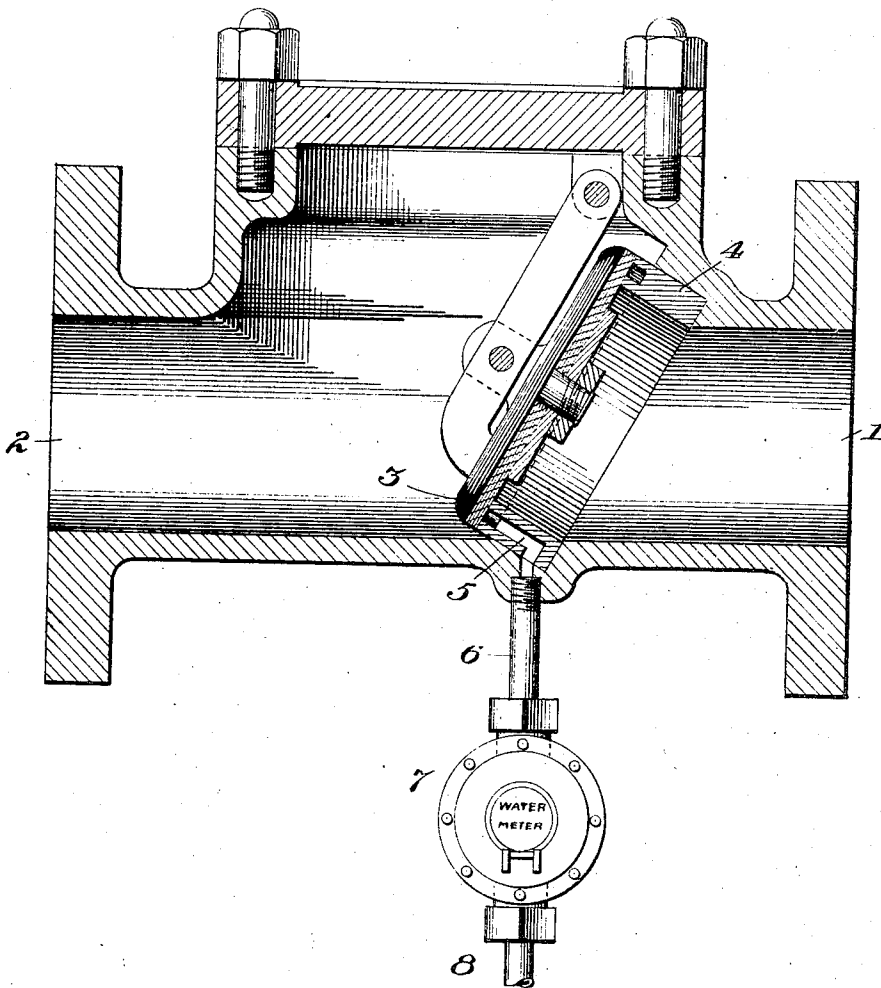


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FLOW INDICATING DEVICE FOR SPRINKLER SYSTEMS.
APPLICATION FILED MAY 11, 1906.

1,058,042.

Patented Apr. 8, 1913.



WITNESSES:

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JOHN H. DERBY, OF BROOKLINE, MASSACHUSETTS.

FLOW-INDICATING DEVICE FOR SPRINKLER SYSTEMS.

1,058,042.

Specification of Letters Patent.

Patented Apr. 8, 1913.

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To all whom it may concern:

Be it known that I, JOHN H. DERBY, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Flow-Indicating Devices for Sprinkler Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in flow indicating devices for sprinkler systems.

Sprinkler systems are frequently connected directly with the street or service main without the interposition of a meter. With this method of connection there is nothing to prevent the drawing of the water from the system without payment therefor by the user or wasteful and extravagant leakage. The practice of stealing water from such sprinkler systems has been so common and the undetected leakage so great in the aggregate that water dispensers have been impelled to require the installation of meters between the street or service main and the sprinkler system. Users of sprinkler systems object to this requirement not only because of the cost of the meters but also because the fire underwriters demand an increased rate for the insurance of such a risk owing to the impediment to the free flow of water from the main into the system caused by the interposition of the meter. In order to overcome this requirement of the water dispensers, the present invention contemplates the use of a valve located between the street or service main and the sprinkler system and provided with mechanism to cause the making of a persisting indication or record of the opening of the valve. In one form of the invention the system is connected with the street or service main by a check valve provided with a channeled seat, the channel of the seat being connected with a small water meter. With this construction, so long as no water is drawn off from the sprinkler system the check valve is held closed and the opening to the meter through the channel is closed by it, whereby the flow of water to the meter is prevented but as soon as water is drawn from the sprinkler system the lifting of the check valve from its seat permits water to flow from the chan-

nel to the meter and a persisting indication or record of the fact that the check valve has been open, is made.

The regular inspection of the apparatus affords provision for enabling the water dispensers to ascertain that water has leaked or been drawn from the sprinkler system and for requiring repair or the imposition of a suitable penalty. This indication is preserved in a part of the apparatus which is inaccessible to the user without such dismantling of the apparatus as would indicate that it had been tampered with. In this respect the invention is clearly distinguished from a construction of alarm apparatus in which water flowing from the channel of a channeled check valve is used to make an electrical connection causing an alarm to be given at a distance, or to drive a hydraulic motor to ring a gong, in which devices indication of the fact that a flow of water has occurred through the check valve is ephemeral, and susceptible of concealment from the water dispensers as well as from the underwriters. One of the principal advantages of the present construction resides in the fact that it recommends itself especially to underwriters, as the persisting indication or record brings to their knowledge otherwise unreported fires, and as well commends itself to the water dispensers for that it prevents the stealing of water from sprinkler systems.

The present invention comprises constructions in which the water conduit is provided with a water-operated or water-controlled valve normally closing the conduit but capable of opening automatically in case of leakage or the opening of a sprinkler head, combined with an indicating contrivance operating to indicate a flow of water through the valve and to preserve such indication for future observation, which contrivance is set in motion by suitable connections including a port normally closed by the valve, but opened by the lifting thereof. It is immaterial whether the water flowing through the port directly or indirectly causes the indicating contrivance to be set in operation.

The accompanying drawing which illustrates the preferred form of the invention is a longitudinal section through the water conduit.

The device comprises a section interposed between the street or service main on the one side and the sprinkler system on the other,

the water entering from the street or service main through the end 1 and passing into the sprinkler system through the end 2. The conduit is provided with a check valve 3 of familiar construction which seats upon the 5 channeled seat 4, which at 5 is connected by a pipe 6 with a water meter 7, from which the water is discharged through the pipe 8 passing first, if desired, to an alarm apparatus of any desired construction. The 10 channel in the seat 4 comprises a port normally closed by the valve and adapted to be opened by the opening thereof.

During the flow of water into the sprinkler system to fill the same the check valve is lifted, then after the system has been filled the check valve seats itself and remains seated until lifted by a flow of water. Water hammer may lift the check valve slightly after 20 the sprinkler system is first filled but such hammer soon builds up such excess pressure on the system side as will hold the check valve firmly to its seat, especially in view of the differential pressure on the two sides of the check owing to the width of the seat. 25 After the pressure has been built up in the system to the normal excess over the main pressure the flow of water through the meter will cease. The meter may then be read, and if sufficient water be drawn by 30 leakage or otherwise from the system side to reduce the pressure so that the valve will open then water will be permitted to flow into the normally closed channel and through the meter and a persisting indication or 35 record of the flow will be afforded thereby. It is true, that if the meter be read immediately after the filling of the system the meter might show some flow of water through the 40 check due to water hammer; but in practice this is always so small an amount that the readers of these meters can easily satisfy themselves as to whether or not the flow of water indicated by the meter is due to water 45 hammer or to leakage or the intentional drawing of the water from the sprinkler system.

What is claimed is:—

1. A flow indicating device for sprinkler 50 systems, having, in combination, a conduit, a water controlled check-valve for preventing back-flow through the conduit, provided with a port located in the valve so that it is covered and closed when the check-valve is

closed and open when the check valve is 55 open, an indicating contrivance having provision to make a record of the opening of the check-valve existing after the closing of the check-valve, and connections between the 60 port and the indicating contrivance acting to start the indicating contrivance upon the uncovering of the port, said indicating contrivance and connections being protected from unauthorized interference with their 65 normal operation, substantially as described.

2. A flow indicating device for sprinkler systems, having, in combination, a conduit, a water controlled check-valve for preventing back-flow through the conduit having a 70 channeled seat covered and closed when the check-valve is closed and uncovered and open when the check-valve is open, an indicating contrivance having provision to make a record of the opening of the check-valve 75 existing after the closing of the check-valve, and connections between the channeled seat and the indicating contrivance permitting a flow of water from the conduit to the indicating contrivance upon the opening of the 80 check-valve to cause the indicating contrivance to make a record of the opening of the check-valve, said indicating contrivance and connections being protected from unauthorized 85 interference with their normal operation, substantially as described.

3. A flow indicating device for sprinkler systems, having, in combination, a conduit, a water controlled check valve for preventing back flow through the conduit having a 90 channeled seat covered and closed when the check valve is closed and uncovered when the check valve is opened, a meter having provision for indicating and recording the opening of the check valve, and connections 95 between the channeled seat and the meter permitting a flow of water from the conduit to the meter upon the opening of the check valve to cause the meter to make a record of the opening of the check valve, said meter 100 and connections being protected from unauthorized interference with their normal operation, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN H. DERBY.

Witnesses:

HORACE VAN EVEREN,
FARNUM F. DORSEY.