(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 November 2015 (26.11.2015)

WIPO | PCT

(10) International Publication Number
WO 2015/177259 A1

(51) International Patent Classification:
F16L 21/08 (2006.01) *F16L 21/04* (2006.01)

(21) International Application Number:
PCT/EP2015/061204

(22) International Filing Date:
21 May 2015 (21.05.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2012869 22 May 2014 (22.05.2014) NL
2013241 23 July 2014 (23.07.2014) NL

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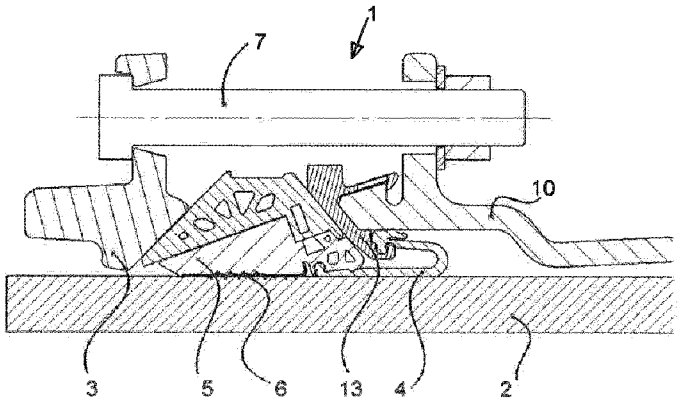
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, 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: FITTING FOR COUPLING TO A PIPE



(57) Abstract: A fitting (1) for coupling to at least one pipe (2), comprising : a sleeve (10) for receiving the pipe (2); at least one sealing member (4) to provide a seal be- tween the sleeve (10) and the pipe (2); a pressure member (5) for applying a pressure to the sleeve (10) and to the pipe (2); gripper teeth (6) provided on the pressure member (5) and arranged to act on the pipe (2); and actuation means (3, 7) for exerting a pressure to the pressure member (5) comprising a pressure ring (3) acting on the pressure member (5) through adjoining slanting contacting surfaces (11% 11") of said pressure ring (3) and pressure member (5), respectively; wherein the at least one sealing member (4) is positioned between the pressure member (5) and the pipe (2); wherein the at least one sealing member (4) is connected with or pressed against the sleeve (10) without being positioned between the pressure member (5) and the sleeve (10).

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Fitting for coupling to a pipe

The invention relates to a fitting for coupling to at least one pipe.

EP-A-0 794 378 discloses a fitting for coupling to at least one pipe, comprising:

- a sleeve for receiving the pipe;
- at least one sealing member to provide a seal between the sleeve and the pipe;
- a pressure member for applying a pressure to the sleeve and to the pipe;
- gripper teeth provided on the pressure member and arranged to act on the pipe; and
- actuation means for exerting a pressure to the pressure member comprising a pressure ring acting on the pressure member through adjoining slanting contacting surfaces of said pressure ring and pressure member respectively.

In the fitting of EP-A-0 794 378 the sealing member is arranged between the pressure member and the pipe and between the pressure member and the sleeve in order to provide the required seal between the sleeve and the pipe.

A fitting according to the preamble of the main claim is further known from WO2011/120669.

During installation of the fitting the actuation means of the fitting are arranged so as to have the pressure member apply a pressure capable to withstand for a stand time of not less than 50 years axial forces that may act on the pipe which is received in the sleeve; to provide sufficient pressure both on the part of the sealing member positioned between the pressure member and the pipe and on the part of the sealing member positioned between the pressure member and the sleeve; and to compensate for relaxation of the material of the fitting that may occur during said fifty-year stand time. The pressures that are thus applied to the sealing member, in particular on the part of the sealing member between the pressure member and the sleeve are at such a high level that the sealing member, usually rubber, is overstressed in particular when the pipe diameter is larger than 300 mm. It is particularly with diameters larger than 300 mm that the required pre-

tension on the part of the sealing member between the pressure member and the sleeve becomes too high for the rubber of the sealing member to survive and maintain its long-term physical properties.

It is therefore an object of the invention to provide a solution to this problem, and to provide a fitting having a lifetime of at least 50 years, and which can withstand axial forces that may come to work on the pipe during this lifetime whilst maintaining its sealing properties, and which can cope with the general deterioration of the fitting during its lifetime, also when the fitting is dimensioned for pipes having a diameter larger than 300 mm.

According to the invention the fitting has the features of one or more of the appended claims.

The fitting of the invention first and foremost is arranged with the feature that the at least one sealing member is connected with or pressed against the sleeve without being positioned between the pressure member and the sleeve. This arranges for a completely closed seal between the sleeve and the pipe wherein the sealing property of the fitting of the invention is not linked to the pressure applied by the pressure member. Accordingly the level of the pressure applied by the pressure member has no bearing anymore on the lifetime of the sealing between the pressure member and the sleeve.

In a suitable embodiment opposite extremities of the at least one sealing member are connected to the pressure member and the sleeve respectively.

In a further suitable embodiment the at least one sealing member is connected with or pressed against the sleeve without being positioned between the slanting surfaces of the pressure ring and the pressure member. This contributes to the longevity of the fitting of the invention.

In a particular embodiment it is desirable that the fitting comprises a clip for attaching the sealing member to the sleeve. This makes mounting and dismounting of the fitting very easy without sacrificing reliability.

The invention will hereinafter be further elucidated with reference to the drawing.

In the drawing of a single figure a preferred embod-

iment is shown of the fitting of the invention.

The figure shows an embodiment of the fitting 1 of the invention for application with a pipe 2. The fitting has a sleeve 10 for receiving the pipe 2, at least one sealing member 4 to provide a seal between the sleeve 10 and the pipe 2, a pressure member 5 for applying a pressure to the sleeve 10 and to the pipe 2, gripper teeth 6 provided on the pressure member 5 and arranged to act on the pipe 2, and actuation means 3, 7 that are tuneable from a single point outside the sleeve 10 for arranging that a pressure is applied to the pressure member 5.

The actuation means 3, 7 comprise a pressure ring 3 acting on the pressure member 5 through adjoining slanting contacting surfaces 11', 11'' of said pressure ring 3 and pressure member 5, respectively. This arranges that a force applied to the pressure member 5 in parallel with a longitudinal body axis of the sleeve 10 or the pipe 2, acts on the pressure member 5 with a component perpendicular to said longitudinal body axis of the sleeve 10 on the pipe 2 received in said sleeve 10.

The sealing member 4 is in accordance with the invention positioned between the pressure member 5 and the pipe 2 and is connected with or pressed against the sleeve 10 without being positioned between the pressure member 5 and the sleeve 10.

One of the further characterizing features of the fitting 1 of the invention is that it is provided with said sealing member 4 without same being positioned between the slanting surface 11' of the pressure ring 3 and the slanting surface 11'' of the pressure member 5.

Furthermore it is preferable that opposite extremities of the at least one sealing member 4 are connected to the pressure member 5 and to the sleeve 10 respectively.

The figure further shows that the fitting 1 of the invention is preferably further provided with a clip 13 for attaching the sealing member 4 to the sleeve 10. This makes mounting and dismounting of the fitting very easy without sacrificing reliability.

Although the invention has been discussed in the

foregoing with reference to a variety of embodiments of the fitting of the invention, the invention is not restricted to these particular embodiments which can be varied further in many ways without departing from the invention. The discussed exemplary embodiments shall therefore not be used to construe the appended claims strictly in accordance therewith. On the contrary the embodiments are merely intended to explain the wording of the appended claims without intent to limit the claims to the discussed exemplary embodiments. The scope of protection of the invention shall therefore be construed in accordance with the appended claims only, wherein a possible ambiguity in the wording of the claims shall be resolved using these exemplary embodiments.

CLAIMS

1. A fitting (1) for coupling to at least one pipe (2), comprising:

- a sleeve (10) for receiving the pipe (2);
- at least one sealing member (4) to provide a seal between the sleeve (10) and the pipe (2);
- a pressure member (5) for applying a pressure to the sleeve (10) and to the pipe (2);
- gripper teeth (6) provided on the pressure member (5) and arranged to act on the pipe (2); and
- actuation means (3, 7) for exerting a pressure to the pressure member (5) comprising a pressure ring (3) acting on the pressure member (5) through adjoining slanting contacting surfaces (11', 11'') of said pressure ring (3) and pressure member (5), respectively;
- wherein the at least one sealing member (4) is positioned between the pressure member (5) and the pipe (2);

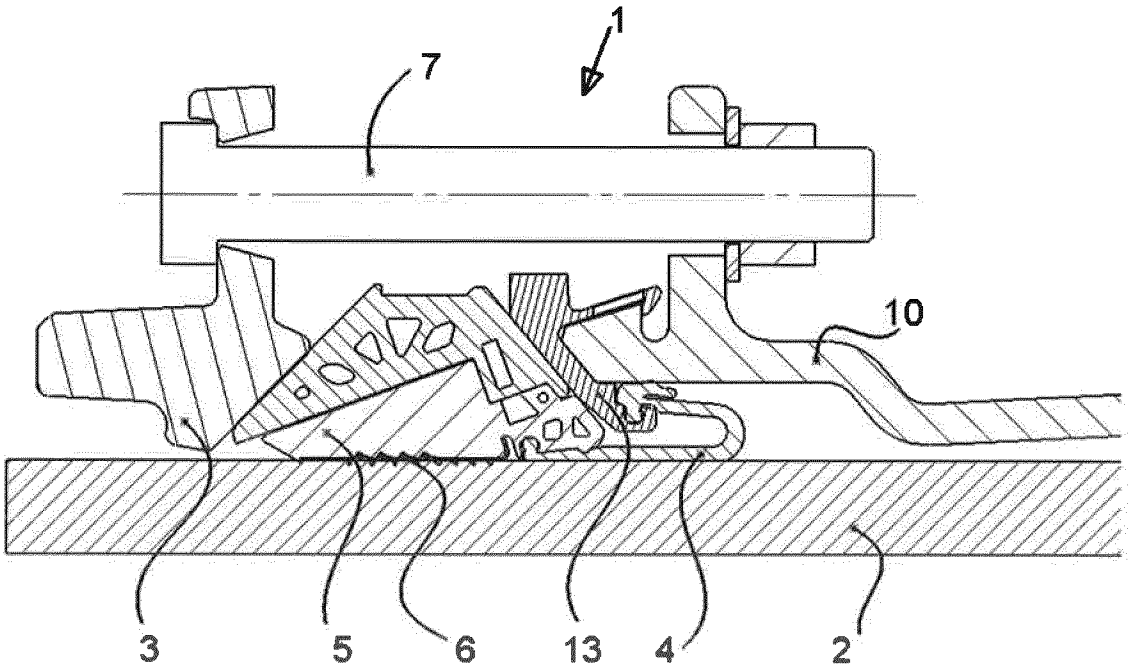
characterized in that

the at least one sealing member (4) is connected with or pressed against the sleeve (10) without being positioned between the pressure member (5) and the sleeve (10).

2. The fitting according to claim 1, **characterized in that** opposite extremities of the at least one sealing member (4) are connected to the pressure member (5) and the sleeve (10) respectively.

3. The fitting (1) according to claim 1 or 2, **characterized in that** the at least one sealing member (4) is connected with or pressed against the sleeve (10) without being positioned between the slanting surfaces (11', 11'') of the pressure ring (3) and the pressure member (5).

4. The fitting according to any one of the previous claims 1 – 3, **characterized in that** it comprises a clip (13) for attaching the sealing member (4) to the sleeve (10).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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/061204

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16L21/08 F16L21/04
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)
F16L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2011/120669 A1 (E HAWLE ARMATURENWERKE GMBH [AT]; LEHNER FRANZ [AT]; FUEHRER GERHARD [) 6 October 2011 (2011-10-06) abstract; figures page 7, line 18 - page 8, line 2; figure 2 -----	1-4
A	EP 0 794 378 A2 (FISCHER GEORG WAGA NV [NL]) 10 September 1997 (1997-09-10) cited in the application abstract; figures column 4, lines 5-11 -----	1-4
A	EP 1 906 073 A1 (LUDWIG FRISCHHUT GMBH & CO KG [DE]) 2 April 2008 (2008-04-02) abstract; figures paragraph [0014] ----- -/--	1-4

[X] Further documents are listed in the continuation of Box C.

[X] 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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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 August 2015	17/08/2015

Name and mailing address of the ISA/	Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2015/061204

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 415 472 A (GLOWAY INTERNAT INC [VG]) 28 December 2005 (2005-12-28) abstract; figures -----	1-4
A	WO 03/010461 A1 (PHILMAC PTY LTD [AU]; PRIDHAM MALCOLM [AU]) 6 February 2003 (2003-02-06) abstract; figures -----	1-4

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2015/061204

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