No. 757,160. PATENTED APR. 12, 1904.

A. VANDERVOORT.

LAWN SPRINKLER.

APPLICATION FILED SEPT. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

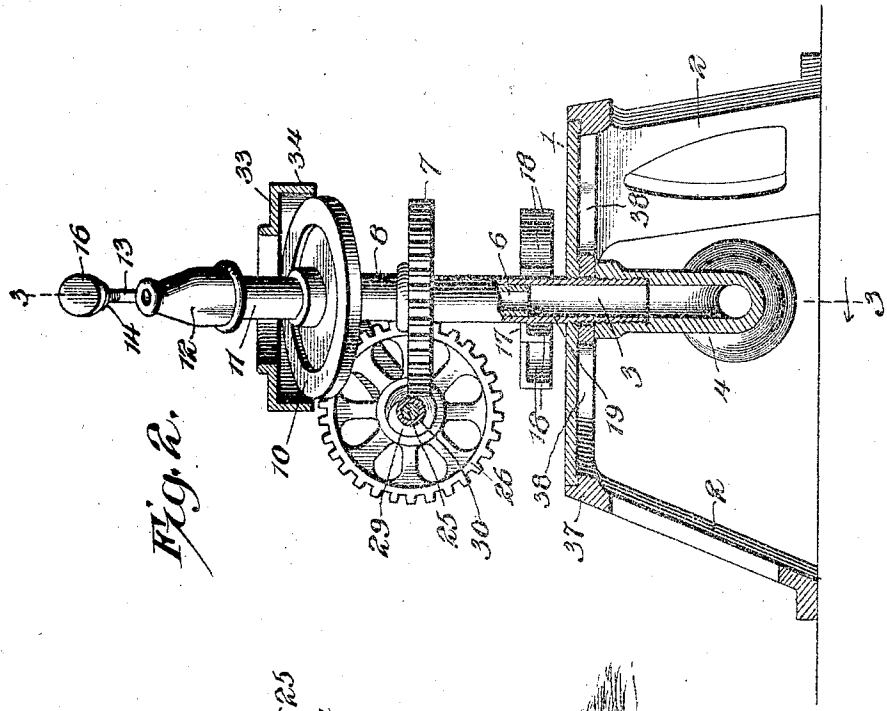


Fig. 2.

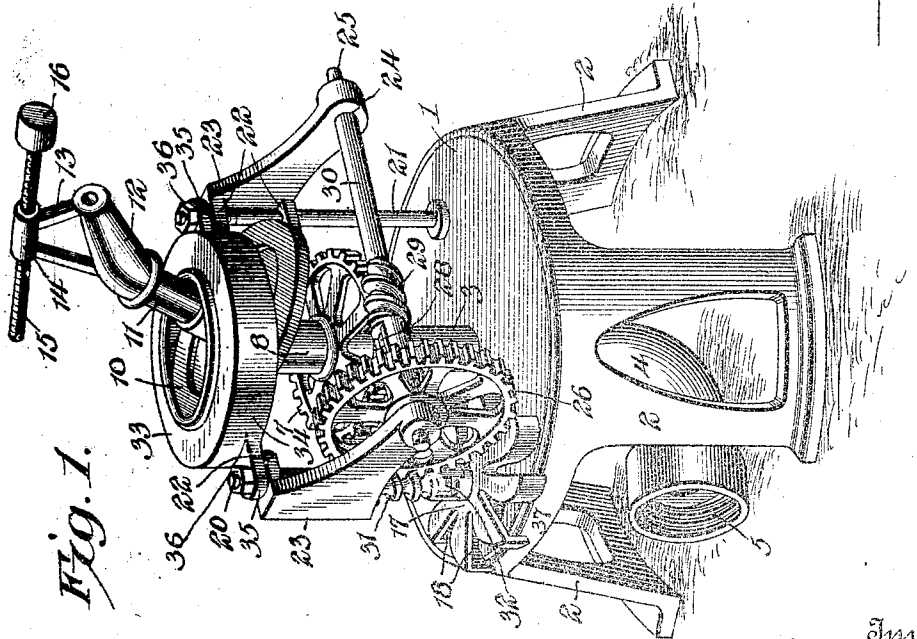


Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

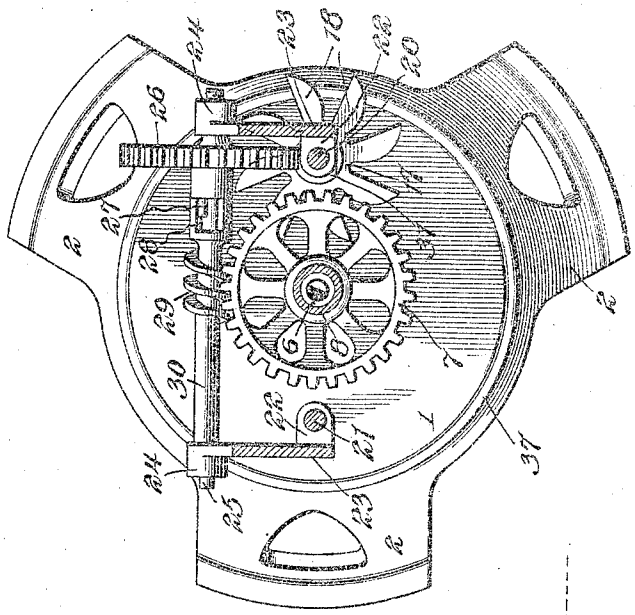
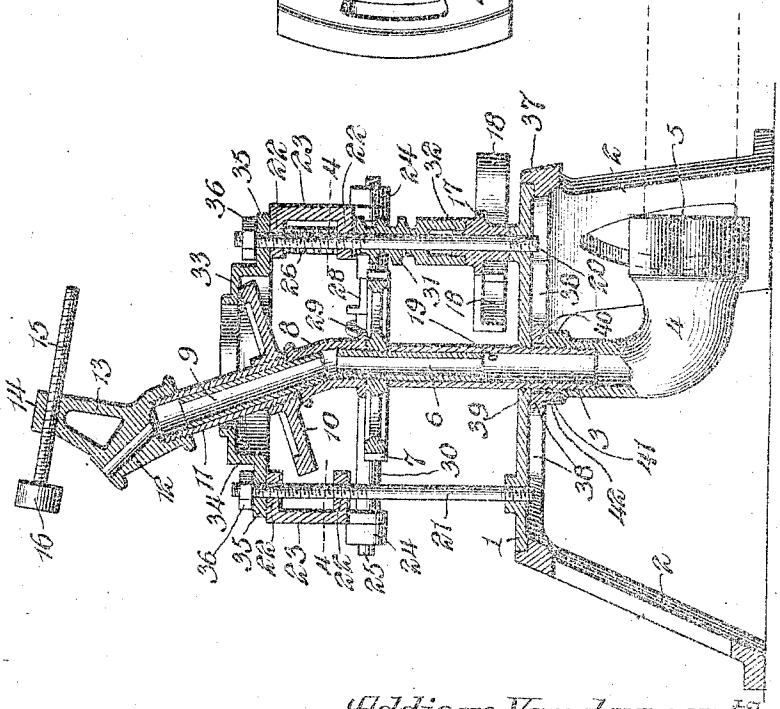


Fig. 3.



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No. 757,160. Patented April 12, 1904.

UNITED STATES PATENT OFFICE.

ADDISON VANDERVOORT, OF BELLEVILLE, CANADA.

LAWN-SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 757,160, dated April 12, 1904.

Application filed September 24, 1902. Serial No. 124,678. (No model.)

To all whom it may concern:

Be it known that I, ADDISON VANDERVOORT, a subject of the King of Great Britain, residing at Belleville, in the Province of Ontario and Dominion of Canada, have invented a new and useful Lawn-Sprinkler, of which the following is a specification.

This invention relates to lawn-sprinklers, and is particularly designed to simplify and otherwise improve the construction and arrangement shown in my prior patent, No. 691,419, dated January 25, 1902. It is furthermore designed to swing the nozzle in the path of a circle, so as to sprinkle a considerably large area of lawn, and also to impart an independent rotation to the nozzle upon its longitudinal axis, so as to more thoroughly scatter the stream of water.

Another object is to materially simplify the means whereby the nozzle is operated by the force of the stream of water and to have the parts of this means mounted for convenient assemblage and removal, so that it may be conveniently set up and also repaired should any of its parts become inoperative.

Another object is to provide an improved sprayer device, which is carried by the nozzle and is adjustable with respect to the discharge end thereof, so as to scatter the discharging stream to a more or less degree, as may be desired.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a lawn-sprinkler constructed and arranged in accordance with the present invention. Fig. 2 is a vertical longitudinal sectional view of the device. Fig. 3 is a similar view on the line 3 3 of Fig. 2. Fig. 4 is a plan view, partly in section, section being taken on the line 4 4 of Fig. 3.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

In carrying out the present invention there is provided a flat base 1, which is supported by suitable leg-standards 2 and is provided at its center with a stationary upstanding tubular post 3, the lower end of which pierces the base and is connected to an elbow 4, which has an internally-screw-threaded socket 5 for connection with a water-supply pipe or hose. Within the tubular post 3 is a metallic pipe-section 6, which is loose within the post, so as to be capable of rotation and also removable therefrom. The upper end of this pipe-section is screw-threaded and carries a substantially horizontally disposed gear 7, whereby the pipe 6 forms an extended hub portion for the gear. The screw-threaded end of the pipe projects above the gear, and fitted thereto is an elbow 8, into the upper end of which is screw-threaded a pipe-section 9, which, in effect, forms a reduced upper extension of the elbow. A disk 10 is rotatably mounted upon the pipe-section 9 and bears against the upper end or body portion of the elbow 8 as a bearing-support and has an upwardly-extended sleeve or hub portion 11, which projects beyond the pipe-section and detachably carries an elbow-nozzle 12 at its outer end, said nozzle being preferably screw-threaded to the part 11.

The nozzle 12 carries a skeleton bracket 13, which is inclined laterally and forwardly from the forward end thereof and is provided at it outer end with an internally-screw-threaded tubular open-ended socket or seat 14, in which is adjustably fitted the screw-threaded shank or stem 15 of the circular or disk-shaped sprayer 16, whereby the latter may be adjusted to overhang the discharge-opening of the nozzle, and thereby form an obstruction in the path of the issuing stream so as to scatter or spray the latter. When the sprayer device is adjusted to its rear limit, it is out of the path of the issuing stream, whereby the sprayer may be set out of operation whenever desired.

From the foregoing description it will be seen that there in a continuous passage from the inlet-elbow 4 to the discharge-nozzle 12,

that the latter is set at an angle to the upright post 3, is capable of being swung in a circular path about the post as a center, and also is capable of being turned upon its inclined axis, which is the pipe or elbow section 9. The first of these movements is imparted to the pipe-section 6 through the medium of the gear 7, while the other or secondary movement is imparted to the nozzle through the medium of the disk 10.

For the rotation of the gear 7 there is provided a horizontally-disposed water-wheel 17, which has a plurality of radial arms, each of which carries a pendent pocket or abutment 18, whereby the wheel is provided with a plurality of radial blades which receive the impact of a fine stream of water which issues from a small perforation 19, formed in the tubular post 3. This water-wheel is mounted upon an upstanding rod or post 20, which rises from the base 1, there being a similar post 21 disposed diametrically opposite and at the other side of the post 3. The upper ends of these posts are screw-threaded and piece the upper and lower screw-threaded ears 22 of the bracket-arms 23, the latter being provided at their outer ends with bearing-openings 24 for the reception of a substantially horizontal counter-shaft 25. One end of this counter-shaft is screw-threaded, and one of the bearings 24 is screw-threaded to receive the shaft, so as to prevent rotation thereof during the operation of the sprinkler. An upstanding gear 26 is loosely mounted upon that end of the shaft 25 which is adjacent to the water-wheel and has the inner end of its hub provided with lugs or projections 27 to engage seats or recesses 28 in the adjacent end of a worm-gear 29, which is loosely mounted upon the counter-shaft, there being a sleeve 30 upon the shaft and interposed between the worm and the bracket which is opposite the gear 26, so as to hold the worm-gear in operative relation with the upstanding gear. The worm-gear is also in mesh with the horizontal gear 7. The connection between the water-wheel and the drive-gear 26 is formed by a worm 31, loosely mounted upon the post which supports the water-wheel, said worm being in mesh with the gear and having a clutch connection 32 with the water-wheel similar to that between the worm 29 and the gear 26. By this arrangement the gear 7 is rotated very slowly, whereby the discharge-nozzle will be swung slowly in its circular path about the central upright axis of the device, thereby to effectually sprinkle a large area from the sprinkler as the center.

To rotate the nozzle independent of its movement in the path of a circle, there is a friction device 33, which consists of a substantially horizontal ring having a pendent peripheral flange 34, from which projects diametrically opposite perforate ears 35, which receive the upper ends of the posts 20 and 21, respectively, and rest upon the upper ends of the brackets 23, there being nuts 36 fitted on the upper ends of the post, so as to hold the ring in frictional engagement with the uppermost portion of the peripheral edge of the disk or wheel 10. When the nozzle is being swung in its circular path, the disk or wheel 10 will travel around in frictional engagement with the cap or ring 33, whereby the disk 10 will be slightly retarded by friction, and thereby caused to rotate slowly upon the elbow 8 in a direction opposite to that of the swinging movement of the nozzle, whereby a rotation is imparted to the nozzle independently of its swinging movement, which causes an additional scattering of the water and materially increases the effectiveness of the sprinkler.

It will now be noted that the water-passage is formed entirely of metallic parts, thereby dispensing with flexible hose-sections, and hence materially increasing the life of the device and avoiding leaks.

As best illustrated in Figs. 2 and 3 of the drawings, it will be seen that the leg-standards 2 are connected at their upper ends by means of an internally-rabbeted ring 37, and the latter is stiffened by crossed braces 38. The base-plate 1 is circular in shape and is snugly seated in the rabbeted portion of the ring and is provided with a central opening 39, which registers with a corresponding opening 40, formed through the juncture of the brace-arms. The lower end of the tubular post 3 is externally screw-threaded and is fitted into the screw-threaded opening 39 in the base-plate and also enters the internally-screw-threaded upper end of the elbow 4, thereby connecting the elbow and the plate to the stand formed by the legs 2 and the ring 37. To prevent accidental turning of the elbow upon the post, there is a pendent lug or projection 41 at the juncture of the brace-arms 38, and said projection fits into a socket or seat 42, formed in the upper end of the elbow 4. In assembling these parts the elbow is placed against the lower sides of the crossed arms with the seat 42 receiving the projection 41, and then the post 3 is screwed down through the plate into the elbow, whereby these parts may be conveniently assembled and also taken apart whenever desired.

What I claim is—

1. A lawn-sprinkler provided with an inclined nozzle having a horizontal revoluble movement and also a rotatable movement upon its axis simultaneously with the horizontal revoluble movement, substantially as described.

2. A lawn-sprinkler provided with an inclined nozzle having a horizontal revoluble movement and also a rotatable movement upon its inclined axis, substantially as described.

3. A lawn-sprinkler provided with a tubular member having a horizontal revoluble

movement, and a nozzle carried by the tubular member and set at an inclination and having a rotatable movement on its axis simultaneously with the said revoluble movement of the tubular member, substantially as described.

4. A lawn-sprinkler having an upstanding open-ended tubular support provided at one end with means for connection with a water-supply, a tubular member having a horizontal revoluble movement and mounted upon and in communication with the top of the support, and an inclined nozzle mounted upon the tubular member and rotatable simultaneously with the said revoluble movement of the tubular member, substantially as described.

5. In a lawn-sprinkler, the combination with an inclined nozzle, of means for imparting to the same a horizontal revoluble movement, and means for rotating the nozzle on its axis simultaneously with its horizontal revoluble movement, substantially as described.

6. In a lawn-sprinkler, the combination with an upstanding inclined nozzle, of means for imparting a horizontal revoluble movement to the same, and means for rotating the nozzle upon its axis simultaneously with the said revoluble movement, substantially as described.

7. In a lawn-sprinkler, the combination with an upstanding open-ended tubular support having one end provided with means for connection with a water-supply, of a tubular member in communication with the support, means for imparting a horizontal revoluble movement to the tubular member, an inclined nozzle mounted to rotate upon the top of the tubular member, and means for rotating the nozzle upon its axis simultaneously with the horizontal revoluble movement of the tubular member, substantially as described.

8. In a lawn-sprinkler, the combination with a support having leg-standards, of an open-ended tubular post rising from and piercing the support, a hose-coupling carried by the lower end of the post, an open-ended tubular member rotatably carried by and rising above the post, an elbow carried by and rotatable with the upper end of the tubular member, a discharge-nozzle carried by the upper end of the elbow and rotatable thereon, means for rotating the tubular member to swing the nozzle in a circuitous path, and means to rotate the nozzle upon the elbow independently of the swinging movement thereof.

9. In a lawn-sprinkler, the combination of a tubular support having means for connection with a source of water, of a tubular member set at an inclination and mounted to swing in a circuitous path upon the support, a nozzle set at an inclination and mounted to rotate upon the tubular member, and means to frictionally engage the nozzle and thereby rotate the latter upon the tubular member independently of the swinging movement of the latter.

10. In a lawn-sprinkler, the combination with a tubular support having means for connection with a source of water-supply, of a tubular member set at an angle and mounted to rotate upon the support, a discharge-nozzle mounted to rotate upon the tubular member and having a friction wheel or disk, and a stationary friction device in frictional engagement with the wheel or disk to rotate the nozzle independently of the rotation of the tubular member.

11. In a lawn-sprinkler, the combination with a tubular support having means for connection with a water-supply, of a tubular member set at an inclination and mounted to rotate upon the top of the support, a discharge-nozzle set at an angle and mounted to rotate independently upon the tubular member, a friction disk or wheel carried by the nozzle and mounted concentrically with respect to the tubular member, and a stationary member in frictional engagement with the uppermost portion of the disk or wheel to simultaneously rotate the latter and the nozzle independently of the tubular member.

12. In a lawn-sprinkler, the combination with a substantially horizontal base having leg-standards, of a tubular post piercing the base and having its lower end provided with means for connection with a water-supply, of a tubular rotatable member mounted upon and set at an inclination to the upper end of the post, a nozzle set at an inclination to and mounted for independent rotation upon the tubular member, a friction wheel or disk carried by the nozzle and disposed concentrically with respect to the tubular member, posts rising from the base at opposite sides of the tubular post, and a stationary ring carried by said posts with the nozzle projected through the ring and the latter lying in frictional engagement with the upper side of the disk or wheel.

13. In a lawn-sprinkler, the combination with a base, of a tubular post rising therefrom, and having a hose-coupling and also provided with a lateral discharge-opening, a water-wheel in coöperative relation with the discharge-opening, a tubular member set at an inclination to and mounted for rotation upon the upper end of the tubular post, a gear-wheel carried by the upper end of the member, an operative connection between the water-wheel and the gear-wheel, a discharge-nozzle set at an inclination to and mounted for rotation upon the tubular member, a friction wheel or disk carried by the nozzle concentrically with the tubular member, and a ring embracing the tubular member and supported upon the base in frictional engagement with the uppermost edge of the friction wheel or disk to rotate the nozzle independently upon the tubular member.

14. The combination with a base, of a stationary tubular post rising therefrom and having a hose-coupling and also provided with a lateral discharge-opening, a water-wheel mounted in coöperative relation with the discharge-opening, a tubular member rotatably telescoped upon the post, a gear-wheel carried by the upper end of the member, an elbow also carried by the upper end of said member, a discharge-nozzle set at an inclination and rotatably telescoped upon the upper end of the elbow, a friction wheel or disk carried by the nozzle and set at an inclination to the post, stationary posts rising from the base at opposite sides of the tubular post, a ring supported by the posts and frictionally engaging the uppermost portion of the edge of the friction disk or wheel, and an operative connection between the water-wheel and the gear-wheel.

15. In a lawn-sprinkler, the combination with a base, of an upstanding tubular member carried thereby and having a hose-nozzle and also provided with a lateral discharge-opening, a nozzle set at an inclination to and rotatable upon the post, a substantially horizontal gear-wheel mounted upon the post and connected to the nozzle, a pair of supports rising from the base at opposite sides of the post, brackets carried by the supports, a shaft mounted in the brackets, a gear upon the shaft and in mesh with the first-mentioned gear, a water-wheel rotatably mounted upon one of the supports in coöperative relation with the discharge-opening of the tubular post, and an operative connection between the water-wheel and the shaft.

16. The combination with a base, of a tubular post rising therefrom and provided with a hose-coupling and a lateral discharge-opening, supports rising from the base at opposite sides of the post, a water-wheel rotatably mounted upon one of the supports in coöperative relation with the discharge-opening in the post, a worm mounted upon said support and in operative relation with the water-wheel, brackets carried by the supports, a substantially horizontal shaft carried by the brackets, a gear-wheel upon the shaft and in mesh with the worm, a worm upon the horizontal shaft, a tubular member rotatably telescoped upon the post and provided with a substantially horizontal gear in mesh with the worm on the shaft, and a discharge-nozzle carried by and set at an inclination to the top of the tubular member.

17. The combination with a base, of a tubular post rising therefrom and provided with a hose-coupling and a lateral discharge-opening, supports rising from the base at opposite sides of the post, a water-wheel rotatably mounted upon one of the supports in coöperative relation with the discharge-opening in the post, a worm mounted upon said support and in operative relation with the water-wheel, brackets carried by the supports, a substantially horizontal shaft carried by the brackets, a gear-wheel upon the shaft and in mesh with the worm, a worm upon the horizontal shaft, a tubular member rotatably telescoped upon the post and provided with a substantially horizontal gear in mesh with the worm on the shaft, an elbow carried by the upper end of the tubular member, a nozzle set at an inclination and mounted to rotate independently upon the upper end of the elbow, a friction wheel or disk carried by the nozzle and set at an inclination to the post, and a substantially horizontal ring embracing the nozzle and carried by the supports, said ring being in frictional engagement with the uppermost portion of the periphery of the friction wheel or disk.

18. A nozzle having a bracket extending from it at an angle and provided with a screw-threaded socket, and a headed spreader having a threaded shank engaging the socket, the head of the spreader being circular and adjustable across the discharge end of the nozzle, substantially as described.

19. In a lawn-sprinkler, the combination with a stand embodying legs, a ring connecting the upper ends of the legs, and crossed braces within the ring and provided at the point of crossing with an opening, of a top plate supported upon the ring and the braces and provided with a screw-threaded opening registering with the opening in the braces, a hose-coupling applied to the under side of the braces and registering with the opening therein, a tubular post having its lower screw-threaded end engaging the screw-threaded opening in the plate and also the internally-screw-threaded upper end of the coupling, and a nozzle connected to the upper end of the post.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ADDISON VANDERVOORT.

Witnesses:

KATHLEEN MACMURRAY,

BESSIE WATERS.