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(54) **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**

(57) The invention relates to a discharge device for cisterns or tanks equipped with a discharge valve. The purpose of the invention is provide optimal discharge of water through the overflow pipe in the event of overflows caused by a malfunction in the operation of the cock used to fill the cistern tank. The invention is **characterised in that** the upper opening (3) in the overflow pipe (2) opens into a chamber (4) that is defined by a bell (5), the side wall of which is disposed outside the overflow element (2), such as to form a narrow annular space (6) through which the water passes from the cistern to the interior of the overflow, thereby producing the hydraulic closure of said annular space (6). In this way, a higher degree of suction is obtained in order to increase the discharge of water through the overflow (2).

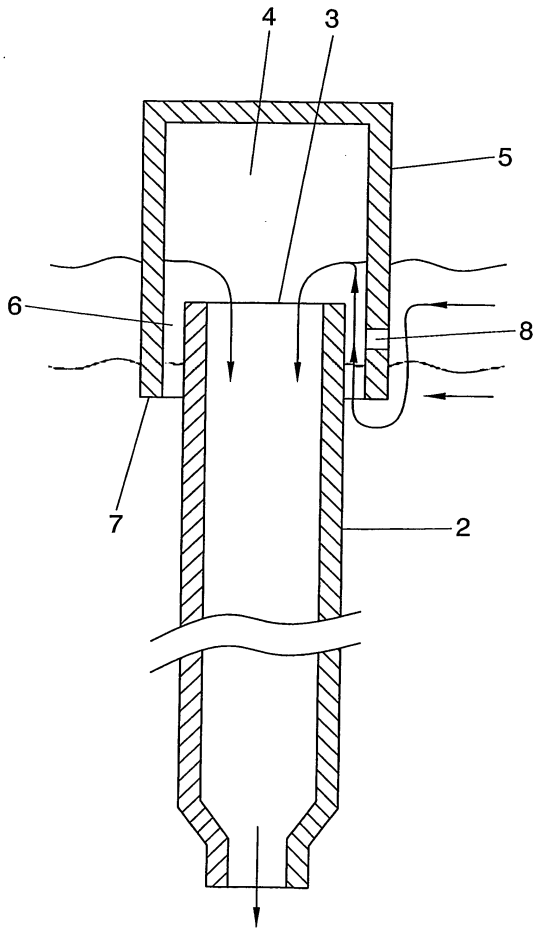

FIG. 2

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Description

OBJECT OF THE INVENTION

[0001] As stated in the title of this specification, the present invention relates to a discharge device for cisterns or tanks equipped with a discharge valve aimed at providing an optimum discharge of water through its overflow pipe in the event of overflows caused by malfunctions in the operation of the cock used to fill the cistern.

[0002] The overflow pipe has the purpose of evacuating the overflow of water via its upper opening or edge towards the drain or lavatory.

[0003] An overflow is normally produced when the cistern filling device breaks and fails to cut off the intake of water correctly.

[0004] It is therefore evident that the role of the overflow is very important in order to prevent flooding.

PRIOR ART OF THE INVENTION

[0005] The regulations governing the performance of overflows require a certain evacuation flow for the cistern for the cistern greater than the inlet flow.

[0006] To achieve this, overflow pipes are used with very large diameters which impair the design and functionality of the discharge, or pipes with a widened upper mouth in order to improve the inlet of water, also at the expense of disturbing the design of the discharge device.

DESCRIPTION OF THE INVENTION

[0007] With the aim of achieving the objectives and avoiding the drawbacks mentioned above, the invention proposes a device adaptable preferably to a cistern discharge for lavatories which is characterised in that it includes a hollow body by way of an inverted vessel or a bell located in the upper part of the overflow, precisely in correspondence with its opening through which the water exits from the cistern towards the drain or lavatory when a certain level of water is exceeded, this being an anomaly which occurs when the filling device is not working correctly, thereby avoiding the exit of water over the top of the cistern.

[0008] This hollow body defines an enclosed chamber which is linked solely with the interior of the overflow and, of course, with the drain or interior of the lavatory.

[0009] Created between the side wall of the hollow body and an upper portion of the overflow is a narrow annular space through which the water passes to the overflow when an anomaly occurs in the filling of the cistern, in such a way that at the moment in which the level of the water reaches that annular zone, a hydraulic closure takes place, closing off the inner space of the hollow body which will only be linked with the interior of the overflow, as referred to above.

[0010] The free edge of the hollow body could be located at the same plane or level as the upper opening of the said overflow.

[0011] The incorporation of this hollow body, and its connection to the overflow generating an annular space, provides a more powerful suction effect which notably increases and improves the evacuation of water providing a better drainage flow through the overflow.

[0012] Moreover, when the annular space is small, the possibility has optionally been provided of making at least one radial hole in the side wall of the hollow body in correspondence with the annular space.

[0013] With this device that is described, the suction produced by the overflow pipe could be optimised, in such a way that even by reducing the diameter of that pipe it will be guaranteed that sufficient quantity of water will be able to be evacuated in order to obtain the desired evacuation flow.

[0014] If we bear in mind the molecular cohesion of the liquids, then we successfully prevent the intake of water towards the interior of the overflow pipe owing to the hydraulic closure mentioned above, with which we manage to get the said overflow pipe to suck a constant zone of liquid and with very little or negligible amount of air, ensuring an outlet flow through the lower part of the overflow that is greater even than that for pipes of larger diameter.

[0015] Below, in order to facilitate a better understanding of this specification and forming an integral part thereof, some figures are attached in which, on an illustrative rather than limiting basis, the most characteristic details of the invention have been represented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

Figure 1.- Shows a view in sectioned elevation of an application of the device to a cistern discharge for lavatories, forming the inventive object.

Figure 2.- Shows a schematic view of the device.

DESCRIPTION OF THE PREFERRED FORM OF EMBODIMENT

[0017] Considering the numbering adopted in the figures, the lavatory cistern discharge device in principle comprises a unit with a conventional structure 1 which includes among its elements an overflow 2, whose upper opening or edge 3 leads to a closed chamber 4 defined by a hollow body by way of a bell 5, where a portion of its wall is arranged externally around an upper portion of said overflow 2, thereby generating a narrow annular space 6 which may or may not be coaxial.

[0018] The possibility also exists of the annular space 6 having a minimum height, or even no height, in other words, the upper opening 3 of the overflow 2 and the free edge 7 of the hollow body 5 are arranged at the same height.

[0019] There is also the possibility that the hollow body

5 can consist of an independent element, either associated with the overflow 2 or other part of the discharge device, or it is an element attached to the actual overflow forming an integral part thereof.

[0020] Another possibility is for the hollow body 5 to have a height adjustment so that the height of the annular space 6 can be varied, along with the internal volume 4 defined by the hollow body 5. In this way, the degree of suction of the water when it exits through the overflow can be varied in order to vary the exit of water through it.

[0021] In any case, when the coaxial space 6 is insufficient, at least one auxiliary radial hole 8 has been provided in the side wall of the actual bell 5 at a level below the maximum height which the water could reach, in order to comply with the minimum evacuation requirements for the incoming flow. Moreover, said hole 8 would act in parallel with the coaxial space 6 feeding water to the opening 3 of the overflow 2.

Claims

1. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, which, comprising among its elements an overflow element, through the upper opening of which water flows from the cistern or device towards the interior of that overflow element when the level of the water reaches that upper edge, is **characterised in that** the upper opening (3) of the overflow element (2) leads to a chamber (4) defined by a bell (5), the side wall of which is arranged externally with respect to the overflow element (2), with a narrow annular space (6) being generated through which flows the water from the cistern or tank to the interior of the overflow element (2) producing a hydraulic closure **in that** annular space (6); all this in order to provide a greater degree of suction in order to increase the flow of water through the interior of the overflow element (2).

2. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to claim 1, **characterised in that** the annular space (6) possesses at least a minimum height where the lower edge (7) of the bell body (5) lies below the opening (3) of the overflow element (2).

3. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to claim 1, **characterised in that** the free edge (7) of the bell body (5) and the upper opening (3) of the overflow element (2) lie at the same height.

4. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to any of the preceding claims, **characterised in that** the bell body (5) is an independent piece coupled to part of the evacuation device.

5. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to any of claims 1, 2 and 3, **characterised in that** the bell body (5) is an independent piece coupled to the overflow device (2).

6. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to any of claims 1, 2 and 3, **characterised in that** the bell body (5) is a piece integral with the overflow element (2).

7. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to any of claims 1 to 5, **characterised in that** the bell body (5) possesses height adjustment in order to be able to vary the height of the narrow annular space (6) and the volume of the chamber (4).

8. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE**, according to any of the above claims, **characterised in that** the narrow annular space (6) is coaxial.

9. **DISCHARGE DEVICE FOR CISTERNS OR TANKS EQUIPPED WITH A DISCHARGE VALVE,** according to claim 2, **characterised in that** the lower section of the bell body (5) faces the upper portion of the overflow element (2), incorporates at least one passage hole (8); all this in order to provide a greater degree of suction during emptying through the interior of the overflow element (2).

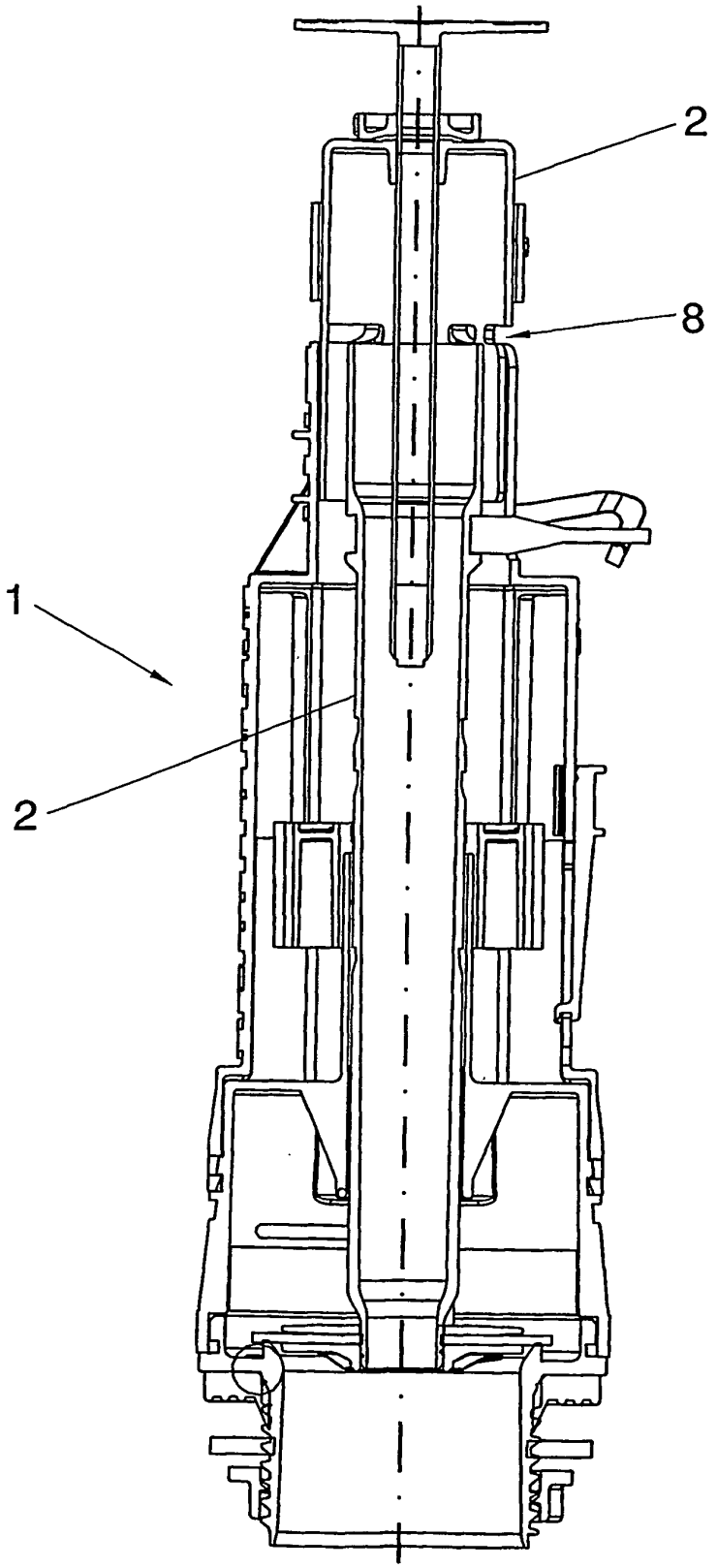

FIG. 1

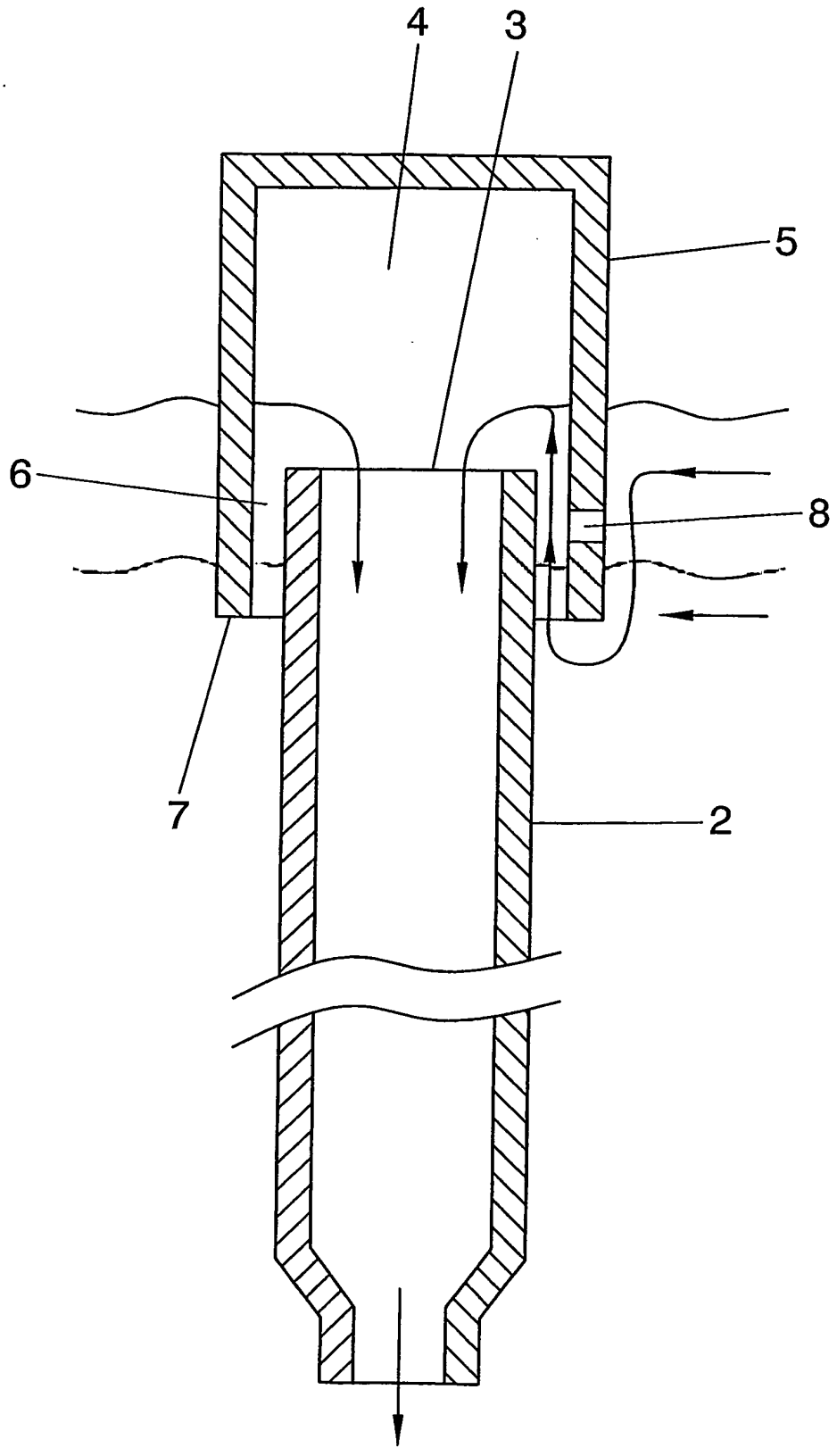

FIG. 2