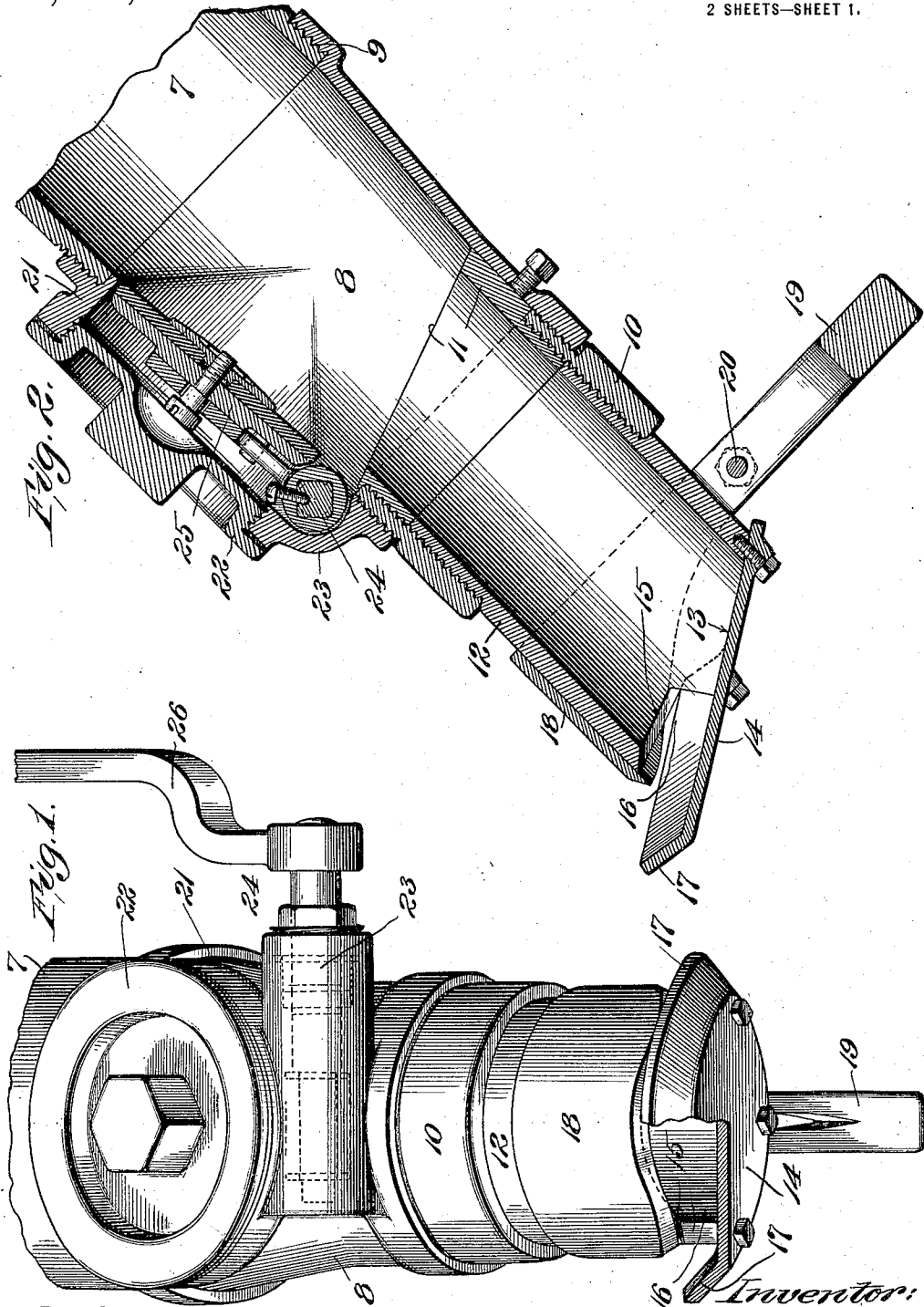


F. A. STIERS.
STREET SPRINKLER.
APPLICATION FILED APR. 28, 1914.

1,156,327.

Patented Oct. 12, 1915.
2 SHEETS—SHEET 1.



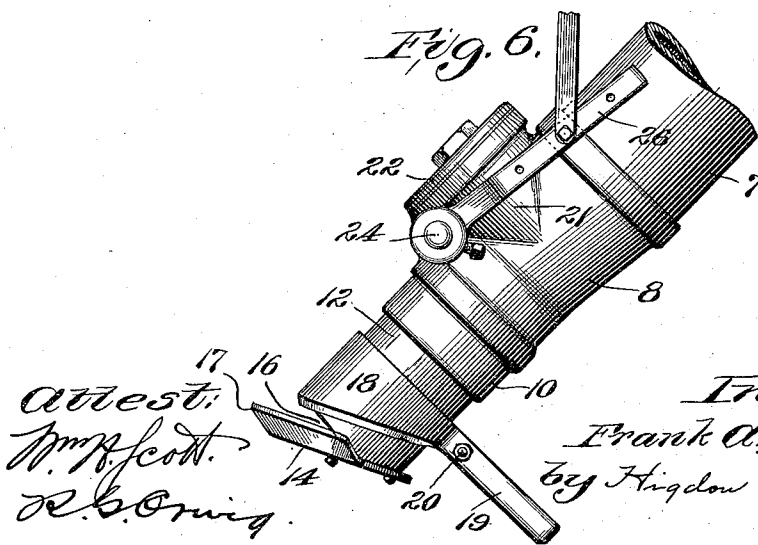
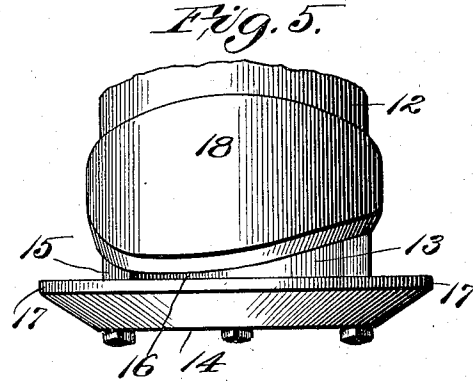
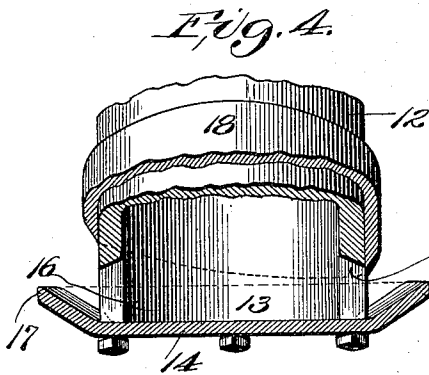
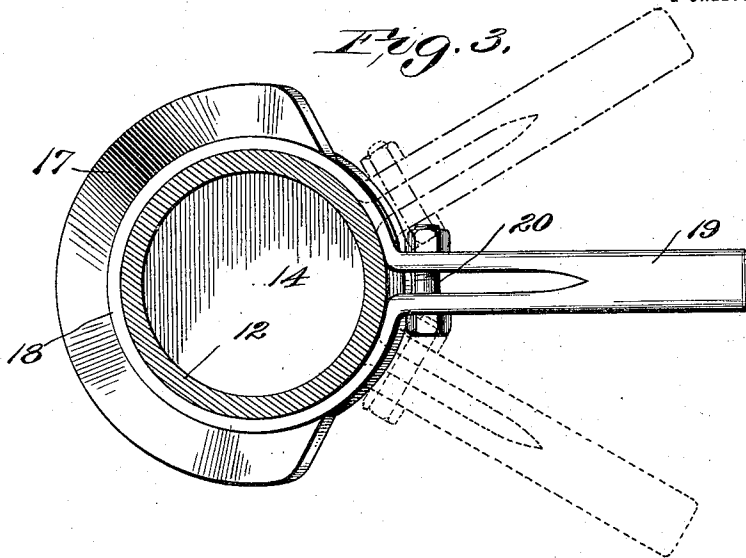
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UNITED STATES PATENT OFFICE.

FRANK A. STIERS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO PHILIP R. WALSH, OF ST. LOUIS, MISSOURI.

STREET-SPRINKLER.

1,156,327.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed April 28, 1914. Serial No. 834,985.

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 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 street sprinklers, and is especially directed to sprinklers of the gravity feed type rather than the type having pressure tanks, and the primary object of my invention is to construct a valve controlled outlet from a tank, which is designed to offer a minimum of resistance to the flow of water there-through and a sprinkler head which forms a part of the outlet which is provided with means for controlling the direction of the stream issuing therefrom, as well as controlling the volume of the stream.

A further object of my invention is to construct a sprinkler head having a saucer or deflecting element at the discharging end of the head arranged at other than a right angle, so that the stream will be delivered to the angular brim of the saucer with a maximum of force in order to cover the greatest possible area to be sprinkled, and in order that the angular brim will give to the stream the desired elevation to cause the stream to drop in an approximately vertical direction toward the surface to be sprinkled to obviate the objectionable washing incident to streams striking the surface at an angle.

With the foregoing and other objects in view, which will be made more clear hereinafter, my invention consists in certain novel features to be described, pointed out in my claims and illustrated by the accompanying drawings, in which:

Figure 1 shows in rear elevation the device of my invention, a portion of the saucer being shown in section; Fig. 2 is a vertical sectional elevation of the sprinkler head; Fig. 3 is a sectional plan showing the lower, discharge end of the head, the saucer and the adjustable band; Fig. 4 is a view illustrating the position of the adjustable band, when it is desired to direct a stream toward the left hand side of the path of the sprinkler, a portion of the discharge end of the head, the adjustable band and the saucer

being shown in section; Fig. 5 shows in rear elevation the arrangement of the adjustable band relative to the head and saucer when directing a stream to the right hand side of the path of the sprinkler; and Fig. 6 is a side elevation, on a reduced scale, of the complete device of my invention.

Referring by numerals to the accompanying drawings, 7 designates a pipe, a portion only of which is shown, arranged to have connection with a supply tank (not shown).

8 designates a longitudinally tapering valve casing arranged at its one end to have an internally flush and a threaded connection 9 with the pipe 7.

At the reduced end of the casing, there is an internal thread arranged to receive an externally and internally threaded collar 10 which serves the double function of holding in place a valve seat 11 and a support for the sprinkler head proper 12. The lowermost or discharge end of the head proper is stepped or offset as shown, and to the margin of the rear or heel step 13 is secured the saucer 14. It is to be observed that the margin of the step 13 referred to is formed at an angle other than a right angle to the longitudinal axis of the head proper, so that the flat body portion or bottom of the saucer stands at an oblique angle relative to the course of the water through the sprinkler head. In other words, the line of incidence or the direction of the oncoming stream of water is oblique to the line of reflection, the saucer, or deflecting surface, thus the water directed over the bottom of the saucer, or deflecting surface will suffer less impedance than it would if received on a surface at right angles to its flow; or wherein the line of incidence was at right angles to the line of reflection.

15 designates the forward step of the sprinkler head which forms with the bottom of the saucer the emission slot 16, which preferably is located rearwardly of the median line of the sprinkler head.

17 designates the brim of the saucer which preferably extends only around that portion of the saucer lying to the rear of and at the sides of the emission slot.

18 designates a band having an integral, split, handle 19, carrying a set screw 20, which band when in position surrounds the sprinkler head adjacent its discharge end, and which may be moved both axially and

circumferentially relative to the head. This band as shown has at one point a maximum axial dimension from which point the axial length or dimension gradually diminishes.

5 When the band is in a central position, that is, when the point of maximum length is directly opposite the center of the emission slot the lowermost margin of the band will approximately parallel the bottom of
10 the saucer, so that when in this position, that is, when the lowermost margin of the band is held approximately parallel with the saucer, the emission slot is uniform throughout, and by simply raising and lowering
15 the band relative to the saucer, the volume of water issuing from the sprinkler may be controlled. In this connection, I am aware that it is not broadly new to control the volume of the water issuing from the
20 sprinkler by a movable or adjustable band, but the band of my improved sprinkler goes farther than simply controlling the volume of water.

Referring now to Figs. 3, 4 and 5 of the
25 drawings, it will be observed that the band is shifted into various positions by rotating it upon the sprinkler head. In Fig. 4 it is to be observed that the band is shifted to a position restricting one side of the emission
30 slot without effect on the opposite side, so that when in this position the band directs the stream to one side of the path of the sprinkler. In other words, the point on the band having the longest axial dimension is
35 shifted to one side of the center of the emission slot which in effect constricts this side of the emission slot and leaves the opposite side full open.

21 designates a lateral extension of the
40 valve casing, the upper open end of which is internally threaded to receive a cap 22. Arranged to one side of the lateral extension and in line with the face of the valve seat 11 is a bearing 23, in which is journaled a
45 shaft 24 arranged to carry a swinging valve 25, designed in one (closed) position to seat against the valve seat 11 and in another (open) position to wholly occupy the lateral
50 extension of the valve casing in order that the valve proper will occupy a position wholly out of the course of the water flowing through the valve. Secured to the shaft 24 upon which the valve 25 is carried, there
55 is a lever 26, arranged for the movement of the valve, from its seat to the lateral casing extension.

As heretofore mentioned, this sprinkler is of the gravity feed type, and with this
60 type of sprinkler in mind, the features of construction which tend toward the efficiency of the device are here recited. The shape and position of the outlet, as a whole, including the pipe 7, the valve casing 8 and
65 the head proper 12. It is to be noted that there is no feature of construction which will

obstruct or in anywise interfere with a free
flowing of the water, that the outlet as a whole is in a continuous straight line, without angles or joints to retard or lessen the
70 flow. That a portion of this outlet is of tapering formation, in the drawings the valve casing being tapered, to give to the stream increased inertia as with an ordinary nozzle. The arrangement of a valve
75 casing extension to accommodate the valve when full open so that the valve may be held wholly out of the direct path of the stream of water, so that the valve, or means for controlling the outlet for water, will
80 not of itself offer obstruction to the flow of water through the outlet. The arrangement of a stream deflecting element, the saucer, at the discharge end of the sprinkler head, at an angle, other than a right angle,
85 relative to the longitudinal axis of the outlet, including the sprinkler head proper 12, the tapering valve casing 8 and the pipe 7. The oblique angularity of this deflecting element causes the stream, with the increased
90 inertia produced in the nozzle like outlet, to suffer a minimum resistance, so that it will be delivered through the emission slot and over the deflecting element in a thin sheet, having a maximum force, to the brim
95 of the saucer over which brim the sheet of water is elevated and directed upwardly and rearwardly so that it will be precipitated upon the surface to be sprinkled in a substantially vertical direction.

It is to be noted that the margin of the
100 emission slot and the margin of the adjustable band are both chamfered in order to present a minimum of slot surface.

All of the features just recited contribute to the efficiency of my improved nozzle, and
105 I am aware that various departures in construction may be resorted to and hence do not wish to be understood as limiting myself to the exact structure shown, but

What I believe to be new and desire to secure by Letters-Patent of the United States
110 therefore is:

1. A cylindrical sprinkler head having a circumferential discharge slit and a deflecting plate below the discharge slit arranged
115 at an obtuse angle to the longitudinal axis of the head, and means for controlling the size and shape of the slit, consisting of a band concentric with the sprinkler head, and adjustable relative thereto both axially and
120 circumferentially, the band having an edge that is substantially parallel with the deflecting plate when the band occupies a central position.

2. In a street sprinkler, the combination
125 of a water supply conduit, a deflecting plate at the end thereof disposed at an obtuse angle to the longitudinal axis of the conduit, there being a slit between the deflector and the end of the conduit through which water
130

is discharged, and a regulating band surrounding and supported by the said conduit, and adjustable both longitudinally and circumferentially thereon, the edge of the band toward the discharge slit being substantially parallel with the deflecting plate when the band occupies a central position.

3. In a street sprinkler, the combination of an unobstructed delivery pipe across the end of which is located a deflecting plate arranged at an angle to the longitudinal axis of the pipe, the end of the pipe being in part cut away whereby there is formed a curved discharge slit above the deflecting plate, and a regulating band supported upon and surrounding the pipe adjacent to its discharge end and adjustable both longitudinally and circumferentially relative thereto, the band having a part of maximum axial dimension adapted to extend across the discharge slit, from which part its axial dimensions diminish, whereby the edge that is toward the deflecting plate operates to change the shape of the discharge slit as the band is circumferentially adjusted.

4. In a sprinkler head, the combination of a delivery pipe across the end of which is located a deflecting plate arranged at an obtuse angle to the longitudinal axis of the pipe, there being a curved discharge slit between the end of the pipe and the deflecting plate, and means for regulating both the width of the said discharge slit and its shape, consisting of a frictionally held band surrounding the sprinkler head, the band being adjustable longitudinally, to vary the width of the slit, and its edge toward the deflecting plate being so shaped that when the band is adjusted circumferentially the shape of the slit is changed, one end or the other thereof being more or less closed accordingly as the band is adjusted.

5. The combination of a straight, inclined and unobstructed conduit adapted to be attached to a source of water supply, a deflecting plate arranged at the lower end of said conduit and partially spaced therefrom to form a curved discharge slit, the said deflecting plate being arranged at an obtuse angle to the longitudinal axis of said conduit and being provided with an upturned flange arranged at an obtuse angle to the body of the deflecting plate, whereby the gravity of the oncoming supply stream may be fully utilized, and the water, deflected and spread by the plate and its flange, is precipitated on the street surface in a substantially vertical direction, after being first discharged into the air.

6. In a street sprinkling device, the combination of an inclined and unobstructed conduit adapted to be attached to a source of water supply, the conduit tapering toward its discharge end whereby a nozzle effect is secured, a deflecting plate arranged to cross the lower open end of the conduit at an obtuse angle to the longitudinal axis thereof and partially spaced therefrom, the deflecting plate being provided with an upturned flange disposed at an obtuse angle to the body of the plate, whereby the flow of water to the deflecting plate is free, unobstructed and accelerated, and the deflecting plate operates to direct the water as a uniform sheet into the air at such an angle that it returns to the surface of the earth upon approximately vertical lines.

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

FRANK A. STIERS.

Witnesses:

WILLIAM MODRA,
E. L. WALLACE.