

UNITED STATES PATENT OFFICE

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FLOOD TIDE AND BACKWATER VALVE

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This invention relates to valves and particularly to an improved flood-tide and backwater valve, the object being to provide an improved construction which will not readily clog up and which will automatically open and close as conditions demand.

Another object of the invention is to provide a flood-tide and backwater valve wherein the valve member consists of a plate acting as a flap valve with floats coacting therewith to open and close the same as the level of water increases or decreases.

An additional object of the invention, more specifically, is to provide a valve of the kind specified wherein the mountings may be readily adjusted to always give a proper seating of the valve.

In the accompanying drawing—

Figure 1 is a sectional view through Figure 2 on the line 1—1;

Figure 2 is a longitudinal vertical sectional view through Figure 1, the section being taken on the line 2—2 of Figure 1.

Referring to the drawing by numerals, 1 indicates an outlet pipe and 2 an inlet pipe, while 3 indicates a valve casing adapted to receive incoming sewerage which is discharged through chamber 5 into the pipe 1. The valve may be used at a number of places as, for instance, in cellars or other low places, but it is particularly adapted to be used in main sewers discharging into a river or other receiving place. When discharging into a river it often happens that during flood-tide the water backs up through the sewers into the various cellars and even into the streets of a city or town using the sewers.

To prevent this it is designed to use a valve similar to that shown in the accompanying drawing at or near the outlet of each of the sewers, so that there can be no back-flow of water through the sewers.

As indicated in Figure 1 the valve casing 3 is provided with a chamber 5. A removable valve seat 6 is arranged at the juncture of inlet pipe 2 and chamber 5, the valve seat being screwed in place and adapted to coact with the flap valve 7. This valve is a slightly cupped disc pivotally mounted so as to swing to the dot-and-dash position 8 when the sewerage is passing through the device in the usual manner.

When the water begins to back up into chamber 5 from outlet pipe 1 it will cause the float 37 to rise upwardly and eventually move valve 7 to the position shown in Figure 2, whereupon the valve is completely closed. When the level of water in pipe 1 lowers the water in the chamber 5 will naturally lower and, consequently, the float 37 will move downwardly and gradually open valve 7 so that the sewerage or water will freely flow from chamber 5. In case some water should back up and close valve 7, said valve will open in case the pressure of the sewerage in pipe 2 is greater than the pressure of water in outlet pipe 1, thus permitting the discharge of sewerage even before the flood has subsided.

From Figure 2 it will be noted that float 37 is provided with a rearwardly extending arm 39 from which a pivotal pin 40 extends, the said pin being held in place by adjustable supports 41 and 42, said supports being screwed into the side walls 43 of casing 3.

In a similar manner bearing members 44 and 45 are provided for the journal pin 46, which journal pin extends through the upper end of the arm 47 of valve 7. Arm 47 is provided with forwardly extending fingers 48 and 49, the inner surface of these fingers being rounded and forming with the main part of arm 47 a socket 50 into which the elongated head 51 of arm 39 fits. The parts are so proportioned and positioned that when the chamber 5 is substantially filled with water, float 37 will rise and will act on fingers 48 and 49 and on arm 47 for closing valve 7. As soon as the water is lowered, float 37 by reason of its weight will move downwardly and will act on fingers 48 and 49 and on arm 47 for positively opening valve 7. It will also be noted that any backward rush of water will assist the float by reason of the fact that the rush of water will mechanically push the valve 7 toward its seat, thus hastening the action of the float.

I claim—

1. A flood-tide and backwater valve including a casing having an inlet and an out-

let, a flap valve for closing said inlet, means
for pivotally supporting said flap valve,
means connected with the flap valve for pre-
senting a pair of spaced fingers, a pivotally
5 mounted float arranged in the casing, and an
arm extending from said float and provided
with a large rounded end fitting between said
fingers and acting to move the flap valve
open when the float is swung downwardly
10 and for moving said flap valve closed when
said float is swung upwardly.

2. A flood-tide and backwater valve includ-
ing a casing having an inlet and an outlet, a
valve member for closing said inlet, a valve
15 member arm connected to said valve member
for causing the valve member to function,
said valve member arm being provided with
a pair of facing curved fingers positioned to
form a socket therebetween, a pivotally
20 mounted float and a float arm extending from
said float, said float arm at its free end hav-
ing an elongated head positioned in said
socket and acting on said fingers to move the
valve member arm for opening and closing
25 said valve member.

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