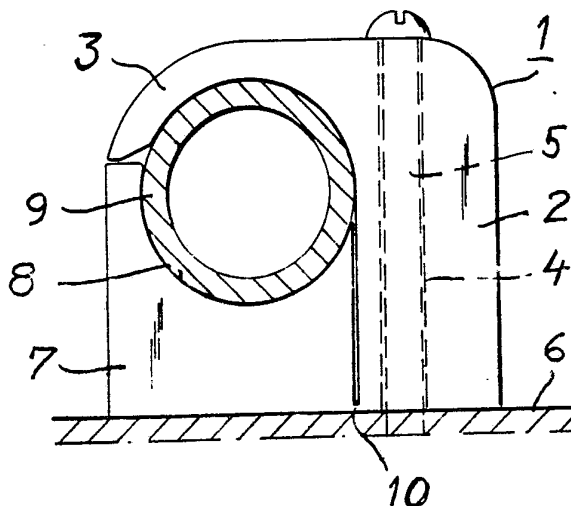


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(54) Title: A PIPE FASTENER



(57) Abstract

A pipe fastener for securing a pipe relative to a support structure includes a cradle (7) which is intended to form a spacer element between a pipe (9) and the support structure (6), and further includes an attachment yoke (2, 3) which can be secured to the support structure and which has a yoke arm (3) that extends over the cradle and a pipe possibly carried thereby. The cradle (7) can be pivoted in relation to the attachment yoke (2, 3) between a pipe receiving position in which a pipe (9) can be inserted between the cradle and the attachment yoke, and a pipe retaining position in which a pipe is held firmly between the cradle and the attachment yoke. The cradle (7) and the attachment yoke (2, 3) can be formed integrally with one another and mutually joined by a flexible material bridge (10) forming a pivot axis for the cradle.

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A pipe fastener

The present invention relates to a pipe fastener for securing pipes in relation to a support structure, primarily in water supply and sewerage installations and in hydraulic installations, the fastener including a cradle which is intended to form a spacer element between a pipe and the support structure, and further including an attachment yoke which can be secured to the support structure and which has a yoke arm which extends over the cradle and also over any pipe located in the cradle.

The object of the invention is to provide a novel and improved pipe fastener which will enable pipes and like cylindrical objects to be secured readily to a support structure, such as a wall structure or ceiling structure.

To this end it is proposed in accordance with the invention that the cradle of the aforescribed pipe fastener is arranged for pivotal movement in relation to the attachment yoke between a pipe receiving position which permits a pipe to be inserted between the cradle and the attachment yoke, and a pipe retaining position in which the pipe is held between said cradle and said yoke. A pipe fastener of this construction greatly facilitates the fitting of pipes to such support structures, since only a minimum number of separate fastener parts need be manipulated in the course of a pipe fitting operation.

The cradle and the attachment yoke are preferably formed integrally with one another and mutually joined by a flexible material bridge. This will enable the pipe fastener to be manufactured from a suitable plastics material in a single molding operation, in a simple and economic manner.

To facilitate the work of fitting a pipe to a support structure with the aid of pipe fasteners according to the invention, the cradle is preferably constructed in a manner which enables it to be held detachably in relation
5 to the attachment yoke in said pipe retaining position through a snap-locking action. This will enable the pipe to be fitted to the pipe fastener either when the fastener is completely free from the support structure or when the fastener is loosely secured thereto. This snap-locking
10 action is achieved in a particularly simple manner when the distance between the hinge axis of the cradle and the outer end of the yoke arm is made shorter than the distance between the hinge axis and the central region of the arm.

15

The invention will now be described in more detail with reference to an exemplifying embodiment thereof illustrated in the drawing.

20 Figure 1 is a side view of an inventive pipe fastener secured to a support structure and securing a pipe firmly in relation to the structure.

Figure 2 is a view taken from the left in Figure 1.

25

Figure 3 is a side view similar to the view of Figure 1 but showing the pipe fastener in a pipe receiving position.

The pipe fastener illustrated in the drawing and generally referred to by numeral 1 therein comprises an attachment yoke which includes a shaft part 2 and a yoke arm 3. The shaft part 2 of the attachment yoke has provided therein a through-passing hole 4 adapted to accommodate a screw 5 for securing the attachment yoke 2, 3 to a support structure 6. A cradle 7 presents
30 a cupped seating 8 for supporting a pipe 9 which in the illustrations of Figures 1 and 2 is held firmly between the cradle 7 and the yoke arm 3 extending over the cradle and

the pipe 9. The cupped or curved undersurface of the yoke arm lies resiliently against the pipe section remote from the cupped seating 8 and holds the pipe in position in said seating, the cradle 7 forming a spacer or distance element which established a clearance between the pipe 9 and the opposing surface of the support structure 6, as will best be seen from Figure 2. The cradle 7 is formed integrally with the attachment yoke 2, 3 and is joined thereto over a flexible material bridge 10, which forms a pivot axis which is parallel with the pipe 9 and about which the cradle 7 can be swung relative to the attachment yoke 2, 3, as will be seen when comparing Figure 1 with Figure 3.

The fastener comprising the yoke 2, 3 and the cradle 7 is preferably made of a suitable plastics material and is conveniently manufactured by molding the fastener in an appropriate molding operation.

The cradle 7 can be swung relative to the attachment yoke 2, 3 about the pivot axis 10, between or beyond the pipe fitting position illustrated in Figure 3, in which position the pipe can be inserted laterally between the cradle 7 and the resilient arm 3, and the pipe retaining position illustrated in Figure 1. In this regard, the yoke arm 3 is formed and the hinge axis 10 positioned such that the cradle 7 is held detachably in the pipe retaining position through a snap-locking action when the pipe is inserted between the cradle and the yoke arm 3 and the cradle is displaced upwards to the position illustrated in Figure 1. In the case of the illustrated embodiment this snap-locking action is achieved because the distance between the hinge axis 10 of the cradle and the free outer end of the yoke arm is shorter than the distance between the pivot axis 10 and the central region of the yoke arm 3. It will be understood, however, that this snaplocking action can be achieved in some other way, for instance by means of a hook or catch provided on the cradle for snap-engagement with the yoke arm, or by shaping the outer end of the yoke arm so that

it will hook firmly in the cradle when the cradle is swung up against the yoke arm.

When securing the pipe 9 to a supporting structure with the aid of the pipe fastener 1, the pipe 9 is placed on the cradle 7 and the pipe and cradle then swung up towards the yoke arm 3, such that the pipe is snapped securely between the yoke arm and the cradle through the aforedescribed snap-locking action. The pipe fastener 1 is then secured to the support structure 6 by means of the screw 5, therewith attaching the pipe permanently in relation to the support structure.

The invention thus provides a pipe fastener construction which can be readily given the following attributes:

Sufficient strength to hold the pipe securely in the position intended; features which are acceptable aesthetically in visible installations; and a construction which can be easily cleaned, i.e. a fastener construction which lacks dust collecting nooks and crannies. The inventive pipe fastener also allows pipes to be fitted at a distance from the support, thereby facilitating cleaning.

The invention is not limited to the illustrated embodiment, but can be achieved in any desirable manner within the scope of the inventive concept defined in the following claims. For example, the aforedescribed pipe fastener illustrated in the drawing is a single-pipe fastener. However, it is possible within the scope of the invention to provide a double-fastener for securing two pipes simultaneously to a support structure, e.g. a hot water pipe and a cold water pipe, in which case the attachment yoke will have two yoke arms which extend in mutually opposite directions, and two pivotal pipe-carrying cradles, each located beneath its respective yoke arm.

Claims

1. A pipe fastener intended for securing a pipe in relation to a support structure and including a cradle (7) which is
5 intended to form a spacer element between a pipe (9) and the support structure (6), and further including a fastener yoke (2, 3) which can be attached to the support structure and which comprises a yoke arm (3) which extends over the cradle (3) and also over any pipe located in the cradle,
10 characterized in that the cradle (7) is pivotable in relation to the attachment yoke (2, 3) between a pipe receiving position in which a pipe (9) can be inserted between the cradle (7) and the attachment yoke (2, 3), and a pipe retaining position in which the pipe is held between said
15 cradle and said yoke.

2. A pipe fastener according to claim 1, characterized in that the cradle (7) and the attachment yoke (2, 3) are integral with one another, and in that the cradle and yoke
20 are mutually joined by a flexible material bridge (10) forming a pivot axis for the cradle.

3. A pipe fastener according to claim 1 or 2, characterized in that in said pipe retaining position the cradle (7) is
25 held detachably relative to the attachment yoke (2, 3) by a snap-locking action.

4. A pipe fastener according to claim 3, characterized in that the distance between the pivot axis (12) of the cradle
30 (7) and the outer end of the yoke arm (3) is shorter than the distance between said pivot (12) and the central region of said yoke arm (3).

AMENDED CLAIMS

[received by the International Bureau on 18 January 1988 (18.01.88)
original claims 1-4 replaced by new claim 1 (1 page)]

A pipe fastener for securing a pipe in relation to a support structure and including a spacer element (7) adapted to be located between a pipe (9) and the support structure (6), and further including a fastener yoke (2,3) which can be attached to the support structure and which comprises a yoke arm (3) which extends over the spacer element (7) and also over any pipe placed on said spacer element, wherein the spacer element (7) is pivotable in relation to the attachment yoke (2,3) to and from a pipe receiving position in which a pipe (9) can be inserted between the spacer element (7) and the attachment yoke (2,3) and wherein the distance between the pivot axis (12) of the spacer element (7) and the outer end of the yoke arm (3) is shorter than the distance between the pivot axis and the central region of said yoke arm (3), characterized in that the spacer element (7) is a cradle having a seating (8) which is cupped so as to exert, together with said yoke arm (3), a snap-locking action on a pipe (9) inserted between said cradle and said yoke arm to retain said pipe therebetween.

20

25

Fig. 1

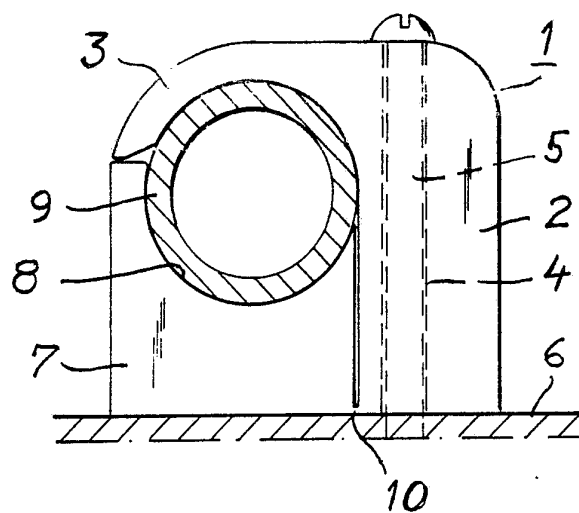


Fig. 2

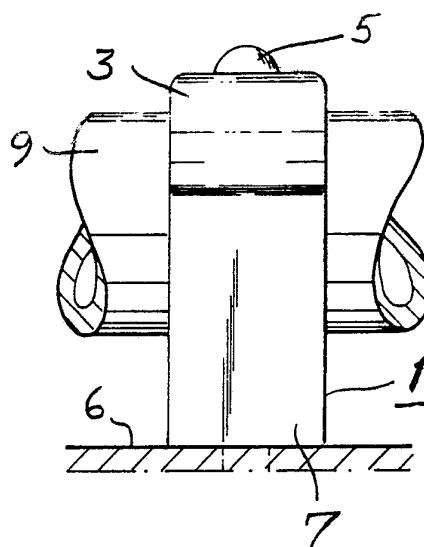
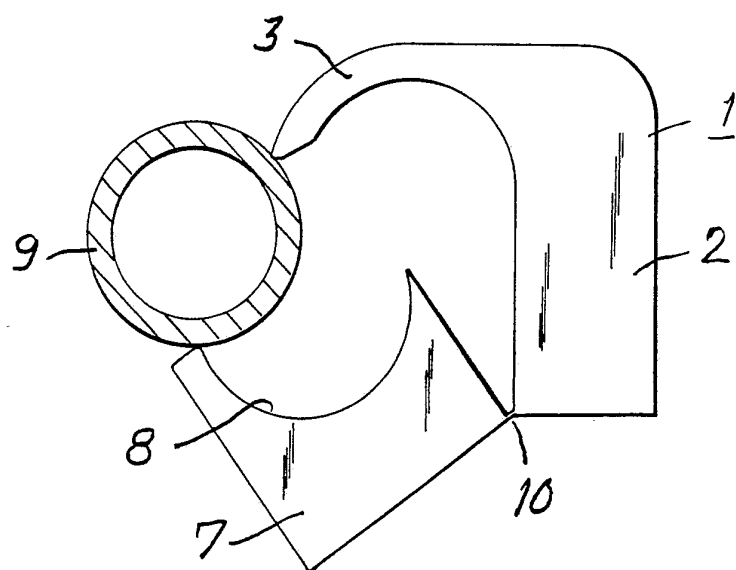


Fig. 3



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE87/00410

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC ⁴ F 16 L 3/10																	
II. FIELDS SEARCHED Minimum Documentation Searched ⁷ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%; padding: 5px;">Classification System</th> <th style="padding: 5px;">Classification Symbols</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">IPC 4</td> <td style="padding: 5px;">F 16 L 3/00-/12</td> </tr> <tr> <td style="padding: 5px;">Nat C1</td> <td style="padding: 5px;">47f: 2/02</td> </tr> <tr> <td style="padding: 5px;">US C1</td> <td style="padding: 5px;">248: 49, 62, 63, 65, 67-74</td> </tr> </tbody> </table> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸ SE, NO, DK, FI classes as above			Classification System	Classification Symbols	IPC 4	F 16 L 3/00-/12	Nat C1	47f: 2/02	US C1	248: 49, 62, 63, 65, 67-74							
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; padding: 5px;">Category ⁹</th> <th style="padding: 5px;">Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 15%; padding: 5px;">Relevant to Claim No. ¹³</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">DE, A, 1 750 035 (ELIN-UNION AG FÜR ELEKTRISCHE INDUSTRIE) 23 December 1970</td> <td style="text-align: center; vertical-align: top; padding: 5px;">2,3,4</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">DE, A, 2 013 147 (F T PRODUCTS LTD) 15 October 1970 & FR, 2040090 FR, 2040091 GB, 1296677 DE, 7010184</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,2,4</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">DE, B, 2 016 346 (F T PRODUCTS LTD) 22 March 1979 & FR, 2043066 FR, 2043065 GB, 1299592 DE, 7012495</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">FR, A, 93 745/1 520 904 (FIRMA A RAYMOND DRUCKNOFF- UND METTALL-WARENFABRIK GRENOBLE) 9 May 1969</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-4</td> </tr> </tbody> </table>			Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	X	DE, A, 1 750 035 (ELIN-UNION AG FÜR ELEKTRISCHE INDUSTRIE) 23 December 1970	2,3,4	X	DE, A, 2 013 147 (F T PRODUCTS LTD) 15 October 1970 & FR, 2040090 FR, 2040091 GB, 1296677 DE, 7010184	1,2,4	X	DE, B, 2 016 346 (F T PRODUCTS LTD) 22 March 1979 & FR, 2043066 FR, 2043065 GB, 1299592 DE, 7012495	1	A	FR, A, 93 745/1 520 904 (FIRMA A RAYMOND DRUCKNOFF- UND METTALL-WARENFABRIK GRENOBLE) 9 May 1969	1-4
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IV. CERTIFICATION <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Date of the Actual Completion of the International Search 1987-11-23</td> <td style="width: 50%; padding: 5px;">Date of Mailing of this International Search Report 1987-11-26</td> </tr> <tr> <td style="padding: 5px;">International Searching Authority Swedish Patent Office</td> <td style="padding: 5px;">Signature of Authorized Officer Axel Lindhult</td> </tr> </table>			Date of the Actual Completion of the International Search 1987-11-23	Date of Mailing of this International Search Report 1987-11-26	International Searching Authority Swedish Patent Office	Signature of Authorized Officer Axel Lindhult											
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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
X	DE, B, 1 249 372 (ANSTALT FÜR MONTAGE-TECHNIK VADUZ) 7 September 1967	1
X	US, A, 4 172 578 (PATE) 30 October 1979	1, 2, 3