

(No Model.)

F. H. CYRENIUS.
AUTOMATIC SPRINKLER.

No. 575,417.

Patented Jan. 19, 1897.

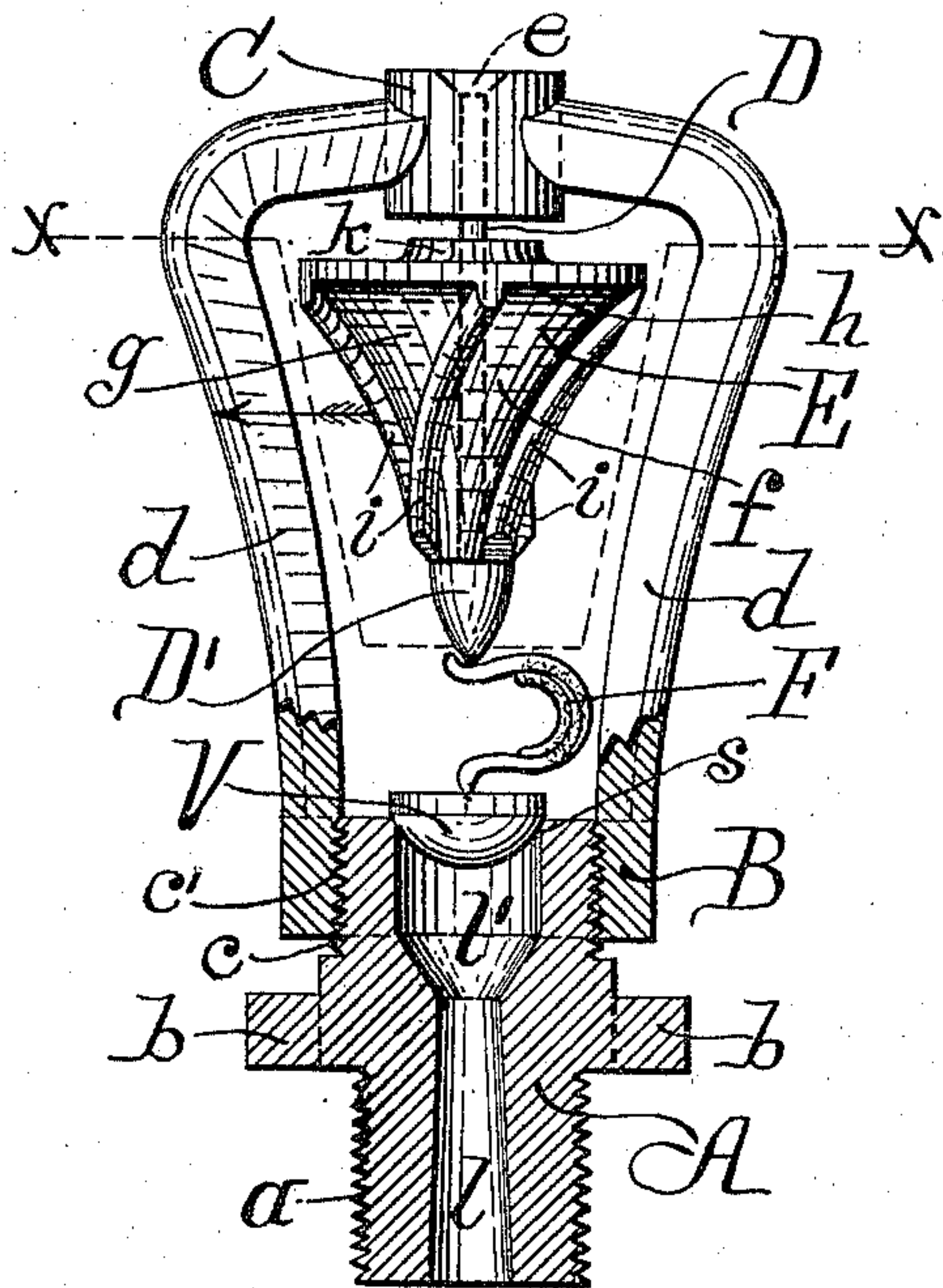


FIG-1-

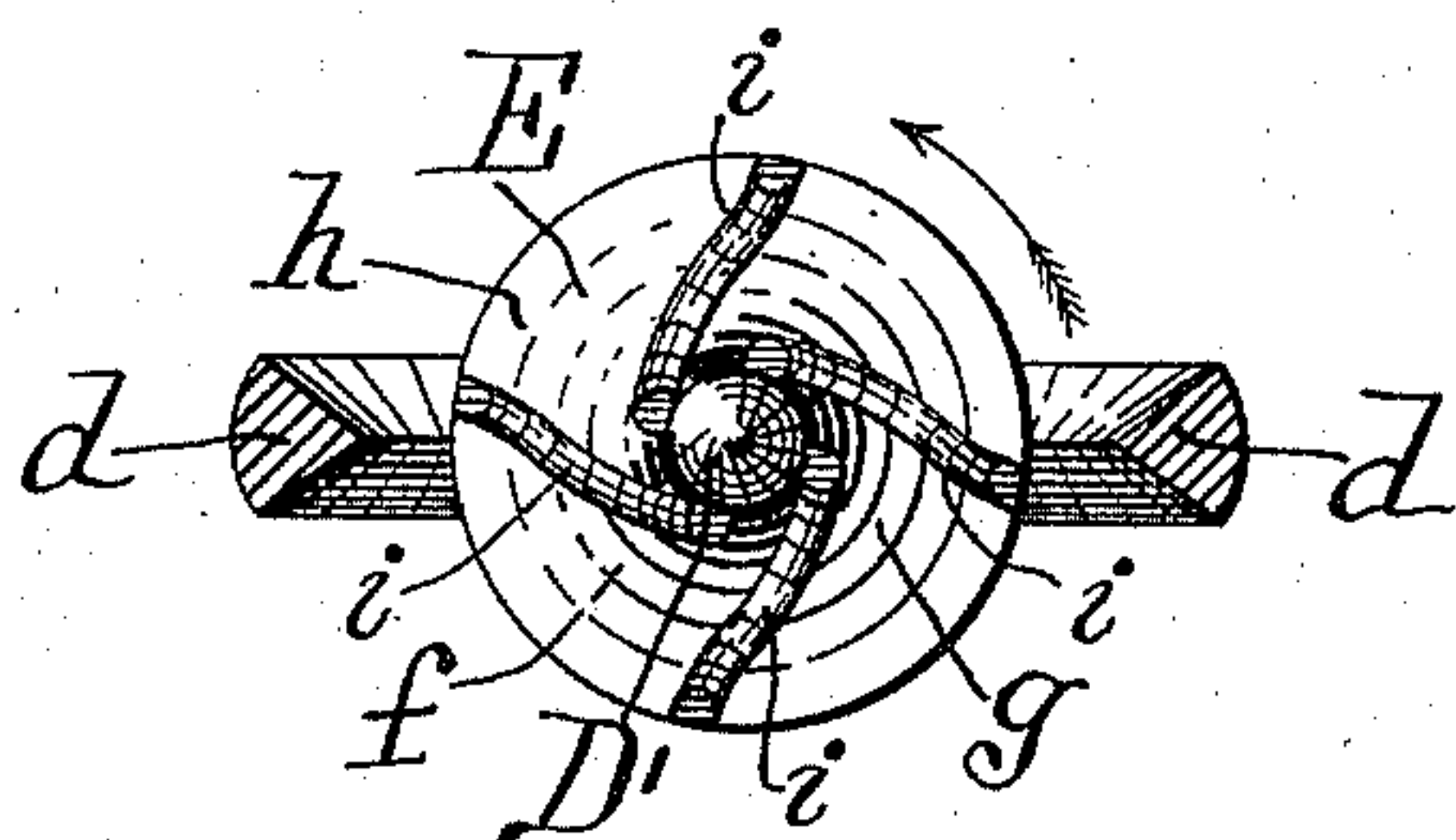


FIG-2-

ATTEST-

C. Kautenorth
W. R. Evans

INVENTOR-

Frederick H. Cyrenius,
By Wm C. Raymond,
his Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK H. CYRENIUS, OF OSWEGO, NEW YORK.

AUTOMATIC SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 575,417, dated January 19, 1897.

Application filed August 9, 1895. Renewed June 18, 1896. Serial No. 596,087. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. CYRENIUS, a citizen of the United States, residing at Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Automatic Sprinklers; 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, reference being had to the accompanying drawings, in which—

Figure 1 is an elevational view of my automatic sprinkler, a portion thereof being represented as appearing externally and the remainder longitudinally sectional; and Fig. 2 is a transverse section taken along dotted line $x x$, Fig. 1, looking upwardly.

Like letters of reference denote similar parts throughout the views of the drawings.

My invention relates to sprinklers or sprinkler-heads designed to act automatically when used in connection with water or chemical fire-extinguishing systems or apparatus or analogous or other service wherefor they may be found adapted.

The object of my invention is the production of an automatic sprinkler, of the species described, of a novel, simple, and effective construction, durable, comparatively inexpensive to manufacture, and devoid of liability to get out of working order, adapted to produce a profuse shower of spray of an exceeding area, and readily applicable not only for utilization as a fusion-valve and spray former and distributor in connection with piping communicating with a chemical or water supply for fire-extinguishing purposes, but, moreover, readily adaptable for lawn or garden sprinkling and fountains.

My invention consists in the novel features of construction, operation, and adaptability hereinafter described, and clearly enumerated in the hereunto-annexed claims.

It is constructed as follows:

A is a hollow plug or nozzle exteriorly threaded, as at a , at its lower portion to adapt its suitable connection with piping; $b b$, lateral lugs for facilitating the screwing of the plug into or out of connection with a supply-pipe, hose, &c., and c denotes the threads

the upper portion of the plug is externally provided with.

B indicates an internally-threaded collar fitting inclosingly the upper threaded portion c of the hollow plug by means of threads c' . Arising from and preferably integral with said collar or annular base there are standards or arms $d d$, located diametrically opposite each other, said standard-like arms extending upwardly a suitable distance and gradually curving outward as they arise, when upon their projection a proper height they curvingly and incliningly approach and unite into an integrally-formed bearing or cap block C, located axially lineal with the passage in the hollow plug A, the parts enumerated forming an upstanding hanger for the suspension therefrom of a revoluble spreader about to be described.

D is a vertical spindle properly held in place in the block C by a head e or in other satisfactory manner, said spindle projecting centrally downward to within a satisfactory distance from the collar B and terminating in a shoulder or bottom bearing D' for the normal upholding of the rotating spreader next to be specified. This swelled termination D' of the spindle, serving both as an underneath bearing or support for a revolving spreader and as a central divider to the water or other fluid rushing upward in a solid stream from out the nozzle or hollow plug A aforescribed. This enlargement D' is solid, preferably integral with the spindle or arbor D, and of an inverted-cone-like or acorn shape externally, the pointed end thereof being located at a medium distance above the annular base or collar B and axially directly over the center of the orifice of the nozzle A, the said nozzle preferably terminating upwardly substantially lineal with the forward face of the collar.

E denotes my revoluble spreader mounted on the spindle D, which spreader, of peculiar contour and detail formation, is, in connection with the normally-supporting fluid-divider D' , the prime and all-essential factor appertaining to the construction of my sprinkler and the proper operation thereof. Said spreader (by choice solid, as shown) is, referring to its body f , of inverted conical-like shape, but—and this is an all-important fea-

ture—having a concaved periphery, as designated by the letter *g*, said circumferential concaving or curvilinear contour being such that the more acute portion resides at and contiguous the upper part of the body *f*, the swelling thereof being such as to create a circumferentially-flaring rim or ledge *h* at the expanded horizontally-ended top of said body, the contracted lower end of the body being of a diameter substantially corresponding to that of the upper edge of the acorn-shaped fluid-divider normally supporting the spreader.

i are oblique or spiral-like flanges standing out from the concaved periphery of the body *f* of the spreader and following the external surface thereof, as illustrated, the flanges (integral with the body) preferably extending from the top to the bottom of the spreader-body, and their degree of projection being the same throughout their lengths.

A central perforation through the body of the spreader insures passage of the spindle, while *k* is a boss located centrally the flat top of the spreader.

Preferably the central passage in the hollowed plug or nozzle *A* is contracted, as designated at *l*, and upwardly enlarging, as at *l'*, the circular wall creating upwardly a valve-seat *s*. The valve *V*, seated on said seat and normally closing the passage, is by preference a hemispherical disk of glass or other non-corrodible substance, and impenetrable and non-adhesive. If wished, a ready-melting substance—sealing-wax for instance—may be applied around the valve where it impinges the valve-seat, for insuring more absolute closing of the passage, provided more effectual closure be possible.

The valve of the sprinkler is held to its seat by means of a strut or clamp-like brace *F*, extending from the rigid shoulder-like bearing or water-divider *D'* of the spindle *D* to the practically flat top of the valve-disk. Said strut is, by choice, of a *U* shape, set on edge, and comprising two or more metallic strips, slightly springy and curvilinear, and at their overlapping portions (usually about midway the strut's length) joined together by suitable fusible solder. The tight impingement of the upper part of the strut with the point of the protuberance *D'* and like firm pressure by its lower end against the valve assures effectual retention until the melting of the solder and consequent collapse of the strut of the valve upon its seat.

I may admittedly, if so wished, utilize other forms of struts extending from the parts aforementioned for the retention in place of the mounted valve.

The operation of my device is as follows: When the fusible solder joining together the pieces comprising the strut *F* is softened by the heat of a fire, said strut falls apart, and the valve, no longer held to its seat, is thrown forwardly away from the opening *l'* by whatever water or chemical pressure there may be within the nozzle *A*. The escaping fluid, rush-

ing outward in a solid or compact stream, is in its course centrally divided into a tubular-like sheet by reason of its impingement against the pointed divider *D'*. The fluid, coursing with velocity up the sides of said divider and striking forcibly against the concaved periphery of the spreader *E* and the flanges *i* thereof, causes revolution of the spreader, which movement breaks up the tubular-like stream of water or other fluid into spray and scatters the same in a profuse shower in all directions for a considerable radius, the flaring contour of the widened top portion of the spreader-body, in conjunction with the peculiarly-disposed flanges, so deflecting the particles of fluid as to throw same to a far greater distance from the spreader than is attainable by devices now commonly employed for the distribution of fluid in the form of spray; and, obviously, the greater the area which may be covered by a sprinkler the more effective and valuable it is, especially in cases of conflagration.

Practical tests upon my part of the working of my sprinkler thoroughly demonstrate the fact of its ability to spread in the form of spray a stream of water to a greater distance circumferentially the sprinkler than is possible to be accomplished by the other forms of sprinklers commonly employed, pressure of the fluid being equal. Very clearly the rapidity of the revolution of the spreader *E* depends upon the force whereby the jet issues forth from the nozzle, and coincidentally the centrifugal force of the rotating flanges assists to break the fluid into spray and distributes it equally to a satisfactory distance.

Whenever I wish to employ my sprinkler for lawn or garden irrigation or as a tip for stationary or portable fountains, and wherein any suitable stop-cock upon the pipe connected to would shut off or regulate the flow of the water, I simply dispense with the employment of the strut and the valve, and thus giving free egress for the water.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sprinkler, the combination with a nozzle, of a revoluble spreader or distributor of an inverted-cone shape provided peripherally with radial curved ribs, a spindle forward of and in line with the aperture of the nozzle and suitably supported away therefrom, and carrying the revoluble spreader, said spindle projecting slightly beyond the truncated vertex of the mounted spreader and terminating in a pointed extremity, substantially as described.

2. In a sprinkler, a nozzle, a spindle suitably supported in line with the aperture of aforesaid nozzle and away therefrom, a revoluble spreader of inverted-cone shape and peripherally concaved and having radial curved ribs, operatively mounted on the spindle, said spindle beyond the truncated end of the spreader terminating in a protuberant

pointed extremity, all combined and operating substantially as described.

3. The combination, in a sprinkler, of a nozzle provided at its discharge with a valve mounted in a valve-seat, a collar secured to the nozzle and provided with means for upholding a longitudinal spindle above and lineally with the passage of the nozzle, an inverted-cone-like protuberance terminating the spindle at a moderate distance from the nozzle and lineal with its aperture, a revolvable spreader or distributor journaled on said spindle and supported away from the nozzle by the protuberance aforementioned, which last stated is adapted to divide into a tubular-like stream the jet of fluid issuing from

the nozzle, said priorly-stated spreader being of an inverted conical-like shape, peripherally concaved, and provided with oblique or spiral flanges, and means extending from the terminating protuberance of the spindle to the valve closing the passage of the nozzle retaining the valve under normal conditions on its seat, substantially as described. 20

In testimony whereof I affix my signature, 25
in presence of two witnesses, this 23d day of July, 1895.

FREDERICK H. CYRENIUS. [L. S.]

Witnesses:

WM. C. RAYMOND,
W. F. BAKER.