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(54) **Gutter drain**

(57) The invention relates to a drain comprising:
- an elongate housing with at least three chambers;
- an inflow opening extending in longitudinal direction;

wherein the inflow opening is arranged in the upper side of the first chamber and the first chamber comprises close to the underside a first passage opening which debouches in the second chamber;
wherein the second chamber comprises on the upper side a second passage opening which debouches in the third chamber, wherein the third chamber extends under a part of the inflow opening and wherein an outlet is connected to the third chamber such that the second passage opening and the outlet are each situated, as seen in longitudinal direction, on either side of the inflow opening.

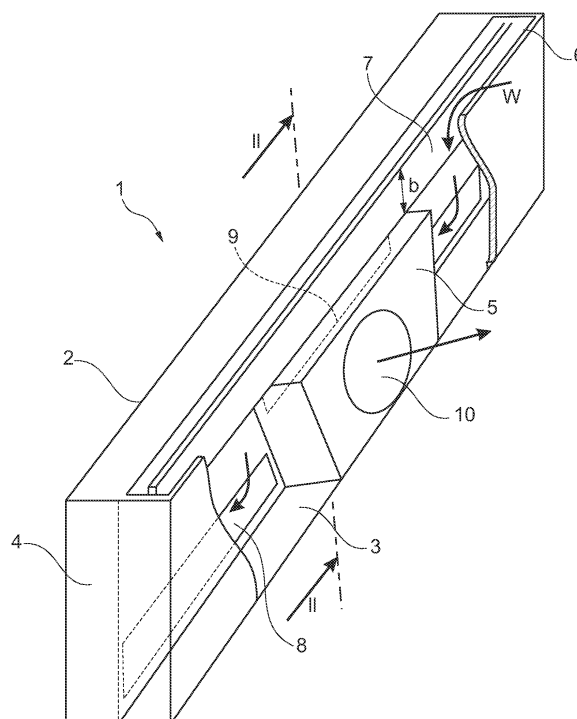


Fig. 1

Description

[0001] The invention relates to a drain. Drains are used in the field of sanitary fittings in bathroom and shower space floors. For some years now elongate shower drains have been much used in such sanitary applications.

[0002] The advantage of an elongate shower drain is that the floor can be laid at one slope in the direction of the shower drain. In smaller drains, such as a square drain, the slope must be laid in at least two directions or, when only one slope is used, there is an undesirably rough transition between the floor and the square drain.

[0003] Although elongate shower drains are still frequently sold with stainless steel grates, the trend is for elongate shower drains to be as little visible as possible. A solution for this is that a tile is arranged instead of the grate, this tile being the same as the tiles of the surrounding floor.

[0004] Another solution is to make the inflow opening elongate and narrow and to conceal the collecting vessel of the drain, and the associated siphon in the floor, below the tiles. A drawback here is that the drain is difficult to clean because parts of the drain are concealed below the floor and therefore inaccessible. In addition, such drains cannot be unblocked because no access can be gained to the outlet pipe.

[0005] It is now an object of the invention to alleviate or even obviate the above stated drawbacks.

[0006] This object is achieved according to the invention with a drain comprising:

- an elongate housing with at least three chambers;
- an inflow opening extending in longitudinal direction;

wherein the inflow opening is arranged in the upper side of the first chamber and the first chamber comprises close to the underside a first passage opening which debouches in the second chamber;

wherein the second chamber comprises on the upper side a second passage opening which debouches in the third chamber,

wherein the third chamber extends under a part of the inflow opening and wherein an outlet is connected to the third chamber such that the second passage opening and the outlet are each situated, as seen in longitudinal direction, on either side of the inflow opening.

[0007] Because the third chamber extends under a part of the inflow opening and because the second passage opening and the outlet are each situated, as seen in longitudinal direction, on either side of the inflow opening, a very compact drain is obtained. The second chamber can be reached via the first chamber for cleaning purposes, while the third chamber, and thereby access to the outlet opening, is situated directly below the inflow opening.

[0008] The second chamber can thereby be concealed below the floor without problem. When the drain is placed

against a wall, the wall tiles can be arranged on top of the second chamber. Obtained as a result is a drain wherein only the inflow opening is visible after fitting of the drain.

[0009] In an embodiment of the invention at least the first chamber and second chamber have a substantially rectangular cross-section. The first chamber and second chamber are preferably parallel to each other.

[0010] By giving the first chamber and second chamber a rectangular cross-section and preferably having them run parallel to each other a box-like structure is obtained which can be manufactured easily from for instance sheet steel.

[0011] In a preferred embodiment of the drain according to the invention at least the bottom of the second chamber runs downward to the first passage opening. Dirt which may enter the second chamber hereby drops down automatically to the first passage opening so that the dirt can be easily removed.

[0012] In a preferred embodiment of the drain according to the invention a closable inspection opening is arranged in the upper side of the third chamber, below the inflow opening. Via this closable inspection opening easy access can be gained from the inflow opening to the third chamber, and thereby to the outlet opening. The drain according to the invention can thus be easily unblocked.

[0013] The length of the first and second chambers is preferably equal to the length of the elongate housing. The height of the chambers can here vary along the length, for instance because the bottom of the second chamber runs downward to the first passage opening or because the third chamber protrudes into the first chamber.

[0014] In a preferred embodiment of the drain according to the invention the third chamber extends into the first chamber. The third chamber preferably extends centrally into the first chamber as seen in longitudinal direction. In addition, the length of the inflow opening is preferably substantially equal to the length of the housing.

[0015] In a preferred embodiment of the drain according to the invention the inflow opening is arranged in the upper side of the housing on one side adjacently of the centre line of the upper surface of the housing. Because the inflow opening is situated to the side of the outlet on one side of the housing, the second chamber is situated on the other side of the housing. A large part of the housing can hereby be hidden under a floor, or the part can be hidden in a wall.

[0016] In yet another embodiment according to the invention a grate is arranged in the inflow opening. The grate is preferably a strip, wherein the width of the strip runs in vertical direction.

[0017] These and other features of the invention are further elucidated with reference to the accompanying drawings.

Figure 1 shows a perspective view with partially cut-away parts of a first embodiment of a drain according

to the invention.

Figure 2 shows a cross-sectional view along line II-II of figure 1.

Figure 3 shows a cross-sectional view of a second embodiment of the invention.

Figure 1 shows a perspective view of an embodiment of a drain 1 according to the invention. This drain 1 has a housing 2 in which a first chamber 3, a second chamber 4 and a third chamber 5 are formed. An inflow opening 6 is arranged on the upper side of first chamber 3.

[0018] A grate 7 is arranged in inflow opening 6. This grate 7 consists of a strip, wherein the width *b* of the strip runs in vertical direction. The strip limits the local width of inflow opening 6 so that local width 20 can remain within the standardized limits. In the Netherlands this is between 5 and 8 mm.

[0019] Water *W* flows via inflow opening 6 in first chamber 3 to the bottom of this chamber. Here the water *W* moves via first passage opening 8 to second chamber 4. The water in this second chamber 4 then rises, after which it can flow via second passage opening 9 into third chamber 5. Once in third chamber 5, the water can be discharged via outlet 10.

[0020] Figure 2 shows a cross-sectional view of drain 1 of figure 1. The cross-section is made here through second chamber 4 and third chamber 5. The height *h* of third chamber 5 is smaller than the height of housing 2, whereby space is created between inflow opening 6 and upper side 11 so that first chamber 3 can extend over third chamber 5. Water *W* flowing into inflow opening 6 over the whole length of inflow opening 6 can thus flow into first chamber 3.

[0021] It will be further apparent from figure 2 that inflow opening 6 in the upper side of housing 2 is arranged to one side adjacently of the centre line of upper surface 12 of housing 2. Second chamber 4 can hereby be built into the wall by arranging wall tiles 13 on top of second chamber 4. Floor tiles 14 are further arranged such that the upper surface thereof runs flush with upper surface 12 of housing 2.

[0022] Figure 3 shows a drain 20 which is a variant of drain 1 according to figures 1 and 2. The same parts are therefore designated with the same reference numerals. In drain 20 the first chamber 3, and thereby third chamber 5, takes a wider form. It is hereby possible to arrange a plug 22 in upper side 21 of third chamber 3, whereby it is possible to gain direct access to outlet 10 after removing plug 22 from inflow opening 6. A grate 23 is further arranged in inflow opening 6.

Claims

1. Drain comprising:

- an elongate housing with at least three cham-

bers;

- an inflow opening extending in longitudinal direction; wherein the inflow opening is arranged in the upper side of the first chamber and the first chamber comprises close to the underside a first passage opening which debouches in the second chamber;

wherein the second chamber comprises on the upper side a second passage opening which debouches in the third chamber, wherein the third chamber extends under a part of the inflow opening and wherein an outlet is connected to the third chamber such that the second passage opening and the outlet are each situated, as seen in longitudinal direction, on either side of the inflow opening.

2. Drain as claimed in claim 1, wherein at least the first chamber and second chamber have a substantially rectangular cross-section.

3. Drain as claimed in claim 1 or 2, wherein the first chamber and second chamber are parallel to each other.

4. Drain as claimed in any of the foregoing claims, wherein at least the bottom of the second chamber runs downward to the first passage opening.

5. Drain as claimed in any of the foregoing claims, wherein a closable inspection opening is arranged in the upper side of the third chamber, below the inflow opening.

6. Drain as claimed in any of the foregoing claims, wherein the length of the first and second chambers is equal to the length of the elongate housing.

7. Drain as claimed in any of the foregoing claims, wherein the third chamber extends into the first chamber.

8. Drain as claimed in claim 7, wherein the third chamber extends centrally into the first chamber as seen in longitudinal direction.

9. Drain as claimed in any of the foregoing claims, wherein the length of the inflow opening is substantially equal to the length of the housing.

10. Drain as claimed in any of the foregoing claims, wherein the inflow opening is arranged in the upper side of the housing on one side adjacently of the centre line of the upper surface of the housing.

11. Drain as claimed in any of the foregoing claims, wherein a grate is arranged in the inflow opening.

12. Drain as claimed in claim 11, wherein the grate is a strip, wherein the width of the strip runs in vertical direction.

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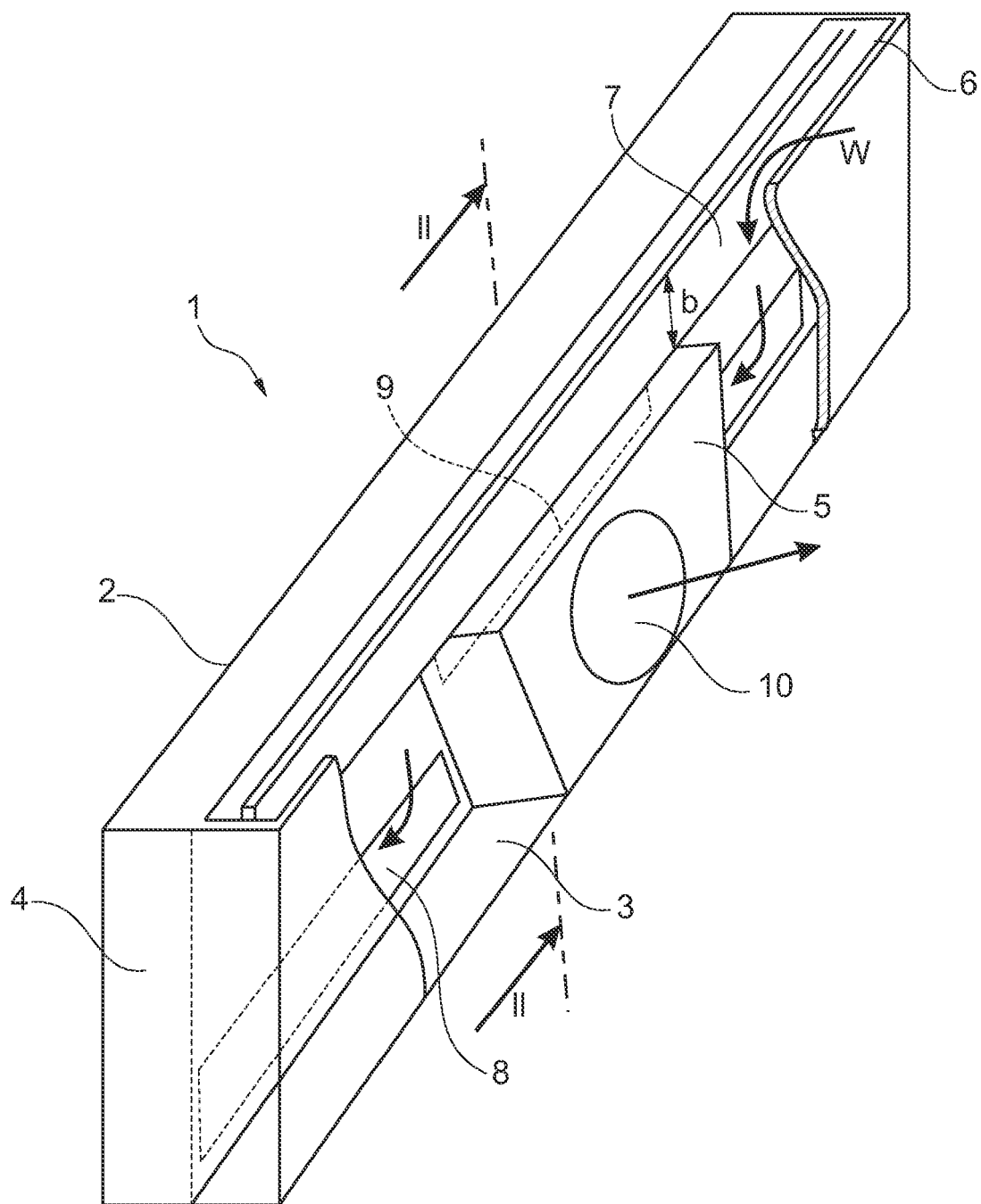


Fig. 1

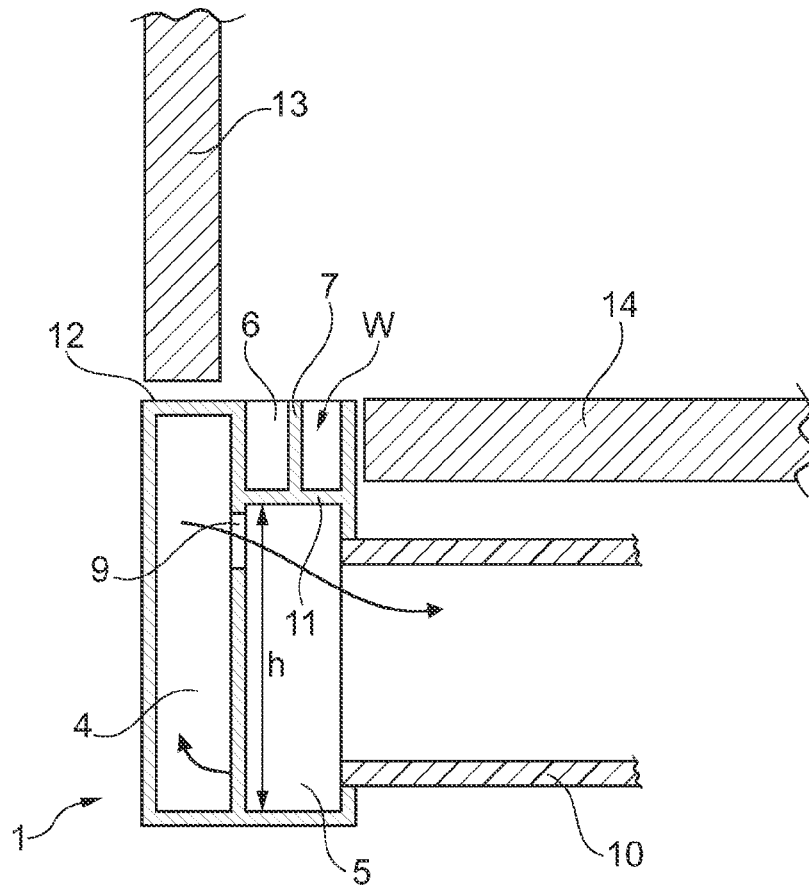


Fig. 2

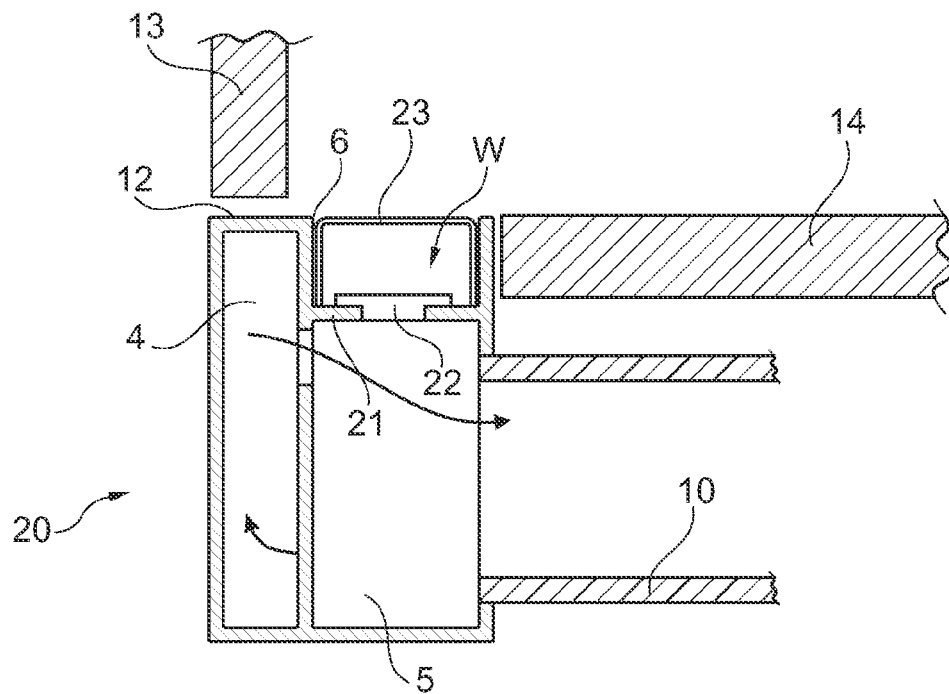


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 10 17 8211

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 048 292 A2 (METZGER WOLFGANG [DE]) 15 April 2009 (2009-04-15)	1-4,6, 9-12	INV. E03F5/04
Y	* paragraph [0027] - paragraph [0031] * * paragraph [0041]; figures * -----	5	
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A	EP 1 956 154 A1 (EASY SANITAIRY SOLUTIONS B V [NL]) 13 August 2008 (2008-08-13) * the whole document * -----	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E03F
Place of search		Date of completion of the search	Examiner
The Hague		26 November 2010	De Coene, Petrus
<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>			

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EPO FORM 1503 03.82 (P04C01)

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

EP 10 17 8211

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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26-11-2010

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