R. M. MERRILL.
Lawn-Sprinkler.

No. 205,886. Patented July 9, 1878.

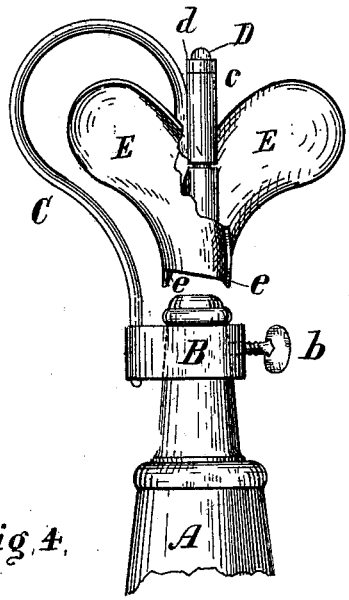

Fig. 1.

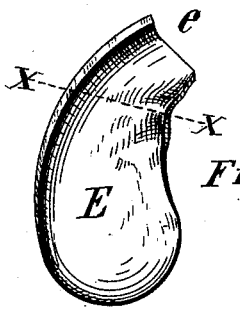

Fig. 4.

Fig. 5.

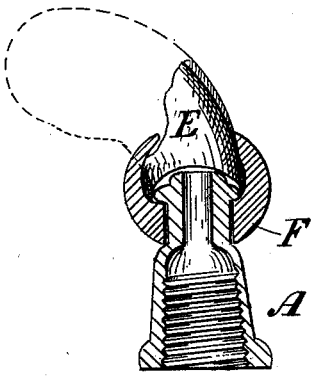

Fig. 3.

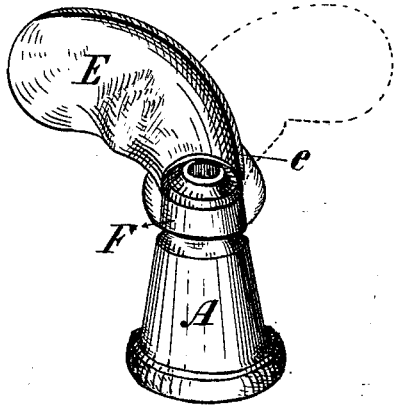

Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

RUFUS M. MERRILL, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN LAWN-SPRINKLERS.

Specification forming part of Letters Patent No. **205,886**, dated July 9, 1878; application filed August 20, 1877.

To all whom it may concern:

Be it known that I, RUFUS M. MERRILL, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Lawn-Sprinklers, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side view of my improved sprinkler with two wings or blades; Fig. 2, a similar view of a sprinkler with but one wing or blade; Fig. 3, a vertical section of the latter; Fig. 4, a plan view of one of the wings or blades; and Fig. 5, a cross-section of the latter, taken on the line *x x*, Fig. 4.

My invention relates to that class of rotary sprinklers in which the stream of water is distributed as it escapes from the nozzle of a pipe by means of spirally-arranged wings or blades, which are supported so as to rotate freely.

The invention consists in arranging the blades of the sprinkler entirely outside of the nozzle, whereby the jet or stream of water is not broken or impeded in its flow until it has escaped from the nozzle.

It also consists in special devices for mounting the sprinkler on the nozzle.

It also consists in the special form of the blades or wings of the sprinkler.

In the drawings, a represents the nozzle of a hose-pipe, to which the sprinkler is to be applied. When a two-bladed sprinkler is desired a collar, B, is fitted to the end of the nozzle, and secured in place by means of a set-screw, *b*. A rod or bar, C, is fastened to the collar B. This rod C extends upward from the collar, and is bent in goose-neck form, so that the upper end is brought almost directly over the nozzle, as shown in Fig. 1 of the drawings. Upon the upper end of the rod C is a suitable tubular bearing, *c*, within which is fitted a short shaft, D, held in place by a nut, *d*, turned upon its upper end. At the lower end of the shaft are two wings or blades, E, securely fastened to the lower end of the shaft, and extending upward and outward, being arranged spirally and on opposite sides of the shaft, as shown in Fig. 1 of the drawings, the axis of the sprinkler being exactly over the center of the nozzle-orifice. I prefer, however, to use a sprinkler with but one blade or wing, as it is more simple and cheap in construction, and is effective in its operation. In this case I fit the ring or collar F loosely upon the upper end of the nozzle A, which is constructed with a suitable seat to form a bearing for the ring or collar. To this collar or ring F a single blade or wing, E, is attached, so that the two will easily revolve together about the nozzle. The base of the wing is arranged a little at one side of the aperture of the nozzle, and the concave portion extends upward in an inclined direction over said aperture, as shown in Fig. 2 of the drawings, its inclined and spiral arrangement being the same as in the construction described above, where two blades are used. Two blades centrally arranged may be attached and used with this collar, if desired. In both instances the device is supported so that the blades or sprinkling mechanism are entirely outside and above the end of the nozzle, so that the stream of water may escape from the end of the nozzle without obstruction, and the operation of the sprinkler will be upon a free jet of water.

The blades or wings, whether one or two are used, are constructed concave on one side and convex on the other, a spiral twist being given to them, and the edge on the concave side being bent or turned up at the lower end of the blade to form a flange, *e*, as shown in Fig. 5 of the drawings. When the sprinkler is in position upon the nozzle, this turned-up edge or flange *e* is at one side of the aperture in the nozzle-pipe at the lower end of the blade, as shown in Figs. 1 and 2 of the drawings, and, owing to the spiral arrangements of the blade, the flange extends up over the nozzle, being arranged on what may be called the upper edge of the blade. The jet of water, as soon as it leaves the nozzle, will therefore strike against the flange *e* and the adjacent concave portion of the blade, thereby causing it to revolve, which movement breaks up the stream of water and scatters it in all directions, the rapidity of the rotation of the sprinkler being dependent upon the force with which the jet issues from the nozzle, and the centrifugal force of the revolving blades assisting to throw the spray to a great distance and distribute it equally over the surface.

When in use the hose pipe and nozzle are

supported in a perpendicular position by means of a suitable post or standard resting upon or stuck into the ground and extending to any height desired.

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

1. A nozzle, A, in combination with a rotary spiral sprinkler or distributer, arranged upon and entirely outside the nozzle, whereby the flow of water through and out of the latter is unimpeded, and the sprinkler acts upon a free jet after it has left the nozzle, substantially as described.

2. The nozzle A, in combination with a collar, F, mounted loosely upon the outer end thereof, and a spiral blade or blades, E, attached to the collar and arranged with reference to the orifice of the nozzle, substantially as and for the purpose set forth.

3. A spiral blade, E, for rotary sprinklers, made concavo-convex in form, and provided with a flange, *e*, on its concave side, arranged at one edge thereof, substantially as and for the purpose set forth.

RUFUS M. MERRILL.

Witnesses:
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