

No. 671,045.

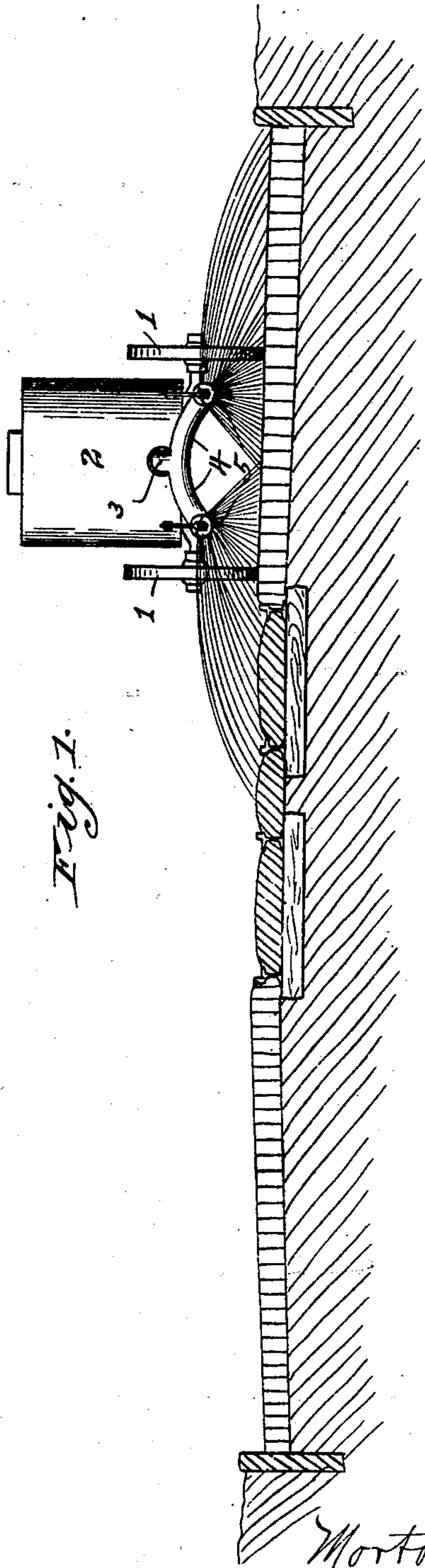
Patented Apr. 2, 1901.

M. G. BUNNELL.
SPRINKLER VALVE.

(Application filed June 25, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses,
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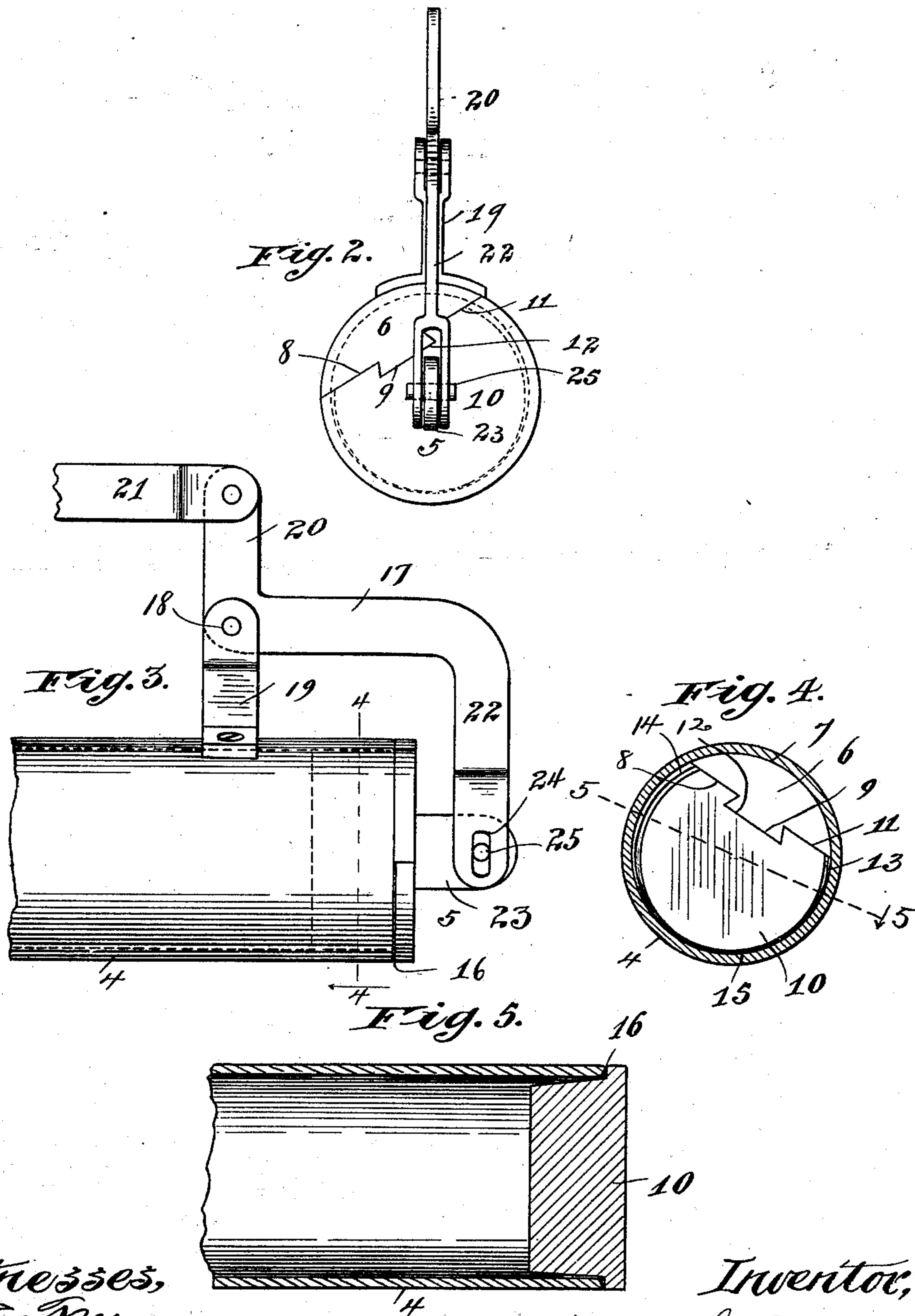
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UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS.

SPRINKLER-VALVE.

SPECIFICATION forming part of Letters Patent No. 671,045, dated April 2, 1901.

Application filed June 25, 1900. Serial No. 21,486. (No model.)

To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sprinkler-Valves, of which the following is a specification.

This invention relates to improvements in valves for sprinklers, and refers more specifically to a valve particularly adapted for use upon traveling sprinklers and the like.

Among the objects of the invention are to provide a valve of this character so constructed that the discharge-orifice thereof is in the form of a single parti-annular outlet as distinguished from those valves in which the water is discharged through a plurality of outlets, to so construct the valve proper that it will afford a variable discharge at different points of its circumference to compensate for the different areas sprinkled by the various parts of the valve, to provide such a construction that the same relative proportions of variable discharge will be maintained at any given degree of opening of the valve, to provide a simple economical construction embodying the above characteristics and one which will not be likely to get out of order in use, and in general to provide an improved device of the character referred to.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse sectional view of a street, showing a sprinkler-wagon equipped with my invention in rear end elevation. Fig. 2 is a detail end view of a valve embodying my invention and the operating-links whereby the valve is shifted. Fig. 3 is a side elevation of the parts shown in Fig. 2. Fig. 4 is a transverse sectional view taken on line 4 4 of Fig. 3 and looking in the direction of the arrows, and Fig. 5 is a central longitudinal view taken on line 5 5 of Fig. 4.

Referring to said drawings, 1 designates as a whole any suitable vehicle, upon which is mounted a liquid-tank 2, provided with one or more discharge-pipes 3, a single one being shown in the present instance provided with branches 4 4, the discharge end of each of

which is controlled by means of a valve 5, embodying my present invention.

Referring now more particularly to Figs. 2 *et seq.*, wherein a single valve embodying my invention is shown in detail, within one side of the discharge end of the branch pipe 4 is fixedly mounted a supporting-block 6, preferably, and, as shown herein, parti-cylindric or approximately arc-shaped in cross-section, its exterior surface 7 being constructed to fit accurately within the discharge-pipe 4 and its flat surface 8 being provided with a suitable rib 9, of dovetailed form in the present instance, extending longitudinally thereof and adapted to form a support upon which the valve-plug 10 is mounted to reciprocate in a direction parallel with the axis of the pipe. The valve-plug is of approximately circular form in cross-section throughout the principal part of its circumference, but is provided at one side with a flat face 11, conformed to fit accurately against the corresponding face 8 of the supporting-block, and is also provided with a dovetail-shaped recess 12, adapted to fit upon the supporting-rib 9, so that the valve-plug may be carried and supported otherwise entirely free from the interior of the pipe.

As will be seen by reference to Figs. 4 and 5, the valve-plug is made tapering inwardly from a diameter almost equal to the internal diameter of the pipe at a point near its outer end to a diameter considerably less at its inner end, and it will be further noted that the curved sides of the plug are not accurately circular or cylindric, but made to taper more rapidly at each side, as at 13 14, adjacent to the supporting-block, and less rapidly tapering from these points circumferentially toward a point 15, located at the lowermost part at the side of the plug. It is to be understood that the degree of taper will be uniform, or, in other words, the taper will be straight from any given point of the circumference of the plug longitudinally throughout its length, so that the same relative proportions of discharge will be maintained whatever be the extent to which the plug be shifted outwardly and its discharge-orifice thereby increased. In order that the discharge-pipe may be completely closed at will, the outer end of the valve-plug is provided

with an annular shoulder or seat 16, adapted to fit accurately against the end of the pipe when the valve-plug is brought into bearing therewith.

5 Any suitable mechanism may be employed for reciprocating and controlling the position of the valve-plug relatively to the discharge-pipe, and in the present instance such mechanism comprises a round lever 17, supported
10 at a point intermediate its length, as at 18, upon a suitable stud or bracket 19, mounted upon the upper side of the discharge-pipe 4, one end portion 20 of said lever extending vertically upward to form an operating-arm,
15 which is pivotally connected with a link 21, leading to and connected with any suitable operating-lever, while the opposite end 22 is extended horizontally rearward and then bent at right angles downwardly and engaged with
20 a projection 23 upon the outer end of the valve-plug. Inasmuch as the valve-plug is guided to reciprocate rectilinearly and the end 22 of the bent lever moves in an arc, one of said parts is slotted at the point of connection, the bent lever being in the present instance provided with a vertical slot 24, which
25 engages with a through-pin 25, seated in the projection 23.

By reference to Figs. 2 and 4 it will be seen
30 that the flat guide-surface 8 within the valve-casing and against which the valve-plug rests and reciprocates is arranged at the upper side of the pipe, but is arranged obliquely with reference to a horizontal line, and by
35 reference to Fig. 1, wherein the position of the valve-plug is indicated in dotted lines, it will be seen that the right and left valves are arranged at opposite inclinations, the object of this construction being to properly distrib-
40 ute the water from a point centrally beneath the vehicle outwardly the full width of the strip sprinkled by each valve. Inasmuch as the valve-plug fits closely against the guide-surface upon which it reciprocates, the valve
45 will obviously discharge no liquid throughout the length of the arc forming said guide-surface, and no part of the area sprinkled will therefore be twice covered by the same valve. By reference to Fig. 4, which represents the
50 left-hand valve of the pair, it will be seen that the point of maximum discharge is located immediately adjacent to the upper side margin of the guide-block 6 and that the discharge-orifice gradually narrows in width from this
55 point around to the point of minimum discharge 15, located at the lowest point of the discharge-pipe. In the same manner the point of maximum discharge of that part of the valve which sprinkles beneath the vehicle
60 is located immediately adjacent to the lower side margin of the guide-block and decreases gradually toward the point of minimum discharge 15, it being noted that that portion of the discharge-orifice which sprinkles beneath
65 the vehicle will be of considerably less capacity than the opposite side to correspond to the lesser area covered by that portion of

the valve. It will also be understood that the relative proportions of the different parts of the discharge-orifice will be varied in accordance with the different conditions re- 70
quired to be met, such variations being matters of mere mechanical skill.

The operation of the device has been sufficiently indicated in connection with the foregoing description to be entirely clear, and need not therefore be repeated. 75

It will be seen from the foregoing that a construction embodying my invention is not only extremely simple and capable of being 80
cheaply constructed, but will obviously be much less liable to become clogged and in case of becoming clogged will be readily cleared by simply opening the valve to a wider extent, so as to permit the water to momentarily rush through the valve freely. 85

It will be obvious from the foregoing description that the details of construction may be modified to a considerable extent without departing from the spirit of the invention, 90
and I do not therefore wish to be limited to the precise details shown except as they may be made the subject of specific claims.

I claim as my invention—

1. A sprinkler-valve comprising a discharge 95
pipe or passage, a longitudinally-tapered valve-plug arranged to control said passage, different portions of the circumference of said plug being tapered at different angles, and mechanism for supporting and reciprocating 100
said valve-plug.

2. In a sprinkler-valve, the combination with a pipe or passage constituting a valve-casing, of a valve-plug arranged to control said passage, having a conoidal portion, the 105
cross-sectional form of which is different from the internal shape of the valve-casing, and such as to form, in conjunction with the latter, a parti-annular discharge-orifice of constantly-varying capacity throughout the circumference of said conoidal portion. 110

3. In a sprinkler-valve, the combination with a pipe or passage interiorly cylindric throughout its main circumference, but provided at one side with a non-circular longi- 115
tudinally-extending guide-surface, of a valve-plug arranged to control said passage having a conoidal shape throughout its main circumference, but provided at one side with a guide-surface constructed to fit and engage the 120
guide-surface of the valve-casing, and means for supporting the valve-plug upon said guide-surface.

4. In a sprinkler-valve, the combination with a pipe or passage interiorly cylindric 125
throughout its main circumference, but provided at one side with a non-circular longitudinally-extending guide-surface, of a valve-plug arranged to control said passage, having a conoidal shape throughout its main circumference, but provided with a guide-surface at 130
one side constructed to fit the guide-surface of the valve-casing, interfitting parts upon said guide-surfaces constructed to impart a

rectilinear reciprocation to the valve-plug, and means for reciprocating said valve-plug relatively to the valve-casing.

5 5. In a sprinkler - valve, the combination with a pipe or passage interiorly cylindric throughout its main circumference, but provided at one side with a flat longitudinally-extending guide-surface provided with an undercut longitudinally-extending rib, of a
10 valve-plug arranged to control said passage, having a conoidal shape throughout its main circumference, but flattened at one side to fit against said guide-surface and provided in said flattened surface with a guide-groove
15 adapted to receive the undercut rib of the valve-casing, the cross-sectional shape of said conoidal portion being such as to form, in conjunction with the cylindric interior of the valve-casing, a parti-annular discharge-orifice
20 having the greatest area of discharge adjacent to the flattened side thereof and decreasing in discharge area from these points to-

ward a point of minimum discharge located intermediate of said points, substantially as described.

25 6. In a sprinkler - valve, the combination with a discharge-pipe, of a tapered valve-plug arranged to control the discharge end of said pipe, means supporting and guiding said valve-plug to impart a rectilinear movement
30 thereto parallel with the axis of the discharge-pipe and means for reciprocating said valve-plug, comprising a bent lever pivotally supported between its ends upon a support fixed relatively to the discharge-pipe, an operating-
35 link connected with one end of said bent lever and a slot-and-pin connection between the opposite end of the lever and a rigid part of the valve-body, substantially as described.

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Witnesses:

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