



(51) International Patent Classification:

F16K 15/06 (2006.01)

(21) International Application Number:

PCT/EP2016/059510

(22) International Filing Date:

28 April 2016 (28.04.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant: ARCELIK ANONIM SIRKETI [TR/TR]; E5

Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

(72) Inventors: AYGUN, Oktay; E5 Ankara Asfalti Uzeri, Tu-

zla, 34950 Istanbul (TR). UNAL, Omer; E5 Ankara As-

faltı Uzeri, Tuzla, 34950 Istanbul (TR). MERIC, Davut; E5

Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). SUNEL,

Gurbuz; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul

(TR). GUNGORMEZ, Soner; E5 Ankara Asfalti Uzeri,

Tuzla, 34950 Istanbul (TR).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ,

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR,

HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA,

LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN,

MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE,

PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE,

SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ,

UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, GH,

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

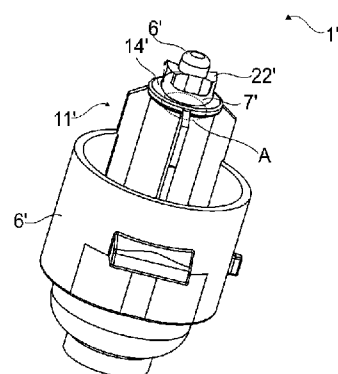
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: CHECK-VALVE ASSEMBLY FOR USE IN A WATER DISPENSER

Fig. 1



(57) Abstract: The present invention relates to a check-valve assembly (1) for use in a water dispenser of a refrigerator. The check-valve assembly (1) comprises: a main body (2) which comprises: an inlet (3); an outlet (4); a flow passage (5) which fluidly connects the inlet (3) with the outlet (4); a valve member (6) for opening/closing the flow passage (5), wherein the valve member (6) is axially movably disposed onto the main body (2); a first sealing member (7) for leak-tightly sealing the flow passage (5) when the valve member (6) is in the closed position, wherein the first sealing member (7) is fixed to the valve member (6).

Description**CHECK-VALVE ASSEMBLY FOR USE IN A WATER DISPENSER**

- [0001] The present invention relates to a water dispenser, in particular to a water dispenser of a refrigerator. The present invention more particularly relates to the check-valve assembly of the water dispenser.
- [0002] Refrigerators having water dispensers for supplying the user with cold drinking water are commonly known in the art. A refrigerator generally comprises a refrigeration compartment for receiving the articles to be refrigerated; a door for opening/closing the refrigeration compartment; a water dispenser which is disposed into the door and in heat-exchange with the refrigeration compartment. The water dispenser comprises a water tank which has an aperture for feeding the water to a check-valve assembly. Fig. 1 is a schematic partial perspective view of a check-valve assembly (1') for a water dispenser (not shown) which is known from the prior art. Fig. 3 is a schematic partial sectional view of the check-valve assembly (1'), taken along the line B-B in Fig. 10. As shown in Fig. 3, the check-valve assembly (1') comprises a main body (2') which comprises: an inlet (3') for receiving the water from the aperture of the water tank; an outlet (4') for discharging the water into a drinking cup or the like; a flow passage (5') which fluidly connects the inlet (3') with the outlet (4'); a valve member (6') for opening/closing the flow passage (5'), wherein the valve member (6') is axially movably disposed onto the main body (2'); and at least a first sealing member (7') for leak-tightly sealing the flow passage (5') when the valve member (6') is in the closed position, wherein the first sealing member (7') is fixed to the valve member (6'). The water dispenser also comprises a lever for actuating the check-valve assembly (1'). The lever and the outlet (4') of the check-valve assembly (1') are both accessible from the front side of the door. Thereby, the user can take the cold drinking water without opening the door.
- [0003] WO2015144244(A1) discloses a refrigerator which comprises the water dispenser, including the check-valve assembly (1') as specified above.
- [0004] Fig. 9 is another schematic partial perspective view of the check-valve assembly (1') prior to attaching a clip member (22') (see Fig. 1) to the

second annular groove (23'). As shown in Fig. 9, when assembling the check-valve assembly (1'), the assembly operator fixes the first sealing member (7') to a first annular groove (20') (see Fig. 3) on the valve member (6'). As shown in Fig. 1, the assembly operator subsequently attaches the clip member (22') to the second annular groove (23') on the valve member (6').

[0005] A problem with the prior art check-valve assembly (1') is that the first sealing member (7') can be easily dislocated on the seating surface (14') (Fig.1) of the support member (11') when the assembly operator attaches the clip member (22') to the valve member (6'). The region A in Fig.1, shows how the first sealing member (7') becomes dislocated. In such occurrences, the check-valve assembly (1) starts leaking. In general, the water dispenser must be absolutely leak-tight. A leakage poses a safety risk to the user. Another problem with the prior art check-valve assembly (1') is that the first sealing member (7') is vulnerable to wear and dislocations under mechanical stress. In particular, the check-valve assembly (1') is subjected to mechanical stress when the user opens/closes the valve member (6') or detaches the water dispenser for replenishment or maintenance. In such occurrences, the check-valve assembly (1) may also start leaking.

[0006] An objective of the present invention is to provide a check-valve assembly for use in a water dispenser of a refrigerator which solves the aforementioned problems of the prior art in a cost-effective way and which is easy to install and has an improved safety.

[0007] This objective have been achieved by the check-valve assembly as defined in claim 1, and the refrigerator as defined in claim 15. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.

[0008] The check-valve assembly of the present invention further comprises: one or more retaining members each adapted to radially inwardly compress the first sealing member and to block its radial outward displacement.

[0009] A major advantageous effect of the present invention is that the first sealing member can be prevented from becoming dislocated during the

assembly process as well during the use by virtue of the retaining member. Thereby, the water dispenser can be quickly and correctly assembled and also properly used, and thus the risk of leakage can be eliminated or reduced as much as possible. Another major advantageous effect of the present invention is that the sealing performance of the first sealing member can be improved by virtue of the retaining member. Thereby, the user satisfaction can be increased.

[0010] In an embodiment, the first sealing member has a circular shape. In this embodiment, the retaining member has a rim which surrounds a cavity. The first sealing member is retained within the cavity under radial compression by the rim. This embodiment is particularly advantageous as the first sealing member can be correctly centered during the assembly process as well as during the use.

[0011] In another embodiment, the valve member is received and supported in a bearing of a support member which is axially movably disposed into a recess of the main body. In this embodiment, the retaining members are formed onto the support member. And the first sealing member is seated on a seating surface on the support member. This embodiment is particularly advantageous as the support member allows designing the check-valve assembly more flexibly. Thereby, the production costs can be reduced and the stock management can be improved.

[0012] In another embodiment, the seating surface on the support member is beveled towards the center of the flow passage. This embodiment is particularly advantageous as the sealing performance of the first sealing member can be further improved.

[0013] In another embodiment, one or more ribs are formed onto the support member. This embodiment is particularly advantageous as the support member can be made lighter, and thus raw materials can be saved.

[0014] In another embodiment, the interface between the support member and the inner surface of the recess is sealed with a second sealing member when the valve member is in the closed position. This embodiment is particularly advantageous as the support member can be disassembled for cleaning.

- [0015] In another embodiment, the valve member is spring-loaded. This embodiment is particularly advantageous as the valve member can be quickly and reliably moved from open position to the closed position or vice-versa.
- [0016] In another embodiment, the check-valve assembly can be attached to the water tank of the water dispenser through an attachment means which comprises a releasable form-fitting connection and/or a releasable force-fitting connection or a bonding connection. In another embodiment, the attachment means comprises a thread connection. This embodiment is particularly advantageous as the valve member can be securely assembled with the water tank.
- [0017] In another embodiment, the interface between the check-valve assembly and the water tank is sealed through a third sealing member. This embodiment is particularly advantageous as the check-valve assembly can be disassembled from the water tank for cleaning.
- [0018] In other alternative embodiments, the first sealing member is fixed to the valve member through a fixing means which has a releasable form-fitting connection and/or a releasable force-fitting connection or a bonding connection. In another embodiment, the fixing means comprises a first annular groove formed into the valve member which resiliently receives the first sealing member. This embodiment is particularly advantageous as the first sealing member can be securely fixed to the valve member.
- [0019] In another embodiment, the valve member is locked to the main body through a locking means. This embodiment is particularly advantageous as the check-valve assembly can be prevented from disintegrating into its component parts when the valve member is under excessive mechanical stress, for instance, when the valve member is moved from the open position to the closed position to strongly for one reason or another.
- [0020] In another embodiment, the valve member is locked to the main body through a clip member which is resiliently received in a second annular groove formed into the valve member. This embodiment is particularly advantageous as the clip member is reliable and cost-effective.
- [0021] In another embodiment, the clip member presses against the first sealing

member towards the closed position and each retaining member. This embodiment is particularly advantageous as the first sealing member can be prevented from retreating when the valve member is in the closed position. Thereby the sealing performance can be further improved.

[0022] Additional features and additional advantageous effects of the check-valve assembly of the present invention will become more apparent with the detailed description of the embodiments with reference to the accompanying drawings in which:

[0023] Figure 1 – is a schematic partial perspective view of a check-valve assembly according to the prior art;

[0024] Figure 2 – is a schematic partial perspective view of a check-valve assembly according to an embodiment of the present invention;

[0025] Figure 3 – is a schematic partial sectional view of the check-valve assembly of Fig. 1, taken along the line B-B in Fig. 10;

[0026] Figure 4 – is a schematic partial sectional view of a check-valve assembly according to an embodiment of the present invention, taken along the line C-C in Fig. 11;

[0027] Figure 5 – is a schematic perspective view of the support member of the check-valve assembly of Fig. 2;

[0028] Figure 6 – is a schematic partial perspective view of the check-valve assembly of Fig. 2, prior to mounting the first sealing member to the first annular groove;

[0029] Figure 7 – is a schematic partial perspective view of the check-valve assembly of Fig. 2, prior to mounting the clip member to the second annular groove;

[0030] Figure 8 – is a schematic perspective view of the support member of the check-valve assembly of Fig. 1;

[0031] Figure 9 – is a schematic partial perspective view of the check-valve assembly of Fig. 1, prior to mounting the clip member to the second annular groove;

[0032] Figure 10 – is a schematic top view of the check-valve assembly according to the prior art;

[0033] Figure 11 – is a schematic top view of a check-valve assembly according

to an embodiment of the present invention.

[0034] The reference signs appearing on the drawings relate to the following technical features.

1. Check-valve assembly
2. Main body
3. Inlet
4. Outlet
5. Flow passage
6. Valve member
7. First sealing member
8. Retaining member
9. Rim
10. Cavity
11. Support member
12. Recess
13. Bearing
14. Seating surface
15. Rib
16. Second sealing member
17. Attachment means
18. Third sealing member
19. Fixing means
20. First annular groove
21. Locking means
22. Clip member
23. Second annular groove
24. Third annular groove

[0035] The check-valve assembly (1) is suitable for use in a water dispenser (not shown) of a refrigerator (not shown).

[0036] The refrigerator comprises: a refrigeration compartment for receiving the articles to be refrigerated; a door for opening/closing the refrigeration compartment; and the water dispenser which is disposed into the door and in heat-exchange with the refrigeration compartment. The water dispenser

comprises a water tank which has an aperture for feeding the water to the check-valve assembly (1).

- [0037] The check-valve assembly (1) comprises: a main body (2) which comprises: an inlet (3) for receiving the water from the aperture of the water tank; an outlet (4) for discharging the water into a drinking cup or the like; a flow passage (5) which fluidly connects the inlet (3) with the outlet (4); a valve member (6) for opening/closing the flow passage (5), wherein the valve member (6) is axially movably disposed onto the main body (2); a first sealing member (7) for leak-tightly sealing the flow passage (5) when the valve member (6) is in the closed position, wherein the first sealing member (7) is fixed to the valve member (6) (Fig. 4).
- [0038] The check-valve assembly (1) of the present invention further comprises: one or more retaining members (8) each adapted to radially inwardly compress the first sealing member (7) and to block its radial outward displacement (Fig. 4).
- [0039] The refrigerator of the present invention further comprises: the check-valve assembly (1); and an actuation means for actuating the valve member (6).
- [0040] In an embodiment, the first sealing member (7) has a circular shape (Fig. 6 and Fig. 7). In this embodiment, the retaining member (8) comprises a rim (9) which surrounds a cavity (10) (Fig. 5). In this embodiment, the inner radius of the rim (9) is slightly smaller than the outer radius of the first sealing member (7) such that the first sealing member (7) is retained within the cavity (10) under the radial inward compression by the rim (9) (Fig. 2 and Fig. 4).
- [0041] In another embodiment, the check-valve assembly (1) comprises: a support member (11); and a recess (12) in the main body (2) for axially movably receiving the support member (11) (Fig. 4). In this embodiment, one or more retaining members (8) are formed onto the support member (11) (Fig. 5). In this embodiment, the support member (11) comprises: a bearing (13) for receiving and supporting the valve member (6); and a seating surface (14) for seating the first sealing member (7) (Fig. 4).
- [0042] In another embodiment, the seating surface (14) is beveled (Fig. 4).
- [0043] In another embodiment, the support member (11) has one or more ribs

(15) which abut onto the inner surface of the recess (12) (Fig. 4 and Fig. 5).

- [0044] In another embodiment, the check-valve assembly (1) further comprises: a second sealing member (16) for sealing the interface between the support member (11) and the inner surface of the recess (12) when the valve member (6) is in the closed position (Fig. 4).
- [0045] In another embodiment, the check-valve assembly (1) further comprises: a spring element (not shown) which is adapted to push the valve member (6) from the open position towards the closed position. In this embodiment, the spring element is disposed between the valve member (6) and the main body (2).
- [0046] In another embodiment, the spring element is provided as a compression coil spring.
- [0047] In another embodiment, the check-valve assembly (1) comprises an attachment means (17) for attaching the main body (2) to the aperture of the water tank (Fig. 4).
- [0048] In another embodiment, the attachment means (17) comprises a thread connection.
- [0049] In another embodiment, the check-valve assembly (1) further comprises a third sealing member (18) for sealing the interface between the main body (2) and the water tank (Fig. 4).
- [0050] In another embodiment, the check-valve assembly (1) further comprises: a fixing means (19) for fixing the first sealing member (7) to the valve member (6) (Fig. 4).
- [0051] In another embodiment, the first sealing member (7) is annular shaped (Fig. 6). In this embodiment, the fixing means (19) comprises a first annular groove (20) formed into the valve member (6) and adapted to resiliently receive the first sealing member (7) (Fig. 6 and Fig. 7). In this embodiment, the inner radius of the first sealing member (7) is slightly smaller than the radius of the first annular groove (20) such that the first sealing member (7) is form-fittingly and force-fittingly kept in place.
- [0052] In another embodiment, the check-valve assembly (1) further comprises a locking means (21) for locking the valve member (6) to the main body (2)

(Fig. 4).

- [0053] In another embodiment, the locking means (21) comprises: a clip member (22); and a second annular groove (23) formed into the valve member (6) (Fig. 4). In this embodiment, the second annular groove (23) is adapted to resiliently receive the clip member (22).
- [0054] In another embodiment, the clip member (22) presses the first sealing member (7) towards the closed position and the retaining member (8) (Fig. 2 and Fig. 4).
- [0055] In another embodiment, the support member (11) comprises a third annular groove (24) which resiliently receives the second sealing member (16) (Fig. 5).
- [0056] In other alternative embodiments, the first sealing member (7), the second sealing member (16) and the third sealing member (18) are rubber O-rings with circular or square cross-sections (Fig. 4).
- [0057] A major advantageous effect of the present invention is that the first sealing member (7) can be prevented from becoming dislocated during the assembly process as well during the use by virtue of the retaining member (8). Thereby, the water dispenser can be quickly and correctly assembled and also properly used, and thus the risk of leakage can be eliminated or reduced as much as possible. Another major advantageous effect of the present invention is that the sealing performance of the first sealing member (7) can be improved by virtue of the retaining member (8). Thereby, the user satisfaction can be increased. Other advantageous effects of the present invention can be taken from the above-described embodiments.

Claims

1. A check-valve assembly (1) for use in a water dispenser of a refrigerator, the check-valve assembly (1) comprising:
a main body (2) which comprises: an inlet (3);
an outlet (4);
a flow passage (5) which fluidly connects the inlet (3) with the outlet (4);
a valve member (6) for opening/closing the flow passage (5), wherein the valve member (6) is axially movably disposed onto the main body (2);
a first sealing member (7) for leak-tightly sealing the flow passage (5) when the valve member (6) is in the closed position,
wherein the first sealing member (7) is fixed to the valve member (6),
characterized by further comprising:
one or more retaining members (8) each adapted to radially inwardly compress the first sealing member (7) and to block its radial outward displacement.
2. The check-valve assembly (1) according to claim 1, characterized in that the first sealing member (7) has a circular shape; and the retaining member (8) comprises a rim (9) which surrounds a cavity (10), wherein the inner radius of the rim (9) is slightly smaller than the outer radius of the first sealing member (7) such that the first sealing member (7) is retained within the cavity (10) under the radial inward compression by the rim (9).
3. The check-valve assembly (1) according to claim 1 or 2, characterized by further comprising: a support member (11); and a recess (12) in the main body (2) for axially movably receiving the support member (11), wherein one or more retaining members (8) are formed onto the support member (11), and wherein the support member (11) comprises: a bearing (13) for receiving and supporting the valve member (6); and a seating surface (14) for seating the first sealing member (7) -.
4. The check-valve assembly (1) according to claim 3, characterized in that the seating surface (14) is beveled.
5. The check-valve assembly (1) according to claim 3 or 4, characterized in that the support member (11) has one or more ribs (15) which abut against the inner surface of the recess (12).
6. The check-valve assembly (1) according to any one of claims 3 to 5,

characterized by further comprising: a second sealing member (16) for sealing the interface between the support member (11) and the inner surface of the recess (12) when the valve member (6) is in the closed position.

7. The check-valve assembly (1) according to any one of claims 1 to 6, characterized by further comprising: a spring element which is adapted to push the valve member (6) from the open position towards the closed position, wherein the spring element is disposed between the valve member (6) and the main body (2).
8. The check-valve assembly (1) according to any one of claims 1 to 7, wherein the water dispenser comprises a water tank which has an aperture for feeding the water to the inlet (3) of the check-valve assembly (1), the check-valve assembly (1) being characterized by comprising: an attachment means (17) for attaching the main body (2) to the aperture of the water tank.
9. The check-valve assembly (1) according to claim 8, characterized by comprising: a third sealing member (18) for sealing the interface between the main body (2) and the water tank.
10. The check-valve assembly (1) according to any one of claims 1 to 9, characterized by comprising: a fixing means (19) for fixing the first sealing member (7) to the valve member (6).
11. The check-valve assembly (1) according to claim 10, characterized in that the first sealing member (7) is annular shaped; and the fixing means (19) comprises a first annular groove (20) formed into the valve member (6), wherein the first annular groove (20) is adapted to resiliently receive the first sealing member (7).
12. The check-valve assembly (1) according to any one of claims 1 to 11, characterized by further comprising: a locking means (21) for locking the valve member (6) to the main body (2).
13. The check-valve assembly (1) according to claim 12, characterized in that the locking means (21) comprises: a clip member (22); and a second annular groove (23) formed into the valve member (6), wherein the second annular groove (23) is adapted to resiliently receive the clip member (22).
14. The check-valve assembly (1) according to claim 13, characterized in that the clip member (22) presses the first sealing member (7) towards the closed

position and the retaining members (8).

15. A refrigerator comprising: a refrigeration compartment for receiving the articles to be refrigerated; a door for opening/closing the refrigeration compartment; a water dispenser which is disposed into the door and in heat-exchange with the refrigeration compartment, wherein the water dispenser comprises a water tank, characterized by further comprising: the check-valve assembly (1) as defined in any one of claims 1 to 14; and an actuation means for actuating the valve member (6).

Fig. 1

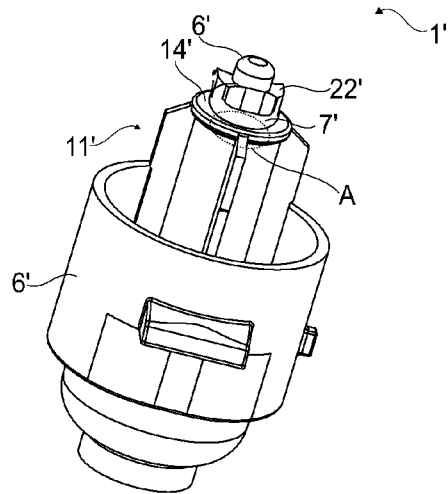


Fig. 2

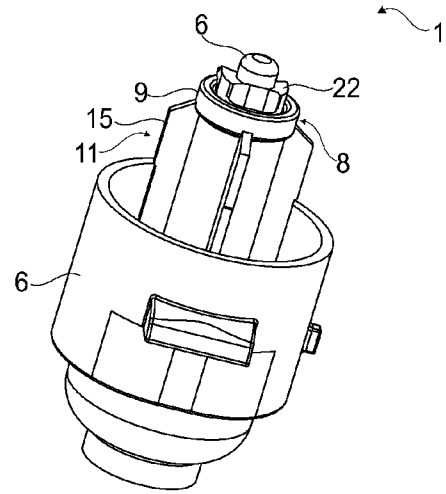


Fig. 3

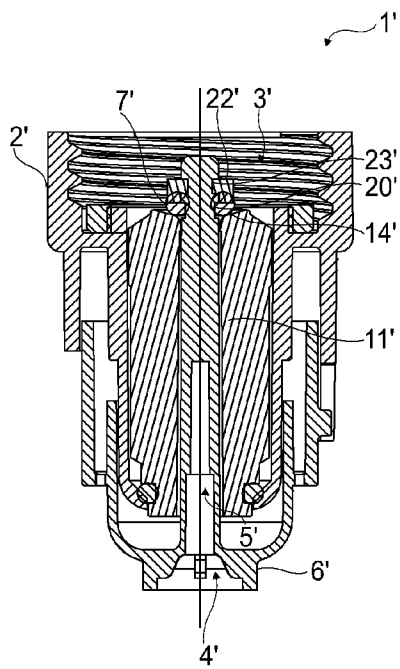


Fig. 4

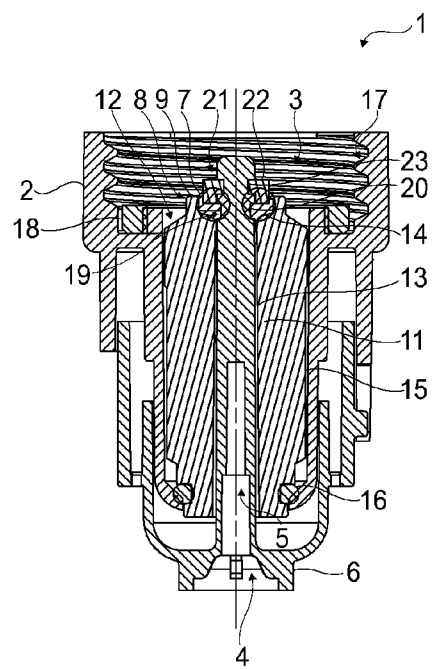


Fig. 5

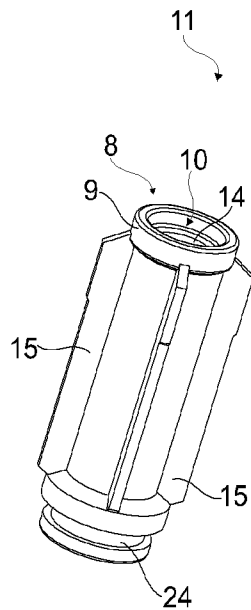


Fig. 6

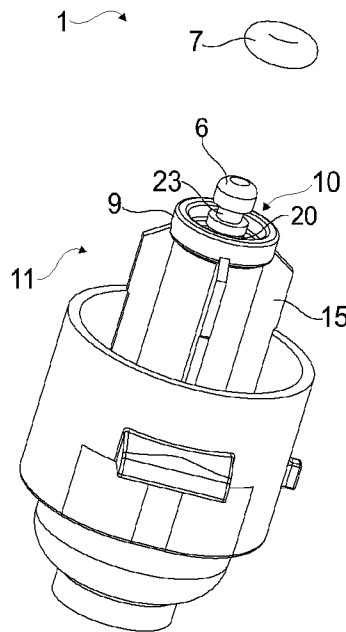


Fig. 7

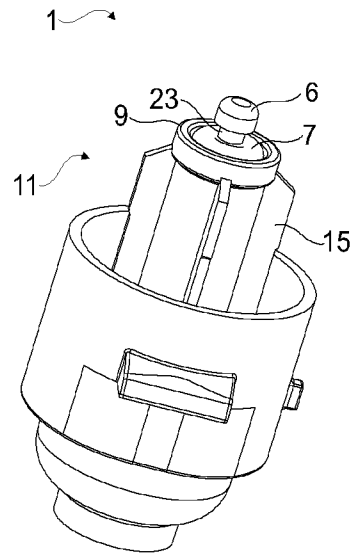


Fig. 8

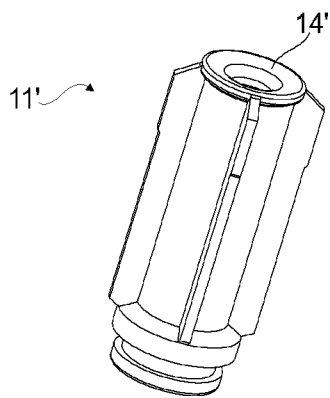


Fig. 9

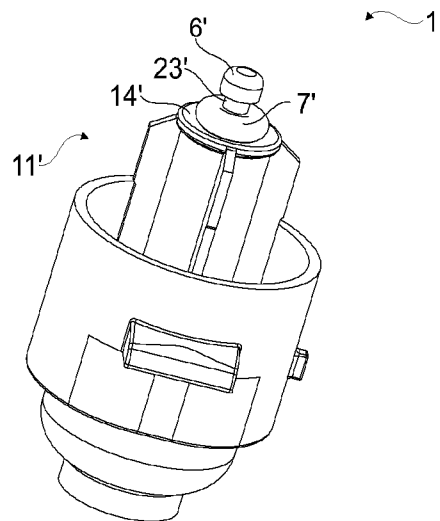


Fig. 10

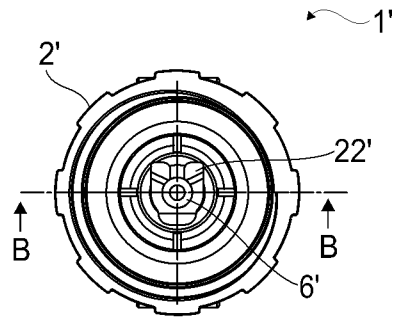
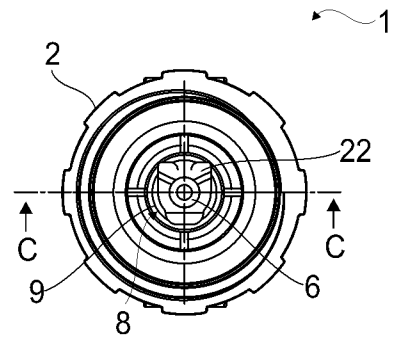


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2016/059510

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16K15/06
ADD.

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)
F25D F25C F25B F16K

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/092864 A1 (ANDERSSON ALLAN BO [US]) 18 April 2013 (2013-04-18) paragraphs [0016], [0018]; figures -----	1-14
X	KR 2014 0047336 A (SAMSUNG ELECTRONICS CO LTD [KR]) 22 April 2014 (2014-04-22) figures 1,5,6 -----	1-4,6-8, 10-12,15
X	US 2005/126638 A1 (GILBERT GREGORY N [US]) 16 June 2005 (2005-06-16) figure 2 -----	1-8



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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

12 January 2017

Date of mailing of the international search report

23/01/2017

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Canköy, Necdet

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/059510

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013092864 A1	18-04-2013	NONE	

KR 20140047336 A	22-04-2014	NONE	

US 2005126638 A1	16-06-2005	US 2005126638 A1	16-06-2005
		WO 2005059417 A1	30-06-2005
