

F. A. STIERS.  
VALVE FOR STREET SPRINKLERS.  
APPLICATION FILED APR. 28, 1914.

1,156,326.

Patented Oct. 12, 1915.

*Fig. 1.*

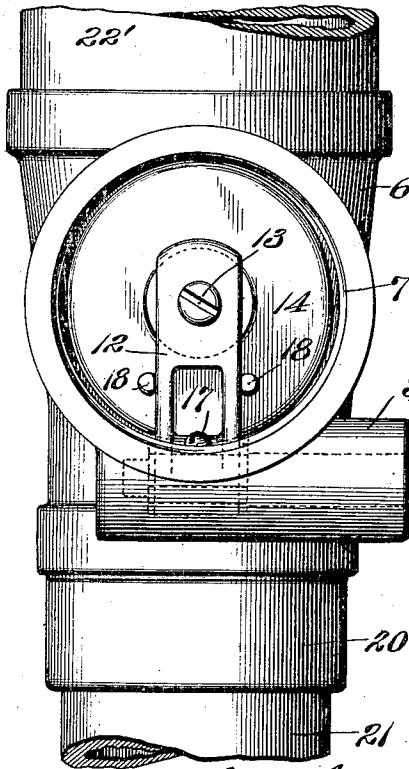


*Fig. 2.*

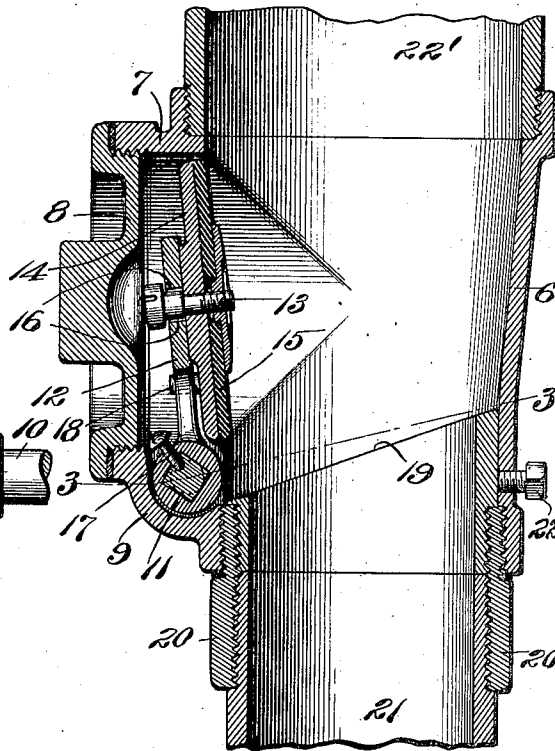


*Fig. 4.*

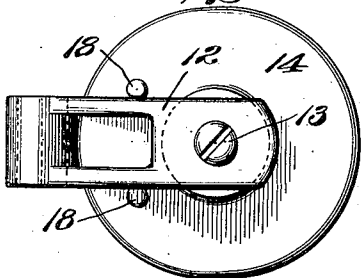


*Fig. 5.*

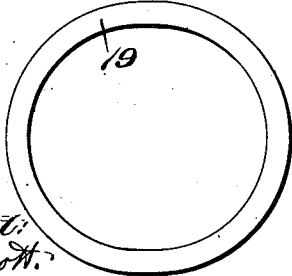
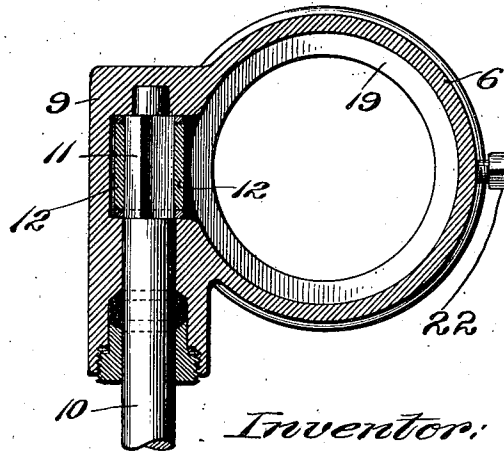


*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## VALVE FOR STREET-SPRINKLERS.

1,156,326.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed April 28, 1914. Serial No. 834,984.

*To all whom it may concern:*

Be it known that I, FRANK A. STIERS, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Valves for Street-Sprinklers, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in valves, especially designed for use in connection with street sprinklers of the gravity feed type, wherein it is essential that the valve as a whole offers a minimum of obstructive resistance to the flow of water, and it is the primary object of my invention to construct a valve casing provided with a lateral casing extension which will receive the valve proper and permit it to occupy a position when open, wholly out of the path of the stream of water.

A further object of my invention is to provide a casing for a valve, which tapers from end to end and wherein there is a lateral casing extension which wholly accommodates the valve proper in a position wherein the face of the valve proper itself forms a tapering wall section complementary to the diametrically opposite wall section of the casing.

The foregoing and other objects will be made more clear in the specification, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows in elevation the valve of my invention with the screw cap removed; Fig. 2 shows a sectional elevation of the valve in a full open position; Fig. 3 is a sectional plan taken on the line 3—3 of Fig. 2; Fig. 4 is a plan of the valve proper and its supporting arm removed from the casing; and Fig. 5 is an end elevation of the valve seat.

Referring now to the drawings, the numeral 6 designates the tapering body portion of the valve casing, and formed integral with this tapering body is a lateral casing extension 7, the open end of which is internally threaded to receive a screw-cap 8.

Between and outside the bodies of the casing proper and its lateral extension is an integral bearing 9 in which a shaft 10 is located. A portion 11 of the shaft is formed non-circular in cross-section, and on this non-circular portion there is carried an arm

12 which is arranged to swing on the shaft 10 to positions diametrically relative to the casing proper and its lateral extension.

Carried at the free end of the arm 12 and secured thereto by a screw 13, is an elliptical plate or head 14, on the face of which is a gasket 15, which may be secured to the head in any desired manner, but preferably by a washer into which the screw 13 seats.

The plate or head preferably has a slight wobbling motion relative to the arm, so that it may conform automatically to the valve seat, and this result is attained by forming the screw hole 16 through the arm 12, slightly larger than the screw.

The arm 12 is secured against longitudinal movement relative to the shaft 10 by means of a set screw 17, and hence the arm serves to hold the shaft against axial movement relative to its bearing.

In order to prevent the plate or head 14 from rotating on the screw 13, I provide the pins 18 which project from the face of the head 14 and engage on either side of the arm 12.

19 designates the valve seat in the form of an abutment, on the inside of the casing, having the plane of its face oblique to the axis of the casing, as shown in Fig. 2, and by preference this valve seat is in the form of a tube separate and distinct from the casing.

The discharge end of the casing is internally threaded to receive a union 20, threaded both externally and internally, its external threads forming a connection with the casing and the interior threads serving to connect the tubular valve seat with the pipe, or, as used in a sprinkler, the sprinkler head, 21. By this threaded connection an axial adjustment of the valve seat may be effected, and this form of connections offers a substantial holding for the valve seat.

22 designates a set screw extended through the valve casing, and impinging the valve seat to prevent its rotation, for it is obvious that due to the angularity of the face of the seat it is essential that it be held against rotation, otherwise the valve proper would not align therewith when brought to a closed position.

The inlet end of the casing is internally threaded to provide a connection with a pipe 22', which leads to a source of water supply (the sprinkler tank) not shown. It is

to be noted this threaded end of the casing just referred to is of greater diameter than the body of the casing, so that when a pipe is fitted thereon the inside face of the pipe will be flush with the inside face of the casing, so that there will be no offset to check the flow of the water.

It is obvious too that the angularity of the valve seat reduces the movement of the valve from a full closed to a full open position, hence the valve operates in a minimum of time.

A feature of prime importance is the taper of the valve casing, which construction acts on the water passing through the valve in a manner common to a nozzle, so that the water at the discharge end of the casing has greater force than the water entering the casing.

The mounting for the valve proper holds it when in a full open position with its face at an oblique angle to the axis of the casing, so that the valve itself forms an inclined surface complementary to the inner surface of the casing.

By arranging the valve in a casing that tapers toward the valve seat, and is provided with a lateral extension of such shape that when the valve is fully lifted from its seat the opening to such extension is practically closed thereby, the face of the valve then becoming in effect part of the wall of the conduit of which the valve casing is a part, I secure several decided advantages of operation. The tapering casing insures a constant and increasing fluid pressure toward the sprinkler head, while its shape and the arrangement of the valve therein, as described, offers practically no obstruction to the forward flow of the water and does not interfere therewith by reason of there being pockets in the casing in which eddies are formed that interfere with the flow. Furthermore, the arrangement of the valve upon an inclined valve seat that is in the lower part of the tapering casing makes the manipulation of the valve comparatively easy, even when the head of water is considerable, because the moment the valve is lifted, even to the slightest degree, it begins to quite rapidly open a space between its edge and the side walls of the casing, the space constantly and rapidly increasing as the valve is moved toward its open position within the lateral extension, due to the tapering walls of the casing. It will be seen that the valve seat is formed by the beveled or inclined edge of a sleeve that is secured to the valve casing and also to the next following section of the conduit, and that its inclined edge constituting the valve seat lies in immediate proximity all around to the wall of the casing; there

being no pockets or enlargements of the casing opposite the seat, as has heretofore been customary in order to permit the movements of the valve, which pockets or enlargements cause eddies that are disturbing elements in the flow of the water. The arrangement of the valve seat in immediate proximity to the walls of the casing also insures that the water has a scouring action upon the edge of the sleeve that constitutes the valve seat keeping it clean, so that the valve at all times sets tightly thereto.

The parts of the valve are rendered easily accessible by removing the screw cap 8, so that if it becomes necessary to take out the valve this may be easily accomplished by removing the cap, removing the screw 17, withdrawing the valve stem 10 from its bearing, and then taking out the valve and its associated parts through the opening left by removing the cap 8.

I am aware that certain structural changes may be made from the valve shown, and hence do not wish to be understood as limiting myself to the exact structure shown, but

What I do claim and desire to secure by Letters-Patent of the United States therefor, is:

1. A valve casing adapted for use in the supply pipe of a street sprinkler, consisting of a tapering pipe section adapted to constitute a part of the said supply pipe, the said pipe section being formed with a lateral extension, a swing valve for closing the said supply pipe, and a mounting for the valve arranged to maintain the latter when open in a position within the said lateral extension of the valve casing and with its face presenting a surface substantially flush with the inner surface of the casing and complementary to the opposing inclined surface thereof.

2. A valve casing adapted for use in the supply pipe for a street sprinkler head, consisting of a pipe section tapering toward an internal valve seat, the plane of which seat is inclined to the axis of the casing, the valve casing being formed with a lateral extension, a swing valve for closing the supply pipe, adapted to rest upon the said valve seat, and means for lifting the valve from its seat and moving it across the tapering part of the casing and into the said lateral extension.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

FRANK A. STIERS.

Witnesses:

E. L. WALLACE,  
R. G. ORWIG.