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DE-A1- 4 345 078
GB-A- 2 472 772
US-A- 5 553 333
US-A1- 2004 064 880

DESCRIPTION

BUILT-IN CISTERN WITH LEAKAGE PROTECTION

The present invention relates to a built-in cistern according to the preamble of claim 1. Such built-in cisterns are known in numerous variants in the state of the art.

Thus, for example patent document EP 2 397 613 A1 discloses a built-in cistern with moisture and leakage protection. In this built-in cistern, the moisture and leakage protection is configured as a flexible, watertight protection sleeve which surrounds the built-in cistern and the connection tube, wherein on the lower side of the protection sleeve there is configured a hose-like prolongation with at least one lower opening at the end thereof. However, in this solution it is disadvantageous that the relatively thin protection sleeve can be easily damaged during installation and such damages cannot be easily detected. A safe leakage protection is thus not ensured with the desirable reliability. A further example is to be found in patent document EP 1284327.

Therefore, the objective of the invention is to solve the problems resulting from the state of the art and in particular to provide a built-in cistern with an especially reliable moisture and leakage protection.

These objectives are reached with a built-in cistern according to the features of claim 1. Further advantageous configurations of the invention are indicated in the dependent claims. It must be pointed out that the features set forth in the dependent claims can be combined with one another in any technologically reasonable manner and define further configurations of the invention. In addition, the features indicated in the claims are explained and specified in further detail in the description, further preferred embodiments of the invention being depicted.

By means of the use according to the invention of a dimensionally stable and watertight shell as a leakage protection device, which at least partially encloses the built-in cistern, an accidental damage of the leakage protection device during mounting is efficiently prevented. While the film known in the state of the art can be

damaged very easily by means of sharp tools or screws, this is not possible without further ado in the event of a dimensionally stable shell which is made from plastic, for example. For that purpose, the shell is configured so that it at least partially encloses the built-in cistern on a rear side. The same applies for side regions arranged within the brickwork and a bottom side of the built-in cistern, which are likewise at least partially enclosed by the shell. Only the front side of the shell is open, it having a leading edge which reaches at least as far as a wall surface. By means of the thus configured watertight shell water is prevented from being able to exit on the bottom sides, the rear side or the side regions of the built-in cistern and enter the wall or the brickwork.

In this respect, it is advantageous for the shell to also enclose the second conduit element. The second conduit element is a water outlet tube, for example, which connects the built-in cistern with a sanitary facility, such as a ceramic toilet seat, for example.

It is especially successful and cost-efficient when the shell is made from a polymer material, such as a plastic from the group of PP, PE, ABS, PS, for example. In particular deep-drawable plastics, which are available in numerous colours and finishes, are appropriate for this purpose.

Advantageously, a wall thickness of the shell, at least in the region of a wall surface, is less than 60 mm, preferably less than 50 mm. In the region of the wall surface there is provided a leading edge for that purpose, which first has an extra length and protrudes beyond the wall surface. In the totally mounted installation position, this leading edge is cut to the respective installation depth by means of cutting out and ends afterwards flush with the wall surface. The cutting out is simplified due to the preferred wall thicknesses, which however still ensured a sufficient dimensional stability of the shell at the same time.

In a very especially preferred embodiment of the invention it is envisaged that the shell has watertight passages for fixing elements for fixing the built-in cistern. The shell can be hereby fixed for example with screwed connections to a wall portion in

order to subsequently arrange the built-in cistern within the shell. If the fixing elements and the, as the case may be, required passages of the fixing elements are passed through the shell in a watertight manner, then the functional capability of the leakage protection device with a simultaneous fixing possibility is ensured.

Another preferred embodiment envisages that at least the built-in cistern and the shell are arranged in a mounting frame. Such a mounting frame can be made from wood, metal or plastic profiles, for example, and serve as a mechanical supporting structure for the built-in cistern and the shell. In this respect, the built-in cistern can be fixed to the mounting frame by means of screws, which protrude through the shell. The mounting frame itself is fixed in turn during mounting to the brickwork. In this respect, the passage points of the fixing elements for the connection of the built-in cistern, the shell and the mounting frame are of course also implemented again in a watertight manner.

Preferably, the shell is implemented open on a front side. In the context of the invention it is hereby ensured that in the event of a leakage water can exit the shell on the front side. In this respect, it is furthermore possible to completely or also only partially open the front side. If a partial cover of the front side is provided in a lower region of the shell, for example, a reservoir can thus be provided, in which eventually exiting water accumulates. An exit of the water would thus first take place when a receiving capacity of the reservoir is exceeded. It is hereby possible to gain time in detecting a possible leakage before water exits the shell.

In order to also now ensure that water does not penetrate the brickwork or a wall construction, it is advantageously envisaged that an installation depth of the shell is selected in such a size that, in the installed state, it reaches at least a wall surface. In this respect, the installation depth of the shell can be selected with a sufficient size, such that a projection of the wall surface occurs as a general rule. If needed, the installation depth of the shell in the installed stated can then be adapted exactly to the contour of the wall surface. This can be achieved by means of a simple sawing of the projecting portion of the shell, for example.

In this respect, shells which have an installation depth in the range of 100 mm to 350 mm, preferably 150 mm to 250 mm, have especially proven to be valid. Such configured shells cover most application cases.

It is in addition advantageous for the shell to have at least one collection area for leakage water on a bottom side, in which the exiting water first accumulates. For that purpose, it can optionally be first accumulated in a reservoir, in order to be deviated afterwards or without previous accumulation via a drainage conduit. Preferably, a drainage conduit is also to be envisaged, which likewise deviates the leakage fluid accumulated at a low point to a wall surface. In the totally mounted state, a leakage of the built-in cistern can thus be directly detected by means of the leakage water exiting at the wall surface into the space.

The invention and technical field are explained below in further detail by means of the drawings. It must be pointed out that the drawings show especially preferred but non-limiting embodiments of the invention.

In the drawings:

Figure 1 schematically shows a front side of a totally mounted built-in cistern according to the invention;

Figure 2 schematically shows a side sectional view through the built-in cistern according to Figure 1;

Figure 3 schematically shows detail A according to Figure 2,

Figure 4 schematically shows detail B according to Figure 2,

Figure 5 schematically shows a side view of a partially cut-away built-in cistern,

Figure 6 schematically shows a rear view of a partially cut-away built-in cistern; and

Figure 7 schematically shows an oblique view of a built-in cistern with shell and mounting frame.

Figure 1 depicts a front view of a built-in cistern 1 according to the invention. The built-in cistern 1 is mounted together with a sanitary facility 2, which in the present case is configured as a suspended ceramic toilet seat. An actuation device 3 without an actuation panel is depicted. In the lower region there is depicted a port 4 of a drainage hose 5. In addition, a leading edge 6 of a shell 7 is depicted. The leading edge 6 is depicted in an uncut state and protrudes beyond a wall surface 8 in the direction of the centre of the space. Within the shell 7 there is furthermore a wall covering 9, which after the mounting has taken place is inserted into the shell 7 and fixed therein. The wall covering 9 is oriented in a planar manner to the wall surface 8. Both the wall covering and the wall surface can hereby be cladded together after cutting the leading edge 6, which can take place by means of placing non-depicted tiles, for example.

Figure 2 depicts a vertical sectional view of the built-in cistern according to Figure 1. The built-in cistern 1 rests within the shell 7 and is completely enclosed by same both on the rear side and on the upper side, the bottom side as well as the right side and the left side. In summary, the built-in cistern 1 is thus completely enclosed both sideways and on the rear side thereof by the shell 7. In this respect, the rear side 10 forms the side which is directed to the wall or the brickwork. Via a first conduit element 11, which is connected to a water inlet connection 12, the built-in cistern 1 is supplied with water. The deviation of the water takes place via a second conduit element 13, which is connected via a water outlet connection 14 to the built-in cistern and connects same with the sanitary facility 2. The sanitary facility 2 is in turn fixed to a mounting frame 15 which also receives the built-in cistern 1 and the shell 7.

Figure 3 depicts detail A according to Figure 2 once again enlarged. The first conduit element 11 guides water via the water inlet connection 12 into the built-in cistern 1 through a side region 16 depicted in a concealed manner. It can clearly be seen here that the shell 7 tightly encloses the built-in cistern 1 both on the rear side 10 and on the side region 16. The mounting frame 15 is firmly connected via a fixing device 17

to the building and supports both the wall covering 9, the shell 7 as well as the built-in cistern 1 and the sanitary facility 2.

Figure 4 depicts detail B according to Figure 2. In the lower portion of the built-in cistern 1 it is in turn possible to see the shell 7 with the leading edge 6. The wall covering 9 is arranged within the shell. A collection area or reservoir 18 arranged to accumulate leakage water can clearly be seen in the region below the second conduit element 13. A drainage conduit 19 is connected to the collection area 18. The drainage conduit 19 is only partially depicted and is still explained in further detail referring to Figure 6. The collection area 18 is arranged on a bottom side 20 of the built-in cistern in order to favour the accumulation of leakage water.

Figure 5 shows a side view of the built-in cistern 1 according to the invention. The built-in cistern 1 is completely enclosed by the shell 7, it being possible to clearly see the drainage conduit 19 in the lower region 18. The mounting frame 15 has fixing elements 21, whereby the built-in cistern 1 and the shell 7 are connected to the mounting frame 15. In this respect, in the present case they are screws, which pass through the shell 7. The passage points are implemented in each case in a watertight manner, such that no leakage water can exit the shell 7 through the passage points.

Figure 6 depicts a rear view of the mounting frame 15 with the built-in cistern 1 and the shell 7. On the bottom side 18 it is possible to clearly see the drainage conduit 19, which leads from the bottom side 20 with the collection area 18 to the port 4 of the drainage hose 6.

Figure 7 shows a perspective depiction of the built-in cistern 1 again, with the actuation device 3, the wall surface 8, wherein the wall covering 9 has been hereby removed. The built-in cistern 1 is completely enclosed by the shell 7, the leading edge 6 of which, as can be seen, is not shortened and still has the entire installation depth. This does not take place until the completely mounted state, before the final surface cladding is applied. The drainage hose 5 with the port 4 can also be seen in the lower right region. In this depiction, it can clearly be seen that leakage water, as the case

may be, accumulated on the bottom side 20 can only be deviated in the direction of the inner space and water damages are thus mostly prevented.

List of reference numbers

1	built-in cistern
2	sanitary facility
3	actuation device
4	port
5	drainage hose
6	leading edge
7	shell
8	wall surface
9	wall covering
10	rear side
11	first conduit element
12	water inlet connection
13	second conduit element
14	water outlet connection
15	mounting frame
16	side region
17	fixing device
18	collection area
19	drainage conduit
20	bottom side
21	fixing elements

Indbygget cisterne med lækage beskyttelse

1. En indbygget cisterne (1) med lækagebeskyttelse, en vandudløbstilslutning (14),et første rørelement (11) til tilslutning af vandindløbstilslutningen (12) til en vandforsyning og et andet ledningselement (13) til tilslutning af vandudløbstilslutningen (14)til et sanitæranlæg (2) og en lækagebeskyttelsesanordning, hvor lækagebeskyttelsesindretningen er konfigureret som en dimensionelt stabil og skal der er vandtæt (7), som mindst delvist lukker den indbyggede cisterne (1), hvor skallen (7) er åben på en forside, karakteriseret ved, at skallen (7) også lukker det andet ledningselement (13).

2. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at skallen (7) er produceret af et polymermateriale.

3. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at tykkelsen af skallen (7), i det mindste i området af en vægoverflade, er mindre end 60 mm, fortrinsvis mindre end 50 mm

4. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at skallen (7) har vandtætte passager til fastgørelseselementer til fastgørelse af den indbyggede cisterne (1).

5. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at den indbyggede cisterne (1) og skallen i det mindste (7) er anbragt i en monteringsramme.

6. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at skallen (7) har en installationsdybde i området af 100 til 350 mm, fortrinsvis 150 mm til 250 mm.

7. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at skallen (7) har mindst et område til opsamling af lækkevand på en bundside.

8. Indbygget cisterne (1) ifølge et hvilket som helst af de foregående krav, karakteriseret ved, at der er anbragt en dræningsledning til dræning af lækagevæske på et lavt punkt i opsamlingsområdet

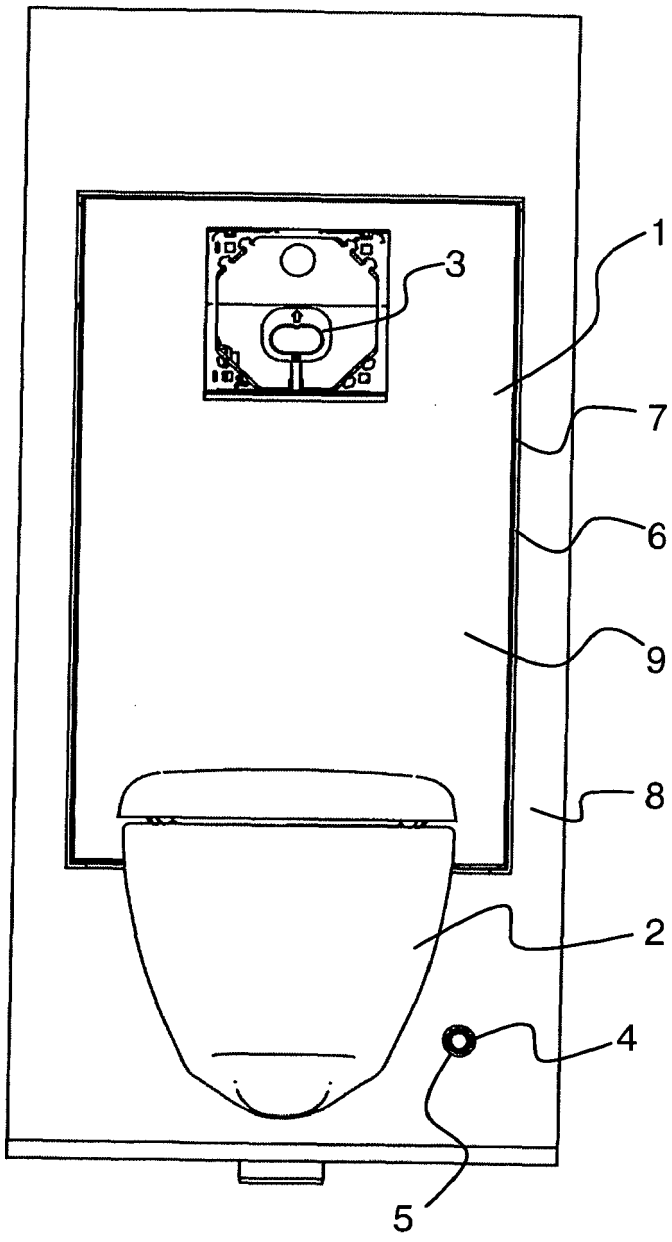

Fig. 1

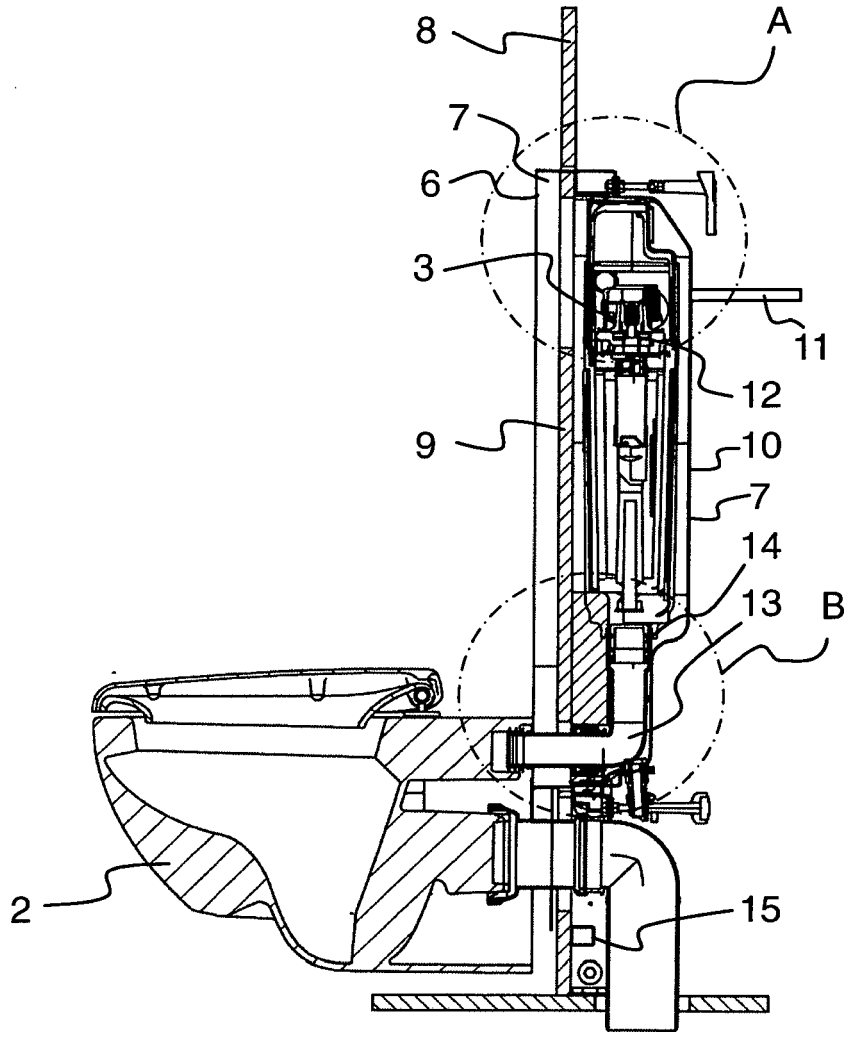

Fig. 2

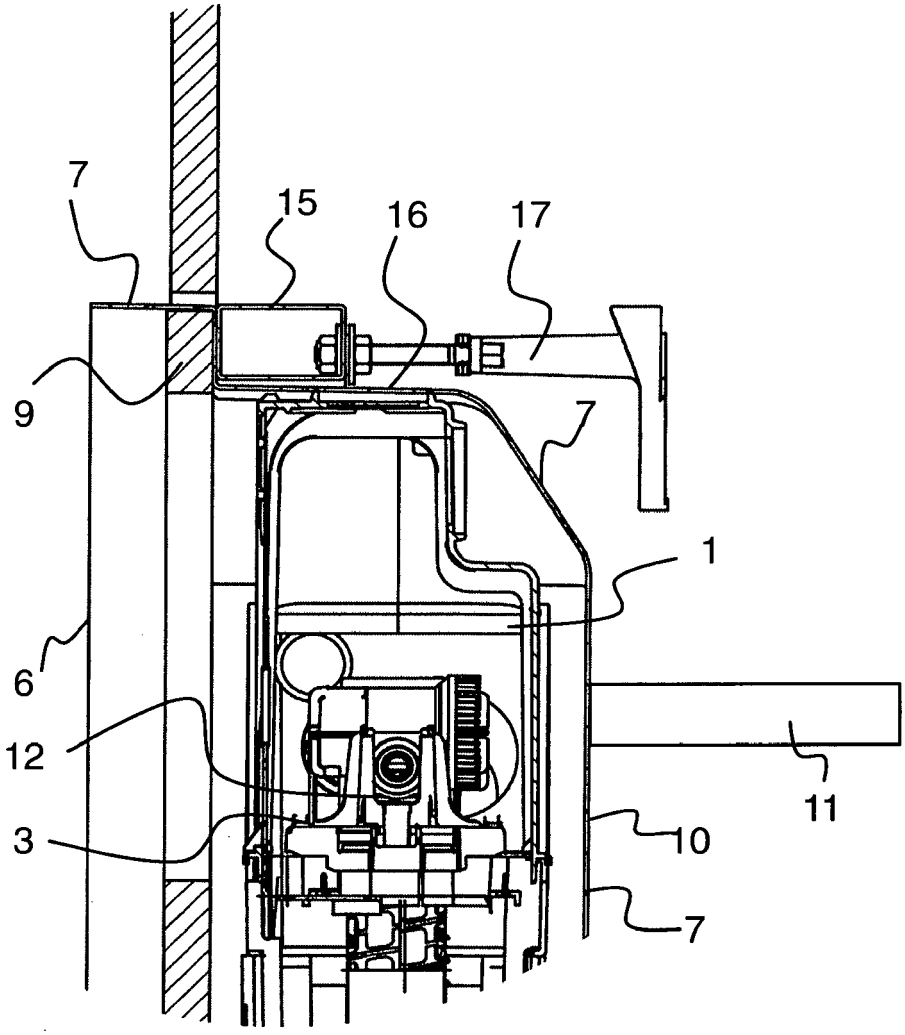

Fig. 3

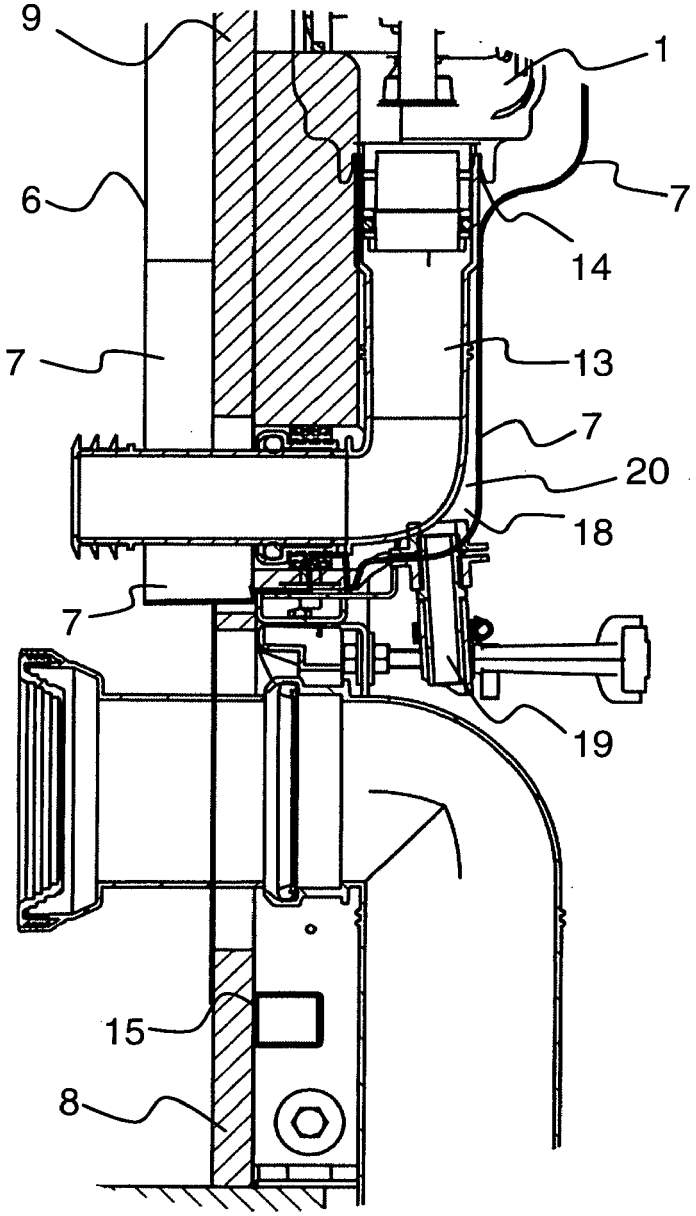

Fig. 4

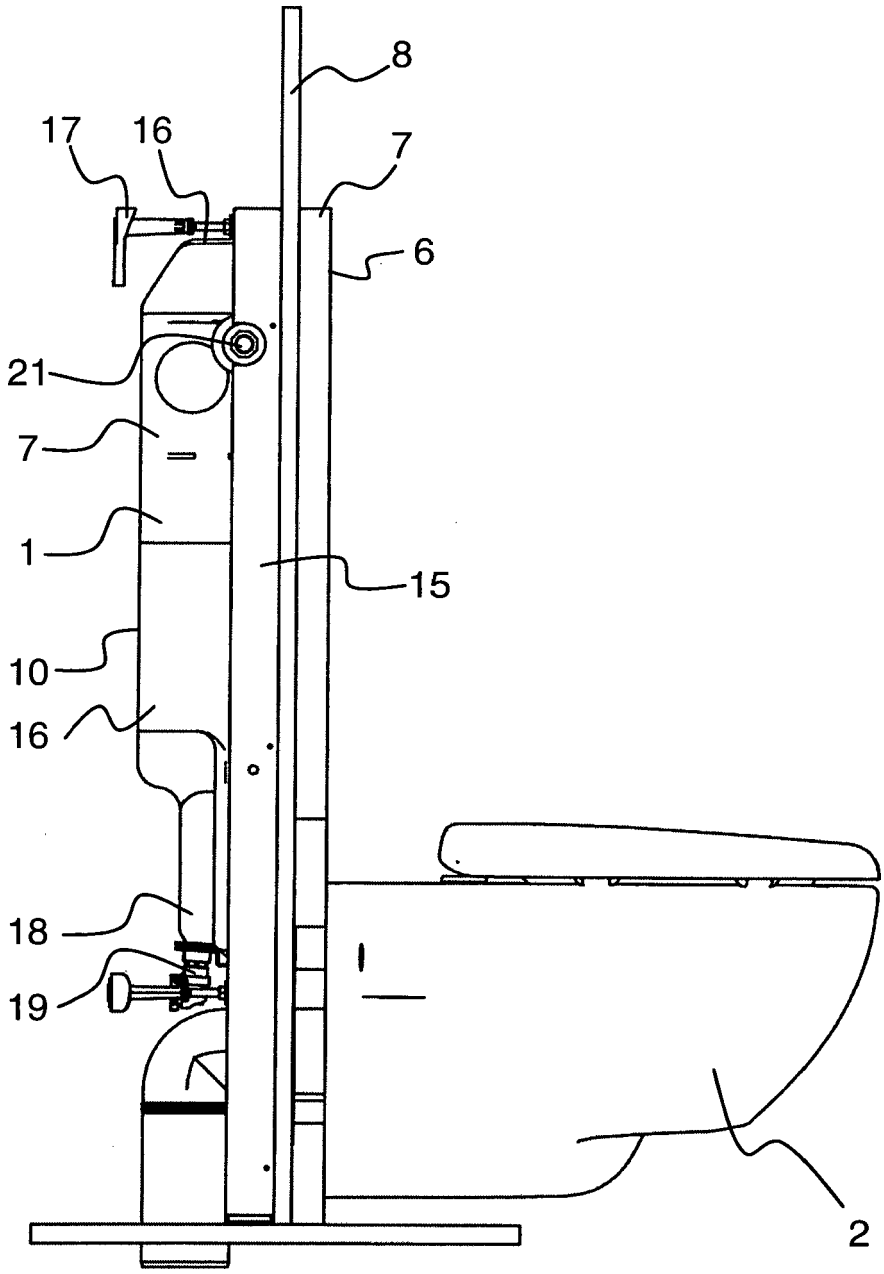

Fig. 5

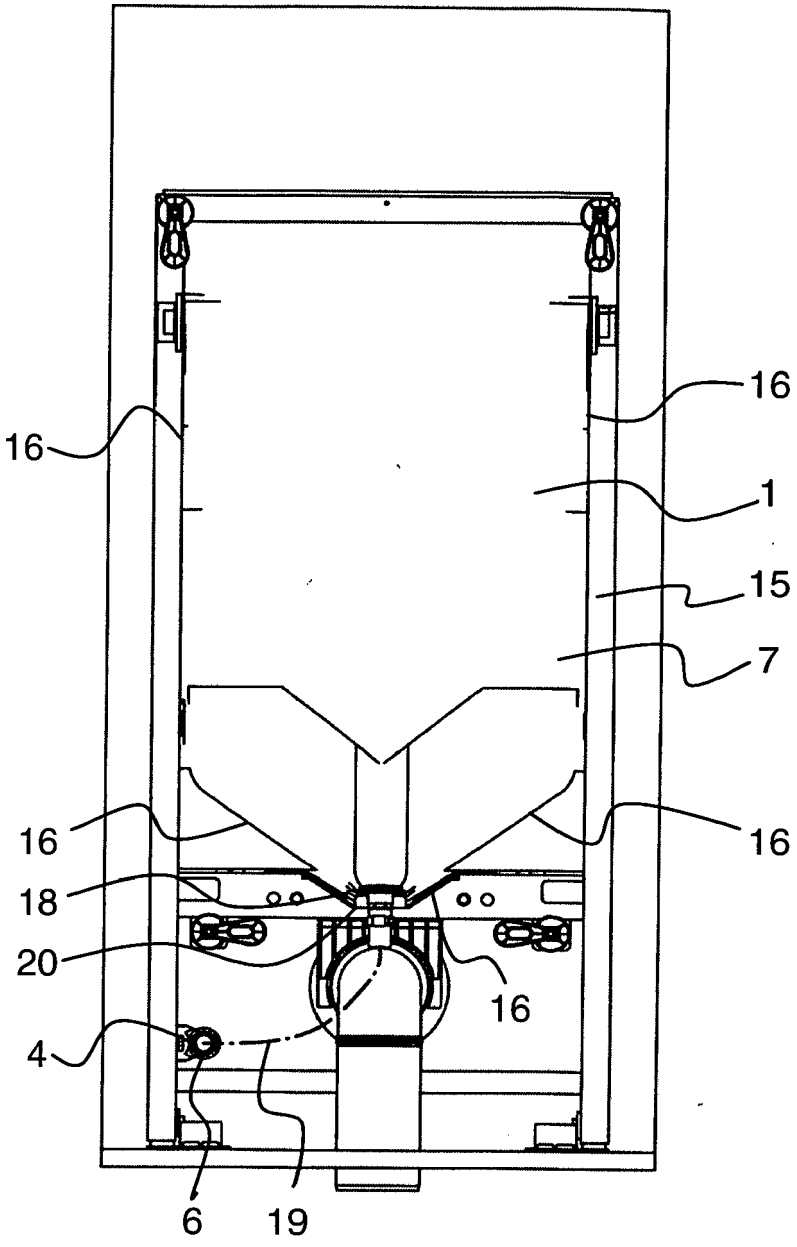

Fig. 6

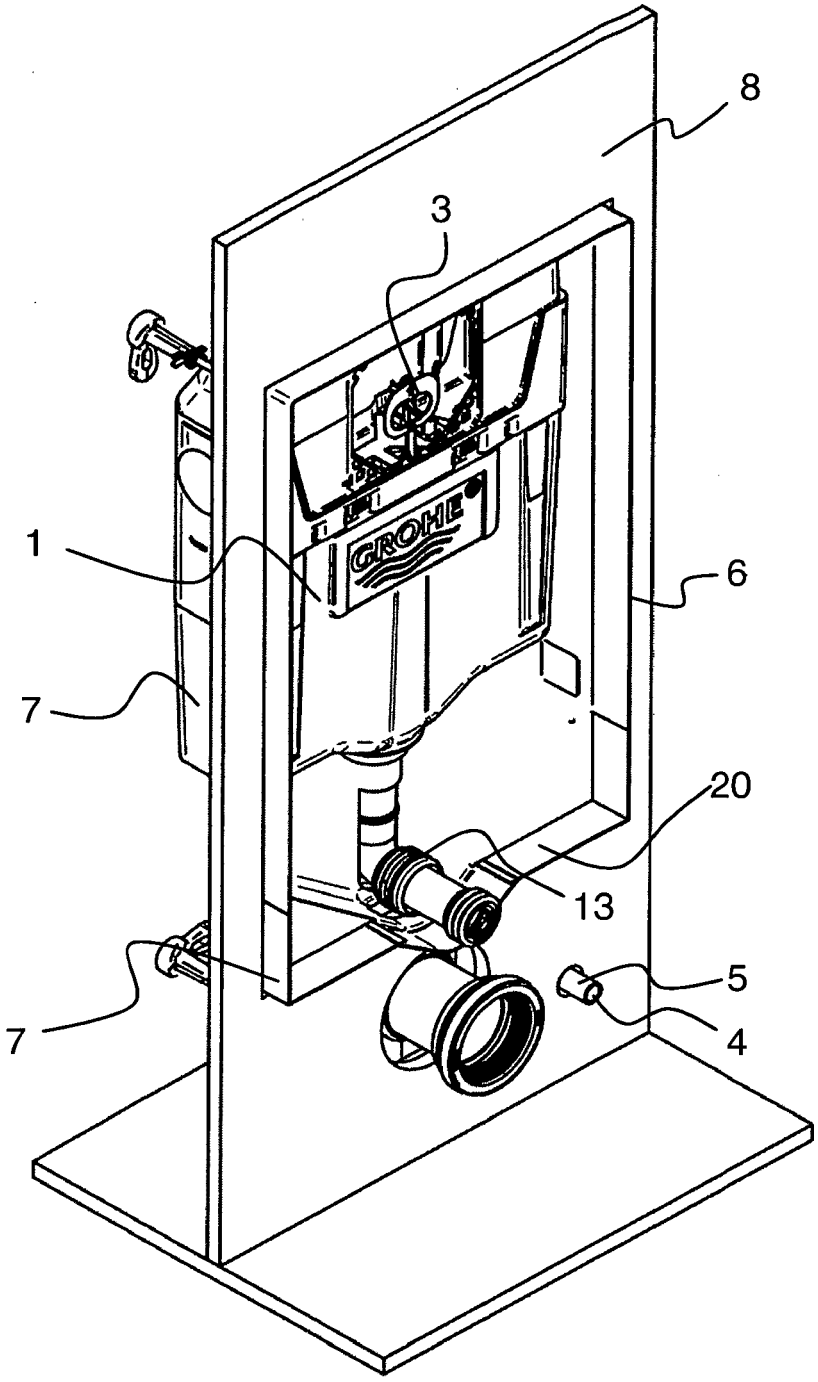

Fig. 7