

**(12) STANDARD PATENT**  
**(19) AUSTRALIAN PATENT OFFICE**

(11) Application No. **AU 2009212809 B2**

(54) Title  
**Pressure hose for a water-carrying system, particularly for connecting movable sanitary fittings or for connecting parts of the water-carrying system with one another**

(51) International Patent Classification(s)  
**F16L 11/11** (2006.01) **F16L 15/00** (2006.01)

(21) Application No: **2009212809** (22) Date of Filing: **2009.08.26**

(30) Priority Data

|                          |                   |              |
|--------------------------|-------------------|--------------|
| (31) Number              | (32) Date         | (33) Country |
| <b>10 2008 039 991.4</b> | <b>2008.08.27</b> | <b>DE</b>    |

(43) Publication Date: **2010.03.18**

(43) Publication Journal Date: **2010.03.18**

(44) Accepted Journal Date: **2014.10.16**

(71) Applicant(s)  
**Kottmann GOSLA GmbH**

(72) Inventor(s)  
**Dickel, Heiko**

(74) Agent / Attorney  
**Shelston IP, L 21 60 Margaret St, Sydney, NSW, 2000**

(56) Related Art  
**US 3605817**  
**US 5853202**  
**US 5413147**

# ABSTRACT

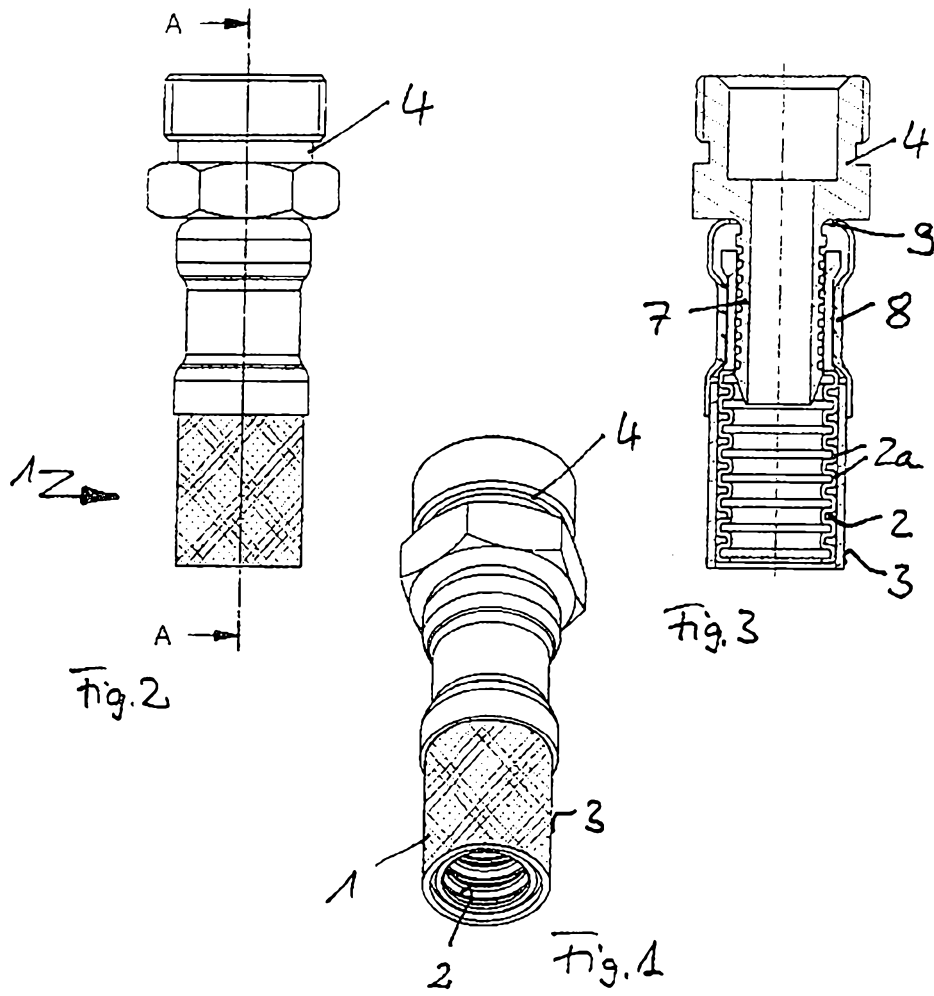
5 A functional pressure hose is to be created for a water-carrying system, particularly for connecting movable sanitary fittings or for connecting parts of the water-carrying system with one another, having an inner hose made of plastic and an outer jacket made of a braided material, whereby at least one hose end is provided with a connector piece having a tubular connector, onto which the hose end is pressed, which hose demonstrates great flexibility while maintaining the required pressure strength, but at the same time guarantees great bending protection.

10

This is achieved in that the inner hose is formed by a corrugated hose (2), and the tubular connector (7) has circumferential ring beads (11) that are adapted to the inner contour of the corrugated hose (2), whereby at least some of the ring beads (11) are provided with notches (12) that run axially.

15

Fig. 3



# AUSTRALIA

-----  
PATENTS ACT 1990  
-----

## COMPLETE SPECIFICATION

FOR A STANDARD PATENT

**ORIGINAL**

---

Name of Applicant/s: Kottmann GOSLA GmbH

Actual Inventor/s: Heiko Dickel

Address for Service is:

SHELSTON IP  
60 Margaret Street  
SYDNEY NSW 2000

Telephone No: (02) 9777 1111  
Facsimile No. (02) 9241 4666

**CCN: 3710000352**

Attorney Code: SW

Invention Title: PRESSURE HOSE FOR A WATER-CARRYING SYSTEM,  
PARTICULARLY FOR CONNECTING MOVABLE SANITARY  
FITTINGS OR FOR CONNECTING PARTS OF THE WATER-  
CARRYING SYSTEM WITH ONE ANOTHER

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

File: 63585AUP00

**PRESSURE HOSE FOR A WATER-CARRYING SYSTEM, PARTICULARLY FOR  
CONNECTING MOVABLE SANITARY FITTINGS OR FOR CONNECTING PARTS OF THE  
WATER-CARRYING SYSTEM WITH ONE ANOTHER**

**FIELD OF THE INVENTION**

[0001] The invention relates to a pressure hose for a water-carrying system, particularly for connecting movable sanitary fittings or for connecting parts of the water-carrying system with one another, having an inner hose made of plastic and an outer jacket made of a braided material, whereby at least one hose end is provided with a connector piece having a tubular connector, onto which the hose end is pressed.

**BACKGROUND OF THE INVENTION**

[0002] Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

[0003] Pressure hoses of this type have been in use for a long time, in many different ways, particularly in the sanitary sector. In this connection, the smooth inner hose made of plastic serves as a water-carrying, fluid-tight medium, and the outer jacket made of a braided material serves for pressure stability. Such hoses have been limited in terms of their flexibility until now, since the inner hose is relatively rigid, at least if the wall thickness is correspondingly great to guarantee sufficient protection against bending.

[0004] For other areas of use, pressure hoses have already become known, as well, in which the inner hose does not consist of a smooth hose but rather of a corrugated hose. For example, a pressure hose for the greatest demands is known from DE 86 07 066 U1, which has an inner hose made of a corrugated tubular film made of polytetrafluoroethylene and an outer wall reinforcement that can consist of a tight-mesh stainless steel braiding. Such a hose is particularly intended for industrial applications, for example in oil drilling or in the manufacturing industry, and has increased flexibility and a reduced bending radius because of the inner hose that is selected. Such a hose is supposed to be able to be used with conventional connection systems. However, such connection systems are not suitable for a hose in the sanitary sector,

in which the hose end is generally pressed onto a tubular connector, using a pressure sleeve that lies on the outside.

[0005] It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

[0006] It is the task of the invention in at least its preferred form, to create a functional pressure hose for a water-carrying system that demonstrates great flexibility while maintaining the required pressure resistance, but at the same time guarantees great protection against bending.

[0007] In one aspect, there is provided a pressure hose of the type indicated initially, according to the invention, wherein the inner hose is formed by a corrugated hose, and the tubular connector has circumferential ring beads that are adapted to the inner contour of the corrugated hose, whereby at least some of the ring beads are provided with notches that run axially.

## **SUMMARY OF THE INVENTION**

[0008] According to one aspect, the present invention provides a pressure hose for a water-carrying system, comprising:

- an inner hose made of plastic and being formed as a corrugated hose with parallel corrugations;

- an outer jacket made of a braided material and directly surrounding the inner hose;

- at least one connector piece having a tubular connector, onto which a hose end is pressed by means of a pressure sleeve, said tubular connector having circumferential ring beads that are adapted to an inner contour of the corrugated hose, wherein at least some of the ring beads are provided with notches that run axially.

[0009] Unless the context clearly requires otherwise, throughout the description and the claims, the words “comprise”, “comprising”, and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of “including, but not limited to”.

[0010] Thus, a pressure hose is made available that makes use of the known advantages of an inner hose formed by a corrugated hose, but is adapted to the special conditions in the sanitary sector, with regard to pressure resistance and bending protection. Because of the special configuration of the connector, with circumferential ring beads and grooves and notches that run axially, at least in part of the ring beads, it is guaranteed that the inner hose end is pressed together with the connector, in pressure-tight manner, on the one hand, but on the other hand, twisting protection of the hose relative to the connector is reliably guaranteed, since the inner hose is pressed into the notches when the inner hose is pressed on. The inner corrugated hose then makes contact in tight and torque-proof manner, because of the adaptation of the ring bead contour and groove contour of the tubular connector to the contour of the corrugated hose.

[0011] In a particularly preferred embodiment, it is provided that the corrugated hose has parallel corrugations. A parallel corrugation is understood to mean that the corrugations are configured parallel to one another, and run on a circular circumference, symmetrical to the longitudinal axis of the hose, in other words are not configured in screw shape or spiral shape. Such a hose has great flexibility at small bending radii, without the undesirable effect of spiral-shaped or screw-shaped torsion or twisting.

[0012] In a particularly preferred embodiment, the corrugated hose can be configured differently over its length, in order to influence the flexibility in certain regions of the hose, for example the end regions, in targeted manner, on the one hand, and, on the other hand, in order to contribute to reducing the noise development that results from the flow behavior within the hose.

[0013] For this purpose, it can preferably be provided that the distance between adjacent corrugations of the corrugated hose deviates from the axial width of the corrugations. Thus, the flow dead spaces that occur in the hose interior below the corrugations can be influenced in targeted manner, in order to reduce noise development and to achieve the most laminar flow in the hose that is possible.

[0014] Furthermore, it can preferably be provided that the distance between adjacent corrugations of the corrugated hose is configured differently along the hose length, in order to be able to vary the flexibility along the hose length.

[0015] Furthermore, it can be provided that the axial width of the corrugations of the corrugated hose is different along the hose length.

[0016] Preferably, polyethylene, polypropylene, or any other suitable material approved for drinking water is provided as the material for the corrugated hose.

[0017] The outer hose preferably consists of a braiding made of plastic and/or metal, particularly precious metal or aluminum.

[0018] The pressure hose according to the invention is preferably configured as a pressure-resistant connecting hose, as a kitchen spray hose, or as a retractable hose for shower hoses.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0019] In the following, the invention will be explained as an example, using the drawing. This shows, in

[0020] Fig. 1 a perspective representation of a pressure hose according to the invention, shown in sections, having a connector piece on the end side,

[0021] Fig. 2 a side view of the pressure hose according to Fig. 1,

[0022] Fig. 3 a section along the line A-A in Fig. 2,

[0023] Fig. 4 the connector piece of the pressure hose in a side view, and in

[0024] Fig. 5 a perspective representation of the connector piece according to Fig. 4.

#### **PREFERRED EMBODIMENT OF THE INVENTION**

[0025] A pressure hose according to the invention is shown in Fig. 1 to 3, only in certain sections, with a hose end, and referred to in general as 1. This pressure hose 1 for a water-carrying system, particularly for connecting movable sanitary fittings, such as a kitchen spray or also a shower or shower fitting, or for connecting parts of the water-carrying system with one another, as a connecting hose, has an inner hose and an outer jacket.



[0026] The inner hose is formed by a corrugated hose 2 made of plastic, which is preferably configured with parallel corrugations. This inner corrugated hose 2 is surrounded by an outer jacket 3 made of a braided material, which rests directly against the inner corrugated hose 2.

[0027] The inner corrugated hose 2 made of plastic can consist of polyethylene, for example. The outer jacket 3 consists of a braided material made of plastic or metal, or of a combination of these materials. Possible metals are particularly stainless steel or aluminum.

[0028] At least one end of the pressure hose 1 is provided with a connector piece designated as 4 (see, in particular, Fig. 4 and 5). This connector piece 4, which can be provided with an outside thread 5 and, adjacent to that, with a hexagonal edge 6, at its free end, has a tubular connector 7 onto which the end of the pressure hose 1 is pressed, for which purpose a pressure sleeve 8 is used, in usual manner, which is disposed on the outside on the outer jacket 3, and forms a counter-bearing for the connector 7 that is pressed in. In this connection, the pressing process is preferably carried out, at the end of the pressure sleeve 8, in a region 9, so that direct metal contact between the region 9 of the pressure sleeve 8 and the connector 7 is produced.

[0029] The tubular connector 7 is provided with circumferential grooves 10, in adaptation to the inner contour of the inner corrugated hose 2, which grooves are formed by adjacent circumferential ring beads 11. Before being pressed, the pressure hose 1 is placed onto the connector of the connector piece 4 in such a manner that the inner corrugated hose 2 lies against the ring beads 11 of the connector 7 with its corrugations 2a that are directed radially outward, and engages into the grooves 10 with its regions that lie in between.

[0030] Aside from this adaptation of the connector 7 to the inner contour of the pressure hose 1, at least some of the ring beads 11 of the connector 7 have notches 12 that run axially. These notches serve as protection against twisting between the pressure hose 1 and the connector piece 4. When the hose end is pressed together with the connector piece 4, the corresponding hose regions are pressed into the notches 12, so that twisting of the pressure hose 1 relative to the connector piece 4 is reliably avoided.

[0031] The inner hose 2 can have a special geometric configuration, in adaptation to different conditions of use, which is not shown in the drawing. For example, the distance between adjacent corrugations 2a of the corrugated hose 2 can deviate from the axial width of the

corrugations 2a. Furthermore, the distance between adjacent corrugations 2a can be configured differently along the hose length. Furthermore, it is possible that the axial width of the corrugations 2a of the corrugated hose 2 is different along the hose length. By means of this variation of the geometric configuration of the inner corrugated hose 2, it is possible to influence the flexibility over the hose length, on the one hand, and, on the other hand, the axial expanse of the flow dead spaces formed in the interior of the inner corrugated hose 2a by the corrugations 2a can be influenced in targeted manner, in order to achieve as laminar a flow in the pressure hose 1 as possible, so that as little flow noise as possible is produced.

[0032] Of course, the invention is not restricted to the embodiments shown. Other embodiments are possible without leaving the basic idea of the invention. For example, the notches 12 can also have a different configuration and be disposed differently, and more of the like.

**CLAIMS**

1. A pressure hose for a water-carrying system, comprising:  
an inner hose made of plastic and being formed as a corrugated hose with parallel corrugations;  
an outer jacket made of a braided material and directly surrounding the inner hose;  
at least one connector piece having a tubular connector, onto which a hose end is pressed by means of a pressure sleeve, said tubular connector having circumferential ring beads that are adapted to an inner contour of the corrugated hose, wherein at least some of the ring beads are provided with notches that run axially.
2. The pressure hose according to claim 1, wherein a distance between adjacent corrugations of the corrugated hose deviates from an axial width of the corrugations.
3. The pressure hose according to claim 2, wherein the distance between adjacent corrugations of the corrugated hose differs along a length of the hose.
4. The pressure hose according to claim 1, wherein an axial width of the corrugations of the corrugated hose differs along a length of the hose.
5. The pressure hose according to claim 1, wherein the inner hose consists of polyethylene or polypropylene.
6. The pressure hose according to claim 1, wherein the outer jacket consists of plastic or metal.
7. The pressure hose according to claim 1, wherein the hose is configured as a pressure-resistant connecting hose, as a kitchen spray hose, or as a retractable hose for shower hoses.
8. A pressure hose for a water-carrying system substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

