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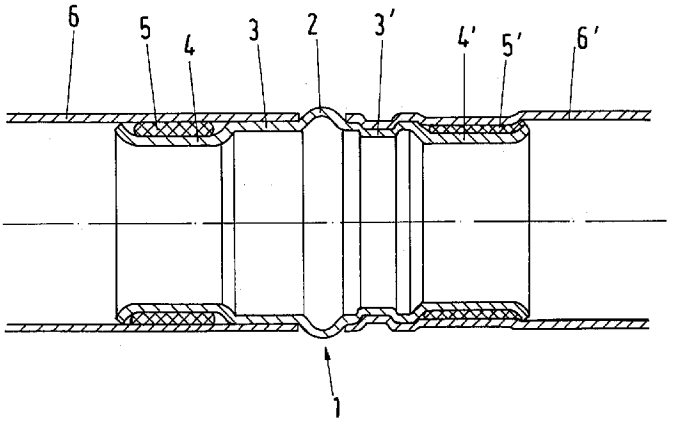
(54) **RACCORD DE TUYAUX**
(54) **PIPE CONNECTOR**



(57) Ce raccord de tuyaux comprend un tuyau dont la section terminale lisse est enfilée sur un raccord métallique constitué d'au moins une zone allongée en forme de manchon pourvue d'au moins une moulure pour loger une bague d'étanchéité et d'une butée qui s'étend radialement vers l'extérieur au début de la zone allongée. Le tuyau et le raccord sont réunis de manière permanente par un outil de compression appliqué sur l'extérieur du tuyau et du raccord et qui déforme plastiquement au moins le tuyau. Le tuyau (6, 6'; 7, 7') et le raccord (1) sont métalliques, de préférence en acier inoxydable (acier spécial) et en titane. La bague d'étanchéité (5, 5') est montée dans un évidement (4, 4') aplati à l'extrémité de la zone allongée en forme de manchon du raccord (1). Le tuyau (6, 6', 7, 7') et le raccord (1) forment dans la zone entre la bague d'étanchéité (5, 5') et la butée (2) un point de déformation (3') qui sert à les immobiliser dans le sens axial.

(57) A pipe connector has a pipe whose smooth end section is pushed onto a metallic fitting with at least one elongated, sleeve-shaped area provided with at least one bead-shaped depression for receiving a packing ring and with a stop that extends radially outwards at the beginning of the sleeve-shaped area. Pipe and fitting are permanently joined by a pressing tool applied to the outside of pipe and fitting and which plastically deforms at least the pipe. Pipe (6, 6', 7, 7') and fitting (1) are made of metal, preferably of stainless steel (special steel) and titanium. The packing ring (5, 5') is arranged in a flat recess (4, 4') at the end of the sleeve-shaped area of the fitting (1). Pipe (6, 6', 7, 7') and fitting (1) form in the area between packing ring (5, 5') and stop (2) a deformation point (3') that secures them in the axial direction.

Abstract

The invention relates to a pipe connector with a pipe, whose smooth end section is slipped onto a metal fitting that has at least one elongated sleeve-shaped region, which is equipped with at least one bead-type recess to hold a sealing ring and with a stop extending radially outward at the beginning of the sleeve-shaped region. The pipe and fitting are connected permanently to each other by means of an externally-applied pressure tool that plastically deforms at least the pipe. The pipe (6, 6', 7, 7') and fitting (1) are made of metal, preferably stainless steel (special steel) and titanium, and the sealing ring (5, 5') is arranged in a flat recess (4, 4') at the end of the sleeve-shaped region of the fitting (1). The pipe (6, 6', 7, 7') and fitting (1), in the region between the sealing ring (5, 5') and the stop (2), form a deformation location (3') that secures them axially.

Figure 1

Pipe Connector

Description

The invention relates to a pipe connector in accordance with the generic part of the main claim.

A generic pipe connector from the Geberit Company is known (see excerpt from company brochure). In this system, a so-called compound pipe is slipped onto a red brass fitting. The compound pipe comprises an inner pipe with an aluminum mantle, which transports the liquid, and a sleeve pipe that provides external protection and is located over the inner pipe. Usually, the inner pipe and the sleeve pipe are made of plastic. The fitting has an elongated region with a stop, up to which the pipe to be connected is slipped. The region adjacent to the stop usually has two ring grooves, in each of which is arranged a sealing ring. The remaining section is sharply contoured, so that the slipped-on pipe can be shaped into the contour during pressing. After the pipe is slipped on, pressing tongs are applied from the outside and the pipe is pressed on in the sealing ring region as well as the contoured region. The sealing ring region thereby carries out the sealing function, while the contoured region is responsible for axial locking. It is disadvantageous in this system that the compound pipe can be used only for a narrow temperature and pressure range. Furthermore, the fitting is expensive to produce, because the contoured end regions as well as the sealing ring region must be manufactured with precision. Another disadvantage is the crevice that remains between the slipped-on pipe and the contoured region of the fitting. Aggressive substances dissolved in liquid can penetrate into this crevice; by repeated evaporation, their concentrations can increase disproportionately and, in the worst case, lead to so-called crevice corrosion.

The object of the invention is to indicate a pipe connector of the generic type that is also suitable for higher pressures and temperatures and in which the development of crevice corrosion is avoided. This object is attained by means of the features indicated in the characterizing part of the main claim. Advantageous further developments are the subject matter of the subclaims.

In the pipe connector according to the invention, advantageously, the required position of the pipe slipped onto the fitting can be immediately recognized visually without other aids. The long-proven metal pressure connection achieved by deforming the pipe and fitting is retained, so that high axial longitudinal forces and thus high internal pressures can be transmitted. The transition between the pipe and the fitting is free of crevices, because the sealing ring is arranged in the end region of the fitting.

Advantageously, the stop is embodied as a roof-shaped bulge, because this can be simply produced with pressing machines. The radial depth of the flat recess for the sealing ring should be as small as possible, because this constitutes the cross-section-determined bottleneck of the conduit pipe system. To lessen this problem, it is also proposed that the internal diameter of the pipe be enlarged in the slipped-on region, so that the cross-section of the pipe section attached thereto corresponds roughly to the internal diameter in the sealing region of the fitting. In this way, pressure losses in the connection region are largely avoided.

The pipe connector according to the invention is described in greater detail in reference to two examples. The drawings show:

Figure 1 A longitudinal section through a first embodiment of the pipe connector according to the invention;

Figure 2 Like Figure 1, but a different embodiment.

Figure 1 shows, in longitudinal section, a first embodiment of the pipe connector according to the invention. The left part of the drawing shows the pipe connector in the slipped-on state. The right part of the drawing shows the pipe connector after pressing. The core of the connection is a fitting 1,

which has a stop 2 embodied as a bulge that extends radially outward. Attached thereto, at least toward one side, is a cylindrical section 3, 3' that extends in the longitudinal direction and then goes over into a section having, for example, a flat recess 4, 4'. Arranged in this recess 4, 4' is a sealing ring 5, 5'. In this example, two smooth-ended conduit pipes 6, 6' are slipped onto the fitting 1, specifically, up to the stop 2. By means of a pressing tool (not shown here), the two pressing points are deformed one after the other. As mentioned above, the right part of the drawing shows the pressed state. The deformed section 3' thereby undertakes the axial locking of the pipe connector, while the section 4' performs the sealing function. In section 3', both the slipped-on pipe 6' and the fitting section 3' located below the pipe 6' are deformed. The type of pressing-in, e.g., hexagonal or lemon-shaped segments, depends on the contour of the mouth of the pressing jaws (not shown here).

Figure 2 shows a second embodiment, which uses the same reference numbers as in Figure 1 for the same parts. Again, the left part of the drawing shows the pipe connector in the slipped-on state, while the right part of the drawing shows the pressed state. The fitting 1, in geometry and shape, is the same as in Figure 1. The pipe end sections are designed differently. The smooth-ended pipes 7, 7' have an expanded section 8, 8' in the slip-on region on the fitting 1. The section 8, 8' is selected in such a way that the internal diameter 9, 9' of the actual conduit pipe 7, 7' corresponds roughly to the internal diameter 10, 10' of the fitting 1 in the sealing region. Thus, pressure losses are largely avoided in the connection region.

Patent Claims

1. Pipe connector with a pipe, whose smooth end section is slipped onto a metal fitting that has at least one sleeve-shaped region extending in the longitudinal direction, which is equipped with at least one bead-type recess to hold a sealing ring and with a stop extending radially outward and located at the beginning of the extension, and the pipe and fitting are connected permanently to each other by means of an externally-applied pressure tool that plastically deforms at least the pipe, whereby the pipe is pressed on both in the region of the sealing element and in the adjacent region on the fitting,
characterized by the fact
that the pipe (6, 6', 7, 7') and the fitting (1) are made of metal, preferably stainless steel (special steel) and titanium, and the sealing ring (5, 5') is arranged in a flat recess (4, 4') at the end of the extension of the sleeve-shaped region of the fitting (1), and the pipe (6, 6', 7,7') and the fitting (1), in the region between the sealing ring (5, 5') and the stop (2), form a deformation location (3') that secures them axially.

5.[*sic*] Pipe connector as in one of the Claims 1 to 4,
characterized by the fact
that the pipe and fitting are made of special steel or titanium.

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Patent Claims:

1. Pipe connector with a pipe, whose smooth end section is slipped onto a metal fitting that has at least one sleeve-shaped region, which extends in the longitudinal direction and is equipped with at least one bead-type recess to hold a sealing ring and with a stop extending radially outward and located at the beginning of the extension, and the pipe and fitting are connected to each other permanently by means of an externally-applied pressure tool that plastically deforms at least the pipe,
characterized by the fact
that the pipe (6, 6', 7, 7') and fitting (1) are made of metal, preferably stainless steel (special steel) and titanium, and the sealing ring (5, 5') is arranged in a flat recess (4, 4') at the end of the extension of the sleeve-shaped region of the fitting (1), and the pipe (6, 6', 7, 7') and the fitting (1), in the region between the sealing ring (5, 5') and the stop (2), form a deformation point (3') that secures them axially.

2. Pipe connector as in Claim 1,
characterized by the fact
that the stop (2) is embodied as a roof-shaped bulge.

3. Pipe connector as in Claim 1,
characterized by the fact
that the radial extension of the flat recess (4, 4') equals at least 5% of the external diameter of the fitting (1).

4. Pipe connector as in Claims 1 to 3,
characterized by the fact
that the pipe, in the slipped-on region (8, 8'), has a greater internal diameter than the remaining pipe section (7, 7') attached thereto.

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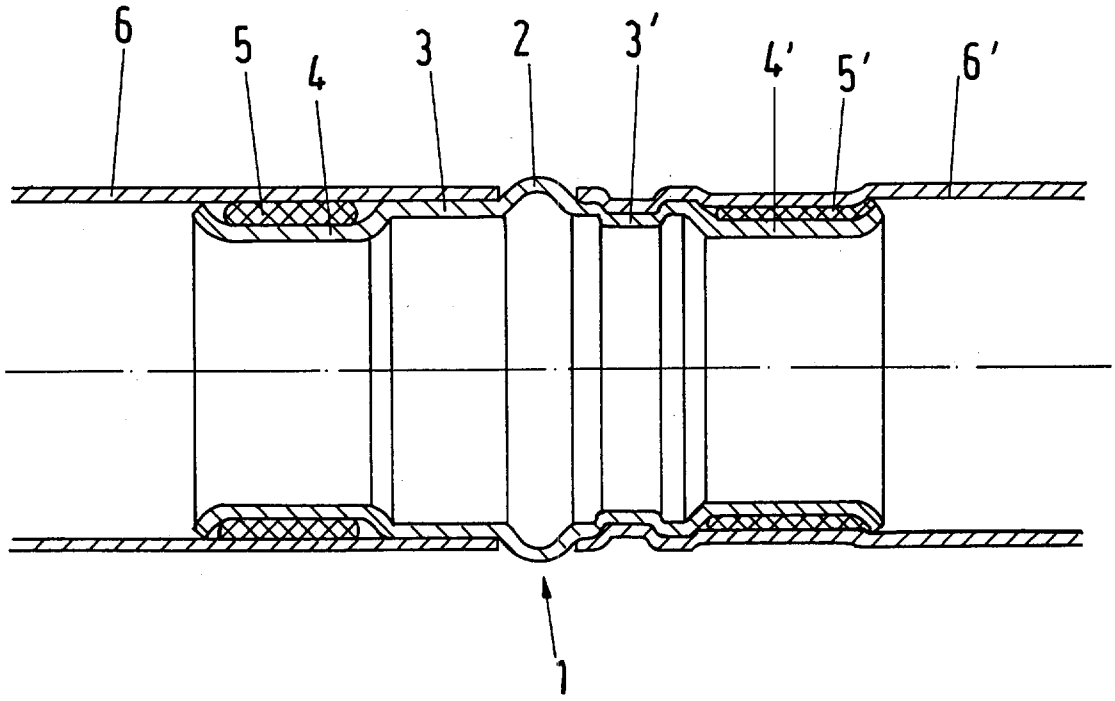
Fig.1



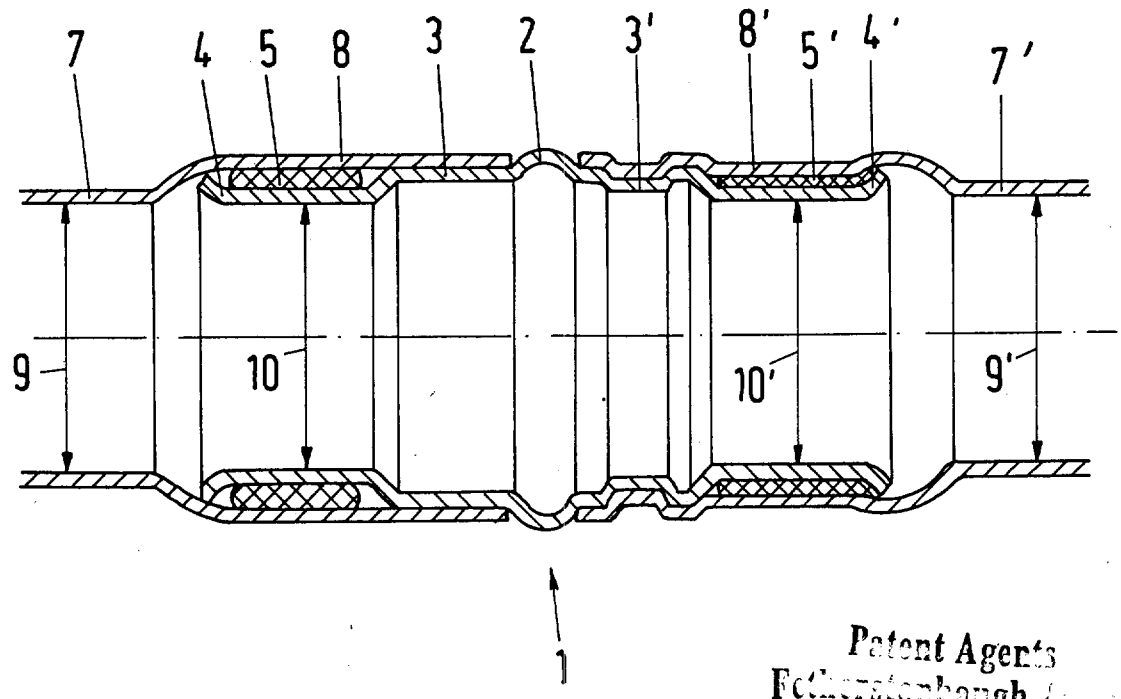
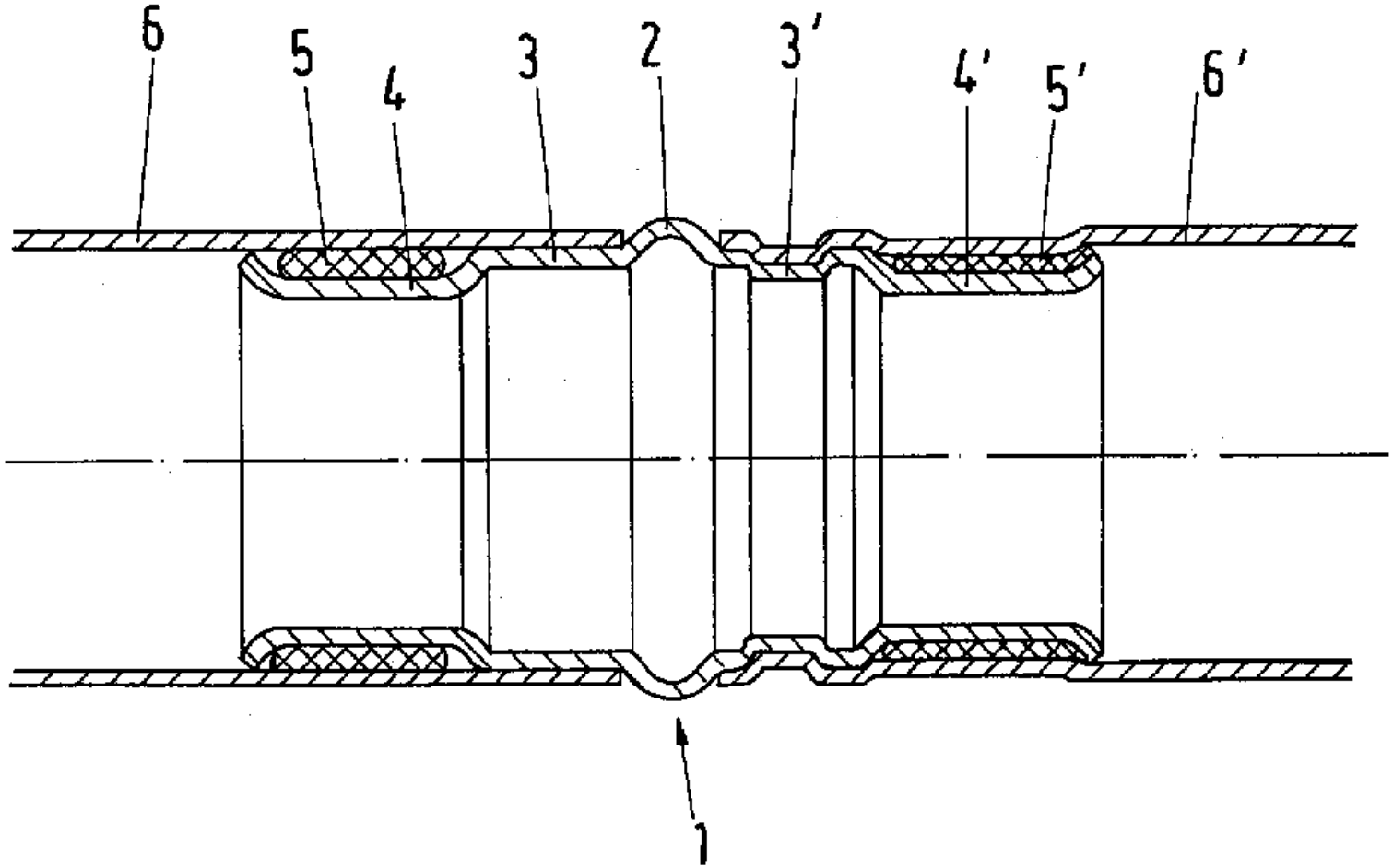


Fig.2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