(No Model.) 2 Sheets—Sheet 1.

T. M. MURPHY.

SPRINKLER.

No. 418,048. Patented Dec. 24, 1889.

Fig. 1.

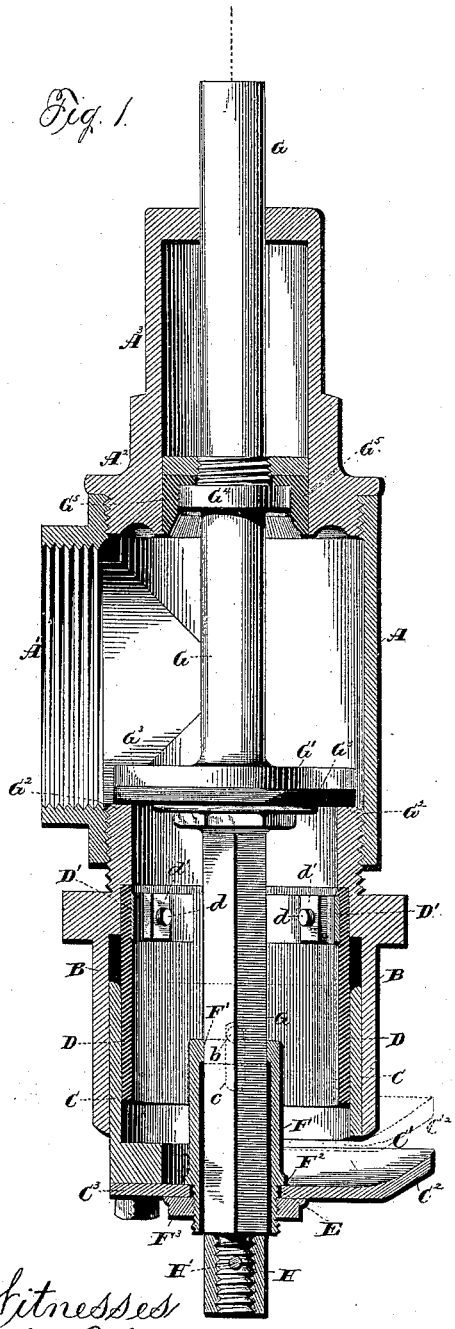
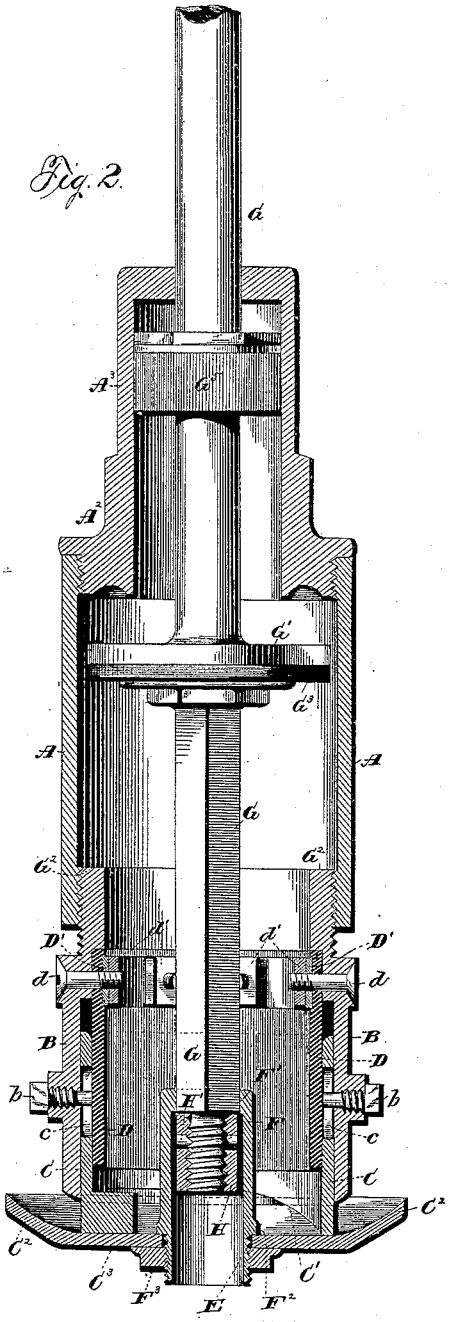


Fig. 2.



Witnesses
Chas. J. Williamson.
Henry C. Hazard.

Inventor,
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by Brundle and Russell
his attorneys

(No Model.) 2 Sheets—Sheet 2.

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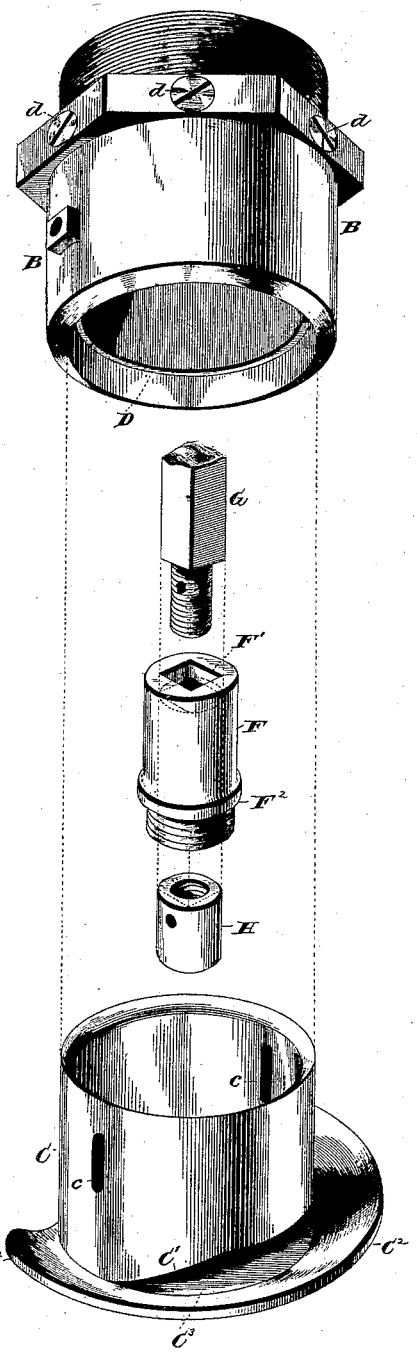
Fig. 3.



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Thomas M. Murphy
by Pindle and Russell
his Attorneys

UNITED STATES PATENT OFFICE.

THOMAS M. MURPHY, OF ST. LOUIS, MISSOURI.

SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 418,048, dated December 24, 1889.

Application filed April 24, 1889. Serial No. 308,407. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. MURPHY, of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Sprinklers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a vertical central section of my sprinkler with the valve closed, so as to shut off the water from the sprinkling-slot; Fig. 2, a similar view with the section plane at right angles to the plane of section in Fig. 1 and the parts in position as when sprinkling is being done, and Fig. 3 a perspective view of the various parts of the sprinkler separated from each other.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved sprinkler; and to this end my invention consists in the sprinkler and in the construction, arrangement, and combination of the parts thereof, as hereinafter specified.

In my United States Patent No. 366,974 I show and describe a nozzle designed for use particularly for street-sprinkling carts, but also adapted to be employed elsewhere and for other purposes than sprinkling streets. Such nozzle, as is fully set forth in said patent, has, instead of a series of openings or holes for the exit of small streams of water, a narrow slot in combination with a distributing or spreading lip extending upwardly and outwardly from the lower side of the slot. As explained at length in the specification of the patent, the lip is continued around beyond the ends of the slot, while the slot itself is of one shape when the nozzle is to be used alone and of another where a pair of nozzles are employed, each to sprinkle one-half of a space. This combination of slot and lip I employ in my present nozzle with the same changes in details to suit the nozzle for different purposes, as in the case of my patent sprinkler. I need not, therefore, explain herein the form or construction of the slot and lip or their operation together to secure the desired even spreading of a thin sheet of water.

The special object of my present invention is to provide a slot-and-lip form of sprinkler which can be easily and readily adjusted at will from the seat of the sprinkling-cart or elsewhere, so as to throw a thinner or thicker sheet of water to wet down a surface less or more, as desired. With this object in view I have done away with the adjusting-sleeve with fastening set-screws used in my patented nozzle and have provided the adjusting or regulating means to be described hereinafter.

In the drawings, A designates a tubular casing of brass or any other desired metal or material. As shown, such casing is cylindrical in general shape, but I do not limit myself to that form. At one side of it is a threaded opening A′ for receiving the supply-pipe or a coupling on the latter.

On the upper end of casing A and fastened to it, preferably, by being screwed into it, as shown, is the cap A^2, having the upwardly-extending hollow neck A^3, whose interior, cylindrical in shape, is of less diameter than that of the casing. The upper end of this neck is provided with a central opening for a purpose to be described.

On the lower end of the casing A and preferably fastened thereto by being screwed up into it, as shown, is the tubular piece B, which, as illustrated, is cylindrical, but may be of any other desired shape. The lower portion of piece B is made of greater diameter than the upper portion, and within it fits, so as to be capable of easy sliding up and down, the tubular piece C, carrying at its lower end the issue-slot C′ and distributing-lip C, constructed and relatively arranged as in my patented nozzle hereinbefore referred to. The walls of piece C are made of such thickness that their inner face is substantially flush with that of the upper unrecessed or uncut-away portion of piece B. While the lip C^2 can be made in one piece with piece C, I prefer to form it, as shown, upon a separate plate C^3, which is fastened to piece C, so as to constitute the bottom thereof. The lower side of issue-slot C′ is then formed by the plate. Piece C is guided in its up-and-down movements within the piece B by screws *b b*, tapped through the sides of piece B and engaging vertical slots *c c* in piece C. The length of these slots is such as to allow sufficient up-and-down movement of piece C to

cause the issue-slot C′ to be entirely covered or uncovered by the lower edge of piece B, as indicated in dotted and full lines in Fig. 1. The adjustment of the piece C up or down between the limits of its movement will cause more or less of the slot to be covered or closed by the piece B, so that the sheet of water which can issue will be thinner or thicker.

As the piece C should be capable of easy up-and-down movement, I do not attempt to make it fit so closely within piece B as to prevent all chance of leakage, but cover the joint or space between its upper edge and the annular shoulder at the top of the recess or enlargement within piece B by means of a dependent annular lip D, extending down from the upper portion of piece B in contact with the inner face of piece C. Such lip can be formed upon or integral with piece B; but I prefer to make it separately in the form of a cylinder and attach it to the inner face of piece B, as shown in the drawings. While it can be made of metal, I prefer to make it of rubber or leather, so that it will be flexible and can be forced outward against the inner face of piece C by the pressure of the water flowing through the nozzle.

For fastening the rubber lip or cylinder in place I use the clamping-ring D′, held against the inner face of the cylinder so as to clamp the upper edge of the latter between it and the piece B by means of screws *d d* and nuts *d′ d′*.

In the bottom of the slot and lip carrying lower part C, forming the nozzle proper, is a central opening E, down through which extends the threaded end of a tube F, whose upper end is provided with an angular or rectangular shaped opening F′. The interior of the tube below such opening is made cylindrical and of a diameter equal to or greater than the greatest diameter of the opening. An annular shoulder F^2 on the tube near its lower end engages the upper side of the plate C^3, forming the bottom of piece C, while a nut F^3, screwed upon the projecting end of the tube, engages the lower side of the plate around the opening E. With this nut screwed up in place the plate around the edge of such opening will be clamped between the nut and shoulder F^2, so as to fasten the tube firmly and rigidly to plate C^3.

Upon a stem or rod G, arranged centrally within the nozzle, is a valve disk or head G′, adapted to rest when down upon a valve-seat G^2 on the upper end of piece B, so as to close the passage from casing A downward to the slotted portion of the nozzle. This valve-head, which can be formed or fixed on the rod in any desired way, is preferably provided with a rubber or leather facing G^3 to engage the valve-seat and make a tight joint when the valve is down. The portion of the valve rod or stem above the valve is made cylindrical and extends up through the central opening in the top of the neck A^3 of cap A^2. Upon the rod within such neck is a head G^4, adapted to fit closely the interior of the neck. Such head is provided with a packing G^5, preferably of rubber, but of leather or other semi-elastic material, if desired, which, engaging the inner face of the neck, effectually prevents any leakage of water up around the stem through the stem-receiving opening at the top of the neck. The lower portion of the stem or rod G is made angular in shape, so as to fit and be capable of sliding through the opening F′ in the tube F, fixed to the bottom of the lower slotted portion C of the nozzle.

Upon the extreme lower end of the rod is secured the nut H, cylindrical in shape and of such diameter that it projects beyond the flat sides of the rod. With this construction the upper end of the nut forms a shoulder to strike the under side of the top of tube F when the rod or stem G is raised, as shown in Fig. 2. For securing this nut in place and preventing its working off I provide a nut-lock consisting of a pin H′, extending through the nut and the threaded portion of the rod upon which the nut is screwed.

The distance from the valve-head G′ to the upper end of the nut is such that when such head is down, as shown, so as to rest upon its valve-seat to close the passage to the sprinkling-slot, and the lower portion C of the nozzle is down in its lowest position, all as shown in Fig. 1, the nut H will stand at some distance below the upper end of the tube F. With the parts in this position the head G^4 on the stem or rod stands within the lower end of bonnet or cap A^2. The water entering the casing A is now confined to such casing by heads G′ G^4, so that it cannot flow down into the parts B and C of the casing or up within the cap or bonnet A^2. If, now, it is desired to set the nozzle in operation, the stem or rod G is drawn upward, so as to raise the valve G′ and let the water down within parts B and C to issue from the slot C′. The position of the nut H on the stem with reference to the upper end of the tube F allows the stem to be raised far enough to open wide the valve before the nut strikes the tube end. The valve is then opened to admit free flow of water down through the nozzle, and the piece C is down, so that its slot *c′* is entirely uncovered by the lower edge of part B. The sheet of water issuing from the slot and passing upward and outward over the lip is then of the greatest thickness possible with the nozzle. If it be desired to make the sheet or stream thinner, so as to wet down a space less, as where an asphalt instead of a granite or a macadam pavement is to be sprinkled, the stem or rod G is drawn up farther by any desired means, as by a lever worked by the driver of the cart from his seat. The engagement of the nut H with the upper end of the tube F then causes, as the rod G rises, a raising or lifting of the slotted nozzle with reference to the piece B, so that some of the upper

portion of the issue-slot C′ is covered by the edge of the latter piece, and the space through which the stream or sheet of water can pass is made of less height.

The casing A and bonnet or cap A^2 are made of such length as to allow the heads G′ and G^4 to move upward with the rod until the latter has raised the piece C to bring the issue-slot of the latter entirely within the lower end of piece B. The sheet or stream of water can thus be adjusted to any desired thickness by the upward movement of the rod G after the valve has been opened. As the piece C is raised, the lip C^2 at the lower side of the issue-slot C′ is brought nearer and nearer the lower edge of piece B, so as to confine the stream or sheet of water more and more. In order to allow the most free upward and outward flow of the water from the slot over the distributing-lip, the edge of piece B is on its outer side rounded or inclined upward and outward, as shown in Fig. 1. If during a sprinkling operation it is desired to shut off the sheet of water, as in passing an obstruction or through a narrow place, the rod G can be quickly raised to lift piece C, so that the edge of piece B will entirely close the slot C′. Upon lowering the rod again the piece C can be allowed to drop again to the proper position for causing the delivery of a sheet or stream of the desired thickness. When the sprinkling operation is completed, the rod can be allowed to drop or be forced down to its lowest position, so that the valve G′ will rest upon its valve-seat to shut off the water from the delivery part of the nozzle. The piece C will then drop to its lowest position again, as shown in Fig. 1. With the rubber lip or jacket lapping over the space between the upper end of piece C and the shoulder within piece B there can be no leakage of water out around piece C even when the latter fits the piece B but loosely.

I do not claim or intend to cover by the claims in this case, broadly, a nozzle made movable within a casing, in combination with means for fastening it as moved, but without means for moving and adjusting it to any desired position with reference to the casing.

Having thus described my invention, what I claim is—

1. In combination with the movable tubular nozzle with its side delivery-slot, a casing with a tubular portion to receive the nozzle and a rod to raise the nozzle up within such part of the casing, substantially as and for the purpose shown.

2. In combination with a suitable casing having a tubular portion, the movable tubular nozzle extending within such portion of the casing and having at its outer end the side delivery slot and lip, and guiding devices adapted to prevent rotation of the nozzle, while allowing it to be moved in and out with reference to the casing, substantially as and for the purpose set forth.

3. In combination with the casing having a tubular portion, the tubular nozzle extending up within such portion and made movable with reference thereto, and a cylindrical lip within the casing overlapping the inner end of the nozzle, substantially as and for the purpose specified.

4. In combination with the casing having a tubular portion, the tubular nozzle extending into such portion and made movable with reference thereto, and a cylinder or jacket of flexible material attached to the tubular portion of the casing within the same and extending outward over the inner face of the inner end of the nozzle, substantially as and for the purpose shown.

5. In combination with the movable tubular nozzle and the casing having the tubular portion within which the nozzle is made movable in and out, a cylinder of rubber attached to the inner side of the casing beyond the inner end of the nozzle and extending outward so as to overlap such end of the nozzle, substantially as and for the purpose set forth.

6. In combination with a casing having a tubular portion and the tubular nozzle made movable in and out within such portion, the rubber jacket on the inner side of the casing extending outward within the nozzle, a clamping-ring engaging the inner face of such jacket, and means on the casing for drawing and holding such ring in clamping position, substantially as and for the purpose set forth.

7. In combination with the movable nozzle with the side delivery-slot, a suitable casing having a portion adapted to cover more or less of the slot as the nozzle is moved and a stem or rod connected with the nozzle so that the same can be moved at will, substantially as and for the purpose described.

8. In combination with the nozzle having the side delivery-slot, a casing having a portion adapted to cover more or less of the delivery-slot as the nozzle is moved with reference to the casing, the valve within the casing for shutting off the water from the nozzle, the rod carrying such valve, and connections between such rod and nozzle, whereby the latter is moved by the rod after the said rod has opened the valve, substantially as and for the purpose specified.

9. In combination with the movable tubular nozzle with side delivery-slot, a casing having a portion adapted to be caused to overlap the slot by movement of the nozzle with reference to the casing, the valve stem or rod carrying within the casing a valve-head to close the passage to the nozzle, and suitable engaging devices on the nozzle and rod adapted to allow upward movement of the rod to open the valve and then to cause the nozzle to move with the rod, substantially as and for the purpose shown.

10. In combination with the tubular nozzle having the side delivery-slot and the casing provided with a portion adapted to cover such slot as the nozzle is moved inward with reference to the casing, a tube on the nozzle end,

the rod carrying the valve for shutting off water from the nozzle and having its lower end extending down within the tube, a shoulder on the tube, and means on the rod end for engaging such shoulder after the rod has been moved inward to open the valve, substantially as and for the purpose set forth.

11. In combination with the movable nozzle having the side delivery-slot and the inwardly-extending tube with an angular opening in its inner end, the casing, a portion adapted to overlap the delivery-slot as the nozzle is moved inward, the rod provided with the inwardly-opening valve for shutting off water from the nozzle and having the angular outer portion extending out through the opening in the tube on the nozzle, and means on the outer end of the rod for engaging the inner end of the tube after the rod has been moved inward to open the valve, substantially as and for the purpose described.

12. In combination with the movable nozzle having the side delivery-slot and lip and the upwardly-projecting tube with the angular opening in its upper end, the casing having a portion adapted to overlap the delivery-slot as the nozzle is moved upward, the stem or rod extending down through the casing and having its lower end made angular and projecting down through the opening in the tube on the nozzle, the upwardly-opening valve carried by the rod, a nut on the lower end of the rod to engage the upper end of the nozzle-tube after the rod has been raised to open the valve, a bonnet or cap on the casing, and a head on the rod sliding within such bonnet, provided with suitable packing to prevent leakage up around the head, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of April, A. D. 1889.

THOMAS M. MURPHY.

Witnesses:
C. C. CRANE,
JAMES P. WILTON.