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BACK WATER VALVE FOR DRAINS

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FIG. 1.

FIG. 2.

FIG. 3.

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This invention relates to drains, and has for its main object to provide a novel back water valve of simple design, that is adapted to be used to prevent water in a sewer pipe or drain pipe from backing up and flooding the surface from which said drain pipe leads.

Figure 1 is a vertical sectional view of my improved back water valve, showing the valve member in its closed position.

Figure 2 is a similar view, showing said valve member in its open position.

Figure 3 is a vertical sectional view, illustrating my improved back water valve embodied in or forming part of a floor drain of the type that comprises a basin imbedded in the floor.

My invention, briefly described, consists of a back water valve composed of a sleeve-like or tubular supporting member adapted to be arranged in communication with a sewer pipe or drain pipe that leads from a surface to be drained, and a manually-operable valve member carried by said supporting member and constructed so that when said valve member is set in its open position, water can escape to said drain pipe from the surface being drained, and when said valve member is set in its closed position, water that backs up in the drain pipe is effectively prevented from passing to the surface being drained. Said valve member is preferably of substantially inverted cup shape in general form or outline and is arranged in telescopic relation with said supporting member, said valve member being provided at its upper end with a valve element that co-acts with an annular valve seat on the supporting member. The cylindrical side portion of the valve member has screw threads that co-act with screw threads on the supporting member to move the valve element towards its seat when the valve member is turned in one direction, and to move said valve element away from its seat when the valve member is turned in the opposite direction. The co-acting screw threads just referred to may be formed on the interior of the supporting member and on the exterior of the cylindrical side portion of the valve member, or vice versa. In the side portion of the valve member are one or more drain openings arranged so that when said valve member is in its normal open position, water on the surface being drained can escape freely from said surface and pass through said drain openings into the drain pipe, and when the valve member is moved into its closed position, said drain openings will become inactive.

In the form of my invention illustrated in Figures 1 and 2, the reference character A designates a sleeve-like or tubular supporting member which is adapted to be positioned in the bell or flanged upper end portion of a sewer pipe or drain pipe B that leads from the top face of a floor or other surface C that is to be drained, said supporting member A being preferably caked or surrounded by packing material 1 that will produce a tight joint between said supporting member and the bell of the drain pipe. A valve member, designated as an entirely by the reference character D, is adjustably mounted in the supporting member A for preventing water that backs up in the drain pipe B from flooding the surface C being drained, said valve D being of such construction that when it is set in its normal open position, shown in Figure 2, water that collects on the surface C can escape from same into the drain pipe B, and when said valve is set in its closed position, shown in Figure 1, it positively cuts off communication between said surface C and drain pipe B.

The valve member D preferably consists of a casting of substantially inverted cup shape or form whose cylindrical side portion 2 is provided with external screw threads 3 that mesh with internal screw threads formed in an annular rib 4 at the upper end of the supporting member A. Said valve member D is provided at its upper end with an annular valve element 5 that projects laterally beyond the cylindrical portion 2, and the upper end of the supporting member A is constructed so as to form an annular valve seat 6 that is arranged in opposed relation to the valve element 5. Usually, the valve element 5 will be provided with a gasket 7, so as to produce a water-tight joint between said valve element and its co-acting valve seat 6 when the valve member D is in its closed position. One or more drain openings 8 are formed in the cylindrical portion 3 of the valve member D, so as to permit water to escape from the surface C being drained and flow into the drain pipe B when the valve member D is in its open position. When said valve member is turned in a direction to move the portion 2 of same downwardly relatively to the supporting member A, the drain openings or openings 8 become inactive or inoperative, assuming, of course, that the valve member is moved downwardly far enough to cause the annular valve element 5 on same to engage its co-acting seat 6. In order to facilitate turning the valve member D, the top portion of said member is provided with a non-circular-shaped lug or projection 9 that can be engaged by a wrench. By adjusting
the valve member D vertically relatively to the supporting member A, communication between the drain pipe B and the surface C being drained can be established or cut off. Normally, the valve member D is set in such a position that the drain hole or holes 8 in same are completely uncovered, but, if desired, said valve member may be set in a position so that the internally threaded portion of the supporting member A partially covers or closes the drain openings 8, this being advantageous in instances where it is desired to control the rate of discharge of the water from the surface C being drained to the drain pipe B.

In Figure 3 I have illustrated my improved back water valve as being combined with or forming part of a floor drain of the type that comprises a basin E imbedded in the floor C and provided at its upper end with a removable grille or grating E'. The basin E is provided at its lower end with a depending tubular or sleeve-like portion A' that performs the same function as the supporting member A of the structure shown in Figures 1 and 2, in that it sustains or carries a valve member D provided with an externally screw-threaded, cylindrical portion 2 that is screwed into internal threads formed in the bottom of the basin or in the upper end portion of the depending tubular part A' on the basin. Normally, the valve member D is set or adjusted in the position shown in broken lines in Figure 3, so that water which enters the basin E can escape from same through the drain holes 8 and enter the drain pipe B that leads from the basin. If it becomes necessary or desirable to cut off communication between the drain pipe B and the basin E, the valve member D can be moved into its closed position, shown in full lines in Figure 5, simply by turning said member in a direction to cause the annular valve element 5 thereon to engage its co-acting seat 6.

A back water valve of the construction above described is inexpensive to manufacture; it is easy to install, and it forms a very efficient means for preventing sewer water from backing up and flooding a surface from which a drain pipe leads, for when the valve member D is set in its closed position, it constitutes an absolutely tight closure for the drain pipe that is rugged and strong enough to successfully withstand a high back pressure.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A back water valve for drains, comprising a sleeve-like supporting member adapted to communicate with a drain pipe and provided with an annular valve seat, a manually-operable valve member provided with a valve element that is adapted to be moved into engagement with said seat to prevent back water in the drain pipe from flowing to the surface being drained, and a cylindrical part on said valve member arranged in telescopic relation with said supporting member and connected with same by screw threads, said cylindrical part having a drain opening which permits water to escape to the drain pipe from the surface being drained when said valve member is set in its open position.

2. A back water valve for drains, comprising a sleeve-like supporting member provided adjacent its upper end with internal screw threads, a manually-operable valve member provided with an externally screw-threaded, cylindrical portion screwed into said supporting member, an annular valve element on said valve member that co-acts with a seat on said supporting member, and a drain opening in the cylindrical portion of said valve member arranged so as to be housed entirely within said supporting member when said valve member is set in its closed position.

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