Sept. 29, 1931. C. S. WERT 1,825,640

LAWN SPRINKLER

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Fig. 1.

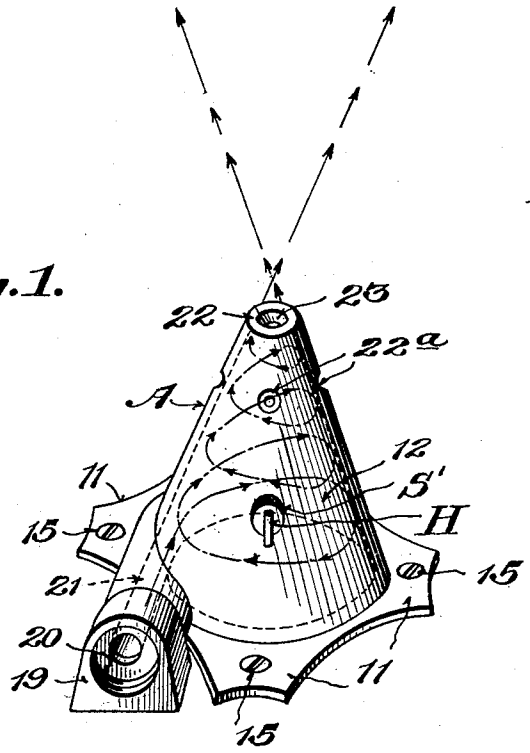


Fig. 4.

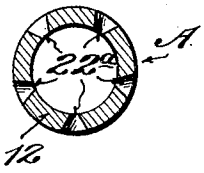


Fig. 2.

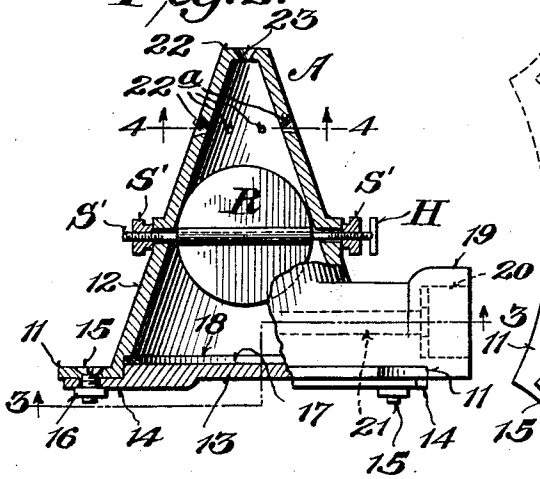
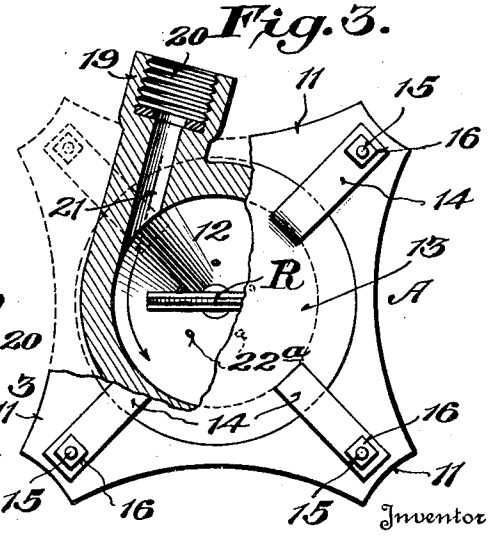


Fig. 3.



Witnesses:-

Chas. L. Griesbauer

Emory L. Groff

Inventor

Cyrus S. Wert,

By S. P. Wolhaupter

Attorney

Sept. 29, 1931. C. S. WERT 1,825,640

LAWN SPRINKLER

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Fig. 5.

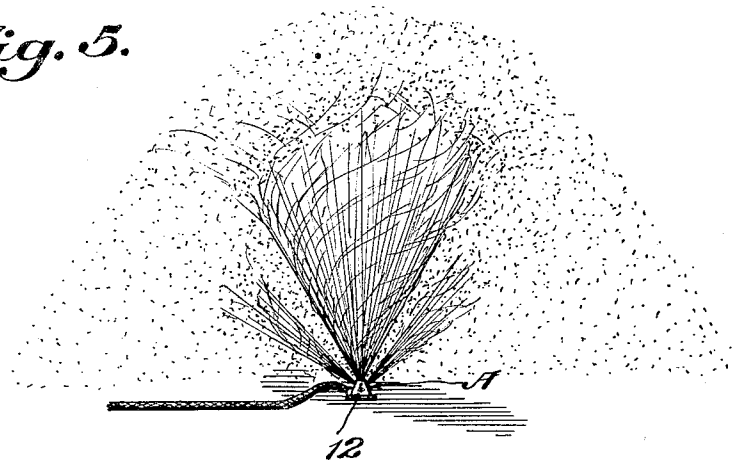


Fig. 7.

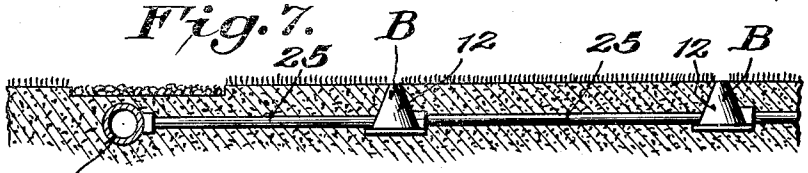
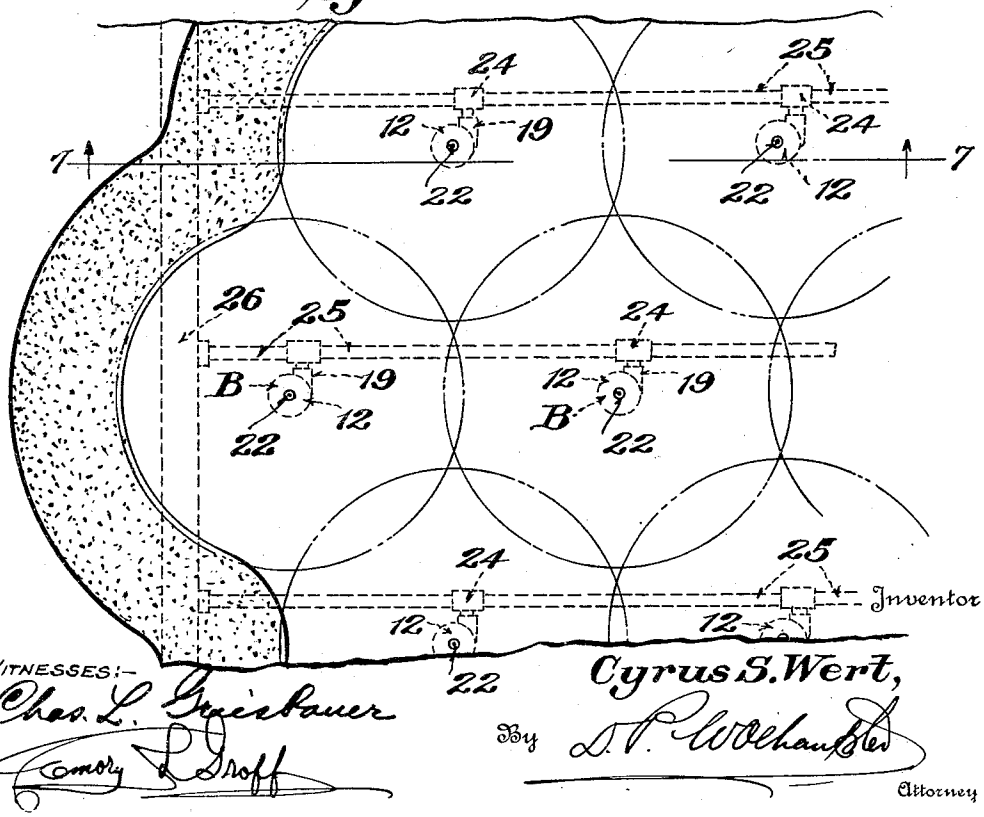


Fig. 6.



Inventor

WITNESSES:-

Chas. L. Greenbauer

Emory L. Groff

Cyrus S. Wert,

By D. P. Wakefield

Attorney

Patented Sept. 29, 1931

1,825,640

UNITED STATES PATENT OFFICE

CYRUS S. WERT, OF KENDALLVILLE, INDIANA; AARON W. SHAEFER, ADMINISTRATOR OF SAID CYRUS S. WERT, DECEASED

LAWN SPRINKLER

Application filed March 5, 1929. Serial No. 344,375.

This invention relates to lawn sprinklers.

A primary object of the invention is to provide a simple and practical sprinkler device capable of throwing water high in the air with a whirling or centrifugal motion to cause a spreading out thereof, and the breaking up or disintegrating of the water into the finest particles or drops possible, and insuring a thorough mixing of the water spray with the oxygen in the air, thus resulting in a gentle falling of the water in a fine mist or spray over a large area surrounding the sprinkler.

Another object of the invention is to provide a lawn sprinkler of the character set forth which includes a frusto-conical body and a tangential water inlet just above the base thereof, while the water discharge opening or outlet is located at the apex of the body and is of a smaller diameter than the water inlet and terminates in a flared or outwardly inclined outer wall.

A further object of the invention is to provide a sprinkler which when used above the ground, may include side outlet ports or orifices for enlarging or increasing the spray, and to also provide means for controlling the flow of water to the outlet orifices or jets.

A still further object of the invention is to provide a sprinkler device having a minimum number of parts of simple and inexpensive construction and arrangement, and which is highly efficient in use. In that connection the invention contemplates the use of a body which may be readily cast in its conical form, and whose open side or bottom is closed by a bottom plate having a water-tight connection therewith.

In addition to the foregoing base, a general object of the invention resides in the provision of a sprinkler construction that may be made a part of an underground piping system so that the sprinkler and piping are completely buried beneath the surface of the earth, while only the discharge end of the sprinkler is exposed at the surface of the ground.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a perspective view of the improved sprinkler device.

Fig. 2 is a vertical sectional view, partly in elevation.

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a detail elevation of the sprinkler in use above the ground.

Fig. 6 is a plan view showing the arrangement of sprinkler devices when used underground.

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 6.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

Referring to the embodiment of the invention shown in the drawings, it will be observed that Figures 1 to 5 inclusive illustrate a sprinkler designated generally as A and having not only a top orifice or jet, but also side jets which increase the volume and fineness of the spray when the device is used above ground. On the other hand, Figs. 6 and 7 designate a form of the sprinkler indicated as B, which is provided only with a top opening located at the surface of the ground.

Referring to Fig. 1, it will be observed that the improved sprinkler A includes a base 11 of substantially rectangular form and from the upper face of which extends the frusto-conical body 12. The body 12 is hollow and the lower end or bottom thereof is closed by the bottom or base plate 13 having radially extended arms 14 on its under face secured to the corners of the base 11, by suitable fastening means such as the bolts 15 and nuts 16. A water-tight connection is formed between the base 11 and the bottom or base plate 13, by means of the washer 17 po-

sitioned between the said plate 13 and the annular abutment 18 within the lower end of the body 12, the lower face of the plate 13 being substantially flush with the under face of the base 11, when the plate is secured in position.

Near the bottom of the body 12 is provided the tangential extension 19 having an interiorly threaded outer end 20, to provide for attachment of the sprinkler to a water supply or branch pipe, pipe connection, hose, or the like. Directed centrally and longitudinally through the extension 19, is the water inlet passage 21 which leads the water into the lower portion of the body 12, on a tangent, causing the water to strike against the inner wall of the body 12 and immediately begin movement in a circular direction around the wall and upwardly in the conical body 12, continuing such motion and increasing in force and speed, as it moves toward the upper contracted discharge end of said body 12.

It is also to be noted that as the passage 21 is slightly above the bottom of the body, there will always be a small amount of water below said water inlet passage 21, during operation of the sprinkler and which water will continue a whirling motion and thus act as a cushion to force the water upwardly in the body 12, as it enters the latter, by way of the water inlet passage 21. After reaching the upper end of the body 12, this whirling body of water discharges by way of the contracted discharge opening 22 in the apex of the body 12 and which has a flared or inclined upper wall 23.

As previously indicated, one of the distinctive features of the invention is to provide the side walls of the body with additional openings or orifices to augment the spray issuing from the top opening or orifice 22. Accordingly, as will be seen from Figs. 1, 2 and 4, the sides of the conical body are provided with the side orifices 22*a*.

The water discharge from the head of the sprinkler body is therefore thrown upwardly and outwardly, and as it leaves the main or apical outlet 22 it continues in an upward diverging direction constantly moving out further as it ascends until its energy is completely spent. Also, the water issuing from the side orifices 22*a* will serve to augment the spray and cause a wider diffusion thereof radially from the sprinkler. By the time the water has issued from the orifices 22 and 22*a* it is completely broken up into very fine drops or particles and thoroughly mixed with the oxygen of the air through which the water has been moving, and the water then descends gently in the form of a very fine and even spray or mist, over the entire area surrounding the sprinkler, just as a regular fine rain, carrying the oxygen with the water, to the grass, plants and the like, growing in the ground thus watered. This is highly important, as the oxygen is so essential to the life of the grass, plants, etc. The manner in which the water rises from the sprinkler and then descends in the form of a fine, even spray or mist, may be readily apparent from Figures 1 and 5 of the drawings. In Figures 1 and 3, the direction of movement of the water is indicated by arrows. The sprinkler is illustrated in Figure 5 as being carried on a flexible hose and with which it may be moved from place to place, as desired.

Another feature of the invention resides in providing a valve or regulator R within the cone for regulating the force of the spray or mist. This regulator is preferably in the form of a butterfly-valve carried by a shaft S iournaled in the opposite side walls of the body 12 of the cone and provided near each end with suitable threaded portions for receiving the thumb-nuts S′ or their equivalent. One end of the shaft may also be provided with a handle H lying parallel with the body of the valve or regulator R so that the setting of the valve within the cone may be readily determined before the water is turned on. When the valve is vertical, clearly the full force of the water pressure will pass through the nozzle orifices, but by causing the valve R to assume an angle, the water supply may be throttled to limit the capacity and force of the spray. Through the medium of the thumb-nuts S′ the shaft S may be held at any desired setting or angle so that the force of the water pressure will not cause it to shift when in use.

Figures 6 and 7 disclose an arrangement of a series of the sprinklers embedded below the surface with the apex of each body 12 just about flush with the surface. In this arrangement, the cone without the side orifices or openings 22*a* is used and the tangential extension 19 of each body 12 is carried on a T-connection 24 on one of the branch pipes 25 leading from the main water conducting pipe 26, which large pipe is shown at right-angles to the smaller pipes 25. As all of the pipes 25 and 26, as well as the sprinklers 12 are beneath the surface, they do not interfere with healthy and proper growth of the grass, plants, flowers, etc., or passage of the lawn mower or other objects over the surface.

As the construction of the device has thus been described in detail, brief reference is now had to its use and modus operandi: Each sprinkler serves to sprinkle evenly the entire surface surrounding the same and when operating at full force, the water will rise for approximately thirty feet and in a wide circle having a diameter of about thirty feet, the rising water spreading as it moves upwardly and thus forming a solid body of water of inverted cone shape. The broken up particles or drops of water thus sent through the

air with force and thoroughly mixed with the oxygen of the air drop gently from this body of whirling water, onto the surface and the grass, plants, flowers, etc., as a mist or fine gentle rain and thus carrying to the roots a nourishing moisture, just as essential and effective as a natural rain. This result cannot be accomplished when directing the water in a solid stream or permitting it to fall heavily on the grass, plants, flowers, etc., and without first being broken up and mixed with the oxygen of the air in the same manner as a gently falling rain.

From the foregoing description taken in connection with the accompanying drawings, it will be manifest that a lawn sprinkler is provided which will fulfill all the necessary requirements of such a device, but as many changes could be made in the above description and many widely different embodiments of my invention constructed within the scope of the appended claims without departing from the spirit or scope thereof, it is intended that all matters contained in the said accompanying specification and drawings shall be interpreted as illustrative and not in a limited sense.

I claim:

1. A sprinkler device comprising a hollow conical body having an inlet opening in its lower end tangential to the inner face of the body and an outlet orifice at its upper end arranged axially of the body, a disk valve disposed within said body intermediate the outlet at the upper end and the inlet at the lower end thereof for rotatable adjustment on an axis extending transversely of the body, means located exteriorly of the body for rotatably adjusting said valve, and means also located exteriorly of the body and connected with said valve for securing the same against rotation in any desired position of adjustment thereof.

2. A sprinkler device comprising a hollow conical body having an inlet opening at its lower end tangential to the inner face of the body and an outlet orifice at its upper end arranged axially of the body, a disk valve disposed within said body between the outlet and inlet openings for rotatable adjustment on an axis extending transversely of the body, means for rotatably adjusting said valve, and means for securing said valve against rotation in any desired position of adjustment thereof.

In testimony whereof I hereunto affix my signature.

CYRUS S. WERT.