

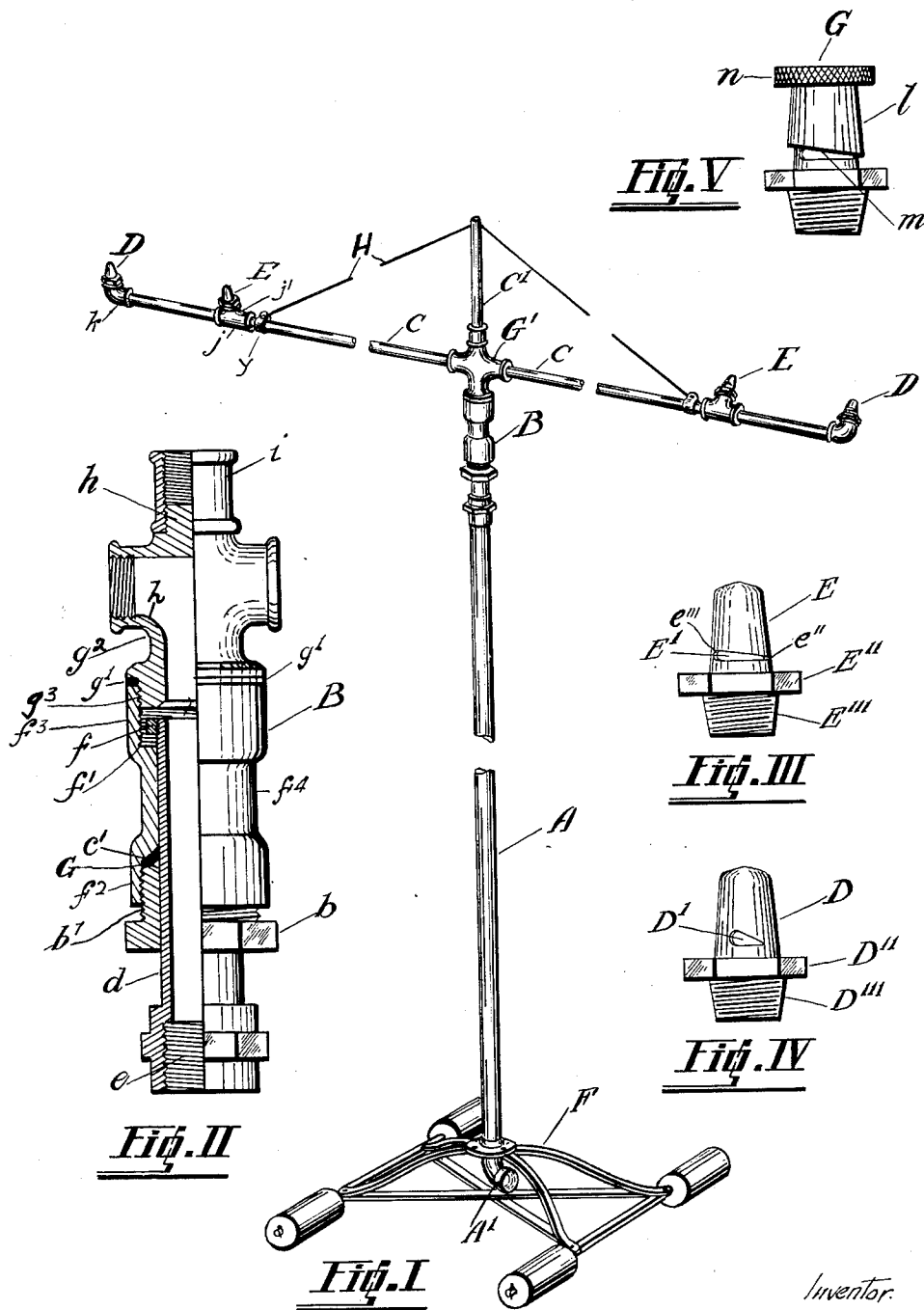
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WATER SPRINKLER

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UNITED STATES PATENT OFFICE

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WATER SPRINKLER

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My invention relates to a sprinkler which is so constructed that it may be readily moved from place to place as desired, and which may be readily adjusted to meet the peculiar watering requirements of any portion of a lawn, flower bed, tennis court, bowling green, golf links or the like.

An object of this invention is the production of a sprinkler in which the spray nipples are adjustably mounted on horizontally disposed arms, which in turn are connected with a turntable set in, and maintained in motion by the hydraulic pressure as hereinafter more fully described.

Another object of the invention is to regulate the speed of rotation of the spray arms—apart from that provided by the aforesaid hydraulic pressure—by a simple adjustment of the nipples.

A still further object of the invention is to completely spray the whole of the area on which the apparatus may be operating, and thus overcome a defect in most sprinklers of this type, i. e., leaving the area immediately beneath the stand pipe, or centre of the apparatus, unwatered. This is accomplished by the peculiar construction of the nipples and is hereinafter more fully set out.

A still further object of this invention is to water a maximum area with a minimum hydraulic pressure.

Other objects and advantages of my invention will be revealed from the following detailed description, and in which reference is made to the accompanying drawings, in which—

Figure 1 is a general perspective view of the apparatus mounted on a mobile frame.

Figure 2 is an elevation, partly in section, of the turntable or hub to which the spray arms and stand pipe are fixed.

Figure 3 is a plan of the nipple or nozzle which is positioned on the spray arm at each side and adjacent the hub, and

Figure 4 is a similar view of the nozzle which is positioned at the extreme end of the spray arm.

Figure 5 is a plan showing a spray regulating cap positioned over the spray orifice of a nipple.

In these drawings like reference characters indicate like parts, the letter A indicating the spray arm supporting standard; B, the hub; C, the spray arms; D and E, the nozzles.

The tubular standard A is rigidly mounted on a roller carriage F and is provided with a union A¹ to receive the corresponding part of a garden hose or pipe as may be desired, the top of the standard being externally screw threaded to receive the threaded part *e* of a hollow spindle *d* of any approved metal. The top of the spindle is also externally screw threaded to receive a ring *f*, which functions as a flange when seating on the internally shouldered part *f*¹ of the top part *f*³ of the turntable body or hub B, and in this position prevents the body B flying off the spindle *d* when water enters the hub; the ring *f* furthermore forms a surface upon which the water re-acts as will be hereinafter explained.

The hub body B comprises the top part *f*³, a reduced central part *f*⁴, which is of slightly greater diameter than the spindle *d*, and a lower part *f*², which is internally screw threaded to accommodate the threaded part *b*¹ of a gland nut *b*. The internal lower part *f*² of the body is chamfered at *c*¹—immediately above the thread thereof—and merges into the reduced central part *f*⁴. A leather washer G is placed within the chamfered part *c*¹, and is adapted, when forced upwards by the gland nut *b*, to make a water-tight joint between the spindle and body.

By loosening the gland nut, greater freedom is obtained between the spindle and washer, thus permitting easy rotation of the hub at low pressures. Contrariwise, by tightening or screwing up the gland the washer is caused to come into closer contact with the spindle and hub, and thus will cause a slowing down of the rotary movement even when a high pressure service obtains.

Thus far, I have described the spindle, gland washer, and body part of the apparatus. The cross head piece G', from which the spray arms radiate, will now be considered. The lower part *g*² of the head is externally screw threaded at *g*³ to engage the threaded part of the top end *f*³ of the body, the face of such part *g*² being adapted to

contact with the opposing face of the ring *f*, when the sprinkler is inoperative.

As will be apparent, the body or hub rises when the water enters and the head *G'* being connected thereto rises also, and as a consequence a space is formed between the hitherto contacting faces of the ring and head. This is a very important feature of my invention, because the said space being occupied by the water, permits the head and body to spin as it were on a water cushion.

The horizontal bore of the head, being of restricted area—having regard to the diameter of the hollow spindle *d*, and to the resistance offered by the peculiarly formed slots *E¹*, *D¹*, of the nozzles—causes a back pressure or re-active force sufficient to create the water cushion.

The head piece is internally curved at *h* adjacent the point where the spray arms are screwed thereto, thus offering little frictional resistance to the outflowing water.

The nozzle and attendant fittings will now be considered. In the case of nozzle *E*, I provide a *T* piece *j*, which may be formed at *j'* with an integral holed lug to receive the stay wires *II*, which are carried by a post *C¹* screwed to the head piece. As shown however, the stay wires are anchored to a clip *y* surrounding the spray arms *C*. The nozzle comprises a hollow conical part *E*, water issuing slot *E'*, hexagon shoulder *E''*, and screw threaded tapering end *E'''* which is screwed into the vertical leg of the *T* piece. At a point adjacent the shoulders *E''* and extending approximately $\frac{1}{3}$ of the circumference of the cone *E*, I provide a slot *E'*, which is of an elongated tapering formation and terminates at one end in an apex *e''*, and at the opposite end in a rounded part *e'''*.

This particular construction ensures that the water issuing therefrom, in addition to being projected in the form of a fine spray outwardly, also causes the spray to be thrown inwardly towards the centre of the apparatus, thus spraying the area immediately around the centre of the apparatus, and at the same time directing the spray outwardly to meet the spray issuing from the nozzle *D*. The slot *D¹* in the nozzle *D* is of a short and wide construction—by way of comparison with the elongated narrow slot of the nozzle *E*—and is faced outwardly to project the spray to the furthest points of the circular area covered.

When assembled on the spray arms, the nozzles are inclined at an angle of 45° to the horizontal, and the pairs of nozzles *D*, *E*, *D*, *E*, are oppositely set on each side of the hub, because it has been found in practice that such a setting gives a uniform spray under normal pressure.

If, however, a high pressure water system is encountered, the nozzles are turned to lie horizontally with respect to the spray arms,

and in a low pressure system they would be turned vertically.

If the throw be too great, the distribution may be varied by simply turning the nozzles by the application of a spanner to the shoulder *E''*.

In some cases it is desirable to spray seed beds, and to further reduce the spray to the necessary misty condition, I provide an adjusting cap 1 (Figure 5). This is a neat fit over the nozzle, and is bevelled as shown at *m*, so that it gradually exposes or closes the slot in the nozzle as may be required. The cap is provided with a milled head *n*, for easy manipulation thereof.

Whilst I have shown the sprinkler mounted on a mobile frame suitable for watering lawns, etc., it is obvious that it may be supported in any suitable manner, such as for instance on a tripod or like support, and the number of nozzles on the spray arms may be increased as desired, so long as they are arranged in the manner hereinbefore set out.

What I desire protection for it is more clearly set out in the following claims.

What I claim is:—

1. A sprinkler including a rotating cross head, spray arms carried thereby, and a plurality of nozzles removably carried by each of the spray arms and extending laterally therefrom, each of the nozzles being formed with elongated slots in a plane at right angles to the axis of the nozzles, the slots of the nozzles remote from the cross head being of greater width and less length than the slots in the nozzles more nearly adjacent the cross head.

2. A sprinkler including a rotating cross head, spray arms carried thereby, and a plurality of nozzles removably carried by the spray arms, each of the nozzles being formed with elongated slots in a plane at right angles to the axis of the nozzles, the slots of the nozzles remote from the cross head being of greater width and less length than the slots in the nozzles more nearly adjacent the cross head, and means for supporting the nozzles for independent movement relative to the spray arms whereby said nozzles may be arranged at any angle intermediate the horizontal and vertical relation to the spray arms.

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