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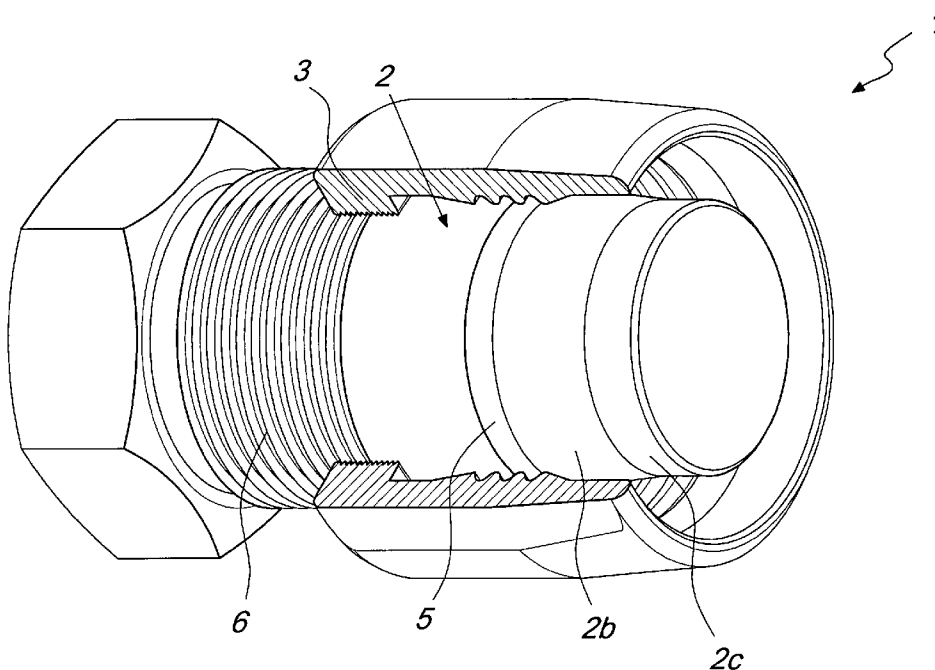
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HOSE FITTING FOR HYDRAULIC, INDUSTRIAL AND AIR-CONDITIONING APPLICATIONS, HAVING IMPROVED TIGHTNESS CHARACTERISTICS



(57) Abstract: A hose fitting (1) for hydraulic, industrial and air-conditioning applications, comprising an insert (2) and a collar (3) which can be screwed onto the insert (2), the insert being provided with at least one positive groove (5).

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# HOSE FITTING FOR HYDRAULIC, INDUSTRIAL AND AIR-CONDITIONING APPLICATIONS, HAVING IMPROVED TIGHTNESS CHARACTERISTICS

## Technical Field

5           The present invention relates to a hose fitting for hydraulic, industrial and air-conditioning applications, having improved tightness characteristics.

More particularly, the invention relates to a hose fitting in which the insert is provided so as to provide the improved tightness characteristics indicated above.

## 10   Background Art

As is known, the type of fitting known as "field attachable" or "reusable" provides for the connection between the collar and the insert by means of a threaded coupling.

The advantage of said fitting with respect to traditional press-on  
15 fittings is the possibility to provide lines which are assembled directly in place since it does not require particular equipment, such as for example presses, in order to perform assembly and coupling.

However, fittings of the type described above, with respect to press-on ones, have a reduced tightness against seepage and leaks.

## 20   Disclosure of the Invention

The aim of the present invention is to provide a hose fitting which is of the type that can be assembled directly in place without particular tools but has a tightness which is substantially equal to that of press-on fittings.

Within this aim, an object of the present invention is to provide a hose  
25 fitting which is of the type which can be assembled in place or reused and can be applied both to hydraulic applications and in air-conditioning and mobile refrigeration systems thanks to the improved screw coupling characteristics with respect to known types of fittings.

Another object of the present invention is to provide a fitting of the  
30 type that can be assembled in place or can be reused and can be applied for

hydraulic applications, air-conditioning and mobile refrigeration systems.

Still another object of the present invention is to provide a fitting which can be assembled in place or reused and is highly reliable, relatively simple to provide and at competitive costs.

- 5        This aim and these and other objects, which will become better apparent hereinafter, are achieved by a hose fitting for hydraulic, industrial and air-conditioning applications, which comprises an insert and a collar which can be screwed onto said insert, characterized in that said insert is provided with at least one positive groove.

## 10    **Brief Description of the Drawings**

Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the fitting according to the present invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

- 15        Figure 1 is a schematic view of the fitting according to the present invention;

Figure 2 is a schematic view of the insert of the fitting according to the present invention;

- 20        Figure 3 is a view of a detail of the insert which belongs to the fitting according to the present invention.

## **Ways of carrying out the Invention**

- With reference to the figures, the fitting according to the present invention, generally designated by the reference numeral 1, comprises an insert 2, which is adapted to be inserted within a hose to be connected to  
25    another hose, and a collar 3, which is threaded internally and is adapted to be screwed onto the insert 2, which has an external thread 6.

The insert 2 is substantially shaped so as to have a first cylindrical portion 2a which is followed by a second conical portion 2b which ends with an additional cylindrical portion 2c.

- 30        The peculiarity of the invention resides in that the insert 2 is provided

with at least one positive groove 5, i.e., at least one protrusion or annular ridge which is arranged circumferentially around the body of the insert.

Such positive groove 5 allows the insert 2, once it has been inserted within the hose, to remain firmly engaged within the hose, thus avoiding the  
5 slippage of the latter off the insert.

Conveniently, the positive groove 5 has a rounded profile, so as to not produce tears within said hose.

The positive groove 5 is arranged at the conical portion of the insert.

Substantially, the fitting according to the invention is of the type that  
10 can be assembled in place, i.e., without the use of tools, or of the so-called reusable type, by way of the screwing with threading of the collar on the insert. However, the insert according to the invention, despite being of the type that does not require pressing, provides improved assurances of tightness with respect to known types of inserts, due to the presence of at  
15 least one positive groove 5 as described above.

The fitting according to the invention has a total length which is shorter than that of known types of fittings, since the positive groove or ridge 5 of the insert improves the performance of the insert, allowing to reduce its length with respect to known types of inserts: accordingly, the  
20 length of the entire fitting is reduced.

In practice it has been found that the fitting according to the present invention fully achieves the intended aim and objects, since it allows to have a tightness against seepage and leaks which is substantially similar to that of a traditional fitting provided by pressing, but without the need to  
25 have a pressing action, and therefore with the advantage of being able to use a fitting with a collar which can be screwed onto the body of the insert.

The fitting thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the elements may further be replaced with other technically equivalent  
30 elements.

In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements and to the state of the art.

The disclosures in Italian Patent Application no. MI2006A001053,  
5 from which this application claims priority, are incorporated herein by reference.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such  
10 reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## CLAIMS

1. A hose fitting for hydraulic, industrial and air-conditioning applications, comprising an insert and a collar which can be screwed onto said insert, characterized in that said insert is provided with at least one  
5 positive groove.

2. The fitting according to claim 1, characterized in that said at least one positive groove has a curved profile.

3. The fitting according to claim 1 or 2, characterized in that said insert has a substantially cylindrical body in a first region, followed by a  
10 conical portion which in turn ends with another cylindrical portion.

4. The fitting according to claim 3, characterized in that said at least one positive groove is arranged at said conical portion of the insert.

5. The fitting according to one or more of the preceding claims, characterized in that it comprises a plurality of positive grooves along the  
15 body of the insert.

6. An insert particularly for hose fittings for hydraulic, industrial and air-conditioning applications, characterized in that it comprises at least one positive groove which is arranged circumferentially around the body of the  
insert.

20 7. The insert according to claim 6, characterized in that it comprises a first cylindrical portion which is followed by a second conical portion and by another cylindrical third portion.

8. The insert according to claim 6, characterized in that said at least one positive groove is arranged at the conical portion of said insert.

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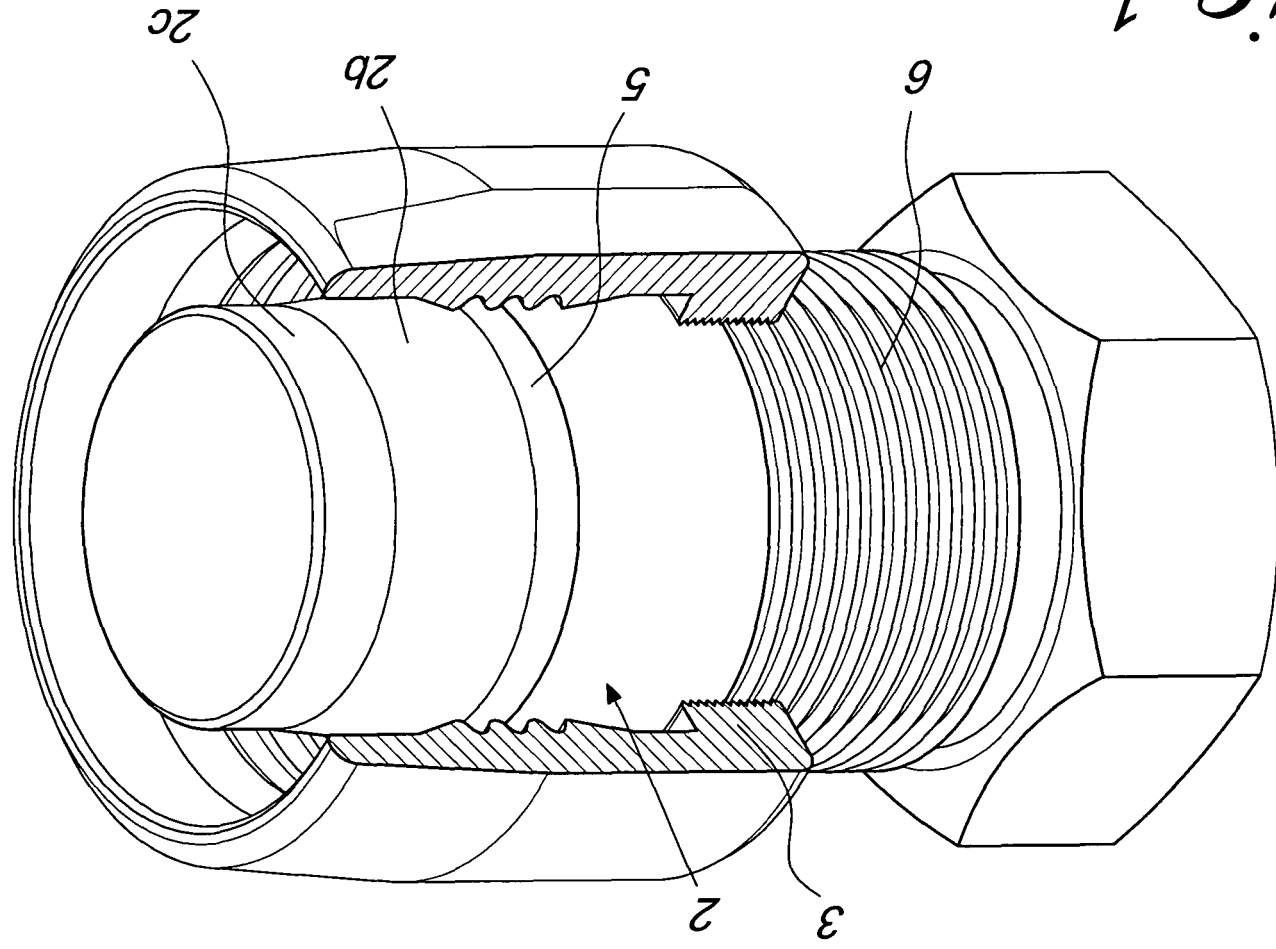
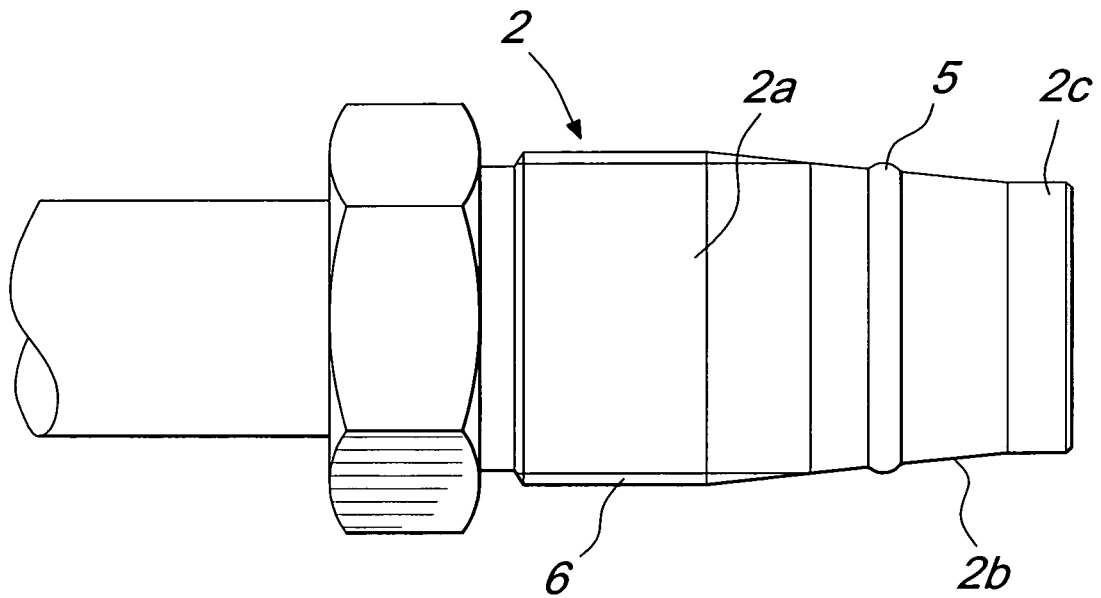
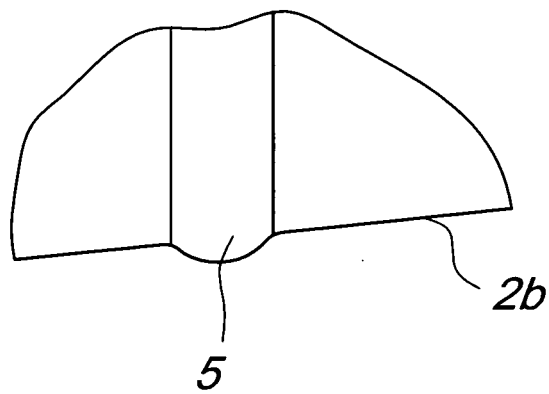


Fig. 1

2/2



*Fig. 2*



*Fig. 3*



# INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2007/004640

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. F16L33/22

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         | DE 42 33 162 A1 (BAUMANN WILFRIED [DE])<br>7 April 1994 (1994-04-07)               | 1,2,6                 |
| A         | figure 1   | 3-5,7,8               |
| X         | US 6 209 804 B1 (SPRIEGEL CLARK F [US])<br>3 April 2001 (2001-04-03)               | 1,3,6,7               |
| A         | figure 1   | 2,4,5,8               |
| X         | AU 15794 70 A (GORDON DOUGLAS GRIFFIN)<br>2 December 1971 (1971-12-02)             | 1,5,6,8               |
| A         | figure 3   | 2-4,7                 |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|----|---------------------|----------------------------|---------------------|
| DE 4233162                                | A1 | 07-04-1994          | NONE                       |                     |
| US 6209804                                | B1 | 03-04-2001          | NONE                       |                     |
| AU 1579470                                | A  | 02-12-1971          | NONE                       |                     |