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(54) Drain with siphon

(57) The invention relates to a drain, comprising:
- a collecting housing with an inflow opening on the upper side, an outflow opening and a tunnel extending to the outflow opening, wherein the outflow opening debouches in the tunnel;
- a siphon cover arranged over the outflow opening, wherein during use the edge of the siphon cover is located lower than the outflow opening; and
- a bridge part hanging over the tunnel and having a first end arranged on the outer side of the siphon cover, wherein the other end of the bridge part further lies sealingly against the inner wall of the collecting housing.

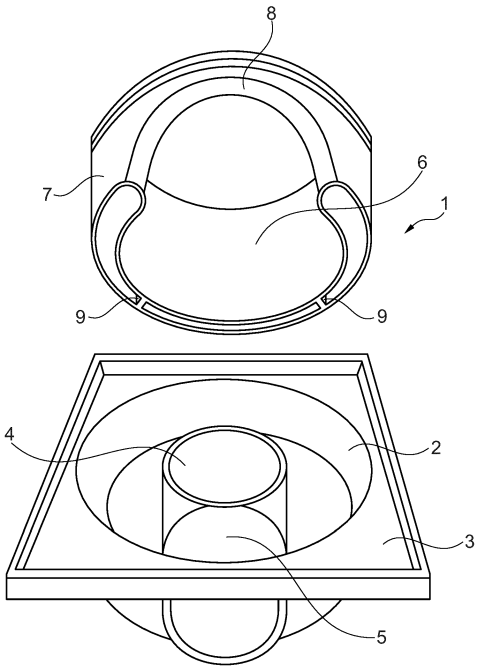

Fig. 1

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Description

[0001] The invention relates to a drain, comprising:

- a collecting housing with an inflow opening on the upper side, an outflow opening and a tunnel extending to the outflow opening, wherein the outflow opening debouches in the tunnel;
- a siphon cover arranged over the outflow opening, wherein during use the edge of the siphon cover is located lower than the outflow opening.

[0002] Such a drain is known from EP 1518969. In the case of this drain a vertical outlet pipe as well as a horizontal outlet pipe with pipe bend can be inserted into the outflow opening. In the case of the horizontal outlet pipe the upward inclining bottom ensures that a relatively flat drain with siphon is obtained, while the collecting housing still has a great maximum depth, whereby a relatively high water trap can be obtained.

[0003] The siphon cover is arranged over the upright wall and together with the upright wall and the collecting housing provides for the siphon action. The siphon cover extends here over the upright wall and has downward directed wall parts extending to a position just above the bottom of the collecting housing.

[0004] In this known drain the downward directed wall parts of the siphon cover must connect sealingly to the raised bottom in order to guarantee a full height of the water trap. The theoretical height of the water trap is determined by the lowest point of the underside of the siphon cover and the upper edge of the upright wall around the outflow opening. Practical experience has however shown that the siphon cover does not connect sealingly to the raised bottom, whereby leakage of air occurs and the effective height of the water trap is determined by the highest point of the siphon cover at the raised bottom and the upper edge of the upright wall around the outflow opening. As a result of the air leakage it is possible for unpleasant odours to escape from the sewer via the siphon.

[0005] It is also possible for an overpressure to occur in the sewer. In order to prevent the water in the siphon being pressed out there has to be a minimum height of water. This minimum water height is typically 4 centimetres.

[0006] It is further known in the case of this known siphon to use a pipe bend which has a narrowed part at the position of the raised bottom. The overall depth including the pipe bend can hereby be reduced. The drawback however is that a narrowing is formed in the outlet pipe, this impeding throughflow.

[0007] It is now an object of the invention to reduce or even obviate the above stated drawbacks.

[0008] This object is achieved with a drain according to the preamble which is characterized by a bridge part hanging over the tunnel and having a first end arranged on the outer side of the siphon cover, wherein the other end of the bridge part further lies sealingly against the inner wall of the collecting housing.

[0009] Because the bridge part runs between the outer side of the siphon cover and the inner wall of the collecting housing, the tunnel can be placed inside the space enclosed by the siphon cover. The downward directed wall of the siphon cover is in fact no longer interrupted by the tunnel part since the siphon cover lies sealingly via the bridge part against the inner wall of the collecting housing.

[0010] It is possible with the drain according to the invention to allow the tunnel to have substantially the same height as the drain so that an outlet pipe can run via the tunnel to the outflow opening without narrowed parts having to be arranged in the outlet pipe as in the prior art.

[0011] The tunnel can either be incorporated into the bottom of the collecting housing or be provided as a tube protruding through the side wall of the housing and debouching in the outflow opening.

[0012] An embodiment of the drain according to the invention further comprises a peripheral wall which is arranged around the siphon cover and which connects sealingly to the inner wall of the collecting housing, and wherein the other end of the bridge part is arranged on the peripheral wall.

[0013] The peripheral wall can be formed in simple manner so that a reliable seal can be obtained on the inner wall of the collecting housing. In addition, the peripheral wall forms a good base for mounting the bridge part with the siphon cover thereon. The siphon cover can further be supported here by partitions arranged between the siphon cover and the peripheral wall.

[0014] In a further embodiment of the drain according to the invention the peripheral wall comprises in the upper edge an external groove and a seal arranged therein for sealing against the inner wall of the collecting housing.

[0015] When the peripheral wall is placed in the housing, the seal in the external groove will provide for a reliable sealing between the peripheral wall and the inner wall of the collecting housing. Furthermore, the peripheral wall, and thereby the siphon cover and the bridge part, can hereby be easily removed when the drain is being cleaned or when access has to be gained to the outlet pipe via the outflow opening.

[0016] In yet another embodiment of the drain according to the invention the bridge part comprises an upper wall arranged above the tunnel and side walls directed downward from the upper wall on either side adjacently of the tunnel.

[0017] Such a bridge part provides a siphon cover which is kept separate from the raised bottom part for the tunnel, so that the problem of sealing is no longer an issue.

[0018] In yet another embodiment of the drain according to the invention the lower edge of the downward directed side walls lies substantially flush with the edge of the siphon cover.

[0019] Since the bridge part does in fact form part of

the siphon cover so as to thus hold the tunnel inside the space enclosed by the siphon cover, the smallest height of the downward directed wall of both siphon cover and tunnel determines the effective height of the water trap formed in the drain.

[0020] In a further preferred embodiment of the drain according to the invention the tunnel is arranged in the bottom of the collecting housing for the purpose of receiving an outlet pipe arranged on the outflow opening.

[0021] With this embodiment it is possible to connect a vertical outlet pipe or a horizontal outlet pipe to the outflow opening, wherein the horizontal pipe is received in the tunnel.

[0022] In a further embodiment of the drain according to the invention the tunnel is tubular. Such an embodiment is particularly suitable for connection to a horizontal pipe, since the tubular tunnel likewise debouches horizontally.

[0023] The invention further relates to a combination of a drain according to the invention and an outlet pipe, wherein the outlet pipe is inserted into the outflow opening.

[0024] In a preferred embodiment of the combination according to the invention the outlet pipe comprises a pipe bend and pipe parts arranged on either side of the pipe bend, wherein a first pipe part is inserted into the outflow opening and wherein the second pipe part is received in the tunnel.

[0025] Because the second pipe part is received in the tunnel, the overall depth of the drain is no more than the height of the drain itself. This is particularly advantageous when the floor thickness is limited.

[0026] With this construction according to the invention it is also possible to embody the siphon in a continuous tube. A double tunnel then has to be arranged here so that the continuous tube can run therethrough.

[0027] These and other features of the invention are further elucidated with reference to the accompanying drawings.

Figure 1 is a perspective view with exploded parts of a first embodiment of the drain according to the invention.

Figure 2 is a cross-sectional view of the embodiment according to figure 1.

Figure 3 is a perspective view of a second embodiment according to the invention.

Figures 4A and 4B show a third embodiment of a drain according to the invention.

[0028] Figure 1 shows a perspective view of a first embodiment of drain 1 according to the invention. Drain 1 has a collecting housing 2 with an inflow opening on the upper side which is bounded by a square peripheral flange 3 on which for instance a grating can be placed. Collecting housing 2 further has an outflow opening 4 to which a tubular tunnel 5 is connected. An outlet pipe can be connected to tubular tunnel 5.

[0029] A siphon cover 6 is arranged over outflow opening 4. Arranged around siphon cover 6 is a peripheral wall 7 which is connected via a bridge part 8 and partitions 9 to the siphon cover.

[0030] Figure 2 shows a cross-sectional view of the embodiment 1 according to figure 1. Siphon cover 6 with peripheral wall 7 and bridge part 8 is placed in collecting housing 2. Arranged in peripheral wall 7 is an external groove 10 in which is accommodated a seal 11 which provides for a sealing on the inner wall of collecting housing 2.

[0031] A grating 12 is further arranged over siphon cover 6 and peripheral flange 3.

[0032] Water W flowing via grating 12 into the inflow opening of the collecting housing will subsequently flow downward between peripheral wall 7 and siphon cover 6 and then flow upward in siphon cover 6 to outflow opening 4, after which the water flows via tubular tunnel 5.

[0033] Figure 3 shows a perspective view of a second embodiment of a drain 20 according to the invention. Only collecting housing 21 is shown in the figure, without a siphon cover which can be formed per se in the same manner as siphon cover 6 according to figure 1.

[0034] Collecting housing 21 has an outflow opening 22 which is connected to two tubular tunnels 23, 24. The advantage of this embodiment is that drain 20 can be arranged in a continuous outlet pipe without throughflow in the outlet pipe being impeded by drain 20.

[0035] Figures 4A and 4B show a third embodiment of a drain 30 according to the invention. Drain 30 has a collecting housing 31 with a square flange 32 on which a grating can be placed. Arranged in collecting housing 31 is an outflow opening 32 which lies against the side of collecting housing 31. Outflow opening 32 is connected via a narrow tunnel 33 to a continuous outlet pipe 34.

[0036] In figure 4B a siphon cover 35 is placed over outflow opening 32 in collecting housing 31. Siphon cover 35 is connected to a peripheral wall 36 which connects to the inner wall of collecting housing 31.

[0037] Siphon cover 35 also lies against peripheral wall 36, wherein the transition between the two parts at the same time forms a bridge part.

Claims

1. Drain, comprising:

- a collecting housing with an inflow opening on the upper side, an outflow opening and a tunnel extending to the outflow opening, wherein the outflow opening debouches in the tunnel;
- a siphon cover arranged over the outflow opening, wherein during use the edge of the siphon cover is located lower than the outflow opening;

characterized by

- a bridge part hanging over the tunnel and having a first end arranged on the outer side of the

siphon cover, wherein the other end of the bridge part further lies sealingly against the inner wall of the collecting housing.

2. Drain as claimed in claim 1, further comprising a peripheral wall which is arranged around the siphon cover and which connects sealingly to the inner wall of the collecting housing, and wherein the other end of the bridge part is arranged on the peripheral wall.

3. Drain as claimed in claim 2, wherein the peripheral wall comprises in the upper edge an external groove and a seal arranged therein for sealing against the inner wall of the collecting housing.

4. Drain as claimed in any of the foregoing claims, wherein the bridge part comprises an upper wall arranged above the tunnel and side walls directed downward from the upper wall on either side adjacently of the tunnel.

5. Drain as claimed in claim 4, wherein the lower edge of the downward directed side walls lies substantially flush with the edge of the siphon cover.

6. Drain as claimed in any of the foregoing claims, wherein the tunnel is arranged in the bottom of the collecting housing for the purpose of receiving an outlet pipe arranged on the outflow opening.

7. Drain as claimed in claim 6, wherein the tunnel is tubular.

8. Combination of a drain as claimed in any of the foregoing claims and an outlet pipe, wherein the outlet pipe is inserted into the outflow opening.

9. Combination as claimed in claim 8, wherein the outlet pipe comprises a pipe bend and pipe parts arranged on either side of the pipe bend, wherein a first pipe part is inserted into the outflow opening and wherein the second pipe part is received in the tunnel.

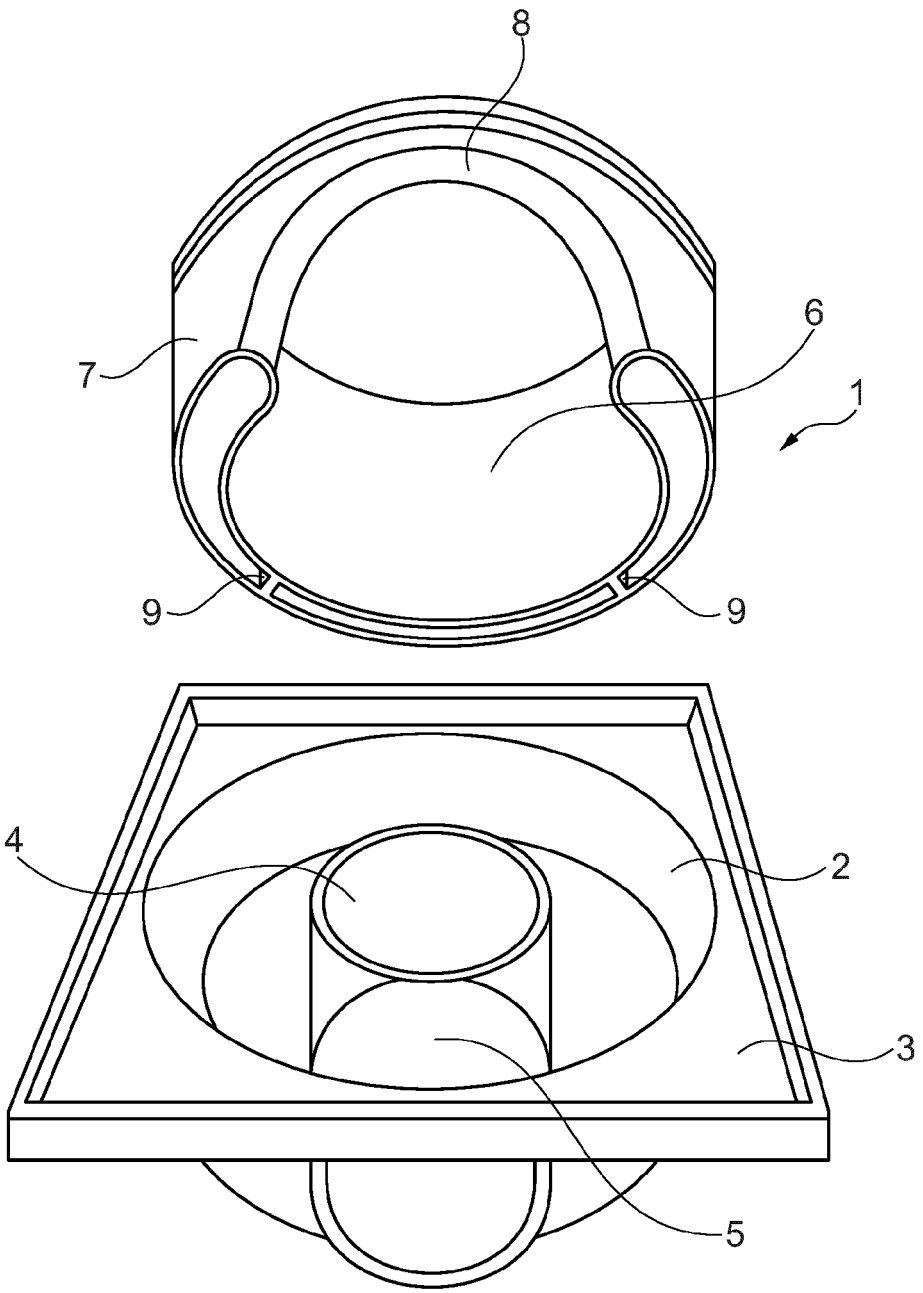

Fig. 1

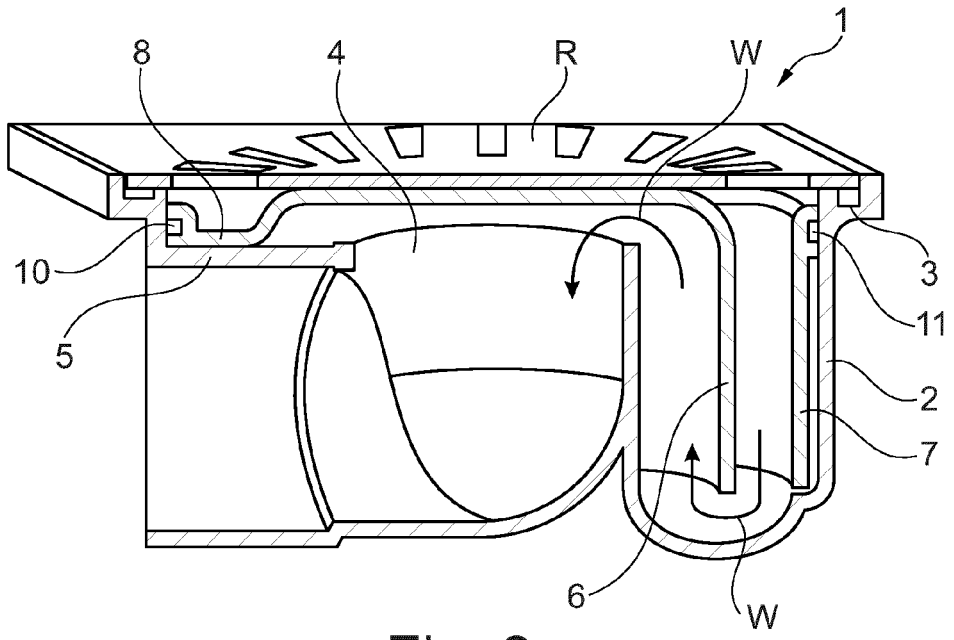

Fig. 2

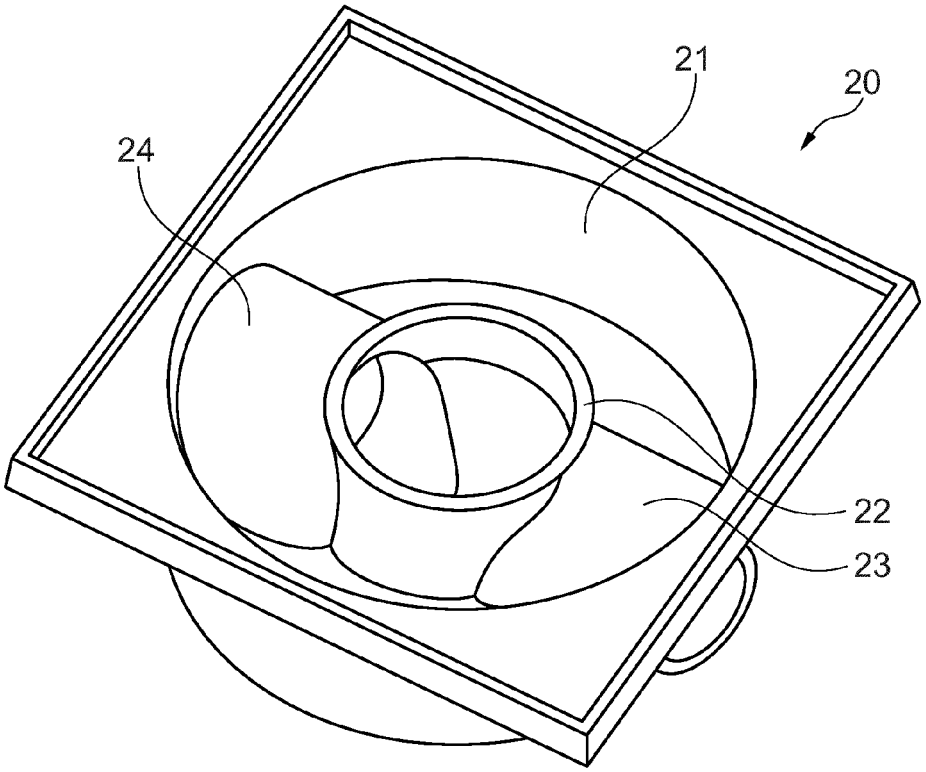

Fig. 3

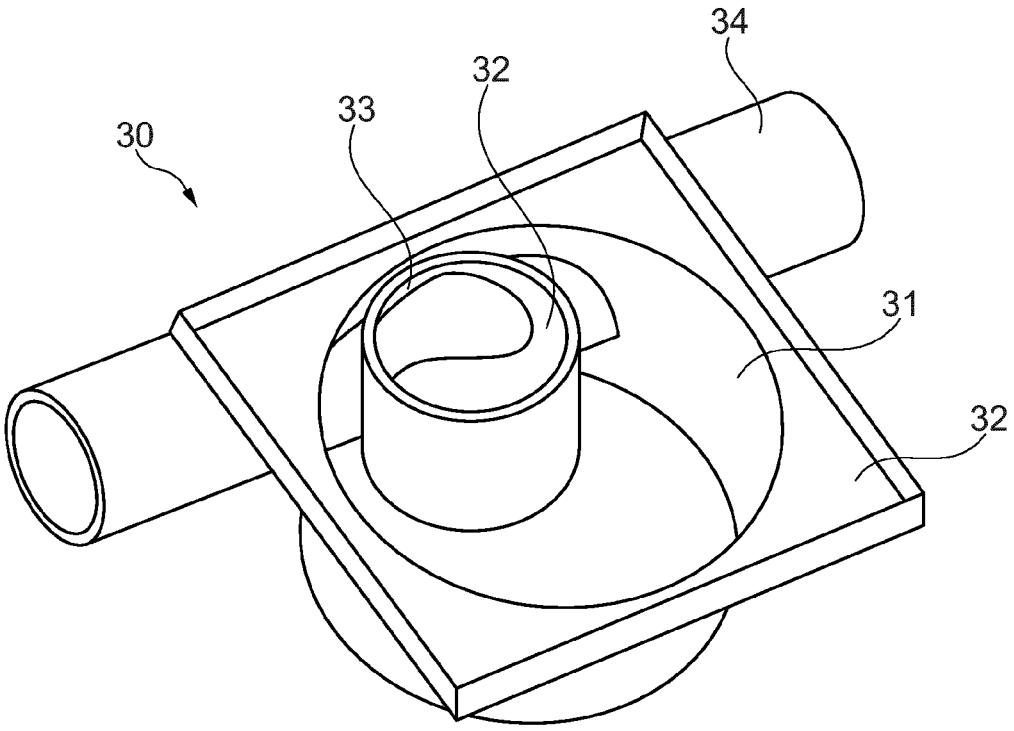

Fig. 4A

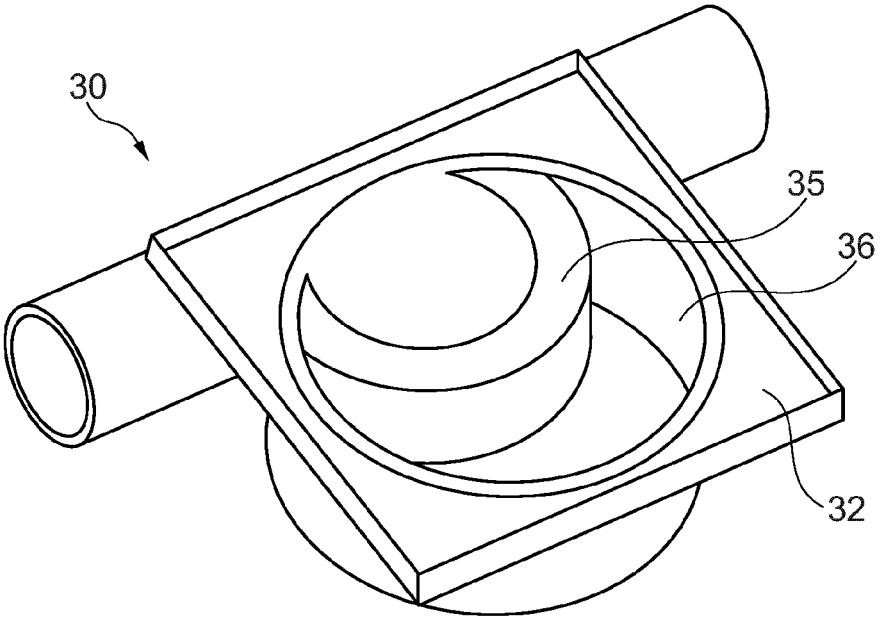

Fig. 4B

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EUROPEAN SEARCH REPORT

Application Number
EP 14 19 6072

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,P	EP 2 674 537 A1 (EASY SANITAIRY SOLUTIONS BV [NL]) 18 December 2013 (2013-12-18) * paragraph [0025] - paragraph [0038]; figures *	1,2,4-9	INV. E03F5/04
A,D	EP 1 518 969 A1 (BLUECHER METAL APS [DK]) 30 March 2005 (2005-03-30) * paragraph [0041] - paragraph [0049]; figures 1-6 *	1,6-8	

TECHNICAL FIELDS SEARCHED (IPC)
E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 May 2015	De Coene, Petrus

CATEGORY OF CITED DOCUMENTS

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07-05-2015

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