

Fig. 1

21

22

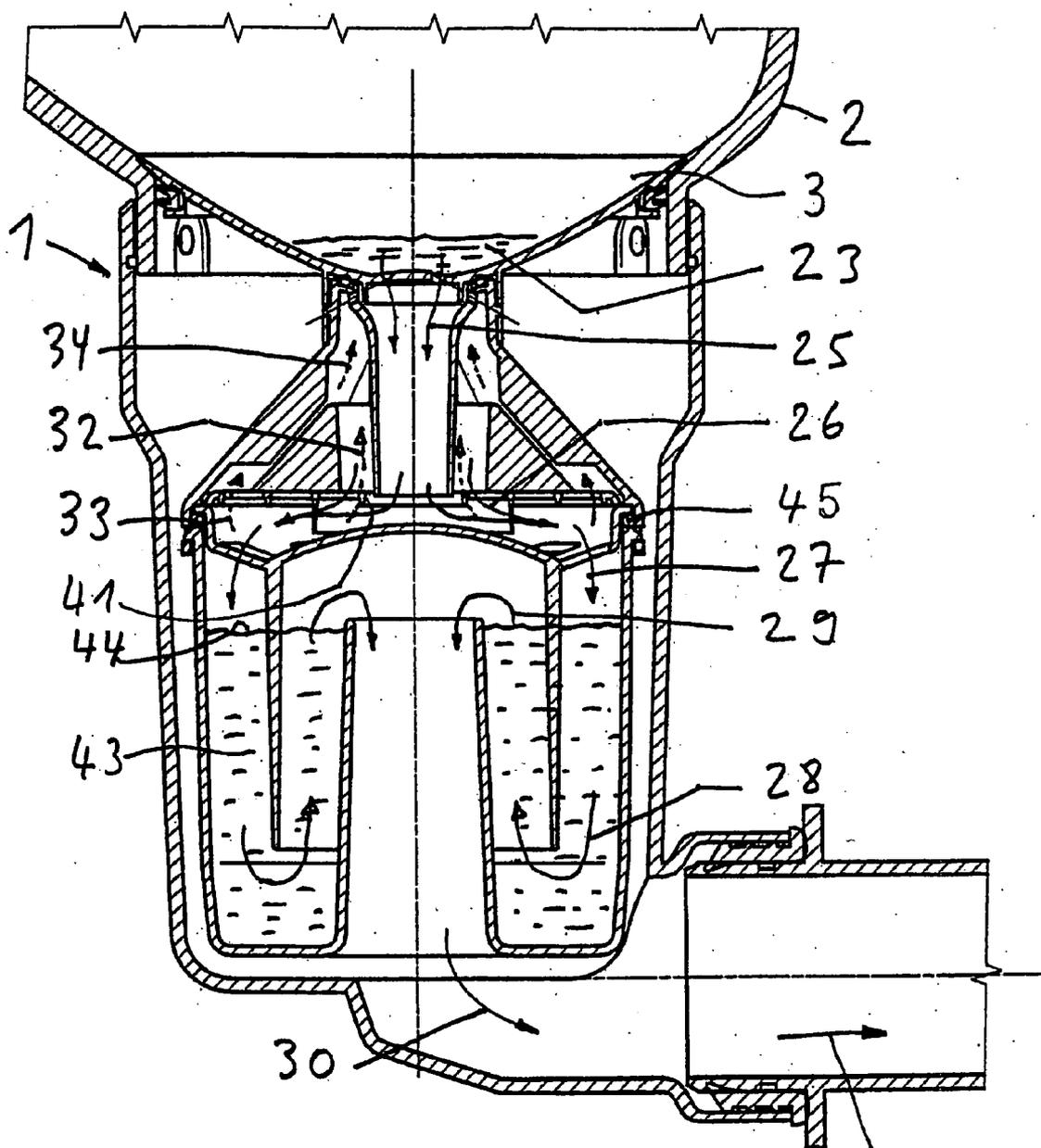


Fig. 2

31

ODOR TRAP FOR A WATERLESS OR LOW-FLUSH URINAL

BACKGROUND OF THE INVENTION

[0001] 1) Field of the Invention

[0002] The invention relates to an odor trap for a waterless or low-flush urinal, with a basin-shaped housing which is connected on an upper end to an inlet and on a lower end has an outlet that leads into a drain line. The trap has a siphon that prevents the passage of gas from the outlet to the inlet and also includes a scent insert.

[0003] 2) Description of the Related Art

[0004] A similar odor trap of the prior art is disclosed in GB 2 356 565 A. In that case, the deodorizing insert, termed a deodorizing block, is located under a hood above the inlet. In this case, the hood acts as an anti-splatter protection and is open on the bottom. When a pool of urine forms above the inlet, the urine flows over and around the deodorizing block and is deodorized by the deodorizing block. One disadvantage of this odor trap is that the deodorizing block disintegrates rather quickly and in spite of the deodorizing block, it is still necessary to flush the urinal if an essentially deodorized room or area is required.

[0005] European Patent No. EP 1 247 910 A, owned by the applicant, describes an odor trap which is suitable for use in a waterless or low-flush urinal.

[0006] The object of the invention is to create an odor trap of the type described above in which the propagation of odor is prevented even more effectively.

BRIEF SUMMARY OF THE INVENTION

[0007] The invention teaches that this object can be achieved by an odor trap in which the deodorizing insert is located in an essentially dry area underneath the inlet.

[0008] In the odor trap claimed by the invention, the deodorizing insert is therefore not located above the inlet, but in an essentially dry area below the inlet. This arrangement has the significant advantage that the deodorizing insert is not exposed to a flow of liquid and can therefore be preserved for a significantly longer time. The odor trap claimed by the invention is therefore suitable in particular for use in a urinal in which there is a siphon insert which is replaced after a predetermined length of time. Because the deodorizing insert in the odor trap claimed by the invention lasts for a relatively long time, it can be replaced simultaneously with the siphon insert.

[0009] An additional significant advantage of the odor trap claimed by the invention is that the fluid, as it rises in the siphon, is deodorized in the dry area of the deodorizing insert. Any air that does escape from the inlet is therefore deodorized and thus an undesirable propagation of the odor is largely prevented. The odor trap claimed by the invention is therefore particularly well suited for use in a waterless urinal.

[0010] In one development of the invention, the deodorizing insert is located in a replaceable siphon insert. When the siphon insert is replaced, it is thereby easily possible to replace the deodorizing insert at the same time. Basically, however, it is also possible to replace the deodorizing insert

on its own. In that case, the siphon insert does not need to be removed from the housing.

[0011] In one development of the invention, the deodorizing insert sits on a screen. In this case, the air can flow over the deodorizing insert and can thereby be effectively deodorized.

[0012] In one development of the invention, the deodorizing insert is located underneath a cover and is held in place laterally by this cover. This arrangement results in a particularly simple installation. The deodorizing insert, which in this case is preferably a deodorizing block, is held in place by installing the cover. No additional fastening means are necessary for the deodorizing insert.

[0013] If, as in one additional development of the invention, there is a space for the passage of un-deodorized air between the deodorizing insert and the cover, a particularly intensive air circulation is possible, in which an intensive current of un-deodorized air flows around the deodorizing insert, which here again is also preferably a deodorizing block. The air is thereby deodorized by the deodorizing insert.

[0014] In one development of the invention, there is an inlet tube that extends downward below the insert. This inlet tube preferably empties below a screen and transports the urine into the siphon.

[0015] The propagation of odor can be prevented particularly effectively if, as in one development of the invention, backwater means are provided in the housing and are arranged so that they guide the undeodorized air to the deodorizing insert. These backwater means are particularly effective if, as in one development of the invention, they are realized in the form of a diaphragm and are located on the lower end of the inlet tube. In one particularly simple realization of these backwater means, they are located on a screen. This screen simultaneously acts as a support for the deodorizing insert.

[0016] Additional advantageous features of the invention are described in the dependent claims, the following description and in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] One exemplary embodiment of the invention is explained in greater detail below with reference to the accompanying drawing, in which:

[0018] **FIG. 1** is a vertical section through an odor trap as claimed by the invention and through a section of a urinal basin, and

[0019] **FIG. 2** shows an odor trap of the type illustrated in **FIG. 1**, but in the operating position.

DETAILED DESCRIPTION OF THE INVENTION

[0020] **FIG. 1** shows a lower section of a conventional urinal basin **2**, which has an outlet in the form of a downward pipe **4**. A collecting basin **3** is inserted in the urinal basin **2** from above, which collecting basin **3** has an inlet **6** in the lower portion, which is formed by at least one passage opening. Below the inlet **6**, a cylindrical diaphragm **36** is molded onto the collecting basin **3**. Concentric to this

diaphragm **36**, retaining means **45** are also molded onto the underside of the collecting basin **3**, and are formed by a plurality of locking tabs. A cover **10** is fastened, e.g. locked, onto these retaining means **45**.

[0021] An odor trap **1** is fastened to the pipe **4**, by means of locking tabs, for example, which odor trap **1** has a housing **37** which accepts a siphon insert **17**. Molded onto the base of the housing **37** is an outlet pipe **21**, which is connected with a disposal line **22**. The housing **37** is realized in particular in the form of a basin-shaped plastic housing.

[0022] The siphon insert **17** has a basin **18** on which an overflow pipe **38** is molded, which has an overflow edge **20** on its upper end. On one edge **39** of the basin **18** there is a dip tube **19**, which has a plurality of passage openings in an upper encircling collar **14**. A curved wall is located at some distance above the overflow edge **20** and is closed, as well as having a convex upward curvature. The above mentioned cover **10** is also locked onto the above mentioned edge **39**. By means of this cover **10**, the basin **18** is fastened to the collecting basin **3** and is thus suspended on the basin.

[0023] A gasket **45** seals the upper edge of the basin **18** against the dip tube **19** and against the cover **10**. A screen **16** is placed on the collar **14** from above. In the center, the screen **16** has a passage opening **41** (FIG. 2), in which the inlet tube **7** is engaged by means of its mouth **9**. The deodorizing insert **11** is placed on top of the screen **16**. This deodorizing insert is realized in the shape of a ring and has a passage **13** in the middle, in which the inlet tube **7** is engaged. Inward-facing fins **10a** are molded onto the cover **10** and hold the deodorizing insert **11** in position.

[0024] The siphon insert **17** forms a unit with the basin **18**, the dip tube **19**, the screen **16** and the deodorizing insert **11** as well as with the cover **10** and the collecting basin **3**. This unit is inserted into the urinal basin **2** from above. A lip seal **42** seals the siphon insert **17** with respect to the urinal basin **2**. The siphon insert **17** can easily be replaced at specified intervals. For this purpose, all that is necessary is to remove the used siphon insert **17** from the urinal basin **2** and to insert the new unit from above. This type of replacement can be carried out very easily and quickly.

[0025] The operation of the odor trap **1** described by the invention is explained in greater detail below with reference to the accompanying FIG. 2.

[0026] In FIG. 2, after the urinal has been used, there is a urine pool **23** in the collecting basin **3** that drains in the direction indicated by the arrows **25**. At the mouth **9** of the inlet tube **7**, the urine reaches the upwardly curved wall **40** and runs along said wall in the direction indicated by the arrow **26** to the passages **15** and through said passages into the basin **18**. The urine travels in the direction indicated by the arrows **28** under the dip tube until it reaches the overflow edge **20**. As it continues to ascend, the urine flows over the overflow edge **20** and as indicated by the arrows **30** and **31** reaches the outlet **21** and finally is discharged into the discharge line **22**.

[0027] The urine pool **43** outside the dip tube **19** in the basin **18** has a ring-shaped surface **44**, on which odors can develop. At least some of these odors penetrate upward through the passages **15**. The backwater means **24**, which are realized in the form of a diaphragm, cause this ascending odor to flow largely in the direction indicated by the arrows

33 into the passages **12** which are located between the deodorizing insert **11** and the cover **10**. The odor is thereby conducted into the cover **10**, in which the deodorizing insert **11** is located. Some of the air travels through the circulation borings **8** that are located in the upper portion of the cover **10** back down through the inlet tube **7** and finally again in the direction indicated by the arrows **33** to the deodorizing insert **11**. The odor is removed during this circulation. Deodorization is thereby ensured as a result of the above mentioned circulation in the cover **10**, with the resulting guarantee that essentially no un-deodorized air can be released back into the environment. Because the deodorizing insert **11** is installed essentially dry in the odor trap **1**, it will last for a long time. The deodorizing insert **11** can be in particular a solid body, such as a deodorizing block, for example. Basically, however, any other type of deodorizing inserts can also be used, which can also contain soft or liquid deodorizers.

1. An odor trap for a waterless or low-flush urinal with a basin-shaped housing which is connected on an upper end to an inlet and on a lower end to an outlet that leads to a drain line, with a siphon that prevents the passage of gas from the outlet to the inlet, and with deodorizing means located underneath the inlet in an essentially dry area.

2. The odor trap according to claim 1, wherein the deodorizing means is a deodorizing insert.

3. The odor trap according to claim 2, wherein the deodorizing insert is located under a cover.

4. The odor trap according to claim 2, wherein the deodorizing insert is a solid body.

5. The odor trap according to claim 4, wherein the solid body is a deodorizing block.

6. The odor trap according to claim 2, wherein the deodorizing insert sits on a screen.

7. The odor trap according to claim 6, wherein the screen, on its underside, has backwater means, by which ascending odors can be deflected outwardly.

8. The odor trap according to claim 3, wherein the outside of the deodorizing insert, together with the cover, form a circulation space for un-deodorized air.

9. The odor trap according to claim 2, wherein the deodorizing insert is held in place by fins on the cover.

10. The odor trap according to claim 1, further including downwardly extending inlet pipe located underneath the inlet.

11. The odor trap according to claim 10, wherein the inlet pipe has a mouth on a lower end, below which there is an upwardly curving wall of a dip tube.

12. The odor trap according to claim 1, wherein below the inlet there are circulation openings through which ascending air can circulate.

13. The odor trap according to claim 2, wherein the deodorizing insert is located in a replaceable siphon insert.

14. The odor trap according to claim 1, wherein the inlet is located in a collecting basin which is inserted into a urinal basin.

15. The odor trap according to claim 14, wherein on the underside of the collecting basin there is a siphon insert, which forms a replaceable unit with the collecting basin.

16. A siphon insert for an odor trap of a waterless or low-flush urinal with a basin-shaped housing connected on an upper end to an inlet and on a lower end to an outlet that leads to a drain line, with a siphon that prevents the passage of gas from the outlet to the inlet, wherein the siphon insert is a deodorizing insert positioned in an upper and essentially dry area of the housing.

17. The siphon insert according to claim 16, wherein the deodorizing insert is located underneath a cover.

18. The siphon insert according to claim 16, wherein the deodorizing insert sits on a screen.

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