

No. 807,617.

PATENTED DEC. 19, 1905.

F. W. HERBKESMANN.
SPRINKLER HEAD OR NOZZLE.

APPLICATION FILED MAR. 12, 1902.

2 SHEETS-SHEET 2.

Fig. 4.

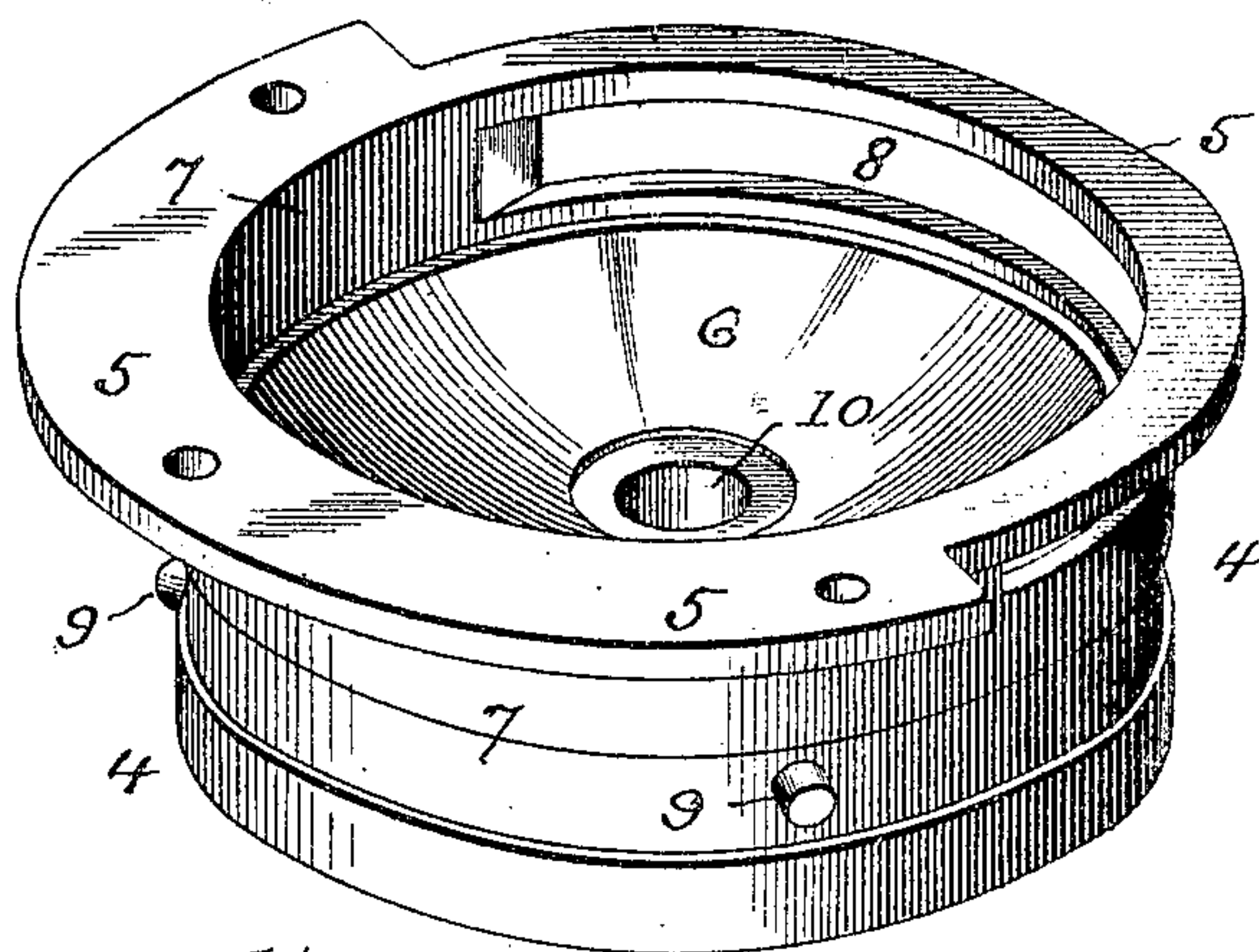


Fig. 5.

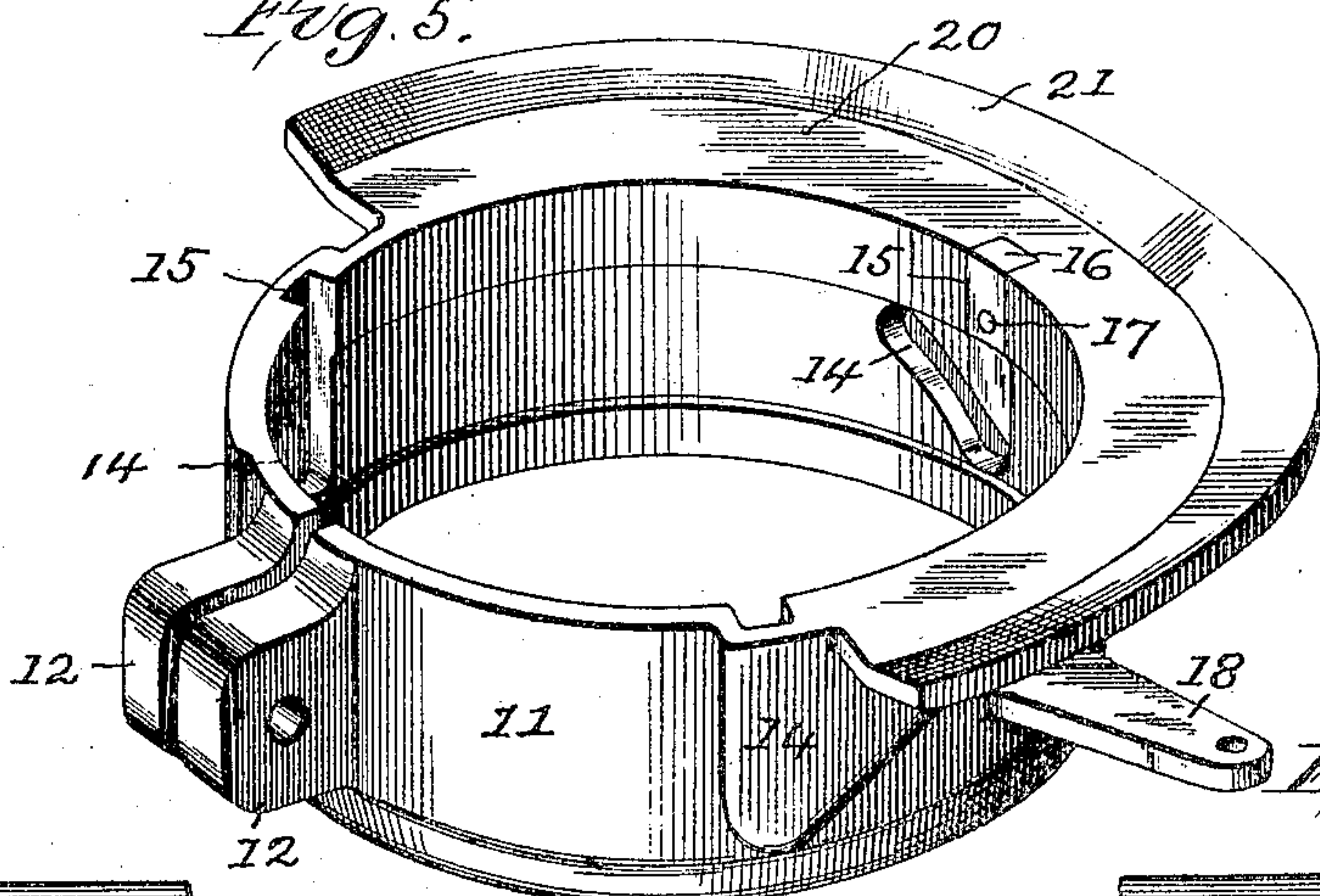


Fig. 7.

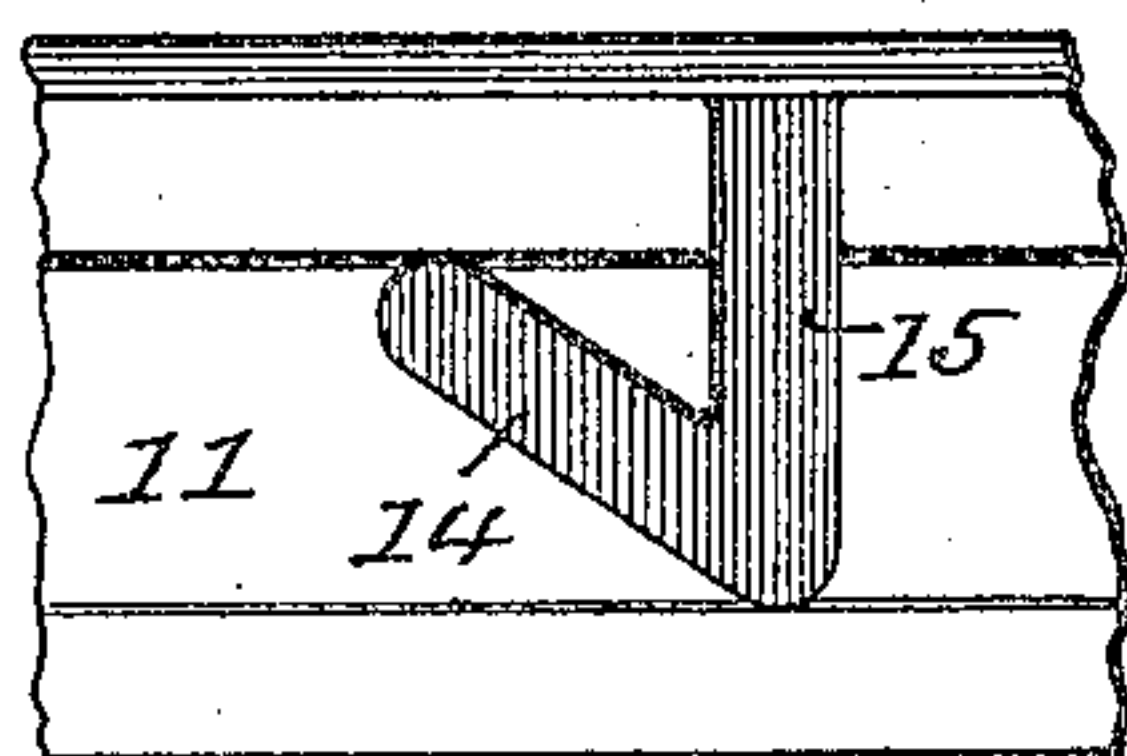


Fig. 6.

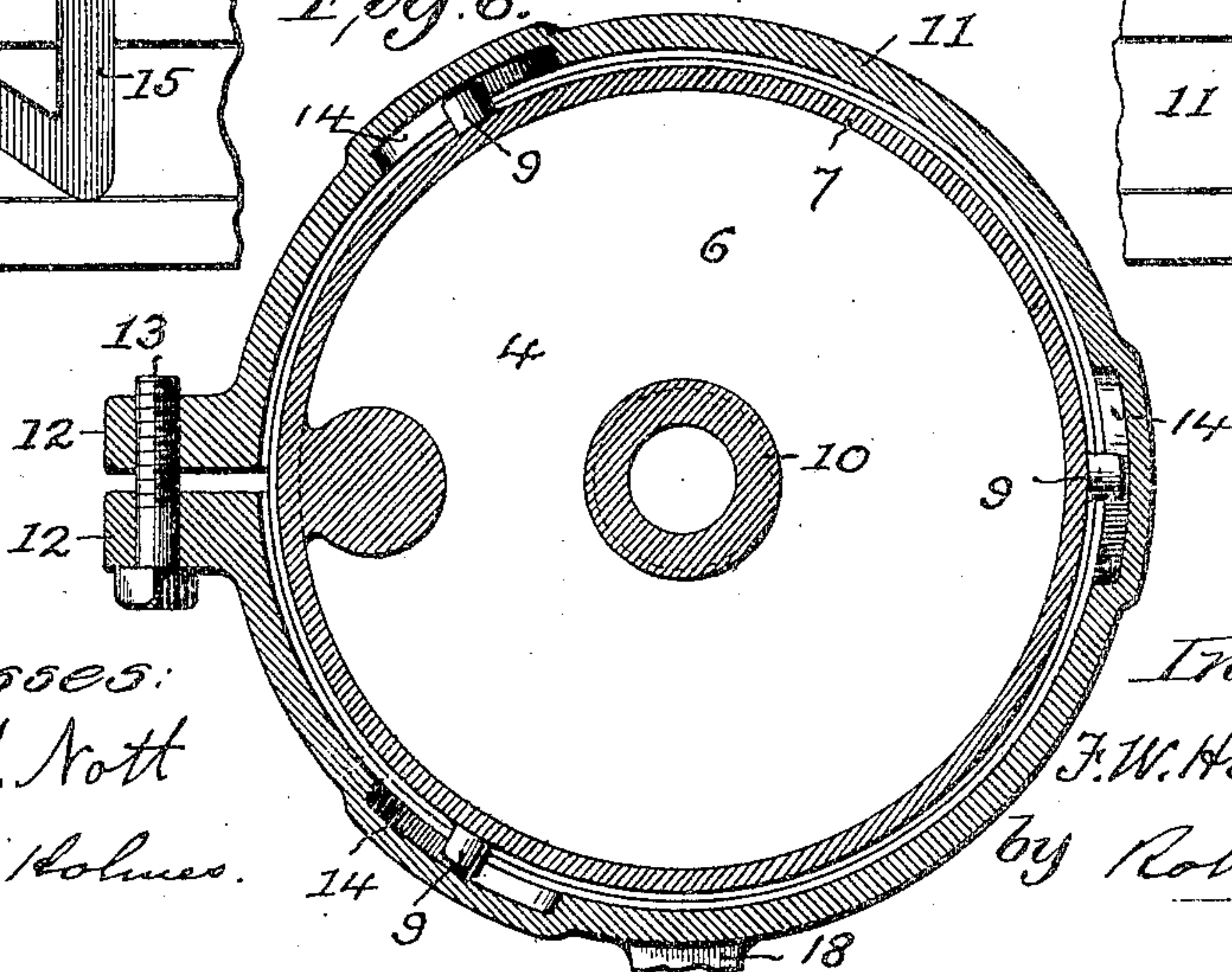
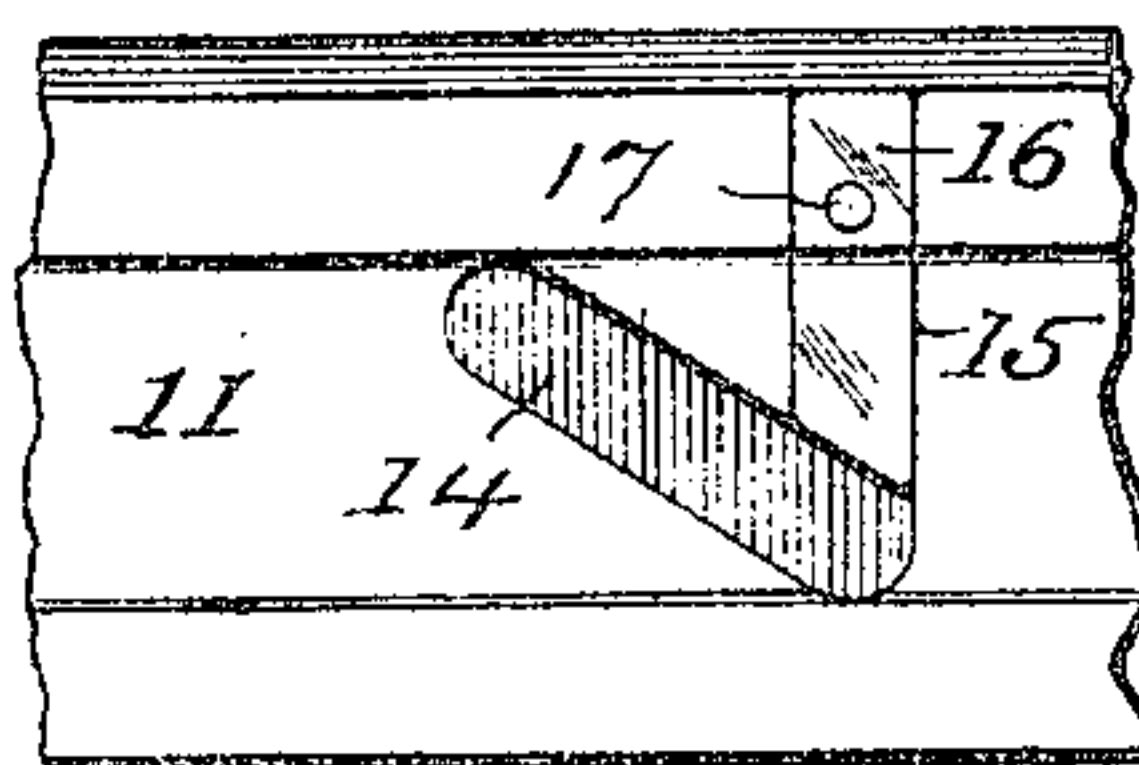


Fig. 8.



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UNITED STATES PATENT OFFICE.

FREDRICK WM. HERBKESMANN, OF ST. LOUIS, MISSOURI.

SPRINKLER HEAD OR NOZZLE.

No. 807,617.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed March 12, 1902. Serial No. 97,822.

To all whom it may concern:

Be it known that I, FREDRICK WM. HERBKESMANN, a citizen of the United States of America, and a resident of St. Louis, State of Missouri, have invented certain new and useful Improvements in Sprinkler Heads or Nozzles, of which the following is a specification.

The present invention relates more especially to that type of sprinkling-nozzles employed in connection with street-sprinkling carts, and has for its objects to provide a simple and efficient construction and arrangement of the parts comprising the sprinkler head or nozzle and by means of which the direction of the sheet or spray of water discharging in a substantially horizontal plane can be changed at the will of the operator so as to avoid passing vehicles and the like and with which the thickness of the sheet or spray of the outpassing water can be regulated and adjusted by the operator in a very perfect manner, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings, illustrative of the present invention, Figure 1 is a central vertical section of a sprinkler head or nozzle embodying the present invention; Fig. 2, an irregular horizontal section mainly on line $x-x$, Fig. 1; Fig. 3, a side elevation of semi-rotary cut-off gate of the present improvement in a detached condition; Fig. 4, a detached perspective view of the fixed bottom cap or casing of the sprinkler head or nozzle; Fig. 5, a similar view of the vertically-adjustable annulus carrying the lower deflecting and spreading lip or flange of the nozzle; Fig. 6, a horizontal section at line $x'-x'$, Fig. 1, looking upward; Figs. 7 and 8, detail elevations of the inner wall of vertically-adjustable annulus, illustrating the arrangement of the inclined or cam grooves of the same.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the outlet end of a pipe by means of which connection is had with the tank of a watering-cart or other source of water-supply; 2, an annular head screwed or otherwise secured to the outlet end of the pipe-section 1 and provided at its lower end with an outturned attaching-flange 3; 4, the fixed bottom cap or casing of the nozzle, provided at top with a marginal flange 5, by means of which it is secured to the flange 3 of the annular head 2 of the nozzle; 6, a horizontal partition having a

dished shape and arranged intermediate the height of the cap or casing 4 and constituting a deflecting-bottom for such cap or casing; 7, a vertical annular wall of said cap or casing adapted to afford a vertical bearing and guide-way for the adjustable annulus hereinafter described; 8, a horizontal opening or slit approximating a semicircle in extent formed in the vertical wall of the cap or casing 4 immediately beneath the attaching-flange 5, above described, and preferably with the bottom face of such flange forming an extended horizontal top surface for said opening or slit 8 with a view to attain a better and more efficient delivery of the passing stream of water in the form of a thin and uniform sheet; 9, a series of cam projections or pins on the periphery of the vertical wall of the bottom cap or casing 4 and adapted for operative engagement with the cam-grooves of an adjustable annulus, hereinafter described; 10, an axially-arranged packing-gland on the dished bottom of the bottom cap or casing 4 for the passage in a watertight manner of the operating-shaft of the adjustable cut-off gate hereinafter described; 11, the adjustable ring or annulus of the present invention, adapted to fit and move upon the periphery of the vertical annular wall 7 of the cap or casing of the nozzle. Such ring or annulus is preferably of the split type shown and provided with lugs 12 at the respective sides of the vertical slit of such ring or annulus, and through which lugs a clamping bolt or screw 13 passes to afford means of adjustment and by means of which the fit of the annulus upon the bottom cap or casing can be regulated to slide with any required degree of friction or be rigidly clamped in place at any desired adjustment at the judgment of the operator; 14, a series of inclined or cam grooves formed in the interior wall of the ring or annulus 11 and adapted to have operative engagement with the cam lugs or pins 9 of the fixed bottom cap or casing 4 of the nozzle, the arrangement being such that with a turning movement of said annulus in a horizontal plane a vertical movement of said annulus will take place in an upward or downward direction in accordance with the direction in which such annulus is turned; 15, a series of vertical passages extending from the upper face of the annulus 11 to the lower ends of the cam-grooves 14 and adapted to afford means for the entrance of the cam-lugs 9 into said cam-grooves in an assemblage together of the parts; 16, filler-pieces, which, with

the described assemblage of the parts, are secured in place in one or more of said vertical passages 15 by means of set-screws 17 or other usual means to prevent any subsequent accidental disengagement of the parts; 18, a laterally-projecting arm on the ring or annulus 11, adapted for operative connection, by means of a link connection 19, with a suitable operating mechanism located adjacent to the station of the operator or driver; 20, a horizontal deck, approximating a semicircle in extent and arranged at the upper end of the ring or annulus 11 to constitute an adjustable and extended horizontal bottom surface for the water-exit slit or opening 8 to coact with the bottom surface of the stationary flange 5, heretofore described, in effecting a discharge of water in the form of a thin and uniform sheet or strata; 21, an upturned deflecting lip projecting outwardly from the horizontal deck 20 so as to lie beyond the outer edge of the above-mentioned flange 5 when the said deck 20 is adjusted upward to contact with the under surface of the said flange 5. In the present invention the extended nature of the opposed horizontal surfaces of the deck 20 and flanges 5 is a material feature of the present construction in that as so formed the vertically-adjustable annulus 11 can be employed in a very efficient manner as a stop-valve or gate for the nozzle during the actual use of the same in connection with a sprinkling-cart; 22, a semicircular gate of a plate form, fitting the upper bore of the bottom cap or casing 4 and arranged on a plane with the horizontal opening or slit 8 of said casing and adapted to be oscillated by hand so that it will close off one side or the other of said outlet-opening at the will of the operator. In my preferred construction as illustrated in Figs. 1 and 3 of the drawings the said semicircular gate 22 will be provided at its upper end with an annular extension 23 to act as a cylindrical trunnion for said gate, with bearing within the upper bore of the bottom cap or casing 4 and between the same and the downwardly-extending boss 24 of the annular head 2, as shown in Fig. 2, and as so arranged is adapted to maintain the said gate in proper concentric position under all ordinary conditions; 25, the vertical operating-shaft of the gate 22 and connected thereto by a carrying-spider 26, the arms of which are curved, as shown. Such shaft passes in a water-tight manner through the packing-gland 10 of the bottom cap or casing 4 and at its lower end has operative connections with a suitable operating mechanism arranged adjacent to the station of the operator or driver. In my preferred construction, as illustrated in Figs. 1 and 2 of the drawings, the means for imparting an oscillating movement to the spider 26 and gate 22 will comprise a toothed pinion 27, secured to the lower end of the shaft 25, a toothed sector 28, pivoted to the

fixed bottom cap or casing 4 and having operative engagement with said pinion, a lateral arm 29 on said sector, and a connecting-link 30, extending from said arm to the operator's station.

With the described arrangement of the cut-off gate 22 the operator is enabled to regulate the amount of water discharged at either side of a sprinkling-cart and in this manner avoid the wetting of passing or standing vehicles and the like at either side along the route. It follows in consequence that such provision adds materially to the effectiveness and efficiency of the apparatus.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a sprinkler-head, the combination of a stationary casing having a vertical circular wall and a horizontal exit-slit extending one-half the circumference of said wall, an inlet-neck at the upper end of said casing, a closure-head for the lower end of said casing formed with a central shaft-bearing, an oscillating gate arranged within the interior of said casing and controlling the exit-slit of the casing, a shaft passing through the central bearing of the closure-head and carrying said gate, and means for imparting a turning adjustment to said shaft and gate to fully close the exit-slit or to partly close one side or the other of said slit.

2. In a sprinkler-head, the combination of a stationary casing having a vertical circular wall and a horizontal exit-slit extending one-half the circumference of said wall, an inlet-neck at the upper end of said casing, a closure-head for the lower end of said casing formed with a central shaft-bearing, an oscillating gate arranged within the interior of said casing and controlling the exit-slit of the casing, a shaft passing through the central bearing of the closure-head and carrying said gate, and means for imparting a turning adjustment to said shaft and gate to fully close the exit-slit or to partly close one side or the other of said slit, the same comprising a pinion carried on the lower end of said shaft, a sector pivoted to the casing and operatively engaging said pinion, and an operating-link connected to said sector.

3. In a sprinkler head or nozzle, the combination of a circular bottom cap or casing having a horizontal discharge slit or opening extending half-way around the casing, an oscillating gate arranged within the interior of such casing and having a semicircular body and annular top extension, said gate controlling said opening and having movement to wholly close said opening as well as to close one side or the other of the same, and means for adjusting said gate in one direction or the other, substantially as set forth.

4. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a hori-

zontal discharge slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, and means for imparting vertical movement to said annulus the same comprising a series of cam-pins and cam-slots on the respective parts, substantially as set forth.

5. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said opening or slit, and an upturned deflecting-lip projecting outwardly from said deck, substantially as set forth.

6. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said opening or slit, an upturned deflecting-lip projecting outwardly from said deck, and means for imparting vertical movement to said annulus, the same comprising a series of cam-pins and cam-slots on the respective parts, substantially as set forth.

7. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface of said opening or slit, an upturned deflecting-lip projecting outwardly from said deck, means for imparting vertical movement to said members, the same comprising a series of cam-pins and cam-slots on the respective parts, and means for regulating the fit of said annulus upon the periphery of the casing, the same comprising a vertical slit in said annulus, lugs at the respective sides of the slit and a clamping-bolt passing through said lugs, substantially as set forth.

8. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, and means for imparting vertical movement to said annulus the same comprising a series of cam-pins and cam-slots on the respective parts, the cam-slots having vertical entrance-passages to permit of the assembly of parts, substantially as set forth.

9. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhang-

ing flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said opening or slit, an upturned deflecting-lip projecting outwardly from said deck and means for imparting vertical movement to said annulus, the same comprising a series of cam-pins and cam-slots on the respective parts and a lateral arm on the annulus, substantially as set forth.

10. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, an oscillating gate adapted to close one side or the other of said opening, means for operating said gate, and means for imparting vertical movement to said annulus, the same comprising a series of cam-pins and cam-slots, on the respective parts, substantially as set forth.

11. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, an oscillating gate arranged within the interior of said casing and adapted to close one side or the other of said opening, means for operating said gate, and means for imparting vertical movement to said annulus, the same comprising a series of cam-pins and cam-slots on the respective parts, substantially as set forth.

12. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface of said slit or opening, an oscillating gate arranged within the interior of said casing and adapted to close one side or the other of said opening, means for adjusting said gate in one direction or the other, the same comprising a carrying-spider, a carrying-shaft passing axially through the bottom of said casing and an operating means connected to the lower end of said shaft, substantially as set forth.

13. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or open-

ing, an upturned deflecting-lip projecting outwardly from said deck, an oscillating gate adapted to close one side or the other of said opening and means for adjusting said gate in one direction or the other, substantially as set forth.

14. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, an upturned deflecting-lip projecting outwardly from said deck, an oscillating gate arranged within the interior of said casing and adapted to close one side or the other of said opening, and means for adjusting said gate in one direction or the other, substantially as set forth.

15. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface for said slit or opening, an upturned deflecting-lip projecting outwardly from said deck, an oscillating gate ar-

ranged within the interior of said casing and adapted to close one side or the other of said opening, and means for adjusting said gate in one direction or the other, the same comprising a carrying-spider, a carrying-shaft passing axially through the bottom of said casing, and an operating means connected to the lower end of said shaft, substantially as set forth.

16. In a sprinkler head or nozzle, the combination of a bottom cap or casing having a horizontal discharge slit or opening, an overhanging flange forming an extended top surface for said slit or opening, a vertically-adjustable annulus surrounding said casing and provided with a horizontal deck forming an extended bottom surface of said slit or opening, an oscillating gate arranged within the interior of said casing and having a semicircular body and an annular top extension, said gate being adapted to close one side or the other of said slit or opening, and means for adjusting said gate in one direction or the other, substantially as set forth.

Signed at St. Louis, Missouri, this 28th day of February, 1902.

FREDRICK WM. HERBKESMANN.

Witnesses:

CONRAD KRAFT, Jr.,

C. C. CRONE.