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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 January 2007 (11.01.2007)

PCT

(10) International Publication Number
WO 2007/004870 A1

(51) International Patent Classification:
F16L 59/16 (2006.01)

(21) International Application Number:
PCT/NL2006/000333

(22) International Filing Date: 4 July 2006 (04.07.2006)

(25) Filing Language: Dutch

(26) Publication Language: English

(30) Priority Data:
1029434 5 July 2005 (05.07.2005) NL

(71) Applicant *(for all designated States except US)*: **THERMAFLEX INTERNATIONAL HOLDING B.V.** [NL/NL]; Veerweg 1, NL-5145 NS Waalwijk (NL).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BAARS, Gerrit, Jan** [BE/BE]; Hazenweg 12, B-2328 Hoogstraten (BE). **GOVERS, Robertus, Jan, Maria** [NL/NL]; Hudsonring 54, NL-5252 VS Drunen (NL). **DE BELL, Humphrey, Reginald** [NL/NL]; Meierijlaan 53, NL-5171 ZT kaatsheuvel (NL).

(74) Agent: **GEURTS, Franciscus, Antonius**; c/o Octrooibureau Vriesendorp & Gaade B. V., P.O.Box 266, NL-2501 AW The Hague (NL).

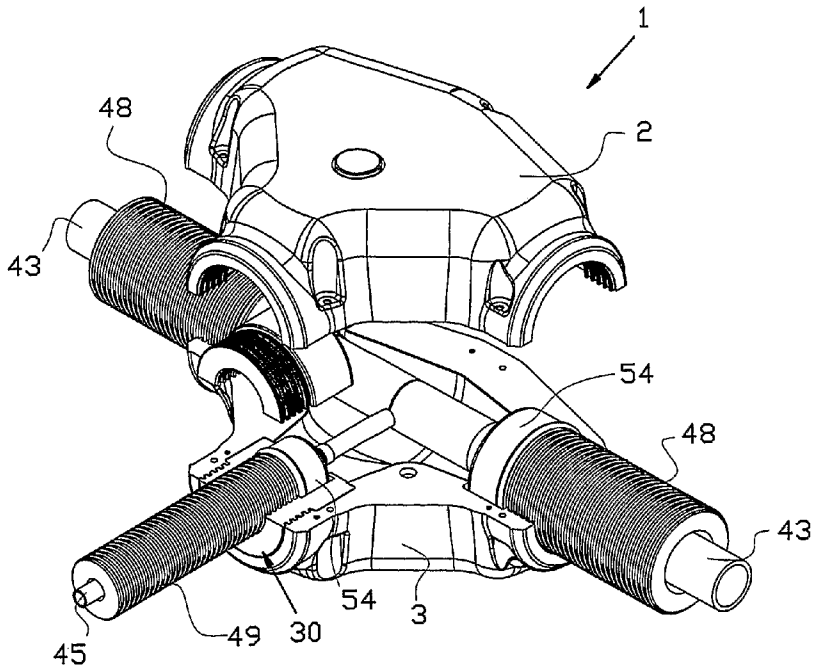
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, 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, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: HOUSING FOR INSULATED PIPES



(57) Abstract: Housing (1) to be placed around a coupling between pipes (40) that have been provided with an insulating sheath, wherein the housing comprises a wall portion having thermally insulating properties for thermal insulation of the coupling to be placed in the housing. Preferably the housing is composed of several housing parts (2,3) to be attached onto each other in order to place the housing in parts around the coupling and the pipes.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Housing for insulated pipes

BACKGROUND OF THE INVENTION

The invention relates to a housing to be placed around a coupling between pipes provided with an insulating sheath.

Such housings are for instance used in district heating systems, wherein the housing is for instance placed around an underground branch of the main pipe to a residence. The supply pipe and the return pipe may in that case be positioned in a joint insulating sheath. The insulating sheath is usually built up from a watertight, ribbed pipe sleeve of slightly form-retaining synthetic material, which at its inside is provided with a foam layer for thermal insulation of the pipes.

A known housing comprises two thin-walled, rigid synthetic shells, which on both sides of the coupling can be fittingly placed against each other and against the thermal insulating sheaths. The coupling then lies free from the insulating sheath. In order to thermally insulate the coupling, the inside of the housing is filled via a filling aperture with a curing synthetic resin. When the synthetic resin sufficiently flows out to the insulating sheath, a watertight connection with the insulating sheath can in that case also be effected.

Filling the housing with the synthetic resin is a time-consuming task, which is at the expense of the number of housings that can be placed per time unit. Filling the housing may furthermore be a difficult task, especially when the housing is situated deep down in a ditch.

It is an object of the invention to improve on this.

It is an object of the invention to provide a housing to be placed around a coupling between pipes provided with an insulating sheath which housing is easy to place.

SUMMARY OF THE INVENTION

From a first aspect the invention provides a housing to be placed around a coupling between pipes that have been provided with an insulating sheath, wherein the housing comprises a wall portion having thermally insulating properties for thermal insulation of the coupling to be placed in the housing. With the housing according to the invention the thermal insulation of the coupled pipes, and particularly of the coupling that usually lies free from the insulating sheaths, can already be effected by placing the housing itself. A finishing action, such as introducing a thermally insulating synthetic resin, can be dispensed with for effecting the thermal insulation.

In a practical embodiment the insulating wall portion has an insulating value comparable to an insulating value of a thermal insulating sheath of insulated pipes. The housing therefore forms an extension piece of the insulating sheath itself. The insulating wall portion of the housing, just like the insulated pipes, may comprise a layer of thermally insulating material.

Formulated in figures, the insulating wall portion according to DIN 52613 may have an insulating value λ lower than 0.050 W/mK, preferably lower than 0.040 W/mK.

In a first development the housing comprises a preformed outer wall which is by itself form-stable. The outer wall is thus able to provide the housing with sufficient rigidity so as to retain its form during its installation and use.

Preferably the housing comprises an inner layer of thermally insulating material at the location of the accommodating wall portion. The insulating material can therefore be of a soft type.

Alternatively or in addition the housing may comprise a preformed inner wall which is by itself form-stable, which preferably is situated at the inside of the layer of thermally insulating material. The inner wall can then keep the layer of thermally insulating material spaced apart from the coupling.

The coupling can be insulated by an air layer when the housing comprises an outer wall and an inner wall which define an intermediate space. Preferably the intermediate space is filled with thermally insulating material. The thermally insulating material can be protected by the inner wall and the outer wall against for instance penetrating moisture.

Preferably the thermally insulating material comprises a synthetic foam, preferably a polyolefin foam or a polyurethane foam.

The housing can be manufactured by injection moulding when the outer wall and/or inner wall is made of synthetic material, preferably a thermoplastic synthetic material, preferably a HD, MD or LD polyolefin, preferably polyethene or polyethylene.

The coupling can be accommodated in the housing in its entirety and in an insulated manner when the insulating wall portion defines an accommodation space for the coupling.

Preferably the size of the accommodation space is adjusted to the size of the coupling for the coupling to lie freely in the accommodation space. Due to the coupling lying freely an air layer may be present between the housing and the coupling which air layer forms an extra thermal insulation layer.

The coupling may be provided with a supplementary insulation layer when the housing comprises a filling channel towards the accommodation space, wherein the filling channel preferably can be closed off. Through the filling channel for instance an extra quantity of synthetic resin or synthetic foam, such as a polyolefin foam can be introduced, for providing an extra insulation layer around the coupling.

In a third, further development the housing comprises an accommodation part for the insulating sheath of a pipe. In that way the housing can be reliably positioned with respect to the pipes.

Preferably the accommodation part comprises a first connection part for surrounding the insulating sheath in the placed condition of the housing. The insulating sheath that is usually able to slightly slide from the pipe, can

be fixated with respect to the housing by the connection part. The insulating sheath may in particular be fixated when the first connection part is formed for a form-closed connection to the insulating sheath.

Preferably an inner dimension of the first connection part is adjusted to an outer dimension of the insulating sheath for a snugly fitting or clamping, preferably splashproof or watertight enveloping of the insulating sheath in the placed condition of the housing. The degree of clamping will in that case depend on the dimensional tolerances used one to the other.

Fixation can be effected with a form-closed connection when the first connection part is bounded by a ribbed connection wall for fitting abutment against a ribbed insulating sheath. Alternatively or in addition the first connection part can be bounded by an even connection wall for fitting abutment against an even insulating sheath or portion thereof.

Alternatively or in addition to the first connection part the passage part for the pipe may comprise a second connection part for an end part that can be placed around an end of an insulating sheath. Such an end part forms a finishing for the insulating sheath and may form a moisture barrier for for instance groundwater seeping in between the insulating sheath and the pipe to the housing.

Preferably an inner dimension of the second connection part is adjusted to an outer dimension of the end part for a snugly fitting or clamping, preferably splashproof or watertight enveloping of the end part in the placed condition of the housing. The degree of clamping will in that case depend on the dimensional tolerances used one to the other.

The accommodation part itself may be adjusted to various types of pipe sleeves optionally provided with end parts when the accommodation part is an insert piece for the housing.

In a fourth, further development the housing is composed of several housing parts to be attached onto each other in order to place the housing in parts around the coupling and the pipes. The housing can then take place in parts and with an overview.

In an embodiment thereof that is easy to place manually, the housing is two-part, wherein the housing parts preferably define two housing halves.

Preferably the housing parts comprise connection surfaces. The connection surfaces can enhance a correct placement of the housing parts onto each other.

Preferably at least one of the housing parts that can be placed opposite each other, comprises a sealing for at least partially closing off the placed housing parts splashproof or watertight with respect to each other, wherein the sealing preferably comprises a contiguous strip of material that can be pressed in, preferably of rubber.

The sealing may have a function both in sealing the housing parts one to the other and in sealing the pipe parts accommodated in the accommodation parts when the sealing extends continuously over the contact parts of the housing parts one to the other, and over the accommodation parts of the housing.

From a further aspect, the invention further provides an assembly of a said housing according to the invention and an insert piece that can be placed separately in the accommodation part of the housing for adapting the accommodation part to a deviating outer dimension of the pipe and/or the insulating sheath that may optionally be provided with an end part. By means of one or several adapter parts, the housing can be placed around pipes and insulating sheaths of different dimensions or diameters. The housing therefore can be used for several dimensions or diameters, wherein the separate insert piece is able to adapt the assembly to a specific dimension or diameter.

The insert piece can be fixated against tensile forces with respect to the housing when the insert piece comprises an outer casing formed for a form-closed connection to the accommodation part.

The inside of the housing can be protected against penetrating moisture when the insert piece is adjusted to an inner dimension of the accommodation part for a snugly fitting or clamping, preferably splashproof

or watertight enveloping of the outer casing in placed condition of the insert piece.

The invention furthermore provides, form a further aspect an assembly of a housing to be placed around a coupling between pipes provided with an insulating sheath, and an insert piece for the housing, wherein the housing comprises an accommodation part for the accommodation of the insulating sheath of a pipe, and wherein the insert piece can be placed separately in the accommodation part for adapting the accommodation part to a deviating outer dimension of the pipe and/or the insulating sheath.

The invention further relates to a pipe system, a house connection or building connection for a hot water system comprising a housing or assembly as stated above according to the invention.

The aspects and measures described and/or shown in the application may where possible also be used individually. Said individual aspects, such as the housing, the end part and the insert piece, and other aspects may the subject of divisional patent applications relating thereto.

SHORT DESCRIPTION OF THE DRAWINGS

The invention will be elucidated on the basis of a number of exemplary embodiments shown in the attached drawings, in which:

Figure 1 shows a view in perspective of a multipart housing in T-configuration according to the invention, of which the parts have been placed separate from each other;

Figures 1A and 1B show detail views of parts of the housing according to figure 1;

Figure 2 shows a view in perspective of a main pipe and branch provided with an insulating sheath that can be partially accommodated in the housing according to figure 1;

Figures 3A, 3B show the consecutive steps in placing the housing according to figure 1 around the pipes according to figure 2; and

Figures 4-6 show alternative embodiments of housings according to the invention in Y-, I- and H-configuration, respectively.

DETAILED DESCRIPTION OF THE DRAWINGS

The housing 1 in T-configuration according to figure 1 comprises a first shell member 2 and a second shell member 3 that can be fittingly placed onto each other. The first shell member 2 and the second shell member 3 are both provided with two longitudinal spout members 6 and a transverse spout member 8 which in the condition in which the shell members 2, 3 are placed on each other define two longitudinal passage openings 4 and a transverse passage opening 5, respectively.

The preformed shell members 2, 3 have both been built up with an outer wall 10 and spaced apart therefrom an inner wall 12 which bounds an accommodation space 13 of the housing 1. The walls 10, 12 have been made of synthetic material, in this example polyethylene. Due to the used material and the wall thickness, the walls 10, 12 and as a result the shell members 2, 3 retain their form or are by themselves stable, as a result of which the housing 2 has sufficient rigidity against deformation by pressing or bending. At the location of the longitudinal spout members 6 and the transverse spout member 8 the outer wall 10 changes via a head surface 11 of the outer wall 10 into semi-cylindrical, ribbed connection parts 14 of the inner wall 12. As indicated in figure 1B the connection parts 14 have a diameter A between the valleys that are oriented towards the outside. Behind every ribbed connection part 14, the inner wall 12 of the first shell member 2 and the second shell member 3 is provided with a recessed semi-cylindrical accommodation part 20 having a diameter B and length C. A sealing that is not further shown and made of resilient material or material that can be pressed together, is situated in these accommodation parts 10.

Between the spout members 6, 8, the outer wall 10 changes over into the inner wall 12 via connection walls 7. The connection walls 7 of the first shell member 2 are provided with dowel pins that are not shown and which can be accommodated in fitted holes 16 in the connection walls 7 of the second shell member 3. The connection walls 7 form one joint connection surface, wherein the connection walls 7 in the condition in which the shell members

2, 3 are placed onto each other, are situated parallel to each other. The connection walls 7 have been provided with a sealing of resilient material or material that can be pressed together, which contiguously changes into the sealing in the accommodation parts 10. The sealing can be placed in a consecutive, continuous small channel in one of the shell members 2, 3.

At a short distance from the dowel pins and fitted holes 16, the spout members 6, 8 are provided with screw holes 17 that are bounded by recessed stop surfaces 18 in the outer wall 10. Bolts that are not shown can be inserted through the screw holes 17 for securing the shell members 2, 3 that have been placed on each other to each other. The first shell member 2 is furthermore provided with a filling aperture 19 for the accommodation space 13. Said filling aperture 19 can be closed off by means of a sealing cap 15.

The hollow space in each shell member 2, 3, between the outer wall 10 with the head surfaces 11 on the one hand and the inner wall 12 with the ribbed connection parts 14 the accommodation parts 20 on the other hand, is filled up with a polyolefin foam such as polyethene or polyethylene or a thermosetting foam, such as polyurethane foam, as a result of which at least the inner space 13 of the housing 1 is thermally insulated in the condition in which the shell members 2, 3 are placed onto each other. The thickness of the foam layer and the thickness of the wall parts 10, 12 are in this case adjusted such that according to DIN 52613 they together have an insulating value λ of less than 0.050. Such an insulating value is comparable to the one of the insulation of the pipes 40 shown in figure 2.

As shown in figure 1 in this example one of two filling or adapter piece halves 30 is placed in the transverse passage opening 5 of the first shell member 3 for adapting the diameter of the transverse passage opening 5. The filling piece halves 30 are made of synthetic material, in this example polyethene. At the outside each adapter piece half 30 has a semi-cylindrical, ribbed outer wall 36, which changes into a semi-cylindrical even outer wall 35. As indicated in figure 1A the ribbed outer wall 36 has a diameter D between the peaks of the ribs, and the even outer wall 35 has a diameter E and a length F. Said diameters D, E and length F are adjusted to the diameters A, B and the length C of the longitudinal passage openings 4 and the transverse passage opening 5 for a fitting or clamping

accommodation of the adapter piece halves 30 in according to this example the transverse passage opening 5, wherein the ribs engage into each other. The adapter piece halves 30 at the inside have a semi-cylindrical, ribbed connection part 32 having a diameter G between the valleys of the ribs that are oriented towards the outside. The connection piece 32 changes into a recessed semi-cylindrical even accommodation part 33 having diameter H and length J and bounded by an end wall 34.

The coupled, insulated pipes 40 according to figure 2 are for instance used in district heating systems. The pipes 40 comprise continuous main pipes 43 in between which a T-coupling 47 has been placed for connecting a branch pipe 45, for instance to a residence.

The main pipes 43 and the branch pipe 45 are situated in a ribbed synthetic pipe sleeve 48, 49, wherein a polyolefin foam layer 50 has been arranged between the pipe sleeves 48, 49 and the pipes 43, 45. The pipes 43, 45 in this case are still slightly free from the polyolefin foam layer 50 around the pipes 43, 45. The outer diameter L of the pipe sleeve 49 around the branch pipe 45 is smaller than the outer diameter K of the pipe sleeves 48 around the main pipes 43. The pipe sleeves 48, 49 are finished with an end sleeve 54 made of resilient material or material that can be pressed together, such as rubber or a soft synthetic material. The end sleeves 54 have a cylindrical connection wall 56 having a diameter M around the branch pipe 45 and a length N and a diameter Q around the main pipes 43 and a length P, wherein the connection walls 56 are bounded by elevated closing ribs 55. The diameters A, B and the length C of the passage openings 4, 5 are adjusted to the diameters K, Q and length M of the main pipe parts, and the diameters G, H and length J of the filling pieces 30 are adjusted to the diameters L, M and length N of the branch pipe parts for a fitting or clamping accommodation of the pipe parts in the passage openings 4, 5, wherein the ribs engage into each other.

The consecutive steps for the installation of the housing 1 around the coupled pipes 40 are shown in the figures 3A-B.

In figure 3A shows the second shell member 3 from below against the pipe sleeves 48, 49 and the end sleeves 54 of the coupled pipes after one adapter piece half 30 has been placed in the transverse passage opening 5

in the second shell member 3. The pipe sleeves 48 of the main pipes 43 then fittingly fall into the ribbed connection parts 14, and the pipe sleeve 49 of the branch pipe 50 fittingly falls into the ribbed connection part 32 of the adapter piece half 30 in the first shell member 2.

Subsequently, as shown in figure 3B, the second shell member 3 is placed onto the first shell member 2, wherein the end sleeves 54 are fittingly confined in the passage openings 4, 5 and the T-coupling 47 comes to lie freely in the accommodation space 13. Subsequently both shell members 2, 3 are clamped firmly against each other by arranging bolts through the screw holes 17 in the shell members. The closing ribs 55 are then pressed together for a watertight sealing.

Subsequently, if so desired, a synthetic resin or liquid polyolefin foam basis is poured into the accommodation space 13 via the filling aperture 19, after which the sealing cap 15 is placed in the filling aperture.

By accommodating the exposed parts of the pipes 43, 45, and the T-coupling 47, as shown in figure 3B, they are provided with a thermal insulation already by placing the first and second shell members 2, 3 onto each other, which thermal insulation if necessary can be supplemented with an insulation or extra sealing with synthetic resin or polyolefin foam.

Figures 4, 5 and 6 show alternative embodiments 100, 200 and 300 of housings according to the invention in Y-, I- and H-configuration, respectively. Corresponding parts are indicated with reference numbers that correspond to the said embodiment in T-configuration.

Claims

1. Housing to be placed around a coupling between pipes that have been provided with an insulating sheath, wherein the housing comprises a wall portion having thermally insulating properties for thermal insulation of the coupling to be placed in the housing.

2. Housing according to claim 1, wherein the insulating wall portion has an insulating value comparable to an insulating value of a thermal insulating sheath of insulated pipes.

3. Housing according to any one of the preceding claims, wherein the insulating wall portion comprises a layer of thermally insulating material.

4. Housing according to any one of the preceding claims, wherein the insulating wall portion according to DIN 52613 has an insulating value λ lower than 0.050 W/mK, preferably lower than 0.040 W/mK.

5. Housing according to any one of the preceding claims, comprising a preformed outer wall which is by itself form-stable.

6. Housing according to claim 5, comprising an inner layer of thermally insulating material at the location of the accommodating wall portion.

7. Housing according to any one of the preceding claims, comprising a preformed inner wall which is by itself form-stable.

8. Housing according to claims 6 and 7, wherein the inner wall is situated at the inside of the layer of thermally insulating material.

9. Housing according to any one of the preceding claims, comprising an outer wall and an inner wall which define an intermediate space.

10. Housing according to claim 9, wherein the intermediate space is filled with thermally insulating material.

11. Housing according to any one of the claims 6, 8, 10, wherein a thermally insulating material comprises a synthetic foam, preferably a polyolefin foam or a polyurethane foam.

12. Housing according to any one of the claims 5-11, wherein the outer wall and/or inner wall is made of synthetic material, preferably a thermoplastic synthetic material, preferably a HD, MD or LD polyolefin, preferably polyethene or polyethylene.

13. Housing according to any one of the preceding claims, wherein the insulating wall portion defines an accommodation space for the coupling.

14. Housing according to claim 13, wherein the size of the accommodation space is adjusted to the size of the coupling for the coupling to lie freely in the accommodation space.

15. Housing according to claim 13 or 14, comprising a filling channel towards the accommodation space, wherein the filling channel preferably can be closed off.

16. Housing according to any one of the preceding claims, comprising an accommodation part for the insulating sheath of a pipe.

17. Housing according to claim 16, wherein the accommodation part comprises a first connection part for surrounding the insulating sheath in the placed condition of the housing.

18. Housing according to claim 17, wherein the first connection part is formed for a form-closed connection to the insulating sheath.

19. Housing according to claim 17 or 18, wherein an inner dimension of the first connection part is adjusted to an outer dimension of the insulating

sheath for a snugly fitting or clamping, preferably splashproof or watertight enveloping of the insulating sheath in the placed condition of the housing.

20. Housing according to any one of the claims 17-19, wherein the first connection part is bounded by a ribbed connection wall for fitting abutment against a ribbed insulating sheath.

21. Housing according to any one of the claims 17-20, wherein the first connection part is bounded by an even connection wall for fitting abutment against an even insulating sheath.

22. Housing according to any one of the claims 16-21, comprising a second connection part for an end part that can be placed around an end of an insulating sheath.

23. Housing according to claim 22, wherein an inner dimension of the second connection part is adjusted to an outer dimension of the end part for a snugly fitting or clamping, preferably splashproof or watertight enveloping of the end part in the placed condition of the housing.

24. Housing according to any one of the claims 16-21, wherein the accommodation part is an insert piece for the housing.

25. Housing according to any one of the preceding claims, wherein the housing is composed of several housing parts to be attached onto each other in order to place the housing in parts around the coupling and the pipes.

26. Housing according to claim 25, wherein the housing is two-part, wherein the housing parts preferably define two housing halves.

27. Housing according to claim 25 or 26, wherein the housing parts comprise connection surfaces.

28. Housing according to any one of the claims 25-27, wherein at least one of the housing parts that can be placed opposite each other comprises a sealing for at least partially closing off the placed housing parts splashproof or watertight with respect to each other.

29. Housing according to claim 28, wherein the sealing comprises a contiguous strip of material that can be pressed in, preferably of rubber.

30. Housing according to any one of the claims 16-24 and any one of the claims 25-29, wherein the sealing extends continuously over the contact parts of the housing parts one to the other, and over the accommodation parts of the housing.

31. Assembly of a housing according to any one of the claims 16-30, and an insert piece that can be placed separately in the accommodation part of the housing for adapting the accommodation part to a deviating outer dimension of the pipe and/or the insulating sheath that may optionally be provided with an end part.

32. Assembly according to claim 31, wherein the insert piece comprises an outer casing formed for a form-closed connection to the accommodation part.

33. Assembly according to claim 31 or 32, wherein an outer dimension of the insert piece is adjusted to an inner dimension of the accommodation part for a snugly fitting or clamping, preferably splashproof or watertight enveloping of the outer casing in placed condition of the insert piece.

34. Assembly of a housing to be placed around a coupling between pipes provided with an insulating sheath, and an insert piece for the housing, wherein the housing comprises an accommodation part for the accommodation of the insulating sheath of a pipe, and wherein the insert piece can be placed separately in the accommodation part for adapting the accommodation part to a deviating outer dimension of the pipe and/or the insulating sheath.

35. Pipe system comprising a housing or assembly according to any one of the preceding claims.

36. House connection or building connection for a hot water system comprising a housing or assembly according to any one of the preceding claims.

37. Housing provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

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38. Assembly provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.

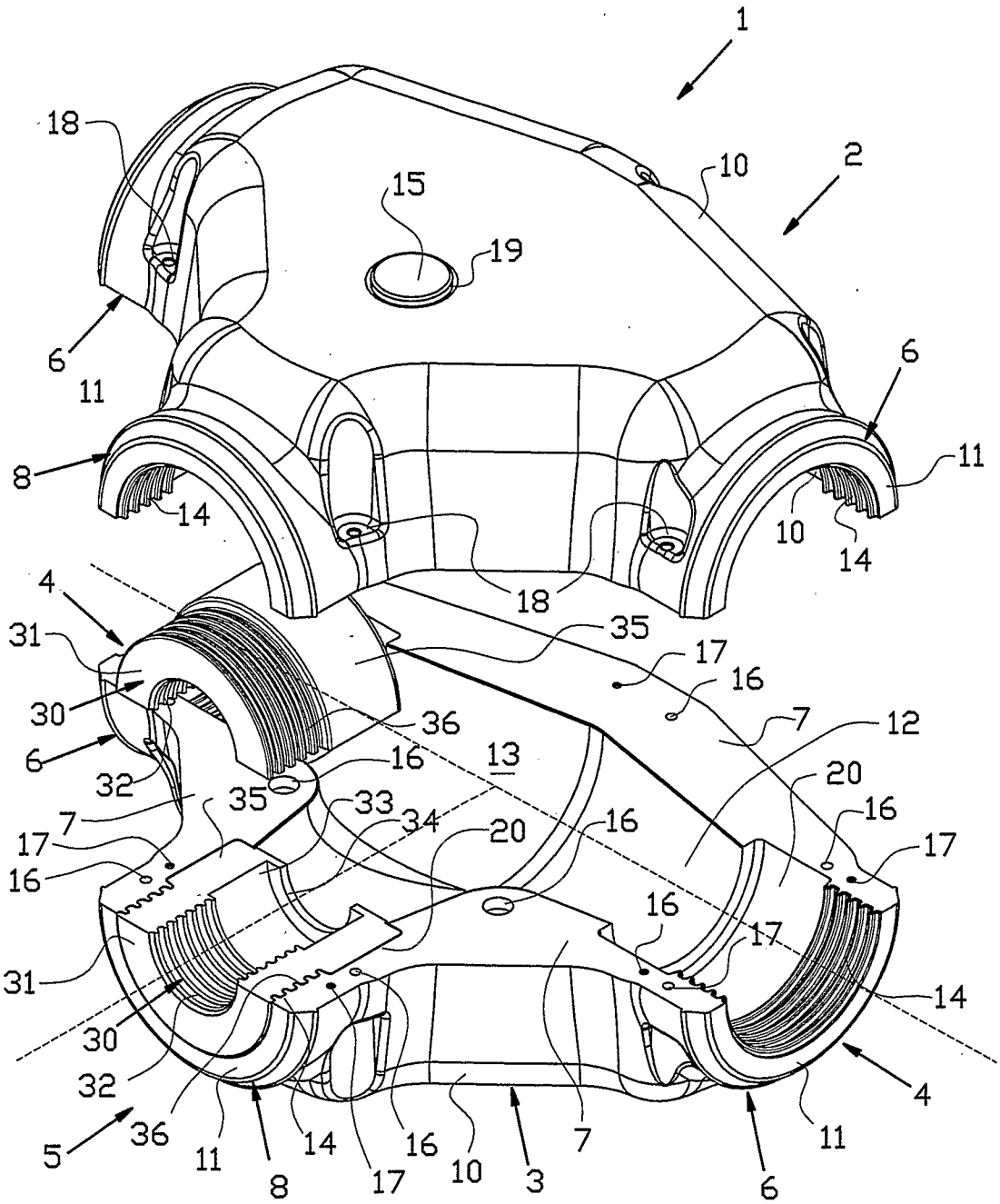

FIG. 1

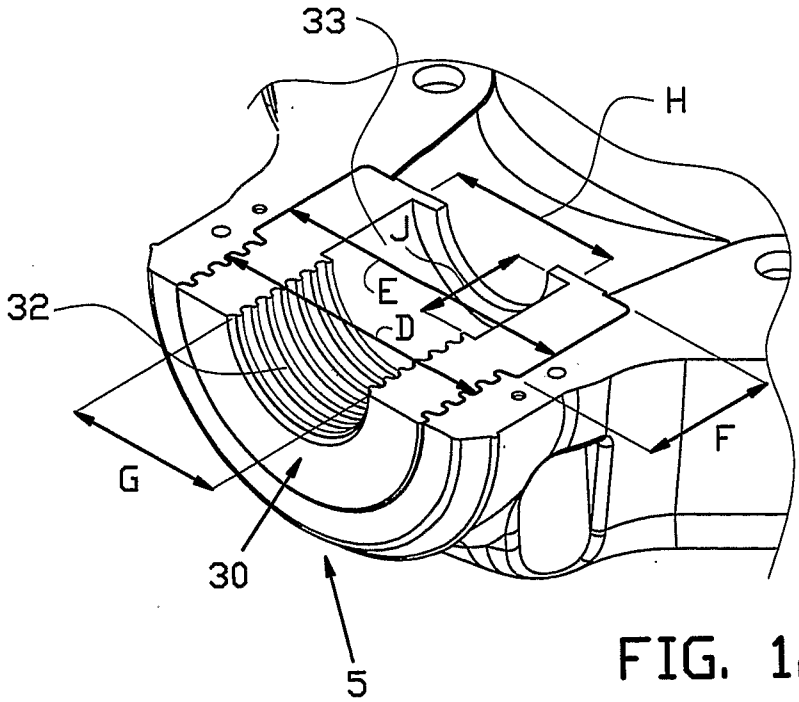

FIG. 1A

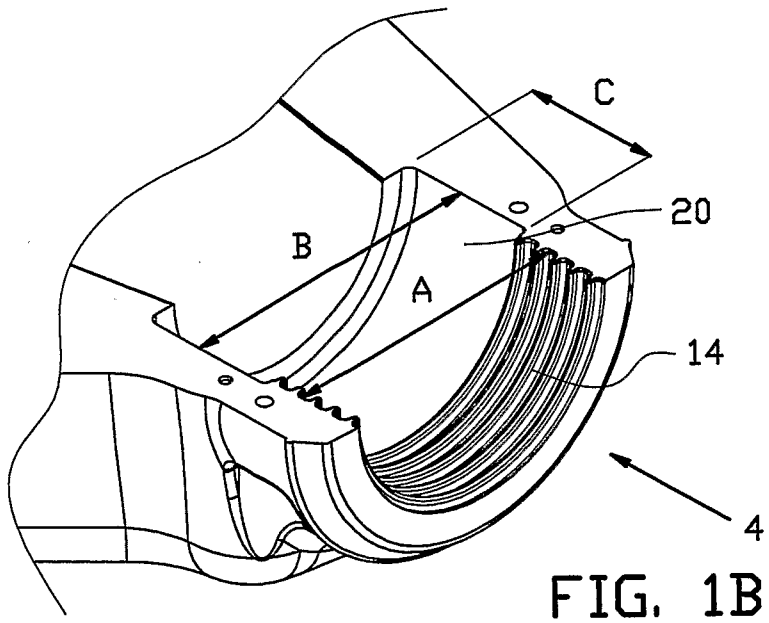

FIG. 1B

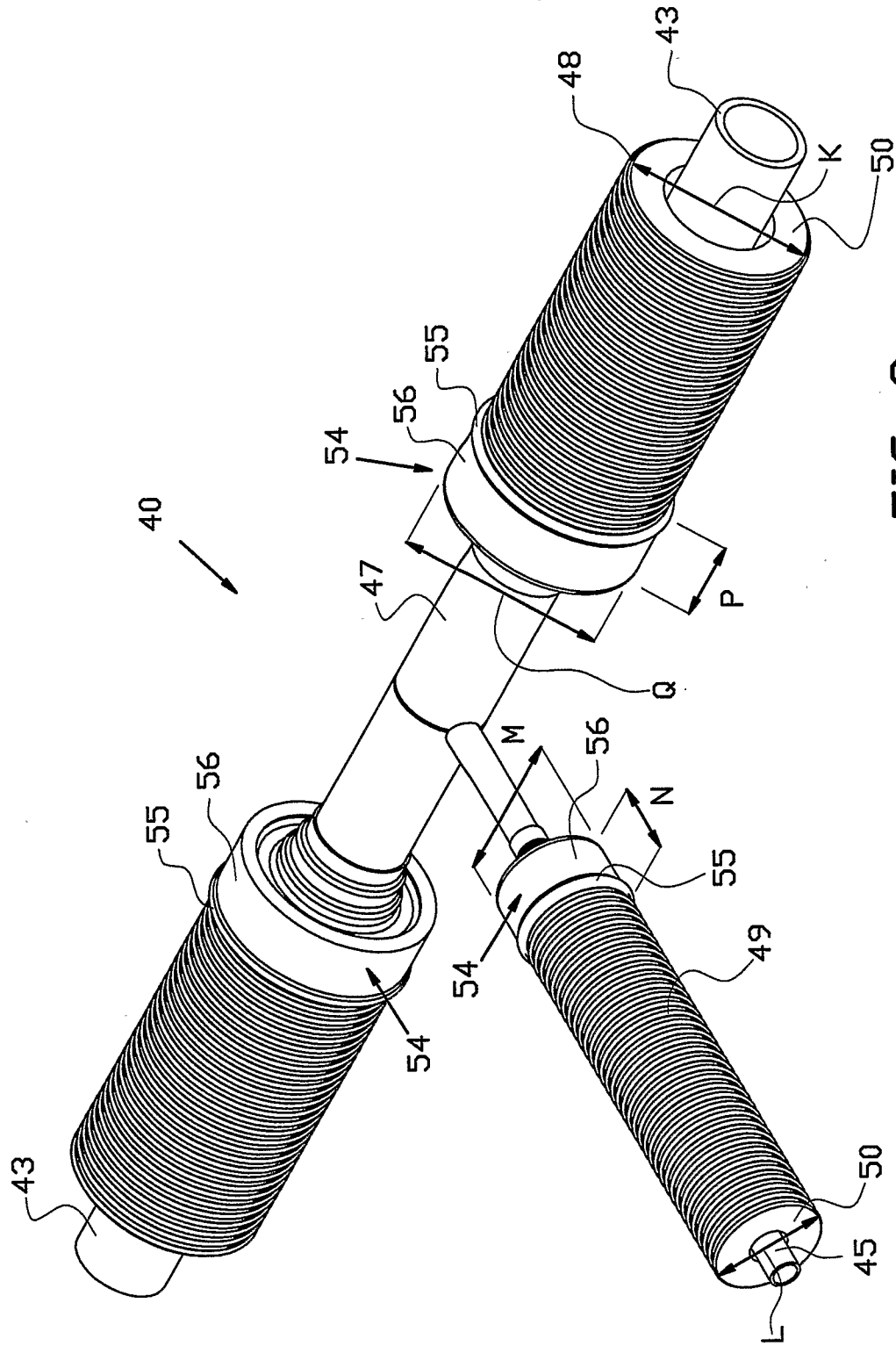

FIG. 2

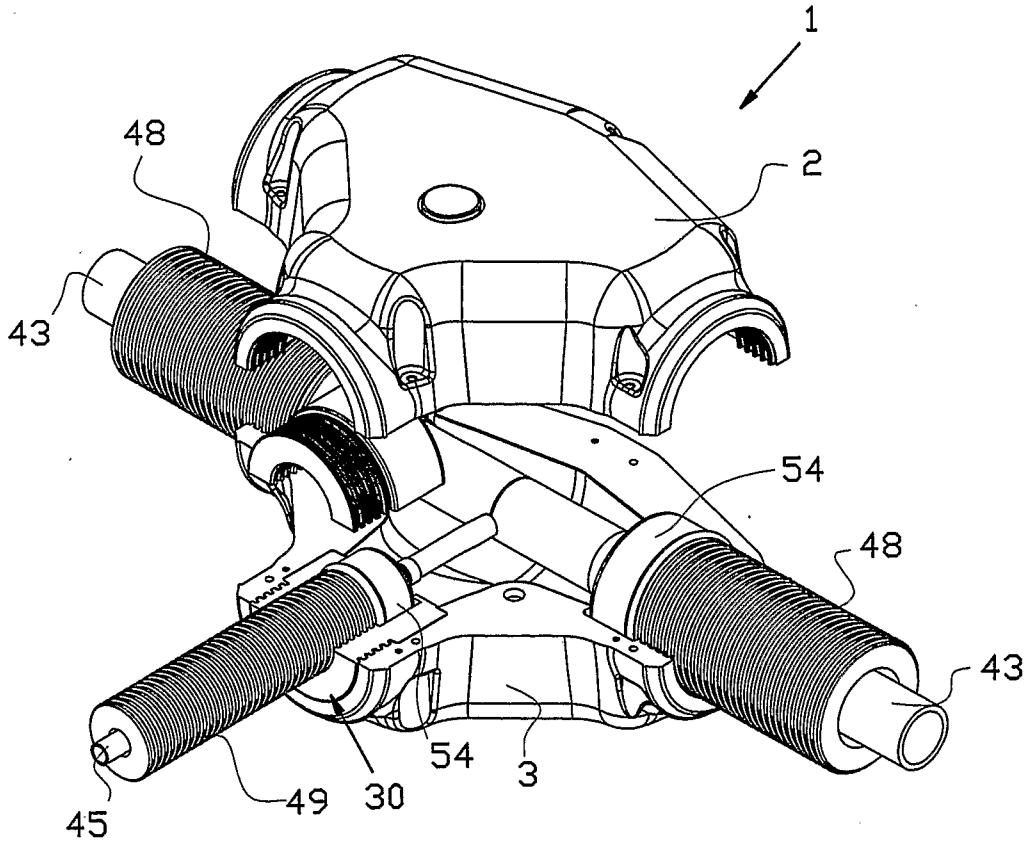

FIG. 3A

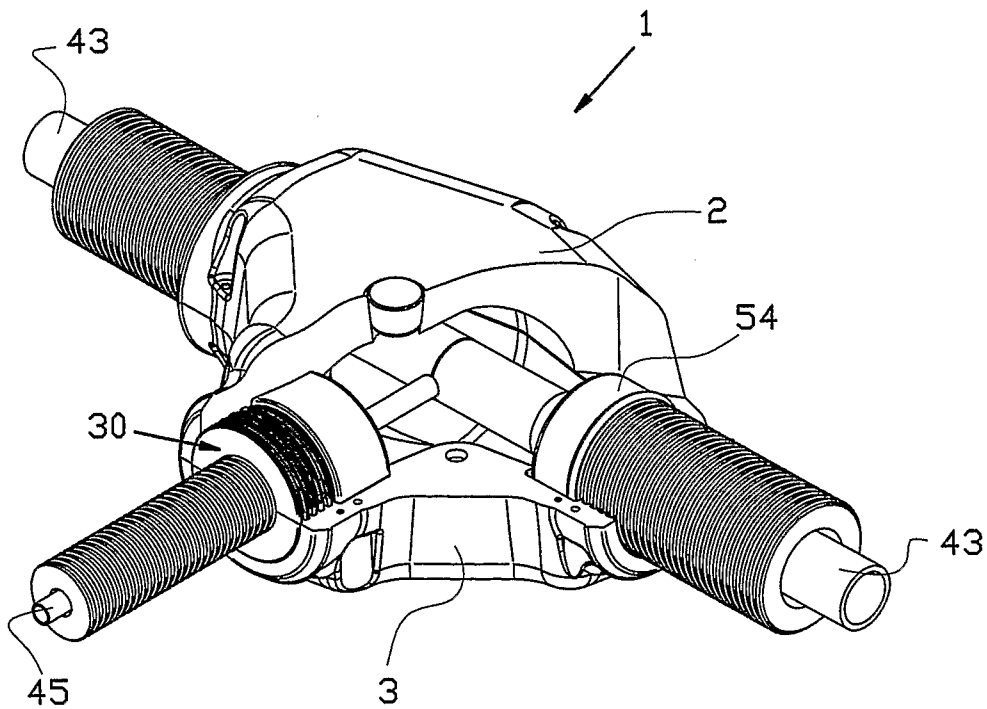

FIG. 3B

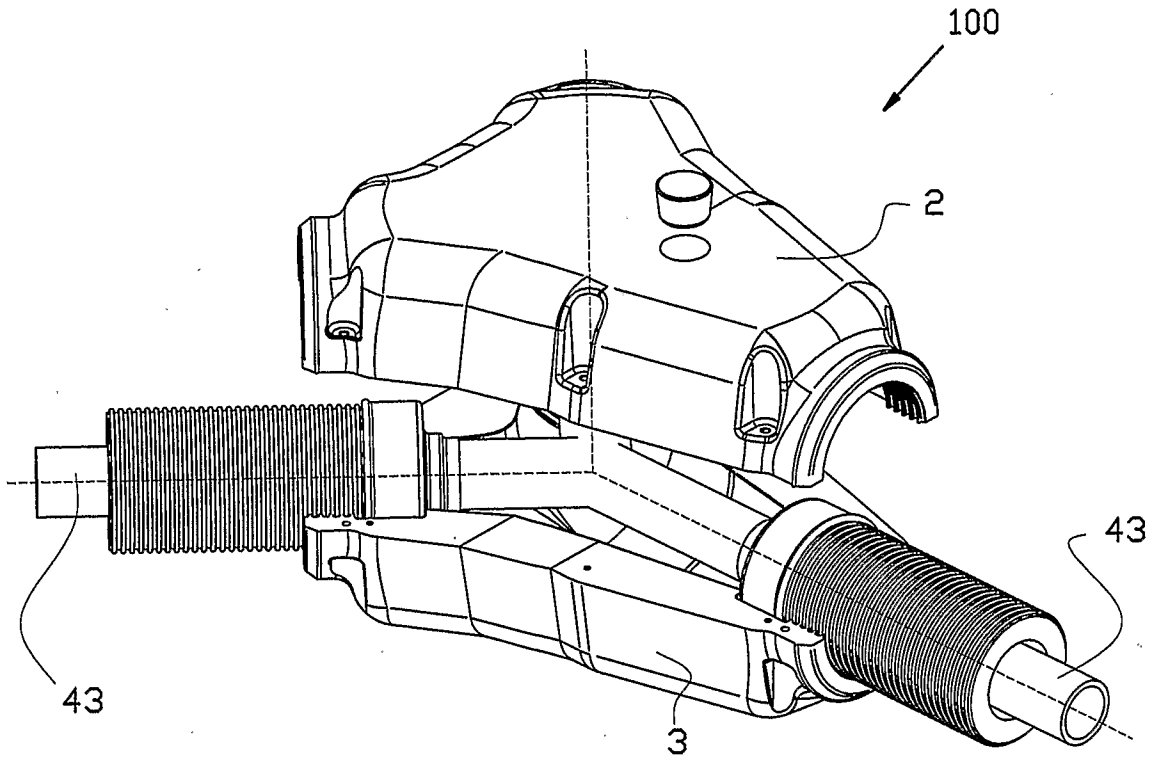

FIG. 4

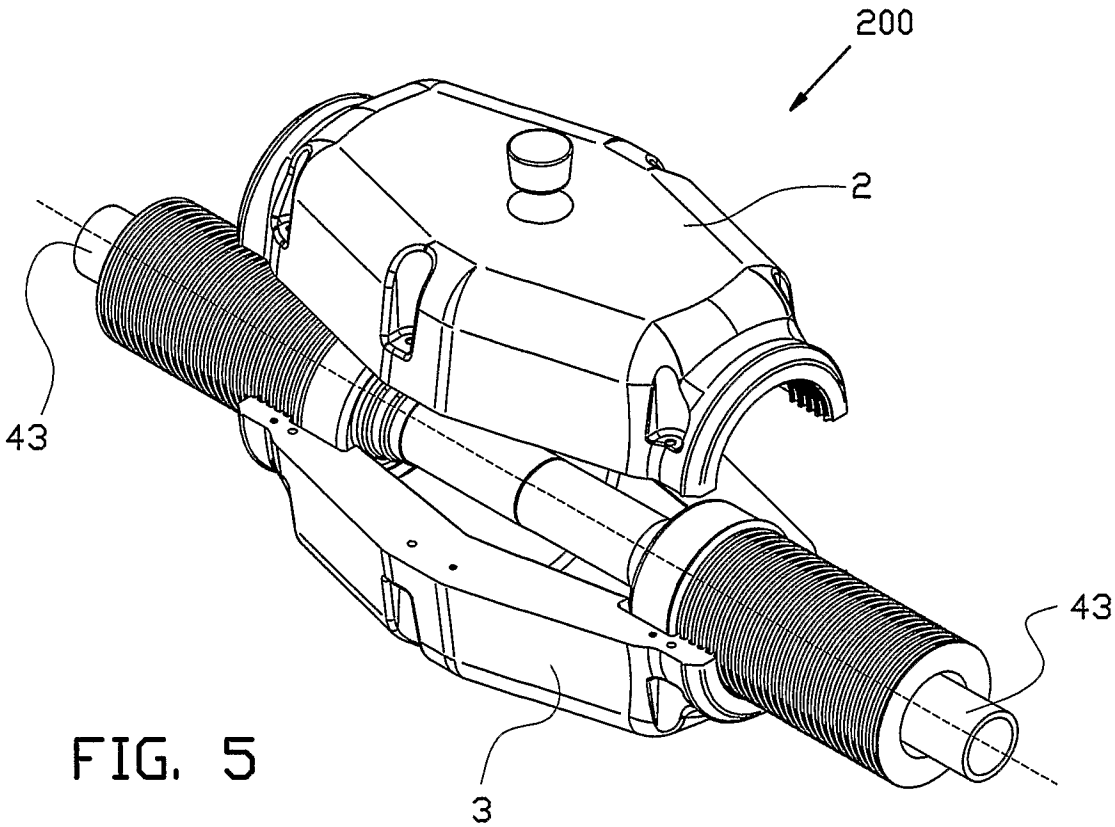

FIG. 5

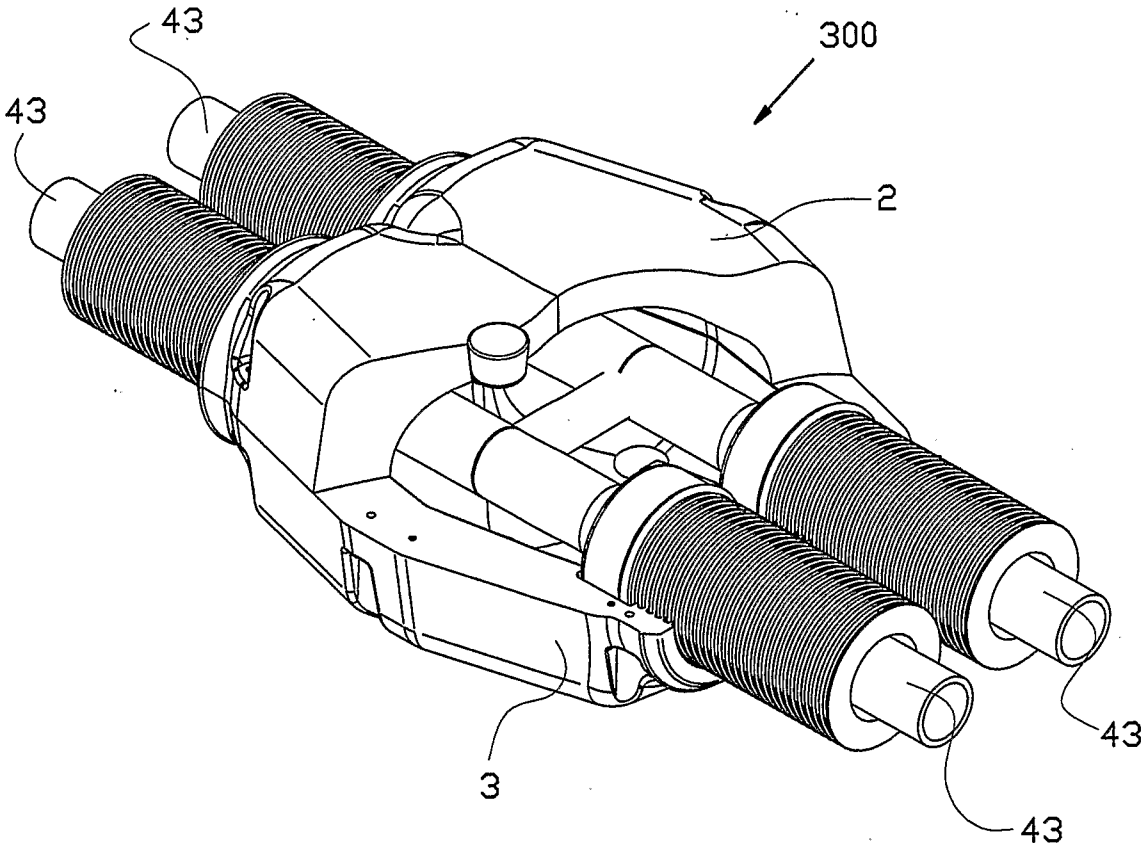

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2006/000333

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16L59/16

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 practical, 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.
X	CA 1 249 974 A1 (PRESTIDGE, GARY R., SR) 14 February 1989 (1989-02-14) page 2, line 15 - line 36 page 4, line 17 - page 5, line 13 page 6, line 2 - line 13 page 10, paragraph 2 claim 1 figures 1,2 ----- -/--	1-4,6, 8-10, 12-14, 16-19, 21, 25-28, 30,35-38

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

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
27 September 2006	06/10/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Axelsson, Torbjörn

INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2006/000333

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 42 22 297 A1 (JACOBS, HEINZ-JOSEF, 4790 PADERBORN, DE) 13 January 1994 (1994-01-13) column 5, line 50 - column 10, line 10; figures	1-6, 12-14, 16-19, 21-25, 27-31, 33-38
X	DE 203 14 164 U1 (MEICHELBOECK, HUBERT) 18 December 2003 (2003-12-18) paragraph [0013] - paragraph [0016]; claim 1; figures	1,2,4,5, 12-14, 16,17, 19,21, 25-28, 35-38
X	DE 19 41 452 A1 (SCHNEIDER,MARVIN) 25 February 1971 (1971-02-25) page 13, paragraph 2 - page 15, paragraph 1 page 19, paragraph 3 - page 22, paragraph 1; figures	1-6, 11-13, 16, 25-28, 30,35-38

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/NL2006/000333

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CA 1249974 A1	14-02-1989	NONE	
DE 4222297 A1	13-01-1994	NONE	
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