



- (51) **International Patent Classification:**
F16K 5/06 (2006.01)
- (21) **International Application Number:**
PCT/TR2010/000084
- (22) **International Filing Date:**
22 April 2010 (22.04.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (71) **Applicant (for all designated States except US):** VALF SANAYII A.S. [TR/TR]; Organize Sanayi Bolgesi Kurtulus Cad. No.: 1, 45030 Manisa (TR).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** RAMAZAN, Köroglu [TR/TR]; Organize Sanayi Bolgesi Kurtulus Cad. No.: 1, 45030 Manisa (TR). CENGİZ, İlhan [TR/TR]; Organize Sanayi Bolgesi Kurtulus Cad. No.: 1, 45030 Manisa (TR).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM,

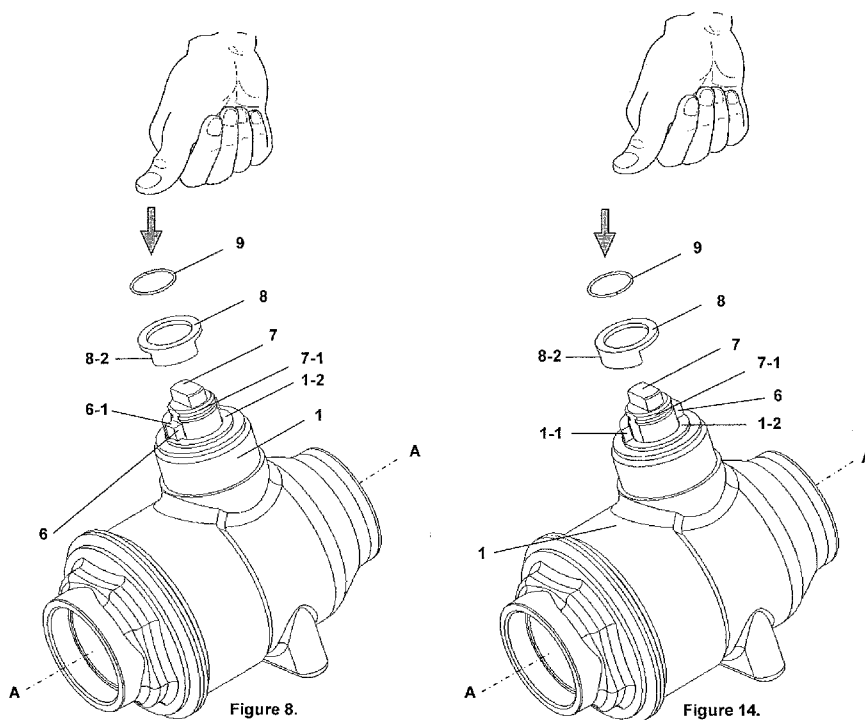
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

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

(54) **Title:** BALL VALVE WITH STOP



(57) **Abstract:** This invention is an apparatus which is permitted to the spindle (7) movement limited turning with only 90° angle on the ball valves which has 180° turning speciality (bi-flow) (figure 8 and figure 14). Aforesaid this apparatus is consisted of blocking part (8) and ring clamp (9). The blocking part (8) is permitted the spindle movement 90° instead of 180° which is assembled to the spindle (7). The blocking part (8) taking off is prevented by fixing a ring clamp (9).

WO 2011/133121 A1

DESCRIPTION

To limits the motion of the opening-closing with 90° instead of 180° on the bi-flow ball valves

The bi-flow ball valve is used on the cooling gas plumbing for opening-closing.

- 5 The valve is fully opened or fully closed by turning of the spindle a quarter tour (90°).
The spindle of valve can be turned till 180° by means of the specification of the bi-flow ball valve.

- 10 The bi-flow ball valves which are used on the cooling system for flow control they are provided the opening-closing operation by movement of the spindle and ball. If the user is turned to the spindle, the ball is also turned on its axis around and it is opened or closed the flow way.

Purpose of this invention is permitted to the spindle movement limited turning of left or right side with only 90° angle (which is preferred) on the ball valves which has 180° turning speciality (bi-flow).

- 15 According to the descriptions of the figures are below which are help understanding of invention more clearly ;

The part numbers short describes and descriptions :

- 1-body
- 1-1 body first upright face
- 20 1-2 body first straight face
- 1-3 body second upright face
- 2- Sealing ring
- 3-ball
- 3-1 ball bore
- 25 4-cover
- 5- o-ring
- 6- pin
- 6-1 pin straight face
- 7- spindle
- 30 7-1 channel
- 8- blocking part
- 8-1 blocking part first straight face
- 8-2 blocking part first upright face

8-3 blocking part second straight face

8-4 blocking part second upright face

9- ring clamp

A-A : Flow axis

5 B-B : Ball bore axis (it belongs 3-1)

C-C : Pin axis

Valve Open : The pin axis (C-C) is upright to the flow axis (A-A) and ball bore axis (B-B) is parallel to the flow axis (A-A), the valve is opened (Figure 9).

10 Closed-1 : Closed position is ensured by turning the spindle (7) right side with 90° angle (Figure 10) from opened position (Figure 9). In this position ; the pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A).

15 Closed-2 : Closed position is ensured by turning the spindle (7) left side with 90° angle (Figure 15) from opened position (Figure 9). In this position ; the pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A).

Figure 1 : It is shown schematically that the valve is closed positions (Closed-1 and Closed-2) from opened position by turning of the left or right side with 90° angle and in this way turning of 180° speciality.

20 Figure 2 : It is view of upper way of Closed-1 position, pin (6) and spindle (7) positions are shown on the body (1).

In figure 3 : It is view of upper way of Open position, pin (6) and spindle (7) positions are shown on the body (1).

25 In figure 4 : It is view of upper way of Closed-2 position, pin (6) and spindle (7) positions are shown on the body (1).

In figure 5 : It is shown schematically that the valve is closed position (Closed-1) from opened position by the spindle (7) is turned right side with 90° angle.

30 In figure 6 : While the valve is opened (it is limited right side with 90°) ; pin (6), spindle (7), blocking part (8) and ring clamp (9) positions are shown on the body (1).

In figure 7 : The valve is closed position (Closed-1) by the spindle (7) is turned right side with 90° . While this position ; pin (6), spindle (7), blocking part (8) and ring clamp (9) positions are shown on the body (1).

In figure 8 : It is shown that the blocking part (8) and ring clamp (9) is assembled to the spindle (7) by hand for providing of the valve operating range which is shown in figure 5. For assembling ; pin straight face (6-1) is abut body first upright face (1-1). It is assembled to the spindle (7) with blocking part second straight face (8-3) look at the body (1). The finally ; ring clamp (9) is assembled to the channel (7-1) and in this way, blocking part (8) is fixed.

Figure 9 : While the valve is opened (it is limited right side with 90°) ; body (1) and cover (4) are taken semi cross-section, in that way the other parts position are shown. Ball bore axis (B-B) is parallel to the flow axis (A-A) and the pin axis (C-C) is upright to the flow axis (A-A).

Figure 10 : While the valve is closed position (Closed-1) from opened position by the spindle (7) is turned right side with 90° angle ; body (1) and cover (4) are taken semi cross-section, in that way the other parts position are shown. The pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A).

In figure 11: It is shown schematically that the valve can be closed position (Closed-2) from opened position by turning of the left side with 90° angle.

Figure 12 : While the valve is opened (it is limited left side with 90°) ; pin (6), spindle (7), blocking part (8) and ring clamp (9) positions are shown on the body (1).

Figure 13 : The valve is closed position (Closed-2) from position of figure 12 by the spindle (7) is turned left side with 90° . While this position ; pin (6), spindle (7), blocking part (8) and ring clamp (9) positions are shown on the body (1).

Figure 14 : It is shown that the blocking part (8) and ring clamp (9) is assembled to the spindle (7) by hand for providing of the valve operating range which is shown in figure 11. For assembling ; blocking part first upright face (8-2) is abut body first upright face (1-1). It is assembled to the spindle (7) with blocking part second straight face (8-3) look at the body (1). The finally ; ring clamp (9) is assembled to the channel (7-1) and in this way, blocking part (8) is fixed.

Figure 15 : While the valve is opened (it is limited left side with 90°) ; body (1) and cover (4) are taken semi cross-section, in that way the other parts position are shown. Ball bore axis (B-B) is parallel to the flow axis (A-A) and the pin axis (C-C) is upright to the flow axis (A-A).

Figure 16 : While the valve is closed position (Closed-2) from opened position by the spindle (7) is turned left side with 90° angle ; body (1) and cover (4) are taken semi cross-section, in that way the other parts position are shown. The pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A).

Figure 17 : It is view of perspective of blocking part (8) from two different anglers. The blocking part (8) is formed to obtained by cut off a portion from a cylindrical part. It has blocking part first straight face (8-1), blocking part first upright face (8-2), blocking part second straight face (8-3) and blocking part second upright face (8-4).

Figure 18 : It is part of view of the body. There are shown pin (6) and blocking part (8) faces which are related on the body (1) faces. These are ; body first upright face (1-1), body first straight face (1-2) and body second upright face (1-3).

Figure 19 : It is shown the parts which are consisted the valve. These parts ; body (1), sealing ring (2), ball (3), cover (4), o-ring (5), pin (6), spindle (7), blocking part (8) and ring clamp (9).

Figure 20 : It is perspective view of pin (6) assembled to the spindle (7).

Figure 21 : It is perspective view of pin (6). The pin (6) has pin straight face (6-1). This invention is consisted to the spindle movement limited turning of left or right side with only 90° angle (which is preferred) on the ball valves which has 180° turning speciality (bi-flow) (figure 8, figure 14 and figure 19).

The blocking part (8) which is assembled on the spindle (7) provides to the spindle turning with 90° instead of 180° . The blocking part (8) taking off is prevented by fixing a ring clamp (9).

If the valve is closed position (Closed-1) from opened position by the spindle (7) is turned right side with 90° angle (figure 5) ; pin straight face (6-1) is abut to the body first upright face (1-1). It is assembled to the spindle (7) with blocking part second straight face (8-3) look at the body (1) (figure 8). The finally ; ring clamp (9) is assembled to the channel (7-1) and in this way, blocking part (8) is fixed. While the valve is opened position ; the pin axis (C-C) is upright to the flow axis (A-A) and ball bore axis (B-B) is parallel to the flow axis (A-A).

The valve is closed position (Closed-1) by the spindle (7) is turned right side with 90°. While this position ; the pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A) (figure 10).

5 If the valve is closed position (Closed-2) from opened position by the spindle (7) is turned left side with 90° angle (figure 11) ; pin straight face (6-1) is abut to the body second upright face (1-3). It is assembled to the spindle (7) with blocking part second straight face (8-3) look at the body (1). The finally ; ring clamp (9) is assembled to the channel (7-1) and in this way, blocking part (8) is fixed. While
10 the valve is opened position ; the pin axis (C-C) is upright to the flow axis (A-A) and ball bore axis (B-B) is parallel to the flow axis (A-A) (figure 15).

The valve is closed position from opened position by the spindle (7) is turned left side with 90° angle (Closed-2). While this position ; the pin axis (C-C) is parallel to the flow axis (A-A) and ball bore axis (B-B) is upright to the flow axis (A-A) (figure 16).

15 This invention will be applied for the ball valves which has 180° turning speciality (bi-flow).

20

25

CLAIMS

1) It is bi-flow ball valve, its speciality is ; to permit the spindle movement limited turning with only 90° angle instead of 180° and it belongs a locking system that is
5 consisted of blocking part (8) and ring clamp (9).

2) The blocking part (8) is aforesaid in claim 1, its speciality is ; has blocking part first straight face (8-1), blocking part first upright face (8-2), blocking part second straight face (8-3) and blocking part second upright face (8-4).
10

20

25

30

1/4

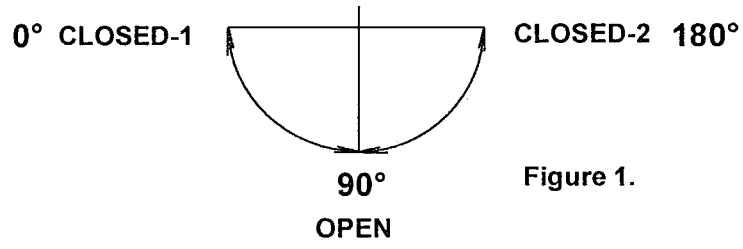


Figure 1.

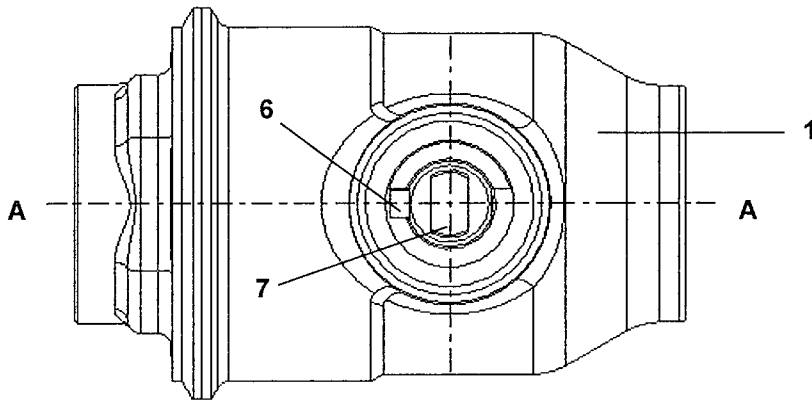


Figure 2.

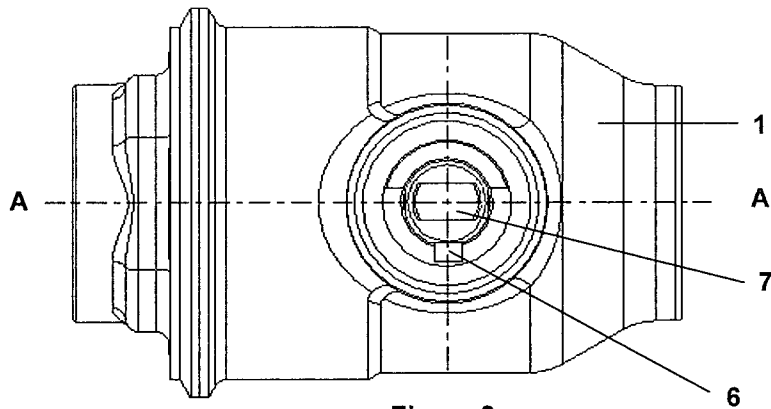


Figure 3.

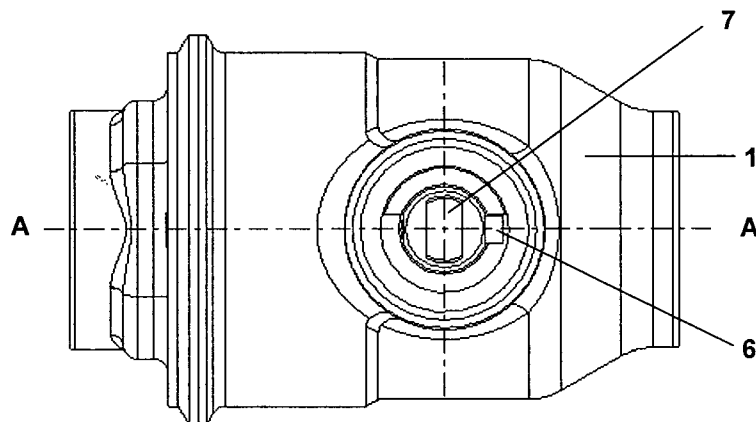


Figure 4.

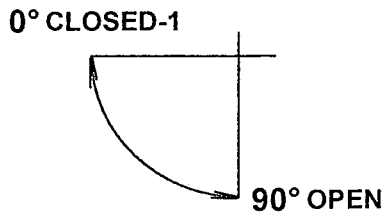


Figure 5.

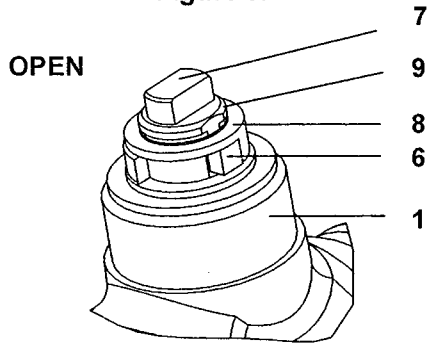


Figure 6.

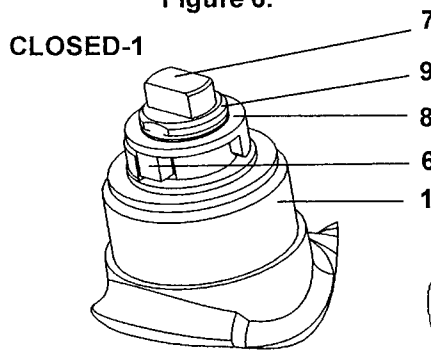


Figure 7.

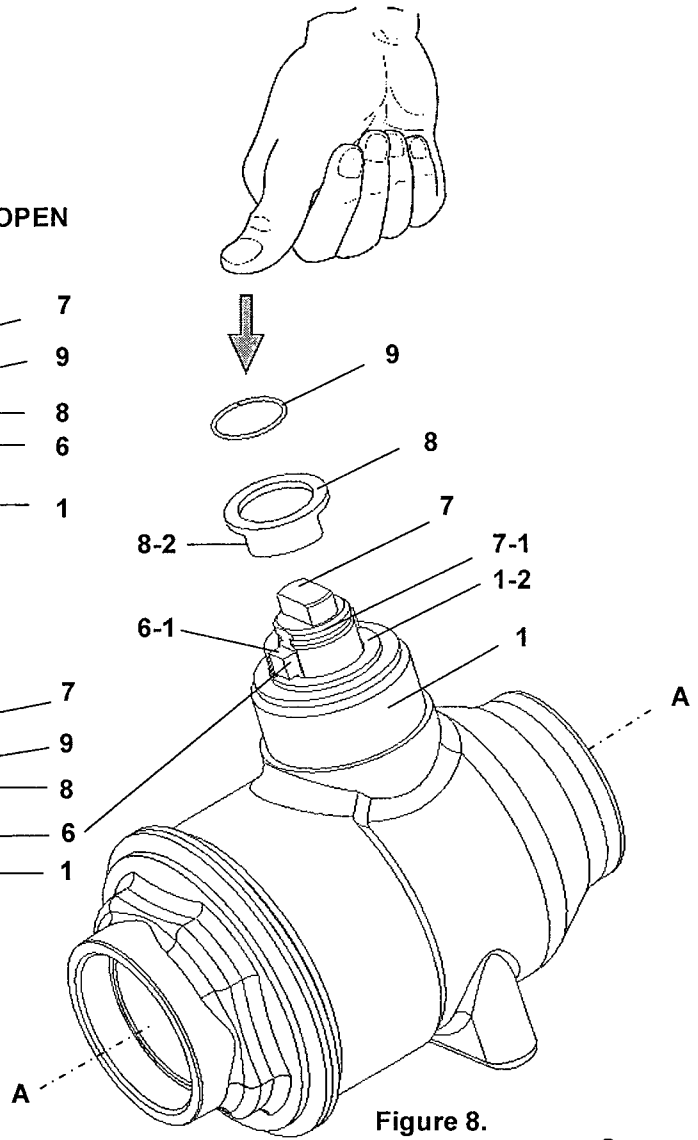


Figure 8.

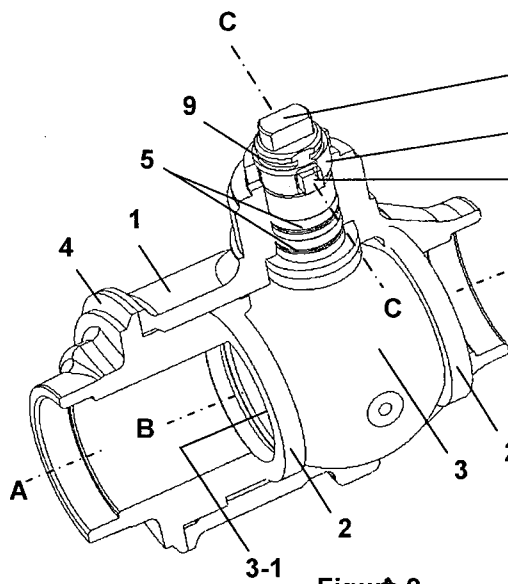


Figure 9.

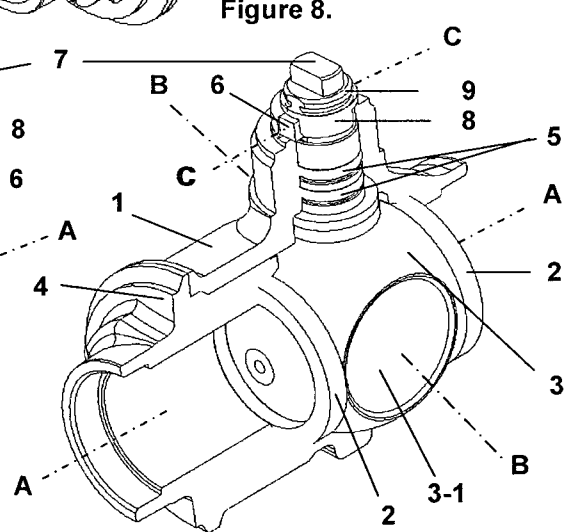
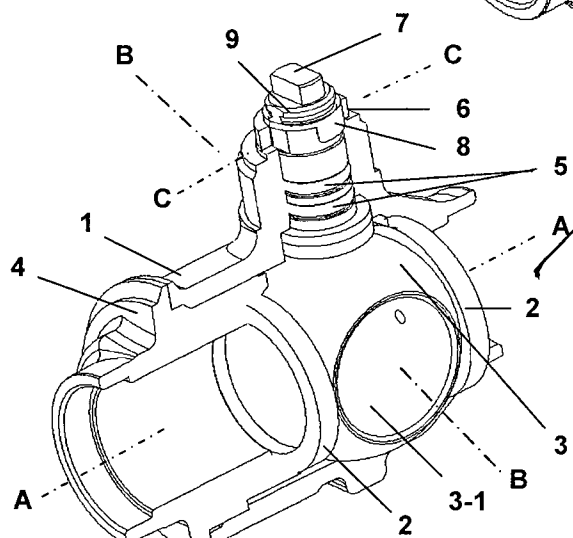
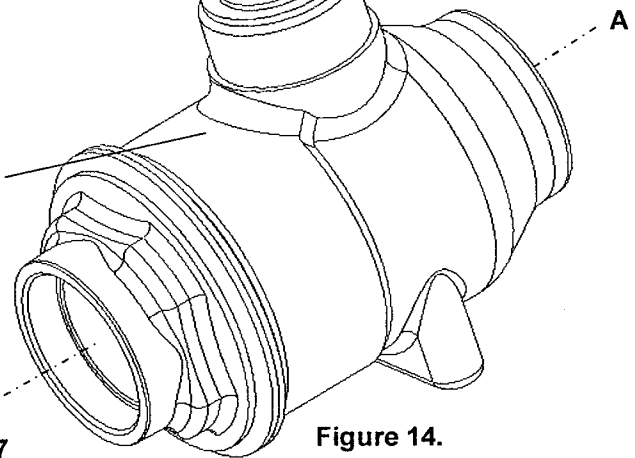
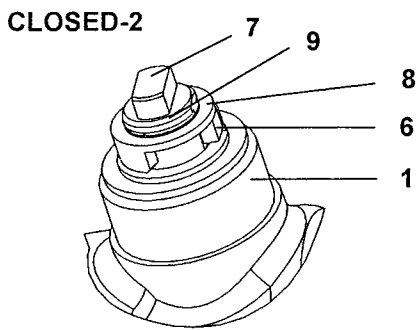
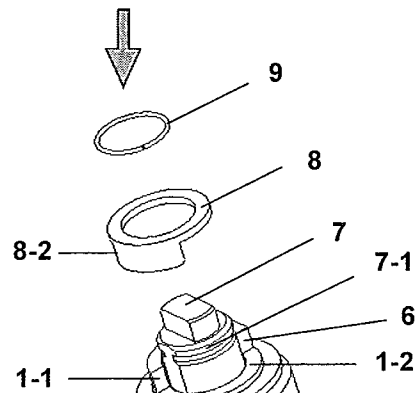
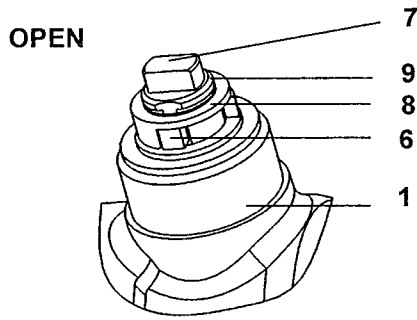
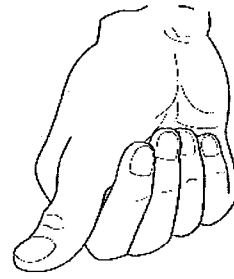
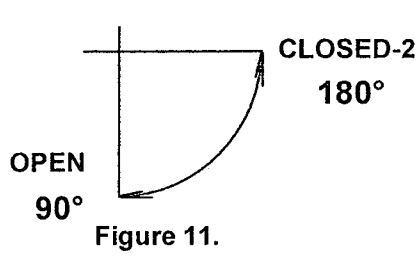


Figure 10.



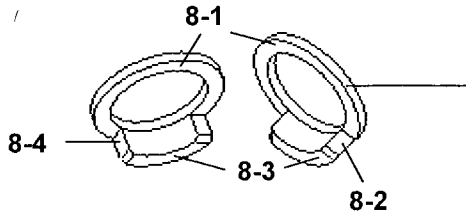


Figure 16.

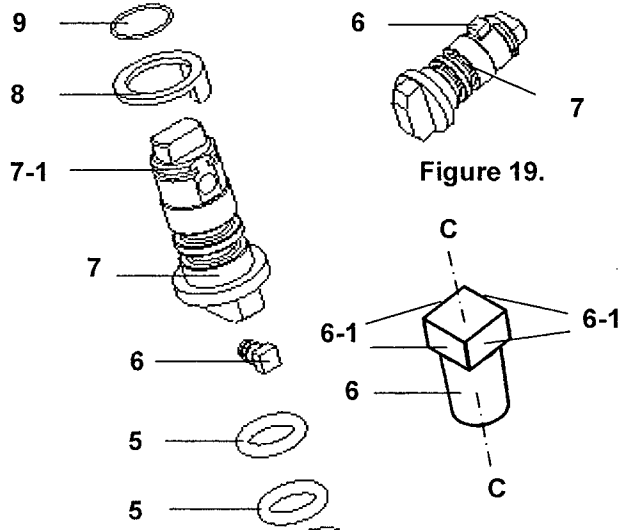


Figure 19.

Figure 20.

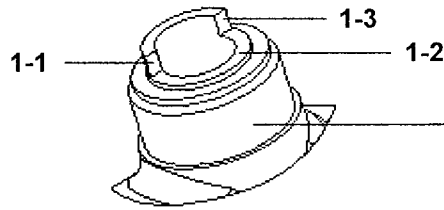


Figure 17.

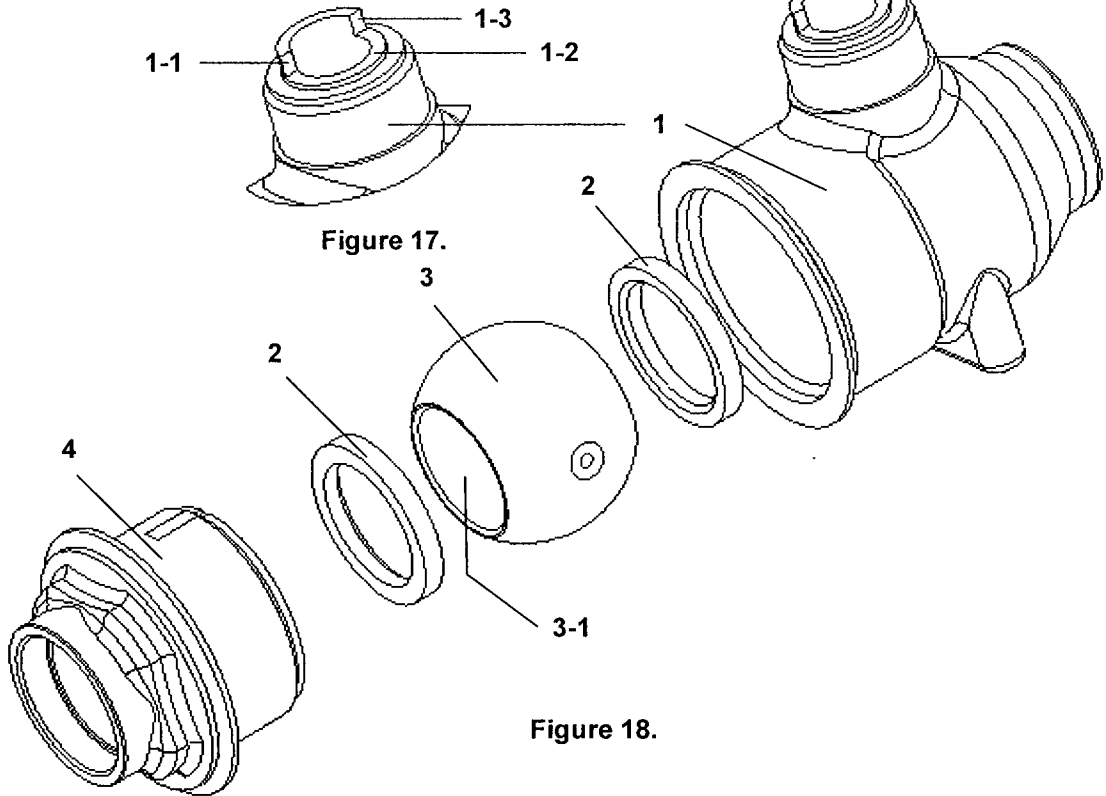


Figure 18.

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2010/000084

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16K5/06
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)
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 practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/069514 A1 (YOUNGIL ELECTRONIC CO LTD [KR]; KIM YOUNG NAM [KR]) 12 June 2008 (2008-06-12) paragraph [0028] - paragraph [0049]; figures 1-12	1,2
X	DE 196 28 720 A1 (OVENTROP SOHN KG F W [DE]) 29 January 1998 (1998-01-29) column 2, line 66 - column 5, line 5; figures 1-11	1,2
X	DE 35 19 532 C1 (REINERT GMBH & CO KG) 11 September 1986 (1986-09-11) column 3, line 44 - column 5, line 9; figures 1,2	1,2
	----- -/--	

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>
--	--

Date of the actual completion of the international search 7 March 2011	Date of mailing of the international search report 16/03/2011
---	--

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 Heneghan, Martin
--	--

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2010/000084

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 191 565 A (WHITEY CO WHITEY CO [US]) 16 December 1987 (1987-12-16) page 2, line 96 - page 4, line 4; figures 1-4 -----	1,2
X	US 4 817 663 A (MCANDREW WILLIAM J [US]) 4 April 1989 (1989-04-04) column 4, line 34 - column 6, line 56; figures 1-7 -----	1,2
X	AT 390 491 B (IMT ARMATUREN AG [CH]) 10 May 1990 (1990-05-10) page 2, line 28 - page 3, line 23; figures 1-8 -----	1,2
X	KR 2008 0070294 A (KOREA MOTOYAMA INC [KR]) 30 July 2008 (2008-07-30) figures 1-6 -----	1,2
X	US 5 139 230 A (LESTER LEO M [US]) 18 August 1992 (1992-08-18) column 5, line 30 - column 9, line 48; figures 1-3 -----	1,2
X	US 5 482 251 A (ROBERTS JOHN L [US]) 9 January 1996 (1996-01-09) column 4, line 26 - column 8, line 17; figures 1-8 -----	1,2
X	US 2008/149873 A1 (CIMBERIO ROBERTO [IT] ET AL) 26 June 2008 (2008-06-26) paragraph [0030] - paragraph [0086]; figures 1-12 -----	1,2
A	US 6 196 262 B1 (GIACOMINI MARIO [IT]) 6 March 2001 (2001-03-06) figures 1-20 -----	1,2
A	US 2002/073837 A1 (NIESSEN LEOPOLD J [GB]) 20 June 2002 (2002-06-20) figures 1-8 -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/TR2010/000084

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
WO 2008069514 A1	12-06-2008	KR	100803088 B1	18-02-2008
DE 19628720 A1	29-01-1998	IT	MI971665 A1	11-01-1999
DE 3519532 C1	11-09-1986	NONE		
GB 2191565 A	16-12-1987	DE	3719763 A1	23-12-1987
		JP	63013986 A	21-01-1988
		US	4714235 A	22-12-1987
US 4817663 A	04-04-1989	NONE		
AT 390491 B	10-05-1990	NONE		
KR 20080070294 A	30-07-2008	NONE		
US 5139230 A	18-08-1992	CA	2051951 A1	01-02-1993
US 5482251 A	09-01-1996	CA	2155816 A1	12-02-1996
US 2008149873 A1	26-06-2008	AU	2007202894 A1	10-07-2008
		CA	2594045 A1	20-06-2008
US 6196262 B1	06-03-2001	CA	2276749 A1	11-07-2000
		IT	C0990004 A1	11-07-2000
US 2002073837 A1	20-06-2002	US	2002108492 A1	15-08-2002
		US	2002108493 A1	15-08-2002
		US	2002112603 A1	22-08-2002
		US	2002112604 A1	22-08-2002
		US	2003033928 A1	20-02-2003
		US	2002129701 A1	19-09-2002