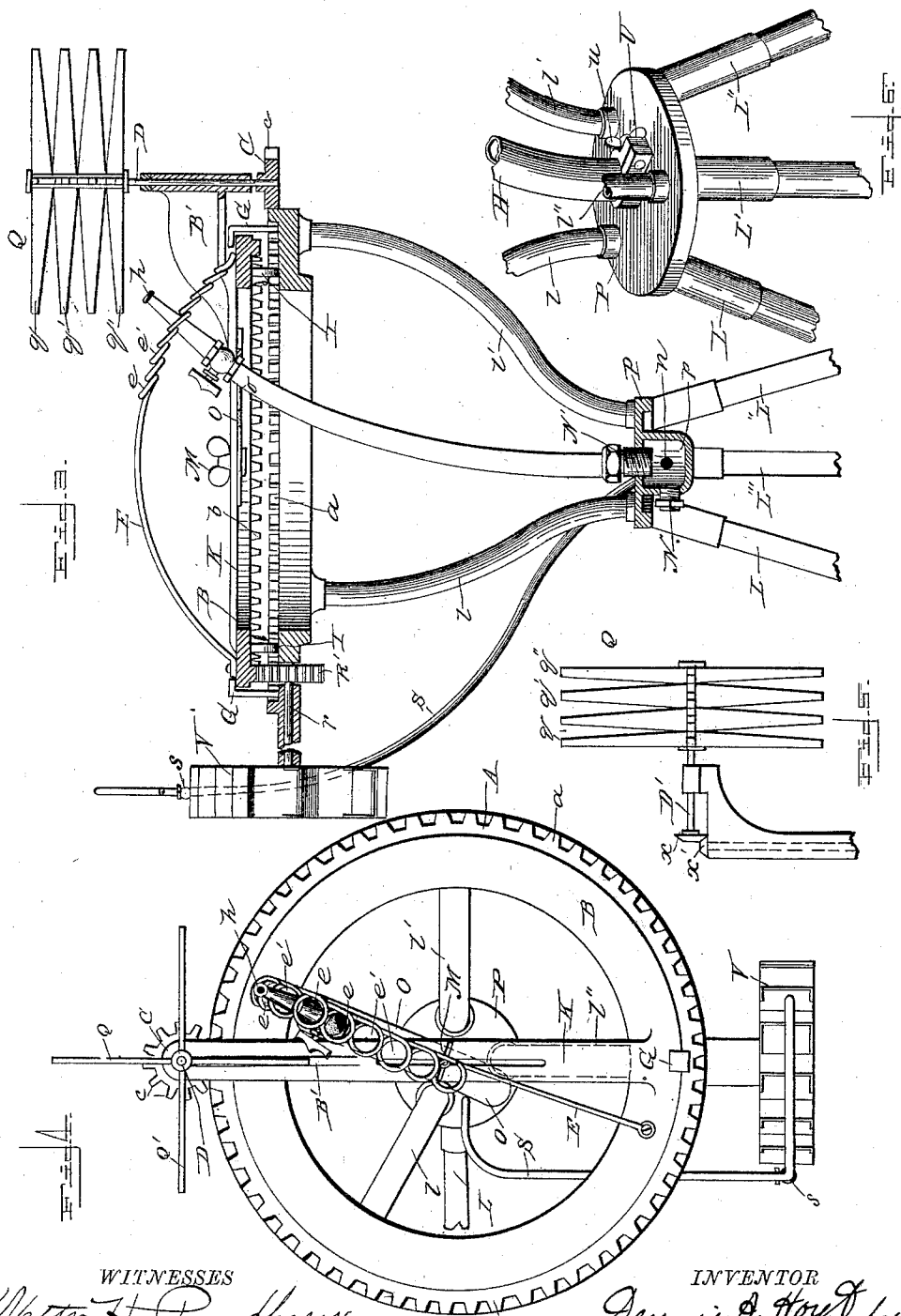


D. A. HOYT.
LAWN SPRINKLER.

No. 448,522.

Patented Mar. 17, 1891.



WITNESSES

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UNITED STATES PATENT OFFICE.

DENNIS A. HOYT, OF ST. CLOUD, MINNESOTA.

LAWN-SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 448,522, dated March 17, 1891.

Application filed June 23, 1890. Serial No. 356,354. (No model.)

To all whom it may concern:

Be it known that I, DENNIS A. HOYT, a citizen of the United States, residing at St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Lawn-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.

My invention consists in the improved form of automatic lawn-sprinkler hereinafter to be more particularly described and claimed.

In the drawings, Figure 1 is a side view of one form of my invention. Fig. 2 is a longitudinal vertical section thereof. Fig. 3 is a vertical section of a modified form. Fig. 4 is a plan view of Fig. 3. Fig. 5 is a modified form of spraying apparatus. Fig. 6 is a modified form of hose-supporting apparatus, and Figs. 7 and 8 are further modifications of the spraying apparatus.

Various lawn-sprinklers have been heretofore designed having automatic apparatus for revolving the same—such, for instance, as I have described in my application, Serial No. 352,127, filed May 17, 1890, which application was pending simultaneously herewith, but has since resulted in Patent No. 437,118, issued September 23, 1890—in which a portion of the water is employed to run a water-wheel to revolve the carriage supporting the hose. It sometimes occurs that this water-wheel attachment is not sufficiently powerful, owing to the small leverage which the buckets of the water-wheel have on the operating-shaft, or for other reasons, and it becomes desirable to employ some more powerful apparatus which shall at the same time consume less water. I have also found that it is possible to cause the rotation of the carriage by gearing the same to a rotating spraying device, so that the driving apparatus heretofore referred to may be altogether dispensed with, and the combined spraying and driving apparatus alone used. To accomplish the objects above set out and to secure other advantages not specifically alluded to, I have devised the improved form of lawn-sprinkler herein described and illustrated, in which—

A represents the bed or upper portion of the supporting-stand, which rests on the tri-

pod $l\ l'\ l''$. These rods $l\ l'\ l''$, forming the tripod, are preferably set in a plate P, which in turn is supported by four legs $L\ L'\ L'' L'''$.

Supported on the portion A of the stand is the rotating carriage B, which runs on rollers II, or upon any equivalent friction-destroying device. This carriage B has one or more supports for the nozzle h of the hose H. I have shown two supports, either or both of which may be used. They consist of the guide E, rigidly fastened to the rotating carriage, which has a number of holes $e\ e'$, through which the nozzle of the hose may be inserted, and thereby given various degrees of elevation, and also of the adjustable arm O, mounted on the cross-bar K by means of the set-screw M passing through slots in said arm and cross-bar. This adjustable arm O has an opening o , through which the hose may be passed, thus forming a loose bearing for the hose, which is arranged below the support for the nozzle formed by the guide E, whereby the hose is loosely supported at a point above its connection with the stand and below the point of support in the guide E, so that when the carriage is revolving the hose will be supported loosely in its several supports or bearings, which will prevent the same from being twisted. The adjustable arm O also provides a simple means for adjusting the hose, so that the direction of the nozzle may be varied without removing the hose from its supports, as has been necessary in devices of this character heretofore employed.

The apparatus which I have illustrated for driving the rotating carriage B consists primarily of the gear-wheel R' , mounted on the shaft r in the stand A and meshing with the teeth b on the under side of said rotating carriage. The shaft r has a ratchet-wheel R mounted thereon, which is engaged with and operated by the pawl F' , as best shown in Fig. 1. This pawl is mounted on the lever F and kept in engagement with the ratchet-wheel by the spring F'' . The lever F is pivoted on a bracket f , which is integral with the stand A. This lever is counterweighted, having the weight W at one end, which normally tends to hold that end of the lever down in the position shown in Fig. 1. At the other end of the lever is the tank T, which is slowly filled with water from any suitable

water-supply, as the pipe S, controlled by the stop-cock s. This tank is so arranged that when filled it falls, carrying with it the lever, and tipping empties itself.

5 The spraying apparatus consists of a number of forms all operating on the principle of having a number of paddles or vanes which are capable of movement in the line of the stream from the hose-nozzle. I have found
10 that this construction of spraying apparatus breaks up the stream of water, so that the greatest amount of space is covered thereby without at the same time interfering materially with the power of the stream and the
15 distance to which the water is thrown.

The spraying apparatus consists of the shaft D, journaled in a rigid projection B' from the rotating carriage. On the end of the shaft D is the gear-wheel C, having the teeth c, which mesh with the teeth a on the stand. On the upper end of the shaft D, in line with the discharge from the hose-nozzle h, is any suitable arrangement of paddles—such, for instance, as a number of wires or metal strips
20 d, arranged in the form of a globe, as shown in Figs. 1 and 2 of my present application, or a number of paddles Q Q', as shown in Fig. 4. These paddles, again, may each be composed of a number of tapering fingers q q' q'',
25 as shown in my aforesaid patent, No. 437,118, and in Fig. 3, and this latter is my preferred form. Again, the paddles, in place of being mounted on the vertical shaft D, may be mounted on an inclined or a horizontal shaft
30 D', as shown in Fig. 5, said shaft being geared to the vertical shaft D by the bevel-gears x x'. If desired, fanciful shapes may be given the spraying apparatus, as shown at d'', Fig. 7, and d'', Fig. 8.

40 The manner in which water is supplied to the hose and to the carriage-rotating apparatus may also vary. In Figs. 1 to 4 the plate P has a hollow portion or receptacle p made integral therewith, to which water is supplied
45 by hose-connection to the nipple N. The short section of hose H is connected to the said chamber p by the nipple N', and the water-supply S for the carriage-rotating apparatus is supplied through the opening u.
50 (Shown in Fig. 3.) When the spraying apparatus is depended upon solely for rotating the carriage, or when the tank T is so placed that it is filled by the spray from the said spraying apparatus, a simpler form of hose-connection may be used, as illustrated in Fig. 6,
55 where P is a simple plate having a perforation through which an ordinary garden-hose may be inserted, being held in place by any desired form of clamp, as the clamp U, operated by the set-screw u, (shown in said Fig. 6,) the branch pipe S being dispensed with.

65 Figs. 3 and 4 illustrate a slightly-modified apparatus in that the water-wheel V (illustrated in my pending application above referred to) is shown as operating in connection with the spraying apparatus to rotate the carriage.

The operation of my invention is evident from the above description. The tank T is slowly filled with water, either from the special supply S or by the spray from the spraying apparatus. When filled, it overbalances the weight W and sinks into the position shown in dotted lines in Fig. 1. This causes the pawl F' to run over one or more teeth of the ratchet-wheel R, and the tank T, having emptied itself by tipping the weight W, again operates the lever, swinging it back again into the position in full lines, and thereby rotating the ratchet-wheel R. The motion thus given is transmitted through the shaft r and the pinion R' to the carriage B. The said carriage is kept in position and prevented from lifting out of engagement with the pinion R' by the overhanging fingers G G' or by some equivalent apparatus. As the hose is thus gradually swung around so that the stream is delivered at all points of the horizon in turn, said stream is striking and rotating the paddles d of the spraying apparatus shown in Fig. 2 or those Q Q' of the modified form shown in the other figures. These paddles move in the line of the discharge from said hose, and thereby at the same time partially spray said stream without interfering with its onward progress, and rotate the shaft D, which by means of the gearing C c a assists to rotate the carriage. As before explained, when the head of water is sufficient to give the spraying apparatus the necessary power the auxiliary rotating apparatus, whether consisting of the lever and pawl or of the water-wheel V, may be dispensed with, and the spraying apparatus will alone rotate the carriage, thus economizing the amount of water otherwise wasted in the discharge from the pipe S. When the head of water is not sufficient to accomplish this, however, the additional rotating apparatus must be employed. By inserting the nozzle h of the hose through different openings e e' in the main guide E, the distance to which the stream is thrown may be controlled. This adjustment may be also made by varying the position of the adjustable arm O, or the two methods of adjustment may be employed together. The adjustment obtained by the arm O may also be varied to direct the stream from the hose so that it will strike the paddles Q Q' nearer to or farther from the shaft D, about which said paddles revolve, and thereby the amount of spraying and the power of the apparatus for rotating the carriage will be varied at will.

The advantage of this invention lies in the fact that by the lever-driving apparatus greater power is obtained with a less waste of water, in the auxiliary action of the spraying device in driving the carriage, in the efficient action of said device as a sprayer simply, and in the fact that when the head of water is sufficient said spraying device alone may be employed for rotating the carriage, and all waste of water thereby avoided. When the

latter is the case, the construction shown in Fig. 6 may be employed, and the resultant apparatus is much simplified and cheapened in its construction.

5 It is evident that various forms of sprayers operating on the principle herein described might be employed without departing from the spirit of my invention, and that various changes might be made in the details
10 of the carriage-rotating apparatus which would still be within the scope and spirit of my invention.

15 Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a lawn-sprinkler, the combination of the stand, the rotating carriage, gearing connecting these two, a hose whose nozzle is supported by said carriage, a ratchet for operating said gearing, a counterweighted lever connected to said ratchet, a tipping water-tank on the end of said lever, and a water-supply for said tank, together with a rotating spray
20 apparatus with paddles capable of motion in the line of the stream from the hose, substantially as described.

2. In a lawn-sprinkler, the combination of the stand, the rotating carriage for supporting the hose-nozzle, the hose, the spray apparatus capable of motion in the line of the stream from the hose, and the gearing connecting the rotating carriage with the stand and with the spray apparatus, whereby the motion of the latter rotates the carriage, substantially as described.
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3. In a lawn-sprinkler, the combination of the hose, the hose-supporting stand, and a ro-

tating spraying apparatus which consists of a number of paddles, each consisting of a row of tapering metal fingers capable of motion in the line of the stream from the hose, substantially as described.
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4. In a lawn-sprinkler, the combination of the stand, the hose, the rotary carriage, the cross-bar on said carriage, a support for the hose-nozzle arranged above said cross-bar, and the adjustable arm, which extends from said cross-bar and affords a movable support or bearing for the hose, whereby the direction of the hose-nozzle may be varied without removing the same from its support, substantially as described.
45 50

5. In a lawn-sprinkler, the combination of the stand, the hose, the rotating carriage, the cross-bar on the same, and the adjustable arm which extends from said cross-bar and supports the hose, together with the guide having a number of holes through which the nozzle of the hose may be inserted, substantially as described.
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6. In a lawn-sprinkler, the combination of the stand, the hose connected to said stand at a point some distance from its nozzle, the revolving carriage having a support for the end of the hose, and a loose bearing arranged on said carriage beneath said support, whereby the revolution of the carriage will not twist the hose, substantially as described.
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In testimony whereof I affix my signature in presence of two witnesses.

DENNIS A. HOYT.

Witnesses:

A. P. SMITH,
T. H. BROWN.