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(11) **EP 1 054 112 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.11.2000 Bulletin 2000/47

(51) Int. Cl.⁷: **E03D 11/16**

(21) Application number: **00110009.8**

(22) Date of filing: **12.05.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **17.05.1999 SE 9901764**

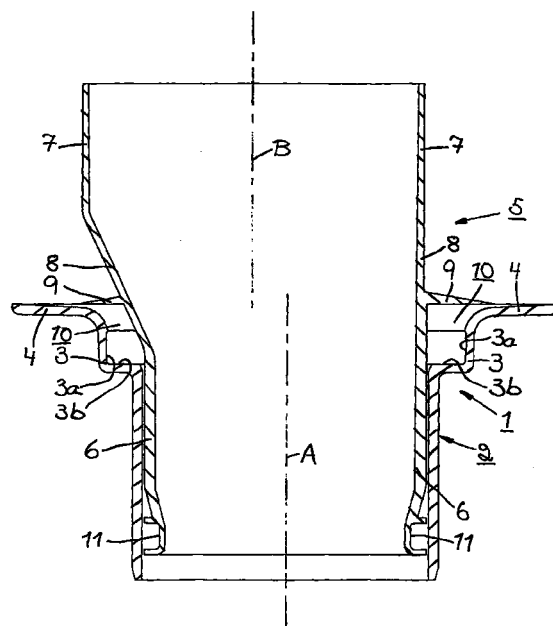
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(54) **Device for floor drain**

(57) The present invention relates to a device for permitting connection of a soil pipe from a toilet to a floor drain without an original coupling therefor. To this end, the device comprises an adapter (5) having a first tubular portion (6) which, after removal of grating, clamping ring and water trap present in the inlet member (2) of the floor drain (1), is insertable into the inlet member (2), and a second tubular portion (7) into which said soil pipe is insertable. A tubular transition portion (8) connects said first and second tubular portions (6, 7) to each other. On the outer side of the transition portion (8), there is a cover means (9) which, when the adapter (5) has been located in the floor drain (1), covers the gap (10) thereby defined between the adapter (5) and the floor drain (1) and engages the floor around the floor drain (1). Finally, the adapter (5) can be located in the floor drain (1) resting therein on a limit stop provided on the outer side of the transition portion (8).



EP 1 054 112 A1

Description

[0001] The present invention relates to a device for permitting connection of a soil pipe from a toilet to a floor drain without an original coupling therefor, such that water from the soil pipe can flow out into the drainage system through the floor drain.

[0002] Presently, there are a number of different floor drain constructions at which the soil pipe from a toilet is connected to the floor drain. See thereby e.g. SE 110 647, SE 342 857 and SE 469 339.

[0003] All these prior art constructions, which are relatively complex in their design, are originally adapted and thus, structured for connection thereto of the soil pipe from a toilet.

[0004] A construction permitting connection of the soil pipe from a toilet to a floor drain not originally adapted therefor, does not exist.

[0005] The object of the present invention has therefore been primarily to provide such a construction. The object has also been to give this construction a very simple design. Furthermore, the connection should be made momentary or permanent as desired and easy to adapt to the soil pipe from the toilet.

[0006] The above objects are attained by means of a device according to the present invention.

[0007] Primarily, the device according to the present invention comprises an adapter which can be located in a floor drain and which includes a first tubular portion which, after removal of grating, clamping ring and water trap present in the inlet member of the floor drain, is insertable into the inlet member, as well as a second tubular portion into which said soil pipe from the toilet is insertable. The adapter further includes a tubular transition portion which connects said first and second tubular portions to each other. The adapter is provided with, on the outer side of the transition portion, a substantially radially directed cover means, preferably a cover flange, which extends around the adapter and which, when the adapter has been located in the floor drain, covers the gap thereby defined between the adapter and the floor drain and engages the floor around the floor drain. Finally, the adapter can be located in the floor drain resting therein on a limit stop provided on the outer side of the transition portion, said limit stop limiting the insertion of the adapter into the floor drain to substantially said first tubular portion of the adapter.

[0008] According to preferred embodiments of the invention, said second tubular portion of the adapter is situated eccentric relative to said first tubular portion thereof and the adapter may further be located rotatable in the floor drain to permit setting of the second tubular portion of the adapter in various positions relative to the floor drain to facilitate adaption of the soil pipe from the toilet to the floor drain.

[0009] Thus, the device according to the invention constitutes a structurally simply designed adapter for

momentary or permanent connection of the soil pipe from a toilet to a floor drain which previously has been used and/or which will be used later only as a conventional floor drain and which therefore, also has been designed as such a floor drain, without a coupling for connection of a soil pipe from a toilet, and thereby smaller and more simple in its design.

[0010] The above and other objects and advantages with the device according to the present invention as well as a preferred embodiment thereof, will be further described below with reference to the accompanying drawing in which the sole figure is a schematic longitudinal section through a floor drain with an adapter located therein.

[0011] Referring to the drawing figure, said figure thus illustrates a floor drain 1 of conventional type with, inter alia, an inlet member 2. An exit pipe (not shown) is connected to the inlet member 2 for discharge of water from the floor drain into a drainage system. In the inlet member 2 there is, in the illustrated floor drain embodiment, i.e. when the floor drain exclusively is used as such and no connection thereof to the soil pipe (not shown) from a toilet has occurred, normally provided a water trap, preferably a removable water-trap insert (not shown). At the top, the inlet member 2 of the floor drain 1 is designed with a portion 3 with an engagement surface 3a, said portion transforming into a floor-drain flange 4. Normally, a clamping ring (not shown) engages the engagement surface 3a for clamping a covering (not shown) provided on the floor and extending over the flange 4 and down into the inlet member 2 to the engagement surface 3a. On top of the clamping ring there is normally located a grating (not shown).

[0012] The device according to the present invention is adapted to permit connection of the soil pipe from a toilet to e.g. a floor drain of the above type, such that toilet water can flow out into the drainage system through the floor drain.

[0013] The device according to the present invention comprises to this end an adapter 5 for location in the floor drain 1. The adapter 5 includes a first tubular portion 6 which can be inserted into the inlet member 2 after first having removed the grating, the clamping ring and the water trap. The adapter 5 further includes a second tubular portion 7, here protruding from the floor drain, into which the soil pipe of the toilet is insertable. Since in a preferred embodiment of the adapter 5, said second tubular portion 7 thereof is situated eccentric relative to said first tubular portion 6 of the adapter (the centre lines A and B respectively of said portions 6, 7 do not coincide), and since the adapter 5, according to another preferred embodiment, also can be rotatably located in the floor drain 1, the second tubular portion 7 of the adapter can be set in various positions relative to the floor drain 1 and thus, facilitate the adaption of the soil pipe from the toilet to the floor drain during insertion of said soil pipe into the second tubular portion of the adapter.

[0014] Said first and second tubular portions 6, 7 of the adapter 5 are, irrespective of whether they are situated eccentric relative to each other or not, connected to each other through a transition portion 8 of the adapter. The transition portion 8 may assume any suitable tubular shape, fitting with the other portions 6, 7 of the adapter 5.

[0015] In embodiments as in the drawing where said second tubular portion 7 of the adapter 5 has a larger through-flow area than said first tubular portion 6 of the adapter for adaption to a soil pipe from the toilet which is larger than the inlet member 2 of the floor drain 1, the transition portion 8 of the adapter is designed tapering towards the first tubular portion 6 along at least a part of the circumference of the transition portion. The adapter 5 may thereby be shaped as is apparent from the figure, in which the transition portion 8 at the left hand side in the figure extends obliquely inwards from said second tubular portion 7 of the adapter towards said first tubular portion 6 thereof, while the transition portion on the right hand side in the figure runs flush with the other tubular portions 6, 7 of the adapter.

[0016] Preferably, the first tubular portion 6 of the adapter 5 is of course given a size (cross-sectional area) which substantially correspond with the size of the inlet member 2 of the floor drain 1 and this is done preferably with such a clearance that said first adapter portion is insertable into the inlet member and kept in position therein with a press or friction fit. Similarly, the second tubular portion 7 of the adapter 5 preferably has the same size as the soil pipe from the toilet to be connected to the floor drain and this is also done preferably with such a clearance that the soil pipe with a press or friction fit is insertable into said second tubular adapter portion.

[0017] The adapter 5 is externally provided with a substantially radially directed cover means, preferably a cover flange 9 as in the illustrated embodiment, which extends around the adapter and which, when the adapter is located in the floor drain 1, extends substantially horizontally and engages the floor around the floor drain for covering the gap 10 defined between the adapter and the floor drain particularly at the top in the inlet member 2 in the space for the clamping ring and the grating (see figure) when locating the adapter. Thus, primarily dirt is prevented from reaching the inlet member 2. The cover flange 9 is provided on the outer side of the transition portion 8 of the adapter 5. The cover flange 9 may have a certain elasticity for better sealing against the floor around the floor drain.

[0018] The adapter 5 may be removably located in the floor drain 1 with, preferably as defined above, a press or friction fit for facilitating mounting and demounting of the adapter. For keeping the adapter 5 in position in the floor drain and in certain embodiments thereof e.g. prevent it from sliding too far down into the floor drain, the adapter rests in the floor drain in addition to said eventual press or friction fit, on a limit stop provided

on the adapter, said limit stop limiting the insertion of the adapter into the floor drain to substantially said first tubular portion of the adapter. The limit stop is hereby provided on the outer side of the transition portion 8 of the adapter 5. The limit stop may consist of at least one flange provided on the outer side of the transition portion 8. The flange may e.g. be provided such that it during location of the adapter 5 in the floor drain 1 is brought to engage an engagement surface 3b in said portion 3 of the inlet member 2 of said floor drain. Preferably however, the limit stop is defined by said cover flange 9, as in the illustrated embodiment, which thus not only covers the gap 10 between the adapter 5 and the inlet member 2 of the floor drain 1 particularly at the top in said inlet member, but also functions as a bracket for the adapter. The cover flange 9 is correspondingly sized, i.e. is given the required thickness and length for the purposes defined.

[0019] The first tubular portion 6 of the adapter 5 is exteriorly provided with a groove 11 for a surrounding sealing (not shown), e.g. an O-ring, for engagement with the inner side of the inlet member 2 of the floor drain 1 when the adapter has been located in the floor drain. The sealing in the groove 11 shall prevent odours and water from finding their way out between the adapter 5 and the floor drain 1. The sealing however, also contributes to said press or friction fit of the adapter 5 in the floor drain 1.

[0020] Similarly, the second tubular portion 7 of the adapter 5 has interiorly a surrounding sealing (not shown) for engagement with the outer side of the soil pipe from the toilet when said soil pipe has been inserted into the adapter, into said second tubular portion thereof.

[0021] Hereby, odours and water are prevented from finding their way out between the adapter 5 and the soil pipe of the toilet.

[0022] It is obvious to a skilled person that beyond what is stated above, the device according to the present invention can be altered and modified further within the scope of the subsequent claims without departing from the idea and purpose of the invention. Thus, the size and shape of the different portions 6, 7, 8 of the adapter 5 may vary substantially based on need and application, and so may also the size and shape of members thereof such as the limit stop, cover means, sealings, grooves for sealings etc..

Claims

1. Device for permitting connection of a soil pipe from a toilet to a floor drain without an original coupling for such connection, such that water from the soil pipe can flow out into the drainage system through the floor drain,

characterized in

that the device comprises an adapter (5) which

can be located in a floor drain (1) and which includes a first tubular portion (6) which, after removal of grating, clamping ring and water trap present in the inlet member (2) of the floor drain, is insertable into the inlet member, as well as a second tubular portion (7) into which said soil pipe from the toilet is insertable,

that said first and second tubular portions (6, 7) are connected to each other through a tubular transition portion (8) of the adapter (5),

that the adapter (5), on the outer side of the transition portion (8), is provided with a substantially radially directed cover means, preferably a cover flange (9), which extends around the adapter and which, when the adapter has been located in the floor drain (1), covers the gap (10) thereby defined between the adapter and the floor drain and engages the floor around the floor drain, and

that the adapter (5) can be located in the floor drain (1) resting therein on a limit stop provided on the outer side of the transition portion (8), said limit stop limiting the insertion of the adapter into the floor drain to substantially said first tubular portion (6) of the adapter.

2. Device according to claim 1, **characterized in** that said second tubular portion (7) of the adapter (5) is situated eccentric relative to said first tubular portion (6) thereof.

3. Device according to claim 2, **characterized in** that the adapter (5) can be located rotatable in the floor drain (1) to permit setting of the second tubular portion (7) of the adapter in various positions relative to the floor drain to facilitate adaption of said soil pipe to the floor drain.

4. Device according to any preceding claim, **characterized in**

that said second tubular portion (7) of the adapter (5) has a larger through-flow area than said first tubular portion (6) of the adapter, and

that the transition portion (8) of the adapter (5) is designed tapering towards the first tubular portion (6) along at least a part of the circumference of the transition portion.

5. Device according to any preceding claim, **characterized in** that the adapter (5) can be removably located in the floor drain (1) to permit resetting of the floor drain.

6. Device according to claim 5, **characterized in** that said first tubular portion (6) of the adapter (5), after insertion thereof into the inlet member (2) of the floor drain (1), is designed to be kept in position therein with a press or friction fit.

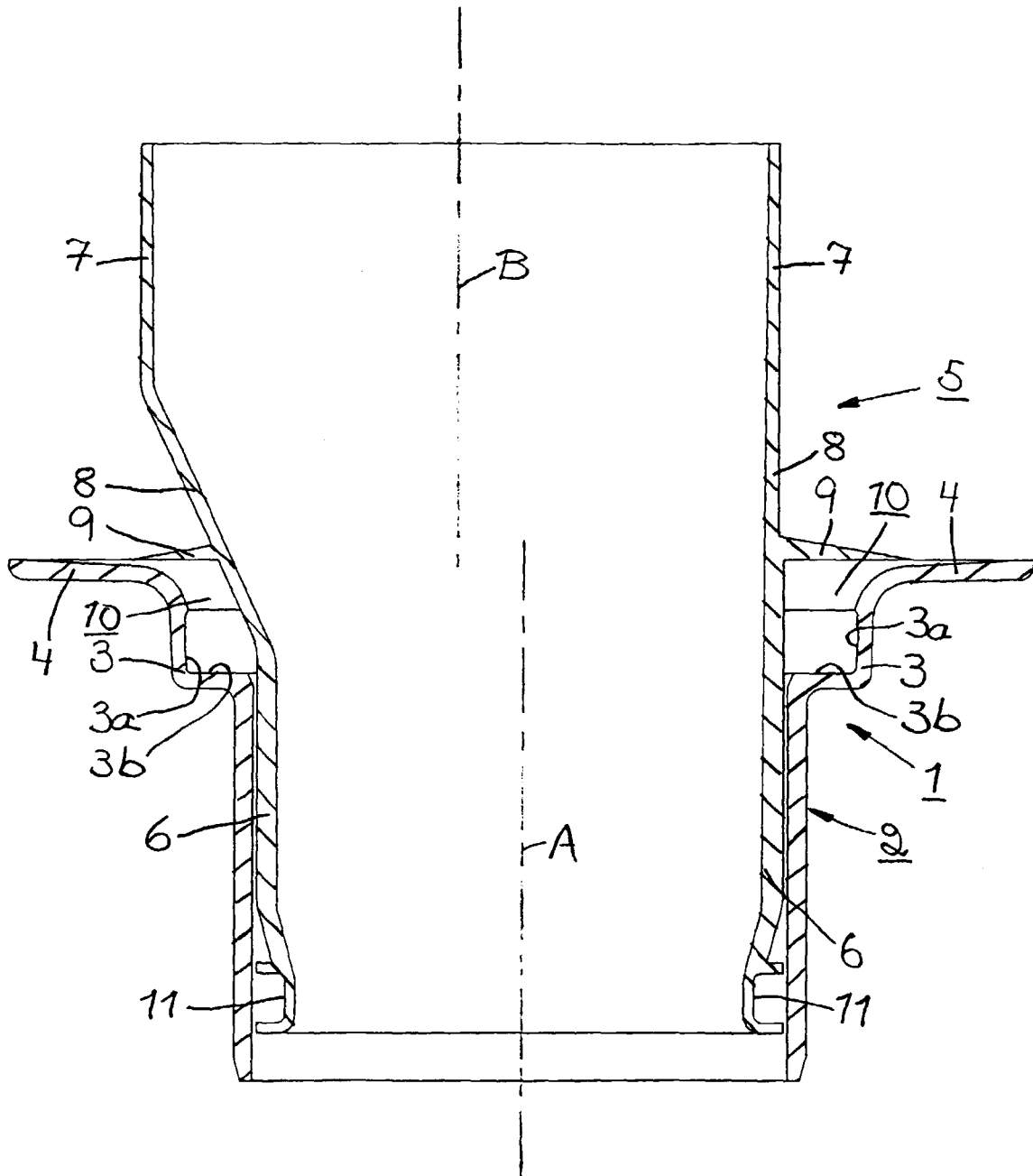
7. Device according to any preceding claim, **characterized in** that said limit stop consists of at least one flange provided on the outer side of said transition portion (8) of the adapter (5).

8. Device according to claim 7, **characterized in** that said limit stop is defined by said cover flange (9).

9. Device according to any preceding claim, **characterized in**

that said first tubular portion (6) of the adapter (5) exteriorly is provided with a surrounding sealing for engagement with the inner side of the inlet member (2) of the floor drain (1) when the adapter has been located in the floor drain, and

that said second tubular portion (7) of the adapter (5) interiorly is provided with a surrounding sealing for engagement with the outer side of said soil pipe when said soil pipe has been inserted into the adapter.





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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 0009

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 863 330 C (JÄGER) * the whole document * ---	1-9	E03D11/16
X	GB 2 012 902 A (PHETCO) 1 August 1979 (1979-08-01) * the whole document * ---	1-9	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E03D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 August 2000	Examiner Hannaart, J
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 11 0009

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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28-08-2000

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