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Description

[0001] The invention relates to a method for replacing an odour seal of a urinal.

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[0002] Further, the invention relates to a urinal which comprises a replaceable odour seal.

[0003] An insertion component that is configured as an odour seal is known from DE 10 2009 008 574 A1, for example. The odour seal is provided with an inflow surface, which has at least one drain opening that can be covered by a superimposed cover bonnet. It has a sealing device which, in a default position, closes the flow connection between a drain and an opening of the drain and which opens when a certain amount of urine runs in. The sealing device has at least two chamber parts which restrict the volume of a chamber, wherein the first chamber part is a membrane part that lifts away from the second chamber part when a predefined amount of liquid collects in the chamber, clearing the flow connection to the drain opening.

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[0004] Another odour seal for a waterless urinal is known from CH 694 274 A5, for example. This odour seal comprises a basin, which has an opening in the upper area in the middle of a ring-shaped inflow surface, with the opening being closed by a closure flap. The closure flap is pressed from the bottom against the edge of the ring-shaped inflow surface via a shaft. This closed state is maintained by a magnet located at the bottom end of the shaft and another magnet that is inserted into the base

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of the basin as the two magnets that have the same polarity repel each other. When a sufficient amount of urine and/or rinse water collects at the closure flap, it is pressed downward, so that the liquid can be drained.

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[0005] Another kind of insertion component for a urinal that is configured as an odour seal is known from EP 1 076 739 B1. In this odour seal, a floating body is inserted instead of closure flap, with the floating body floating up through the liquid level in the insert and coming to rest in the opening of the ring-shaped inflow surface.

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[0006] Such insertion components that are configured as odour seals are used in waterless urinals and serve for closing off the drain into the wastewater pipe system in such a manner that any odour leaks from the wastewater pipes are avoided. Moreover, such odour seals are meant to ensure that the urine is drained completely into the drain, so that the residues remain in the area of the odour seal. Water flushing as in traditional urinals does not take place, whereby fresh water is saved. In addition, cleaning blocks that dissolve when exposed to urine and thus unfold a cleaning and disinfecting effect can be placed on the inflow surface of the odour seal.

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[0007] From EP 1 382 758 A2, a waterless urinal with a mechanical odour seal and a bowl without a flush rim is known. In this waterless urinal, a diaphragm valve closes the drain in a liquid-tight or gas-tight manner in a first position. The diaphragm valve can be transferred into a second position, in which the urine can be drained

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through the diaphragm valve. In order to facilitate the cleaning of the urinal that is operated as a waterless urinal, the urinal as well as the downstream pipe systems are flushed in preset time intervals by means of an
5 externally controlled flushing system. For this purpose, the bowl is provided with a special rinse water distributor, which distributes the rinse water in the bowl without flush rim in a targeted manner. It is explicitly stressed here that this urinal is not to be
10 provided with a flush rim. This is particularly in order to achieve a variable distance between inflow and drain of the rinse water connection.

[0008] In the urinals known from the state of the art,
15 the odour seal has to be replaced from time to time. During this procedure, unpleasant smells often occur. They are especially strong when, in larger toilet facilities with multiple urinals, all odour seals to be replaced are first removed and only afterwards new odour
20 seals are inserted urinal by urinal. What particularly occurs here is the development of a strong ammonium smell, which is often perceivable even after several hours.

25 [0009] From DE 299 00 010 U1, an odour seal for a urinal is known. The odour seal has a replaceable basin for insertion into the urinal. In addition, an odour barrier is provided in the basin frame of the baffle for retaining sewer odours from the drain line and floats on
30 the urine in the basin meant for collecting. The odour barrier comprises a floating body.

[0010] From DE 10 2007 061 255 A1, a system for flushing a vacuum toilet in an airplane is known. Apart from a standard odour seal in the immediate drain line of the urinal, an odour seal for a bypass flow line is
5 provided.

[0011] From US 2006/0101565 A1, a special insert for a waterless urinal is known.

10 [0012] From DE 20 2008 002 130 U1, a urinal with a mechanical odour seal is known. The odour seal has a flap that is balanced by means of a counterweight.

[0013] From US 3,460,168 A, a drainage system for
15 sinks and toilets is known. The drainage system comprises an odour seal as well as an anti-foaming valve which is located downstream with respect to the odour seal and which is meant to prevent any rising of foam, such as may occur when foaming detergents are introduced into the
20 drain pipe system of a building.

[0014] From DE 202 20 156 U1, an odour seal for a drain is known. The odour seal has a closing element that has an outlet opening which can be opened by draining-off
25 liquid. Moreover, the closing element comprises a panel which has an opening and which is supported in the drain, as well as an elastic membrane element which is attached to the panel and which, when it is in a non-weight bearing state, closes the opening and which is expanded
30 by draining-off liquid.

[0015] From DE 92 02 902 U1, a device for disinfecting backwater in odour seals is known. The device comprises a drain, with a treatment zone being arranged downstream with respect to it in the flow direction of the wastewater, and with an antiseptic device being provided therein that at least partially applies backwater by which the odour seal is closed.

[0016] It is the objective of the present invention to indicate a method for replacing an odour seal of a urinal, in which unpleasant smells are mostly avoided.

[0017] The objective is solved by a method according to claim 1, which is characterized by comprising the following steps:

- a) closing of further odour seal of the urinal,
- b) removing the odour seal to be replaced,
- c) inserting a new odour seal, wherein the further odour seal is automatically opened by insertion of an insertion component, and
- e) the new odour seal being configured as the insertion component or as the new odour seal comprising the insertion component.

[0018] It is another objective of the present invention to indicate a urinal in which unpleasant smells are mostly avoided during maintenance.

[0019] The further objective is solved by a urinal according to claim 10, wherein a further odour seal is provided, and the odour seal and the further odour seal are connected in series, wherein the further odour seal
5 [is] automatically closed when the odour seal to be replaced is removed, and is automatically closed through removal of the insertion component, and wherein the replaceable odour seal functions as the insertion component or comprises the insertion component.

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[0020] In particular, the invention has the advantage that almost no disturbing odorous gases can escape during the process of replacing an odour seal. As a result, the urinal may already be used again immediately after the
15 replacement according to the method of the invention, without the user being bothered by unpleasant odours. In practice, this has the further advantage that replacement of an odour seal can be performed without the toilet room having to be closed off for a long period of time.

20 Rather, even the replacement of an odour seal can be performed during the regular cleaning work without any problems.

[0021] Preferably, the new odour seal is inserted in
25 such a manner that it is connected in series with regard to the further odour seal. This embodiment has the special advantage that the further odour seal can ensure a mostly gas-tight insulation of the drain lines that are leading onwards and to which the urinal is connected in
30 the time period when the odour seal to be replaced is substituted with a new odour seal. It can particularly be provided that the new odour seal is inserted in such a

manner that urine introduced into a bowl of the urinal initially runs off through the new odour seal and then through the further odour seal.

5 [0022] In a very particularly advantageous embodiment, the further odour seal is automatically closed when the odour seal to be replaced is removed. In particular, such an embodiment has the advantage that no operating errors can occur. Rather, it is ensured that almost always one
10 of the odour seals is closed, thus preventing any leakage of disturbing gases.

[0023] In particular, it can be provided that the further odour seal is coupled with an actuation
15 mechanism for opening and/or closing the further odour seal that is actuated by the insertion of an insertion component.

[0024] As has already been mentioned, it can be
20 advantageously provided that the closing of the further odour seal occurs automatically. In particular, it can be advantageously provided that the further odour seal is automatically closed by removing the insertion component. What is particularly advantageous is an embodiment in
25 which - also with regard to closing - the odour seal to be replaced is configured as the insertion component and/or the odour seal to be replaced comprises the insertion component.

30 [0025] One embodiment in which the odour seal to be replaced, the removal of which causes the further odour seal to be automatically closed, forms the insertion

component or comprises the same has the very particular advantage that the member of the service staff occupied with the replacement of the odour seal does not have to perform the step of closing the further odour seal him-
5 or herself. A particular advantage that is thus achieved is that no operating errors can occur. What is particularly advantageous here is that the further odour seal is immediately closed during the removal of the odour seal to be replaced, so that even a short-term leak
10 of disturbing gases is mostly avoided.

[0026] Particularly advantageous is the embodiment that has already been mentioned, in which the new odour seal forms and/or comprises the insertion component which
15 causes the further odour seal to be opened when it is inserted into the urinal. In this embodiment, the member of the service staff occupied with the replacement of the odour seal does not have to open the further odour seal in a separate work step. Instead, the opening occurs
20 automatically through insertion of the new odour seal. This has the further special advantage that any operating errors are avoided. In particular, it is avoided that the further odour seal accidentally remains closed after the new odour seal has been inserted, which, in the worst
25 case, could lead to urine build-up in the urinal.

[0027] Particularly advantageous is an embodiment in which the further odour seal is automatically closed during the removal of the odour seal to be replaced, and
30 in which the further odour seal is opened again automatically during the insertion of the new odour seal. Such an embodiment has the very particular advantage that

- apart from the removal of the odour seal to be replaced and the insertion of the new odour seal - the member of the service staff occupied with replacing the odour seal does not have to perform any additional work steps.

- 5 Rather, in such an embodiment the opening and closing of the further odour seal takes place in a completely automatic manner.

[0028] A particular advantage with regard to such a
10 solution is when the further odour seal is coupled with the actuation mechanism, which, triggered through the insertion of the insertion component, opens the further odour seal and closes the further odour seal during the removal of the insertion component.

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[0029] Of course, as an alternative to automatic opening and/or automatic closing it can also be provided that the further odour seal is opened and/or closed in a manual manner.

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[0030] A particularly good protection from disturbing odours is achieved when the further odour seal is closed immediately before the time when the odour seal to be replaced is removed. Largely just as effective is closing
25 the further odour seal while the odour seal to be replaced is removed.

[0031] However, alternatively it is also possible to close the further odour seal immediately after the odour
30 seal to be replaced has been removed. Although a small amount of odorous gas may escape in such an embodiment during the time period between the removal of the odour

seal to be replaced and the closing of the further odour seal, the amount is much smaller than in a conventional replacement method. In particular, such a solution allows for a particularly simple construction. Moreover, it can
5 be advantageously provided that, following the removal of the odour seal to be replaced, the further odour seal can be accessed through the intake space inside of which the odour seal to be replaced had been positioned before, and can be manually closed with the help of a screwdriver,
10 for example.

[0032] With a view to making the leakage of gas as small as possible, when it comes to opening the further odour seal it is of particular advantage for the opening
15 of the further odour seal to be performed at a time after the insertion of the new odour seal or at least during the insertion of the new odour seal.

[0033] However, it is also possible to already open
20 the further odour seal immediately before the insertion of the new odour seal. Although in such an embodiment a small amount of odorous gas may escape in the time period between the opening of the further odour seal and the insertion of the new odour seal, the amount is by far
25 smaller than in conventional replacement method. In particular, such a solution allows for an especially simple construction.

[0034] As has already been explained, here an
30 automatically controlled actuation mechanism has the advantage that no additional work steps have to be carried out by the service staff. However, in simple

embodiments in particular it can also be provided that the opening of the further odour seal is performed in a manual manner, for example by means of a universal tool, such as a screwdriver or a chisel.

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[0035] It can also be provided in a special embodiment of the invention that opening of the further odour seal occurs at a time before the new odour seal is inserted, which may be due to permanent changes, in particular as a
10 result of destruction to at least one part of the further odour seal. Such an embodiment is advantageous in the case that the further odour seal is configured as a refill component for one-time use, for example.

15 [0036] In a particularly advantageous embodiment, the further odour seal is coupled with an actuation mechanism for opening and/or closing. The actuation mechanism can advantageously comprise at least one actuation lever. In particular, it can be provided that the actuation
20 mechanism has at least one actuation lever, which - at least in the case that no insertion component is inserted - is protruding into an intake space for the insertion component. In particular, this takes place in such a manner that the actuation lever is displaced from the
25 intake space during the insertion of the new odour seal, wherein the movement of the actuation lever causes the further odour seal to be opened.

[0037] Alternatively or additionally it can also be
30 provided that the actuation mechanism has at least one actuation lever that can be adjusted by means of the

insertion component (for example, the odour seal to be replaced and/or the new odour seal).

[0038] In a special embodiment, it is provided in an advantageous manner that a restoring force automatically presses the actuation mechanism into the closed position. The restoring force can be exerted by a spring device, for example. However, it can be provided alternatively or additionally that the restoring force is caused by a weight force that is acting on the further odour seal and/or on a weight which is arranged at the further odour seal.

[0039] As has already been mentioned, it can be advantageously provided that the insertion component causes the further odour seal to open and/or close with the help of an actuation mechanism, for example.

[0040] However, as far as the insertion component is concerned, it can also be provided alternatively or additionally that the insertion component has an inlet for urine which is introduced into a bowl of the urinal. It can also be provided alternatively or additionally, that the insertion component has an intake space for a cleaning block. Alternatively or additionally it is also advantageously possible that the insertion component has a bonnet under which a cleaning block is positioned and/or positionable. Especially advantageously it can also be provided - alternatively or additionally - that the insertion component is configured for the purpose of being inserted into a bowl and/or into a drain opening of the urinal.

[0041] In particular, it can be advantageously provided that the insertion component has at least one seal for the water-tight and/or gas-tight insertion of the insertion component into a bowl and/or into a drain opening of the urinal.

[0042] In an advantageous embodiment, the further odour seal has a closure flap. In particular, a closure flap on which an actuation lever is arranged can be provided. In a special embodiment, the actuation lever serves for coupling the closure flap to an opening and/or closing mechanism.

[0043] It is of a very particular advantage when the urinal according to the invention is configured as a waterless urinal. In such urinals, in particular, an odour-tight closing off from the lines carrying faecal matter is especially important, since in most cases flushing with rinse water is done at best after long time intervals by the cleaning staff.

[0044] For security reasons, the further odour device is preferably configured in such a manner that it opens in any case in the event that large amounts of rinse water are introduced into the bowl of the urinal, so that the danger of the bowl of the urinal overflowing is dealt with. For example, it can be provided for this purpose that the restoring force that acts on a closure flap of the further odour seal is limited in such a manner that, due to the weight force, the closure flap is pressed open

by rinse water as soon as the amount of rinse water exceeds a predefined and/or predefinable level.

[0045] Further goals, advantages, features and
5 application possibilities of the present invention follow from the description of an exemplary embodiment given hereafter by referring to the drawing. Here, all the described and/or pictured features, alone or in any practical combination, represent the subject matter of
10 the present invention, also independently of their summary in the claims or their back reference.

[0046] Herein:

15 Fig. 1 shows a detailed illustration of the urinal according to the invention with an inserted odour seal to be replaced, and

Fig. 2 shows the urinal according to the invention in the
20 phase when the odour seal to be replaced is being removed.

[0047] Fig. 1 shows a detailed rendering of a urinal according to the invention with an odour seal to be
25 replaced 2 that is inserted into a drain opening 1 of the urinal. The odour seal to be replaced 2 is configured as an insertion component which comprises an inner-tube valve 3. A screen 4 that carries a cleaning block 5 is arranged above the inner-tube valve 3. A bonnet 6 with
30 openings is provided which provides an intake space for the cleaning block 5.

[0048] The odour seal to be replaced 2 that is configured as an insertion component is arranged in the drain opening 1 of the urinal in such a manner that urine that is introduced into the bowl 8 of the urinal (only
5 partially shown) runs off through the screen 4 and subsequently through the inner-tube valve 3.

[0049] Moreover, the urinal has a further odour seal 9 by which an odour-tight closure of the access to a drain
10 line 7 can be closed. The further odour seal 9 has a closure flap 10 for closing a passageway 11. At the closure flap 10, a weight 11 is arranged that presses the closure flap 10 into the closure position due to weight force.

15 [0050] Moreover, an actuation lever 12 is arranged at the closure flap 10 that, when swivelled downwards, opens the closure flap 10 against the restoring force created by the weight 11.

20 [0051] In the depicted situation, the actuation lever 12 is pressed downward by means of a protrusion 13 that is arranged at the odour seal 2 to be replaced, so that in the depicted situation the further odour seal is open
25 as long as the odour seal to be replaced 2 remains in the drain opening 1.

[0052] As soon as the odour seal to be replaced 2 is removed from the drain opening 1, the closure flap 10 is
30 swivelled into the closed position by means of the weight 11, as the actuation lever 12 is no longer pressed

downwards by the protrusion 13 that is arranged at the odour seal to be replaced 2. This is shown in Figure 2.

[0053] After the removal of the odour seal to be
5 replaced 2, a new odour seal can be inserted, which
itself also has a protrusion 13. Through the insertion of
the new odour seal, the actuation lever 12 is pressed
downwards by means of the protrusion arranged at the new
odour seal, so that the further odour seal is opened
10 again and remains open as long as the new odour seal 2
remains inside the drain opening 1.

Parts list

- 1 drain opening
- 2 odour seal to be replaced
- 3 inner-tube valve
- 4 screen
- 5 cleaning block
- 6 cover
- 7 drain line
- 8 bowl
- 9 further odour seal
- 10 closure flap
- 11 weight
- 12 actuation lever
- 13 protrusion

PATENTKRAV

1. Fremgangsmåde til udskiftning af en lugtforsegling (2) i et urinal, **kendetegnet ved** følgende trin:

- 5 a.) lukning af en yderligere lugtforsegling (9) i urinalet,
- b.) fjernelse af den luftforsegling (2), som skal udskiftes,
- c.) indføjning af en ny lugtforsegling, som skal erstatte den fjernede lugtforsegling (2), og
- d.) åbning af den yderligere lugtforsegling (9), idet den yderligere lugtforsegling (9)
- 10 automatisk åbnes ved indføjningen af et indføjningskonstruktionselement, og
- e.) den nye lugtforsegling er udformet som indføjningskonstruktionselementet eller at den nye lugtforsegling omfatter indføjningskonstruktionselementet.

2. Fremgangsmåde ifølge krav 1, **kendetegnet ved, at** den nye lugtforsegling indføjes
- 15 således, at den er koblet i serie med den yderligere lugtforsegling (9).

3. Fremgangsmåde ifølge krav 1 eller 2, **kendetegnet ved, at** den nye lugtforsegling indføjet således, at den i en skål i urinalet indførte urin først løber igennem den nye lugtforsegling og efterfølgende igennem den yderligere lugtforsegling (9).

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4. Fremgangsmåde ifølge ethvert af kravene 1 til 3, **kendetegnet ved, at** den yderligere lugtforsegling (9) er forbundet med en betjeningsmekanisme, som betjenes ved indføjningen af et indføjningskonstruktionselement.

- 25 5. Fremgangsmåde ifølge ethvert af kravene 1 til 4, **kendetegnet ved, at** den yderligere lugtforsegling (9) lukkes, medens den lugtforsegling (2), som skal udskiftes, fjernes.

6. Fremgangsmåde ifølge krav 5, **kendetegnet ved, at** lukningen af den yderligere
- 30 lugtforsegling (9) sker automatisk.

7. Fremgangsmåde ifølge ethvert af kravene 1 til 6, **kendetegnet ved, at** den yderligere lugtforsegling (9) lukkes automatisk ved fjernelsen af indføjningskonstruktionselementet.

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8. Fremgangsmåde ifølge ethvert af kravene 1 til 7, **kendetegnet ved, at** åbningen af den yderligere lugtforsegling (9) sker under indføjningen af den nye lugtforsegling.

9. Fremgangsmåde ifølge ethvert af kravene 1 til 8, **kendetegnet ved, at** den yderligere lugtforsegling (9) er forbundet med en betjeningsmekanisme, som udløst ved indføjningen af indføjningskonstruktionselementet åbner den yderligere lugtforsegling og som ved fjernelse af indføjningskonstruktionselementet lukker den yderligere lugtforsegling (9).

10. 10. Urinal, som omfatter en udskiftelig lugtforsegling (2) og en yderligere lugtforsegling (9), idet den udskiftelige lugtforsegling (2) og den yderligere lugtforsegling (9) er koblet i serie, **kendetegnet ved, at** et indføjningskonstruktionselement foreligger, og at den yderligere lugtforsegling (9) er udformet og anbragt således, at den automatisk åbner ved indføjningen af indføjningskonstruktionselementet i urinalet og automatisk lukkes ved fjernelsen af indføjningskonstruktionselementet fra urinalet, idet den udskiftelige lugtforsegling (2) fungerer som indføjningskonstruktionselementet eller omfatter indføjningskonstruktionselementet.

11. Urinal ifølge krav 10, **kendetegnet ved, at** den yderligere lugtforsegling (9) sikrer en gastæt isolering af videreførende afløbsledninger (7) under det tidsrum, hvor den udskiftelige lugtforsegling (2) erstattes med en ny lugtforsegling.

12. Urinal ifølge krav 10 eller 11, **kendetegnet ved, at** lugtforseglingen (2) indføjes således, at urin, som indføres i en skål (8) i urinalet, først løber ud igennem den udskiftelige lugtforsegling (2) og efterfølgende løber ud igennem den yderligere lugtforsegling (9).

13. Urinal ifølge ethvert af kravene 10 til 12, **kendetegnet ved, at** den yderligere lugtforsegling (9) er forbundet med en betjeningsmekanisme, som er udformet og anbragt således, at den udløst af indføjningen af indføjningskonstruktionselementet åbner den yderligere lugtforsegling (9) eller at den udløst ved en fjernelse af indføjningskonstruktionselementet lukker den yderligere lugtforsegling (9).

14. Urinal ifølge krav 13, **kendetegnet ved, at** betjeningsmekanismen omfatter i det mindste en betjeningsarm (12), som er anbragt til ved hjælp af indføjningskonstruktionselementet at være justerbar imod en tilbageføringskraft.

15. Urinal ifølge ethvert af kravene 10 til 14, **kendetegnet ved, at** indføjningskonstruktionselementet omfatter et indløb for urin, som indføres i skålen (8) i urinalet, og er indføjet i en udløbsåbning (13) for urinalet i skålen (8).

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16. Urinal ifølge ethvert af kravene 10 til 15, **kendetegnet ved, at** den yderligere lugtforsegling (9) omfatter en lukkeklap (10), på hvilken betjeningsarmen (12) er anbragt.

10 17. Urinal ifølge krav 16, **kendetegnet ved, at** den på lukkeklappen (10) virkende vægt trykker denne mod den lukkede stilling eller at en fjederindretning er tilvejebragt, som trykker lukkeklappen (10) mod den lukkede stilling.

15 18. Urinal ifølge ethvert af kravene 10 til 17, **kendetegnet ved, at** urinalet er udformet som tørurinal.

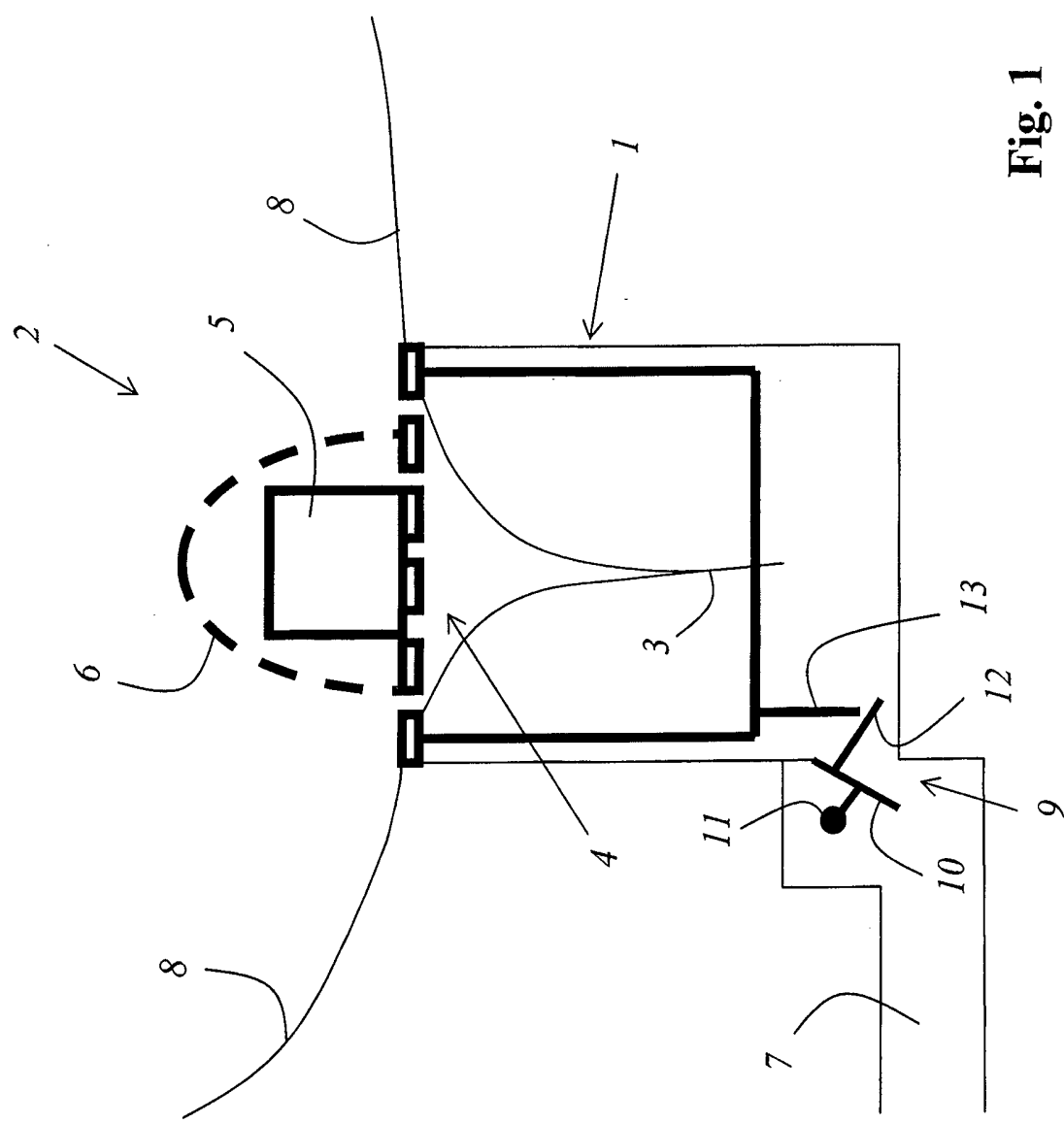


Fig. 1

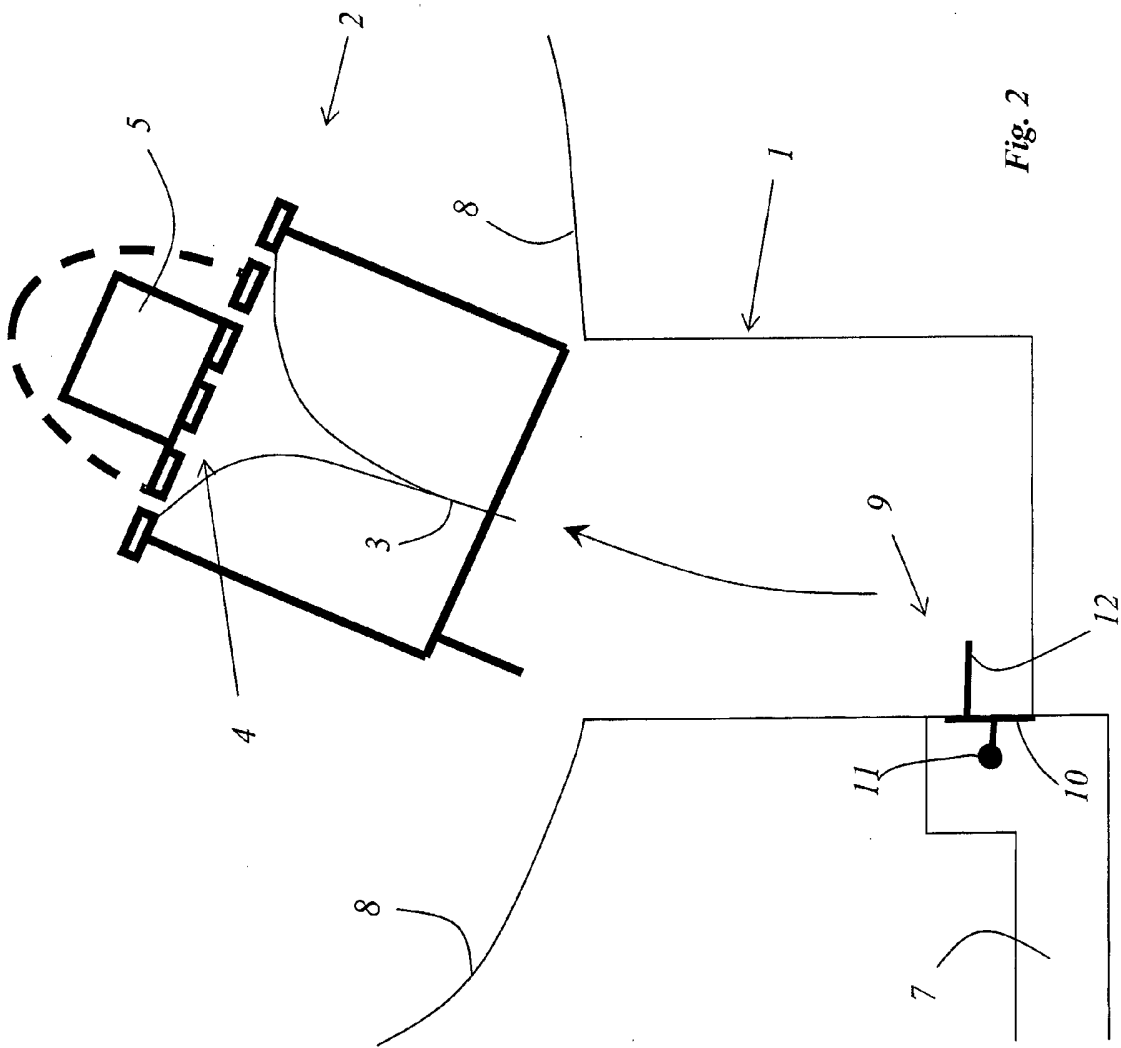


Fig. 2