its preferred embodiments, but it is to be understood that modifications and/or changes can be introduced by those skilled in the art without departing from the relevant scope as defined in the enclosed claims.

## Claims

1. Beverage dispensing system (S) installable on the wall (2') of a support or column (2), said system (S) comprising
   a dispensing tap (3) of said beverage,
   a heat exchanger (5), arranged in contact with said dispensing tap (3),
   a dispensing assembly (1), said dispensing assembly (1) having insulating means (12, 14), suitable to isolate said heat exchanger (5) with respect to said wall (2'), and at least one duct (4) of said beverage to be dispensed, passing through said heat exchanger (5) and in communication with said dispensing tap (3), and
   cooling means (6) of said heat exchanger (5)
   **characterized**
   **in that** said dispensing assembly is arranged straddling said wall (2') of said support or column (2), said heat exchanger (5) being arranged through said dispensing assembly (1),
   **in that** said dispensing assembly (1) comprises a fixing front bushing (11), arranged on the front face of said wall (2') of said support or column (2), and
   **in that** said insulation means comprise a fixing rear bushing (12), arranged on the rear face of said wall (2') of said support or column (2), said rear bushing (12) being made of thermally insulating material, coupled with said front bushing (11) and adapted to isolate said heat exchanger (5) from said wall (2').

2. System (S) according to claim 1, **characterized in that** said insulating means comprise an insulator element (14), made of thermally insulating material, and adapted to isolate said heat exchanger (5) from said wall.

3. System (S) according to claim 2, **characterized in that** said heat exchanger (5) comprises a cylindrical portion (53), internally threaded for coupling with said tap (3), and **in that** said insulator element (14) has a cylindrical shape and it is arranged outside said cylindrical portion (53).

4. System (S) according to anyone of the preceding claims, **characterized in that** it comprises fixing means (13', 13") adapted to fix said dispensing assembly (1) by acting from the outer face of said wall (2') of said support or column (2).

5. System (S) according to claim 4, **characterized in that** said front bushing (11) is provided with at least one hole, (11', 11"), said rear bushing (12) is provided with at least one hole (12', 12"), said heat exchanger (5) is provided with at least one hole, preferably two holes (5', 5"), and said wall (2') of a support or column (2) has at least one hole, (22', 22"), and **in that** said fixing means comprise at least one screw, preferably two fixing screws (13', 13"), said fixing screws (13', 13") being able to be inserted in the holes of said front bushing (11), of said rear bushing (12), of said heat exchanger (5) and of said wall (2') of said support or column (2), for their mutual fixing.

6. System (S) according to anyone of the preceding claims, **characterized in that** said heat exchanger (5) comprises a through channel (51) through which said duct (4) is arranged.

7. System (S) according to one of the preceding claims 3-6, **characterized in that** it comprises a sealing gasket (16), arranged within said heat exchanger (5), between said head (17) for fixing said duct (4) to said heat exchanger (5) and said cylindrical portion (53), said head (17) being arranged within said heat exchanger (5).

8. System (S) according to anyone of the preceding claims, **characterized in that** said cooling means comprise a cooling duct (6), in which a heat exchange fluid flows, passing externally in contact with said heat exchanger (5).

**9.** System (S) according to claim 8, **characterized in that** said heat exchanger (5) has an external perimeter channel (52) in which said cooling duct (6) is housed.

**10.** System (S) according to one of the preceding claims 7 or 8, **characterized in that** said duct (4) of the beverage to be dispensed and said cooling duct (6) are arranged near or adjacent to each other and immersed into an expanded foam jacket (6).

**Patentansprüche**

**1.** Getränkeabgabesystem (S), das an der Wand (2') einer Stütze oder Säule (2) installiert werden kann, wobei das System (S) aufweist:

einen Abgabehahn (3) des Getränks,
einen Wärmetauscher (5), der in Kontakt mit dem Abgabehahn (3) angeordnet ist,
eine Abgabeanordnung (1), wobei die Abgabeanordnung (1) Isolationsmittel (12, 14) aufweist, die geeignet sind, um den Wärmetauscher (5) in Bezug auf die Wand (2') zu isolieren, und mindestens eine Leitung (4) des abzugebenden Getränks durch den Wärmetauscher (5) verläuft und in Verbindung mit dem Abgabehahn (3) steht, und
Kühlmittel (6) des Wärmetauschers (5),
**dadurch gekennzeichnet,**
**dass** die Abgabeanordnung (1) die Wand (2') der Stütze oder Säule (2) überspannend angeordnet ist, der Wärmetauscher (5) durch die Abgabeanordnung (1) hindurch angeordnet ist,
**dass** die Abgabeanordnung (1) eine vordere Befestigungsbuchse (11) aufweist, die an der Vorderseite der Wand (2') der Stütze oder Säule (2) angeordnet ist, und
**dass** das Isolationsmittel eine rückwärtige Befestigungsbuchse (12) aufweist, die an der Rückseite der Wand (2') der Stütze oder Säule (2) angeordnet ist, wobei die rückwärtige Buchse (12) aus einem thermisch isolierenden Material hergestellt ist, verbunden mit der vorderen Buchse (11) und angepasst, um den Wärmetauscher (5) von der Wand (2') zu isolieren.

**2.** System (S) gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Isolationsmittel ein Isolatorelement (14) aufweist, das aus einem thermisch isolierenden Material besteht und angepasst ist, um den Wärmetauscher (5) von der Wand zu isolieren.

**3.** System (S) gemäß Anspruch 2, **dadurch gekennzeichnet, dass** der Wärmetauscher (5) einen zylindrischen Abschnitt (53) aufweist, der mit einem Innengewinde versehen ist, um mit dem Hahn (3) verbunden zu werden, und dass das Isolationselement (14) eine Zylinderform hat und außerhalb des zylindrischen Abschnitts (53) angeordnet ist.

**4.** System (S) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** es Befestigungsmittel (13', 13") aufweist, die angepasst sind, um die Abgabeanordnung (1) zu befestigen, indem sie von der Außenseite der Wand (2') der Stütze oder Säule (2) wirken.

**5.** System (S) gemäß Anspruch 4,
**dadurch gekennzeichnet,**
**dass** die vordere Buchse (11) mit mindestens einer Bohrung (11', 11") versehen ist, die rückwärtige Buchse (12) mit mindestens einer Bohrung (12', 12") versehen ist, der Wärmetauscher (5) mit mindestens einer Bohrung, vorzugsweise zwei Bohrungen (5', 5"), versehen ist, und die Wand (2') der Stütze oder Säule (2) mindestens eine Bohrung (22', 22") aufweist, und
**dass** das Befestigungsmittel mindestens eine Schraube, vorzugsweise zwei Schrauben (13', 13") aufweist, wobei die Befestigungsschrauben (13', 13") in der Lage sind, um in die Bohrungen der vorderen Buchse (11), der rückwärtigen Buchse (12), des Wärmetauschers (5) und der Wand (2') der Stütze oder Säule (2) eingeführt zu werden, für deren gegenseitige Befestigung.

**6.** System (S) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Wärmetauscher (5) einen Durchgangskanal (51) aufweist, durch den hindurch die Leitung (4) angeordnet ist.

**7.** System (S) gemäß einem der vorangehenden Ansprüche 3-6, **dadurch gekennzeichnet, dass** es eine Dichtung (16) aufweist, angeordnet innerhalb des Wärmetauschers (5) zwischen dem Kopf (17) zur Befestigung der Leitung (4) an dem Wärmetauscher (5) und dem zylindrischen Abschnitt (53), wobei der Kopf (17) innerhalb des Wärmetauschers (5) angeordnet ist.

**8.** System (S) gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das Kühlmittel eine Kühlleitung (6) aufweist, in der ein Wärmetauscherfluid strömt, das außen in Kontakt mit dem Wärmetauscher (5) vorbeigeht.

**9.** System (S) gemäß Anspruch 8, **dadurch gekennzeichnet, dass** der Wärmetauscher (5) einen äußeren Umfangskanal (52) aufweist, in dem die Kühlleitung (6) beherbergt ist.

**10.** System (S) gemäß einem der vorangehenden Ansprüche 7 oder 8, **dadurch gekennzeichnet, dass**

die Leitung (4) des abzugebenden Getränks und die Kühlleitung (6) nahe aneinander oder aneinander angrenzend angeordnet und in einen expandierten Schaummantel (6) eingetaucht sind.

**Revendications**

1. Système de distribution de boissons (S) pouvant être installé sur la paroi (2') d'un support ou d'une colonne (2), ledit système (S) comprenant
un robinet de distribution (3) de ladite boisson,
un échangeur de chaleur (5), disposé au contact dudit robinet de distribution (3),
un ensemble de distribution (1), ledit ensemble de distribution (1) comportant un moyen d'isolation (12, 14), apte à isoler ledit échangeur de chaleur (5) par rapport à ladite paroi (2'), et au moins un conduit (4) de ladite boisson à distribuer, passant à travers ledit échangeur de chaleur (5) et en communication avec ledit robinet de distribution (3), et
un moyen de refroidissement (6) dudit échangeur de chaleur (5), **caractérisé en ce que**
ledit ensemble de distribution est disposé de manière à chevaucher ladite paroi (2') dudit support ou colonne (2), ledit échangeur de chaleur (5) étant disposé à travers ledit ensemble de distribution (1),
ledit ensemble de distribution (1) comprend une douille de fixation avant (11), disposée sur la face frontale de ladite paroi (2') dudit support ou colonne (2), et
ledit moyen d'isolation comprend une douille de fixation arrière (12), disposée sur la face arrière de ladite paroi (2') dudit support ou colonne (2), ladite douille de fixation arrière (12) étant réalisée en matériau thermiquement isolant, couplée à ladite douille de fixation avant (11) et conçue pour isoler ledit échangeur de chaleur (5) de ladite paroi (2').

2. Système (S) selon la revendication 1, **caractérisé en ce que** ledit moyen d'isolation comprend un élément isolant (14) en matériau thermiquement isolant et conçu pour isoler ledit échangeur de chaleur (5) de ladite paroi.

3. Système (S) selon la revendication 2, **caractérisé en ce que** ledit échangeur de chaleur (5) comprend une partie cylindrique (53), filetée intérieurement pour s'accoupler audit robinet (3), et **en ce que** ledit élément isolant (14) a une forme cylindrique et est disposé à l'extérieur de ladite partie cylindrique (53).

4. Système (S) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens de fixation (13', 13") conçus pour fixer ledit ensemble de distribution (1) en agissant à partir de la face extérieure de ladite paroi (2') dudit support ou colonne (2).

5. Système (S) selon la revendication 4, **caractérisé en ce que** ladite douille de fixation avant (11) est pourvue d'au moins un orifice (11', 11"), ladite douille de fixation arrière (12) étant pourvue d'au moins un orifice (12', 12"), ledit échangeur de chaleur (5) étant pourvu d'au moins un orifice, de préférence deux orifices (5', 5"), et ladite paroi (2') d'un support ou colonne (2) comportant au moins un orifice (22', 22"), et
**en ce que** lesdits moyens de fixation comprennent au moins une vis, de préférence deux vis de fixation (13', 13"), lesdites vis de fixation (13', 13") étant aptes à être insérées dans les orifices de ladite douille avant (11), de ladite douille arrière (12), dudit échangeur de chaleur (5) et de ladite paroi (2') dudit support ou colonne (2), pour leur fixation mutuelle.

6. Système (S) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit échangeur de chaleur (5) comprend un canal traversant (51) à travers lequel est disposé ledit conduit (4).

7. Système (S) selon l'une des revendications précédentes 3 à 6, **caractérisé en ce qu'**il comprend un joint d'étanchéité (16), disposé à l'intérieur dudit échangeur de chaleur (5), entre ladite tête (17) pour la fixation dudit conduit (4) audit échangeur de chaleur (5) et ladite partie cylindrique (53), ladite tête (17) étant disposée à l'intérieur dudit échangeur de chaleur (5).

8. Système (S) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit moyen de refroidissement comprend un conduit de refroidissement (6) dans lequel s'écoule un fluide caloporteur, passant extérieurement au contact dudit échangeur de chaleur (5).

9. Système (S) selon la revendication 8, **caractérisé en ce que** ledit échangeur de chaleur (5) présente un canal périphérique externe (52) dans lequel est logé ledit conduit de refroidissement (6).

10. Système (S) selon l'une des revendications précédentes 7 ou 8, **caractérisé en ce que** ledit conduit (4) de la boisson à distribuer et ledit conduit de refroidissement (6) sont disposés à proximité l'un de l'autre ou de manière adjacente et immergés dans une chemise en mousse expansée (6).

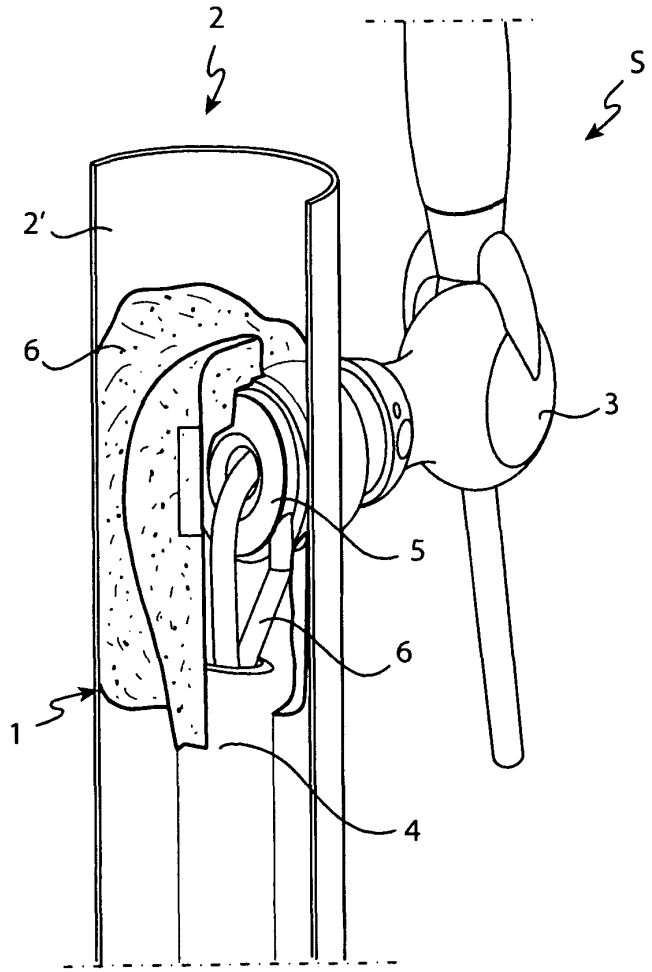



Fig. 1

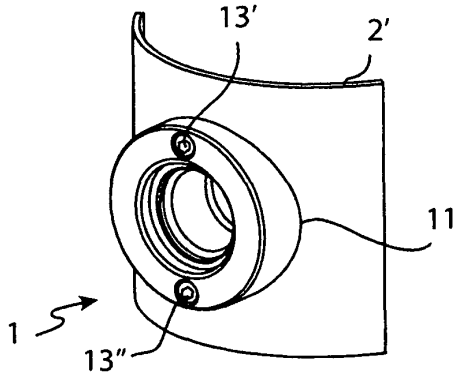



Fig. 2

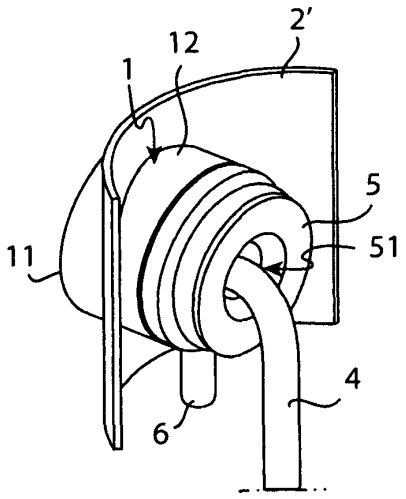



Fig. 3

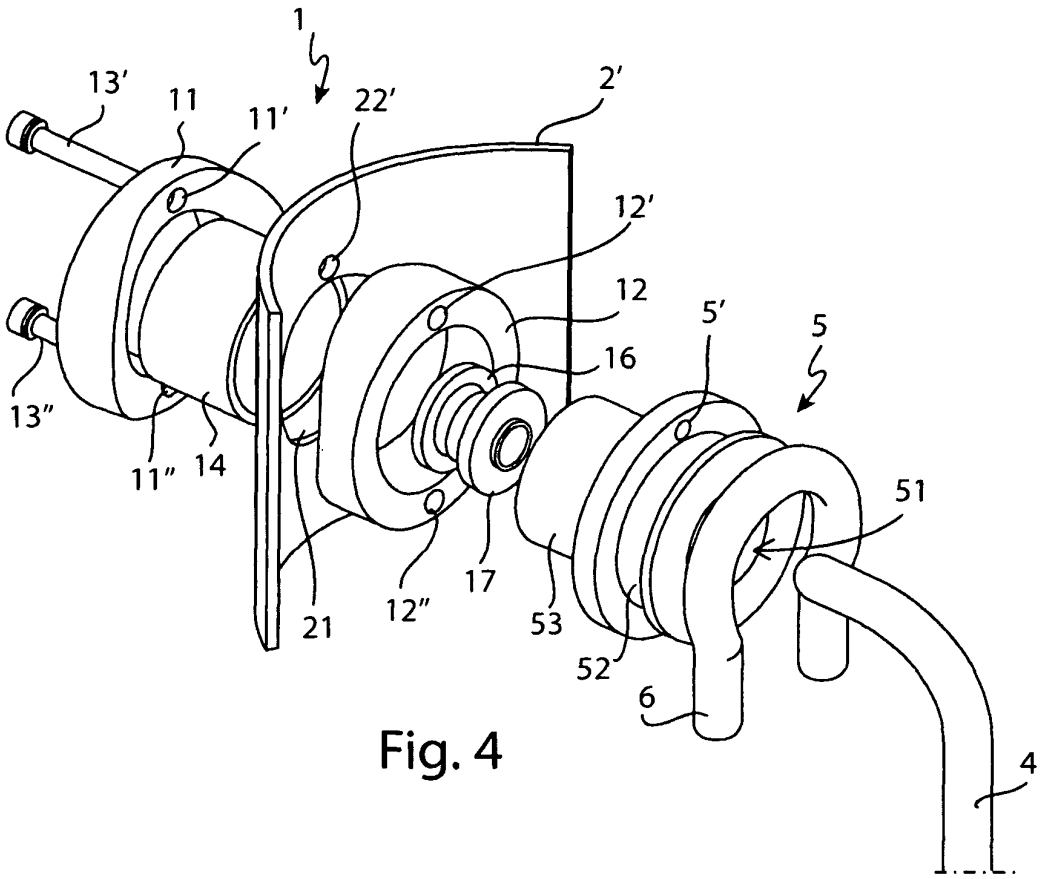

1
13'
11
11'
22'
2'
12'
12
5'
5
16
13"
11"
14
51
17
12"
53
21
52
6
4

Fig. 4

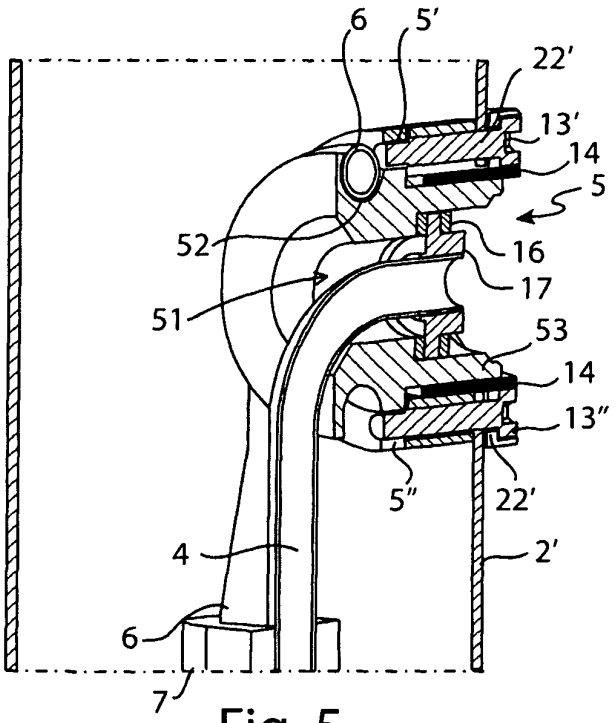

6
5'
22'
13'
14
5
52
16
17
51
53
14
13"
5"
22'
4
2'
6
7

Fig. 5

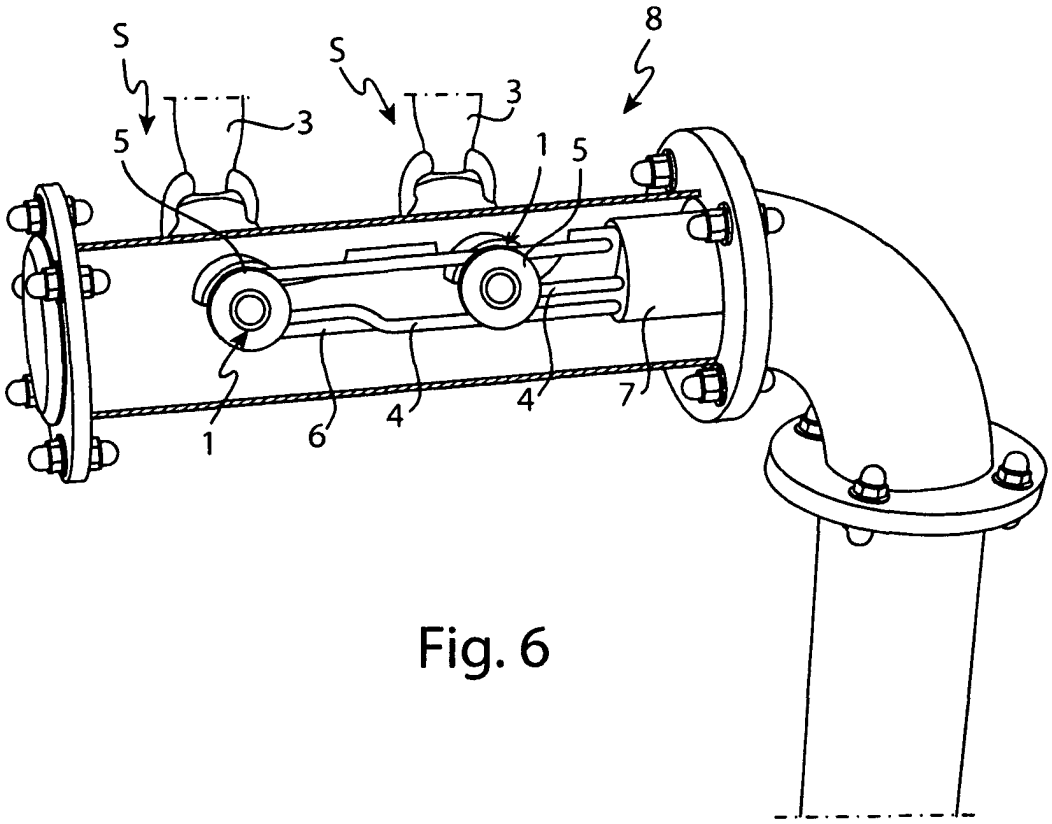



Fig. 6

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- EP 1717190 A2 **[0008]**