

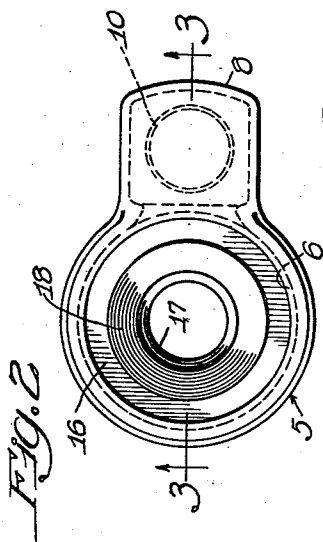
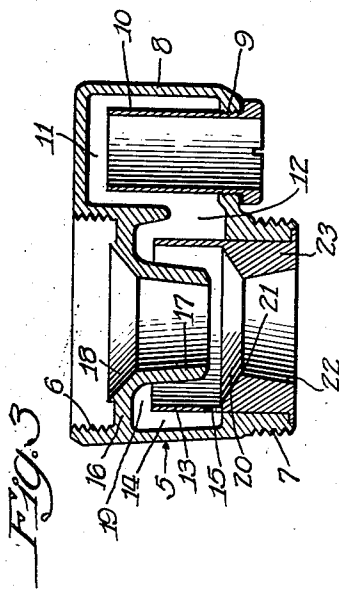
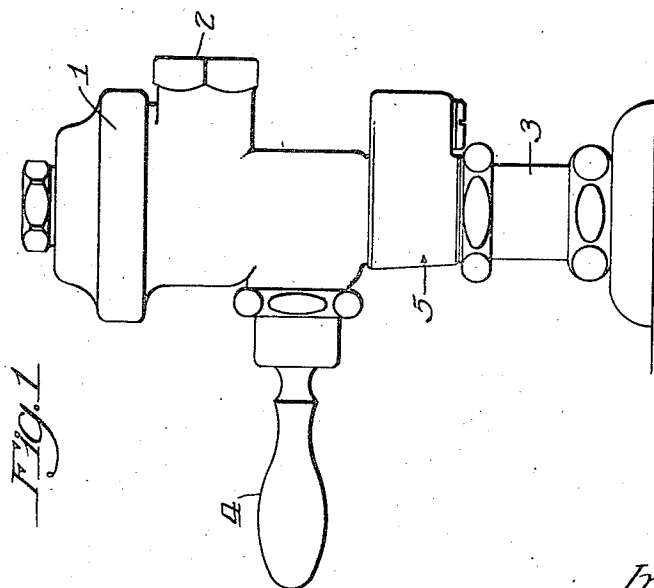
Jan. 11, 1938.

E. J. KOCOUR

2,105,044

VACUUM BREAKING DEVICE FOR PREVENTING BACK SIPHONAGE IN WATER SYSTEMS

Filed March 6, 1931



Inventor:
Emil J. Kocour
By Parker & Carter
Attys.

UNITED STATES PATENT OFFICE

2,105,044

VACUUM BREAKING DEVICE FOR PREVENTING BACK SIPHONAGE IN WATER SYSTEMS

Emil J. Kocour, Chicago, Ill., assignor to Sloan Valve Company, Chicago, Ill., a corporation of Illinois

Application March 6, 1931, Serial No. 520,623

6 Claims. (Cl. 137-111)

This invention relates to vacuum breaking devices for preventing back siphonage in water systems and has for its object to provide a new and improved device of this description. The invention has as a further object to provide a valveless vacuum breaker for water systems which prevents back siphonage of the water. The invention has other objects which are more particularly pointed out in the accompanying description.

Referring now to the drawing, Fig. 1 is a view of one form of device embodying the invention;

Fig. 2 is a plan view of the coupling section separate from the parts with which it is connected; and

Fig. 3 is a sectional view taken on line 3-3 of Fig. 2.

Like parts are indicated by like numerals throughout the several figures.

Referring now to the drawing, there is illustrated a flush valve 1 having an inlet 2 to which the supply pipe is connected. The flush valve has connected with it a discharge pipe 3. The flush valve may be of any of the ordinary types and is operated by moving the handle 4. Located in the discharge pipe 3 is a coupling section 5 having the screw threads 6 and 7 by means of which it is coupled into the pipe. This coupling section has a hollow extension 8 which has a threaded opening 9 at the bottom into which a hollow baffle member 10 is inserted. The hollow interior 11 of the extension 8 is connected to the interior of the main part of the coupling section by the passageway 12 which is located below the top of the baffle member 10. Located within the main body of the coupling section is a baffle member 13 which extends above the upper edge of the passageway 12, see Fig. 3. There is a space 14 between the baffle member and the inner wall of the coupling section, and the baffle member at the bottom is provided with an opening 15 through which any water overflowing the baffle member may escape. The main body of the coupling section is provided with an inwardly projecting ledge 16 to which is connected a downwardly projecting portion 17 which is smaller in diameter than the baffle member 13 but projects to such baffle member. There is an opening extending through the ledge 16 and the portion 17, the opening being enlarged at its upper end 18. There is a space 19 between the ledge 16 and the upper edge of the baffle member 13. The discharge opening below the baffle member 13 is enlarged at its upper end 20 and is contracted near the middle at 21 and again enlarges at its outer end 22. This discharge opening, in

the construction shown, is formed in the lower end 23 of the baffle member 13.

The use and operation of my invention are as follows:

When the flush valve is actuated the water therefrom is discharged into the coupling section 5 and passes therethrough into the discharge pipe 3 which is connected with the bowl or other article in connection with which the flush valve is used. While it will be seen that there is an air connection between the interior of the coupling section 5 and the exterior atmosphere, the water passing through the parts 17 and 23 does not pass out through this connection because of the Venturi action, which action tends to draw air in through the connection and into the coupling section. If any water gets by the baffle member 13 it cannot get by the baffle member 10 and will pass back through the opening 15. If, now, there is a vacuum or suction in the supply pipe which supplies the water to the inlet 2 of the flush valve, this vacuum or suction cannot draw water from the bowl up into the supply pipe by siphonic action so as to contaminate the water supply, because the vacuum will be broken by the air which passes up through this air connection between the coupling section 5 and the outer atmosphere. When this vacuum or suction occurs the air passes up through the open end of the baffle member 10 and up into the space 11 and the passageway 12 and then up over the top of the baffle member 14 and then up through the part 17 into the flush valve. This breaks the vacuum or suction and prevents the contaminated water from being drawn up from the bowl into the supply main.

It will further be seen that this arrangement provides a vacuum breaking device which can be easily and quickly connected in the system and which is free from valves of any kind and which will at the same time prevent the escape of any water from the system.

It will further be seen that there is a non-closing air connection between the coupling section and the exterior atmosphere, and that there are fixed means within the coupling section for preventing water from passing out through this air connection.

I claim:

1. A vacuum breaking device for use in a water system comprising a coupling section with means for connecting it in the system, the main body of the coupling section being provided with a ledge, a hollow downwardly projecting portion connected with said ledge through which the water passes, a baffle member surrounding said

downwardly projecting portion and separated by a space from said ledge, the body portion of the coupling section having a hollow extension with a passageway leading thereto, and a second hollow baffle member in said extension, said latter
5 baffle member having an open free communication with the external atmosphere.

2. A vacuum breaking device for use in water systems comprising a coupling section having a
10 water passage therethrough and forming a part thereof and through which water passes, said section adapted to be connected in the system, a valveless air connection at one side of and substantially parallel to the water passage and leading
15 from said section to the outer atmosphere, and fixed means comprising three overlapping walls with communicating spaces between them, for preventing escape of water through their connection, said three overlapping walls being located
20 at one side of said valveless air connection.

3. A vacuum breaking device for use in water systems comprising a coupling section having a water passage therethrough and forming a part
25 thereof and through which water passes, said section adapted to be connected in the system, a valveless air connection at one side of and substantially parallel to the water passage and leading from said section to the outer atmosphere, and fixed means comprising three overlapping
30 walls with communicating spaces between them, for preventing escape of water through their connection, said three overlapping walls being located at one side of said valveless air connection, said three walls all being located in and a
35 part of said coupling section.

4. A vacuum breaking device for use in water systems comprising a coupling section having a water passage therethrough and forming a part
40 thereof and through which water passes, said

section adapted to be connected in the system, a valveless air connection at one side of and substantially parallel to the water passage and leading from said section to the outer atmosphere, said air connection being eccentric with relation
5 to the water passageway, and fixed means comprising three overlapping walls with communicating spaces between them, for preventing escape of water through their connection, said three overlapping walls being located at one side
10 of said valveless air connection.

5. A vacuum breaking device for use in water systems comprising a coupling section having a water passage therethrough and forming a part
15 thereof and through which water passes, said section adapted to be connected in the system, a valveless air connection at one side of and substantially parallel to the water passage and leading from said section to the outer atmosphere, and fixed means comprising three overlapping
20 walls with communicating spaces between them, for preventing escape of water through their connection, said three overlapping walls being located at one side of said valveless air connection, said three walls all being located in and a part
25 of said coupling section, said air connection discharging downwardly into atmosphere.

6. A vacuum breaking device for use in water systems comprising a coupling section having a passageway through which the water passes, a
30 non-closing air passageway at one side of and parallel to the passageway of the coupling section and in the same horizontal plane and through which air may pass, and valveless means comprising four overlapping walls with communicating spaces between them all within the
35 coupling section for preventing the escape of water through said air passageway.

EMIL J. KOCOUR. 40