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FLOAT VALVE SILENCER

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Fig. 1.

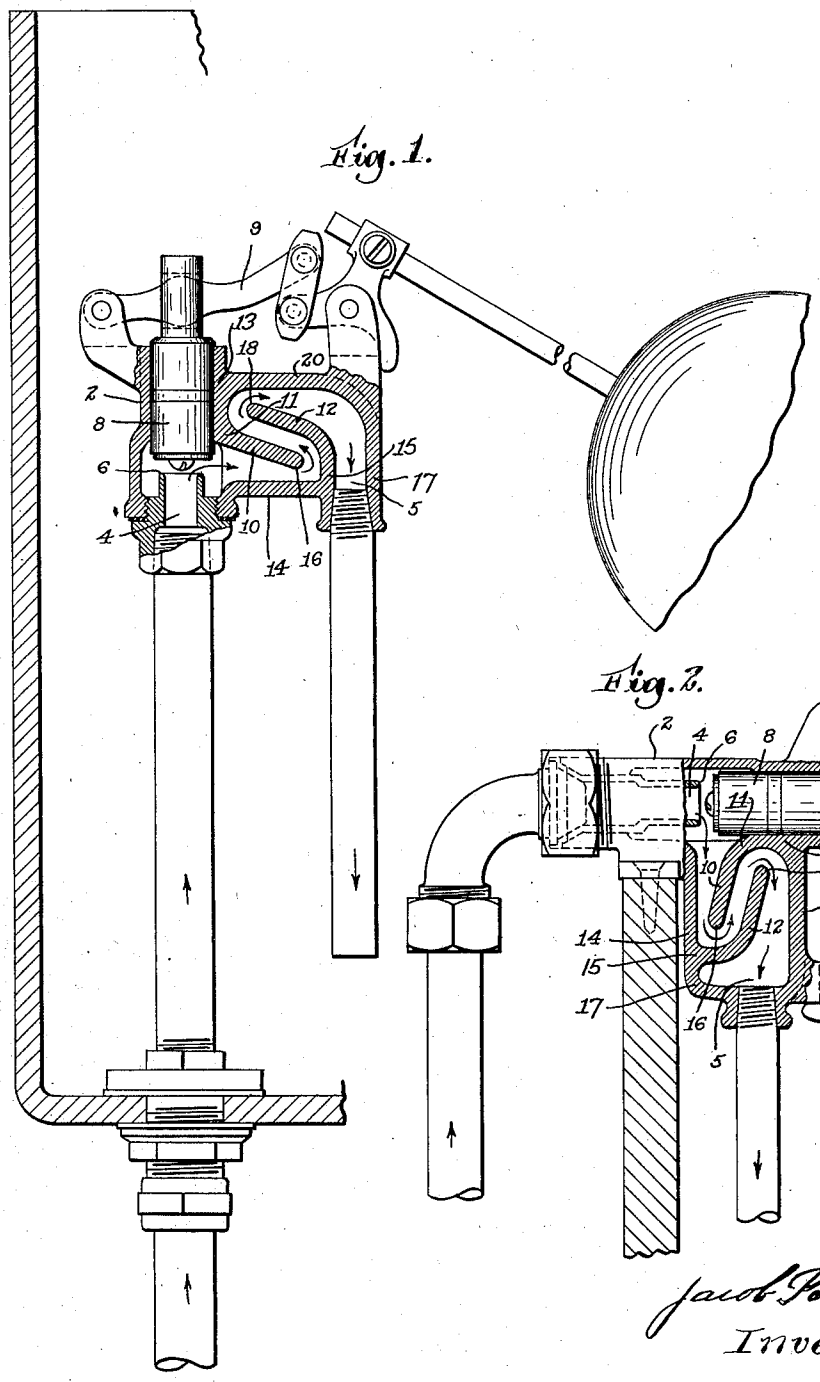


Fig. 2.

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FLOAT VALVE SILENCER

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3 Claims. (Cl. 137—111)

The present invention relates to valve constructions, and more particularly to silencers for flush-tank float valves.

It is an object of the present invention to improve upon flush-tank, float-valve silencers, in order to simplify their construction and reduce their cost of manufacture, while increasing their efficiency. Other and further objects will be explained hereinafter.

The invention will now be described in connection with the accompanying drawings, in which Fig. 1 is an elevation, partly in section, illustrating one embodiment of the invention; and Fig. 2 is a similar view of a modification.

A valve casing 2 is shown provided with an inlet 4 and an outlet 5, the inlet being provided with a valve seat 6 that is adapted to be closed by the head of a valve stem 8, controlled by a float-controlled, valve-stem lever 9. The inlet may extend into the casing 2 from below, as in Fig. 1, or from above, as in Fig. 2, the outlet being shown, in both cases, at the lower side of the casing. Whether the inlet 4 and the outlet 5 are as illustrated, or whether they assume any other desired form, the invention contemplates the use of two deflecting walls 10 and 12 in the casing, the former terminating at one end 11 in a casing wall 13 and extending from near the inlet 4 toward the outlet 5, and the latter terminating at one end 15 in or near another casing wall 17 and extending from near the outlet 5 toward the inlet 4. The deflecting walls 10 and 12 overlap as shown. The water is thus restricted to travel along a zig-zag path from the inlet 4, towards the outlet 5 between the wall 10 and a wall 14 of the casing, then around the free end 16 of the deflecting wall 10, back toward the inlet 4 between the deflecting walls 10 and 12, then around the free end 18 of the deflecting wall 12, and finally toward the outlet again, between the deflecting wall 12 and a wall 20 of the casing 2.

Being forced to travel along this zig-zag path in the casing 2, the water can not flow too fast, with the result that the water substantially fills the casing 2 during its flow from the inlet to the outlet. The high-pitched noises that are usually heard just before the valve stem 8 is forced against the valve seat 6 to shut off the flow of the water become thus completely eliminated.

Other modifications will occur to persons skilled in the art, and all such are considered to fall within the spirit and scope of the invention, as defined in the appended claims.

What is claimed is:

1. A silencing means for a float valve having a valve casing provided with an inlet and an outlet, and a valve in the casing for preventing the flow of liquid into the casing through the inlet when the valve is closed, the silencing means comprising two overlapping deflecting walls in the casing, one of the deflecting walls extending from near the inlet toward the outlet to form a passage for deflecting the liquid to cause it to flow from the inlet toward the outlet, the passage tapering gradually from the inlet toward the outlet to restrict the passage, said other deflecting wall extending from near the outlet toward the inlet to form a passage between the deflecting walls for deflecting the liquid to cause it to flow around the free end of said one deflecting wall back toward the inlet between said deflecting walls and a passage for deflecting the liquid to cause it to flow toward the outlet once more between said other deflecting wall and an inner wall of the casing, the last-named passage tapering gradually toward the outlet to enlarge the last-named passage, whereby the liquid is caused to flow in the casing from the inlet to the outlet along a zig-zag path comprising said three passages when the valve is open, the walls being disposed and spaced from each other to force the liquid to flow slowly enough along the zig-zag path to cause the liquid substantially to fill the casing during its flow from the inlet to the outlet and consequently to eliminate noise during the closing of the valve.

2. A silencing means for a float valve having a valve casing provided with an inlet and an outlet, the casing having a wall disposed near the inlet, a wall disposed near the outlet, and two walls connecting the two first-named walls, and a valve in the casing for preventing the flow of liquid into the casing through the inlet when the valve is closed, the silencing means comprising two overlapping deflecting walls in the casing, one of the deflecting walls terminating at one end in said wall disposed near the inlet and extending from near the inlet toward the outlet to form a passage for deflecting the liquid to cause it to flow from the inlet toward the outlet between said one deflecting wall and one of said two connecting walls, the said one deflecting wall being gradually inclined in a direction from said one end toward said one of said two connecting walls gradually to restrict said passage, said other deflecting wall terminating at one end near said wall disposed near the outlet and extending from near the outlet toward the inlet to form a passage between the deflecting walls

for deflecting the liquid to cause it to flow around the free end of said one deflecting wall back toward the inlet between said deflecting walls and a passage for deflecting the liquid to cause it to flow toward the outlet once more between said other deflecting wall and the other of said two connecting walls, whereby the liquid is caused to flow in the casing from the inlet to the outlet along a zig-zag path comprising said three passages when the valve is open, the said other deflecting wall being gradually inclined in a direction from its said one end toward said other of said two connecting walls gradually to enlarge the last-named passage, the walls being disposed and spaced from each other to force the liquid to flow slowly enough along the zig-zag path to cause the liquid substantially to fill the casing during its flow from the inlet to the outlet and consequently to eliminate noise during the closing of the valve.

3. A silencing means for a float valve having a valve casing provided with two oppositively disposed walls near opposite ends of the casing and side walls connecting the said oppositely disposed walls, whereby a space is formed between the said oppositely disposed walls and the side walls, the casing having an inlet disposed near one of the said oppositely disposed walls and having also an outlet disposed near the other of the said oppositely disposed walls at the lower side of the casing, a water supply pipe and a hush pipe respectively connected with the casing at the inlet and the outlet so as to be spaced from each other horizontally at the opposite ends of the casing, the hush pipe leading vertically downward from the casing, the inlet being provided with a valve seat, and a valve stem disposed in the casing exterior to the said space adjacent to the said one oppositely disposed wall, whereby the valve stem and the hush pipe are spaced horizontally from each other at opposite ends of the casing, the valve stem having a head adapted to be closed against the valve seat to prevent the flow of water into the casing through the inlet, and the casing being provided in the said space with overlapping deflecting walls extending in directions toward the said oppositely disposed walls to form a sharply zig-zag path in the said space for sharply deflecting the flow of the water from the water-supply pipe into the casing through the inlet in a direction toward the outlet, for then sharply deflecting the flow of the water back toward the inlet, and for again sharply deflecting the flow of the water toward the outlet, whereby, when the head of the valve stem is not closed against the valve seat, the water is caused to flow in the said space from the inlet to the outlet along the sharply zig-zag path and down the hush pipe, thereby to eliminate noise during the closing of the head of the valve stem against the valve seat.

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