Aug. 14, 1951

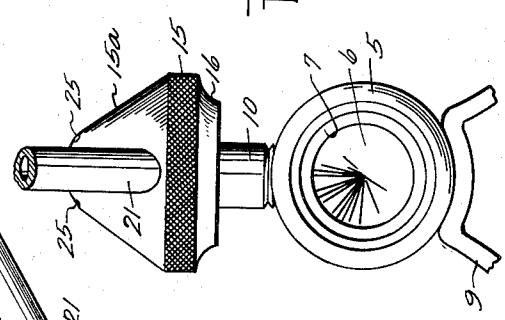
N. M. RIEGER

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ROTARY SPRINKLER FOR LAWNS

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Fig 2



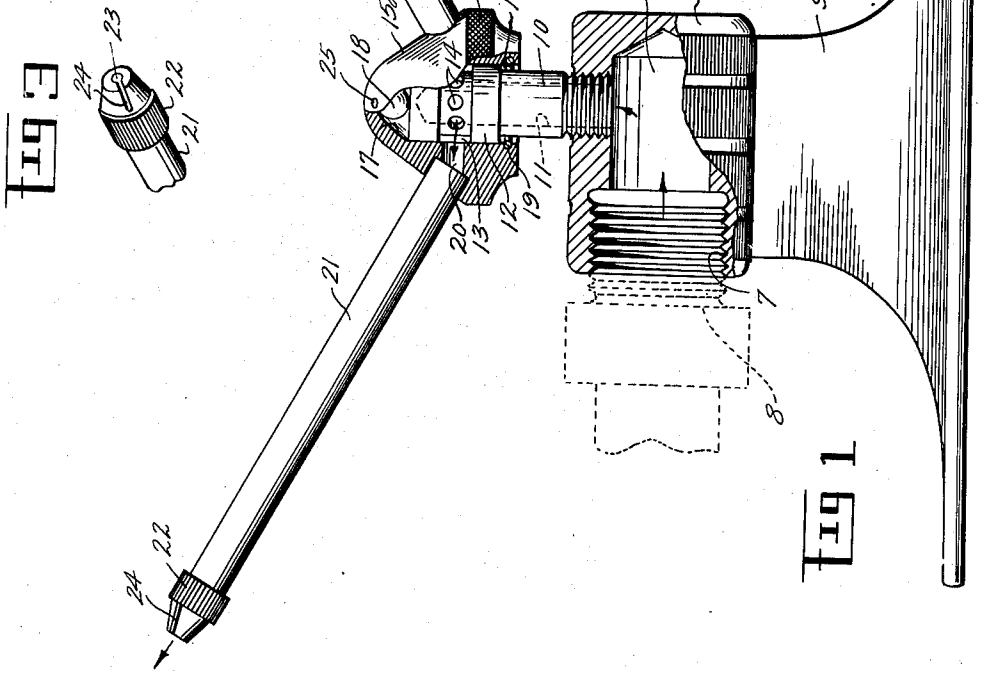


Fig 3

Fig 1

INVENTOR.
NELSON M. RIEGER

BY

Leonard Read

HIS ATTORNEY

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ROTARY SPRINKLER FOR LAWNS

Nelson M. Rieger, Miamisburg, Ohio, assignor to The Rieger Manufacturing Company, Miamisburg, Ohio, a corporation of Ohio

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3 Claims. (Cl. 299—69)

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This invention relates to a rotary sprinkler for lawns and the like.

One object of the invention is to provide a sprinkler of a simple, freely running construction.

A further object of the invention is to provide a sprinkler in which the rotatable head is supported by an end thrust bearing and has only a light running contact with the spindle.

A further object of the invention is to provide a sprinkler in which the weight of the rotatable head is carried by a single anti-friction element.

A further object of the invention is to provide a sprinkler in which water pressure will relieve the thrust bearing of at least a substantial part of the weight of the head.

Further objects of the invention may appear as the sprinkler is described in detail.

In the accompanying drawings Fig. 1 is a side elevation, partly broken away, of a sprinkler embodying the invention; Fig. 2 is a front elevation of such a sprinkler, partly broken away; and Fig. 3 is a perspective detail view of one of the nozzles.

In these drawings I have illustrated a preferred embodiment of the invention but it is to be understood that the sprinkler as a whole, as well as the several parts thereof, may take various forms without departing from the spirit of the invention.

In the embodiment here shown the sprinkler comprises a base 5 having within the same an inlet chamber 6 and having means whereby said chamber may be connected with a source of water under pressure, such as a threaded end portion 7 to receive the threaded end of a hose coupling member 8. The base may be supported in any suitable manner, as by a stand 9. Mounted on the base and communicating with the inlet chamber is an upright tubular member, such as a spindle 10, screw threaded into an opening in the top of the base and having an axial bore 11 which terminates a short distance below the top of the spindle. The spindle has a cylindrical upper portion 12 which, in the present instance, is of a diameter slightly greater than the diameter of the lower portion of the spindle. This upper portion is provided with a circumferential channel, or groove 13, which is connected by a plurality of substantially radial ports 14 with the bore or passage 11 within the spindle.

Rotatably mounted on the spindle is a head 15, here shown as having a conical upper portion 15a. The head is provided with a cavity, the lower portion 16 of which is cylindrical to

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receive the cylindrical portion of the spindle. The cylindrical portion of the cavity is of such diameter with relation to the upper portion of the spindle that it has a very light free running contact therewith. The cavity extends above the end of the spindle, and the upper portion thereof is preferably of reduced diameter and is shown at 17 as substantially conical in form, the upper end of the conical cavity being preferably arcuate to provide a bearing seat. Interposed between the upper end of the spindle and the upper end of the cavity 17 is a bearing member which is preferably rotatable and is here shown as a spherical element or ball 18 which rests upon the upper end of the spindle and has normal bearing contact with the bearing seat in the upper portion of the head. The conical shape of the cavity 17 retains the bearing member substantially in the axis of the spindle, which is also the axis of rotation of the head. Means are provided for retaining the head on the spindle and limiting the upward movement thereof with relation to the spindle. In the present instance this means comprises a snap ring 19 seated in the lower portion of the head and extending beneath the shoulder formed by the lower end of the cylindrical portion 12 of the spindle. Preferably the retaining means is spaced from the shoulder a distance sufficient to permit a slight upward movement of the head.

The head is provided with one or more discharge passages 20, in the present instance two, which communicate with the channel 13 in the spindle. Obviously the channel could be formed in the head instead of in the spindle. Mounted on the head and communicating with the respective discharge passages 20 are tubular discharge elements or arms 21 having in their outer portions outlets so arranged that the water discharged therefrom will react on the arms to impart rotary movement to the head. In the present construction each arm has at its outer end a tapered nozzle 22 provided with a relatively small axial opening 23 and with a radial slot 24 so arranged as to provide the reaction necessary to the rotation of the head.

Water under pressure entering the tubular spindle will pass through the ports 14, channel 13, and discharge openings 20 to the reaction arms 21, and thus impart rotation to the head. The weight of the head being supported wholly by the bearing element 18 and the head having only a light running contact with the spindle it will be obvious that there is very little frictional resistance to the rotation of the head, and that the

latter is thus permitted to rotate rapidly so as to distribute water over a relatively large area. Due to the light contact between the head and the spindle water under pressure can pass between the cylindrical portion of the cavity in the head and the upper portion of the spindle to the cavity 17, and thereby exert upward pressure on the head and thus relieve the bearing element 18 of a portion, or all, of the weight of the head and the parts carried by the head, thereby further reducing, and preferably eliminating, the frictional resistance to the rotation of the head. The upper portion of the head is provided with one or more small outlets 25 through which the water may escape from the cavity 17 and will be distributed over that portion of the lawn below the inner portions of the reaction arms.

While I have shown and described one embodiment of my invention, I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A spraying device for a lawn sprinkler of the type having a ground engaging base including an inlet chamber having an opening in the upper wall thereof, said device comprising a spindle having a cylindrical upper portion, said spindle having at its lower end a part spaced from said cylindrical portion and adapted to be mounted in the opening in the wall of said inlet chamber, and also having an axial bore extending through the lower end thereof and terminating below the upper end thereof, said cylindrical portion of said spindle having a series of substantially radial ports communicating with said bore, a head rotatably mounted on said spindle and having a body provided with a cavity including a lower cylindrical portion in which the cylindrical portion of said spindle is mounted and an upper portion of progressively decreasing diameter from said cylindrical portion to the upper end of said cavity and terminating in an arcuate seat, said body having a plurality of discharge openings communicating with the ports in said spindle, and a freely rotatable ball supported on the upper end of said spindle and normally engaging said seat in said head, said head having light running contact with said spindle above said ports to permit water under pressure to pass between said parts into the upper portion of said cavity and exert upward pressure on said head to relieve said ball of at least a portion of the weight of said head, said spindle and said head having cooperating parts to limit the upward movement of said head with relation to said spindle.

2. A spraying device for a lawn sprinkler of the type having a ground engaging base including an inlet chamber having an opening in the upper wall thereof, said device comprising a spindle having a cylindrical upper portion and a lower portion of less diameter than said cylindrical portion, and having a flat top surface, said spindle having at its lower end a part spaced from said cylindrical portion and adapted to be mounted in the opening in the wall of said inlet chamber and also having an axial bore extending through the lower end thereof and terminating below the upper end thereof, said cylindrical portion of said spindle having a series of substantially radial ports communicating with said bore, a one-piece head rotatably mounted on said spindle and comprising a body extending slightly below the cylindrical portion of said spindle and having therein a cavity including a lower cylindrical portion in which the cylindrical portion of said spindle is mounted and an upper portion of progressively decreasing diameter terminating in an arcuate seat, said body having a plurality of discharge openings communicating with the ports in said spindle, and a freely rotatable ball supported on the flat top surface of said spindle and normally engaging said seat in said head, said ball being of a diameter less than the diameter of said arcuate seat, said head having light running contact with said spindle above said ports to permit water under pressure to pass between said parts into the upper portion of said cavity and exert upward pressure on said head to relieve said ball of at least a portion of said weight of said head, and a retaining member removably mounted on said head below and normally spaced from said cylindrical portion of said spindle to engage the latter and limit the upward movement of said head.

3. A spraying device for a lawn sprinkler of the type having a ground engaging base including an inlet chamber having an opening in the upper wall thereof, said device comprising a spindle having a cylindrical upper portion, said spindle having at its lower end a part spaced from said cylindrical portion and adapted to be mounted in the opening in the wall of said inlet chamber, and also having an axial bore extending through the lower end thereof and terminating below the upper end thereof, said cylindrical portion of said spindle having a series of substantially radial ports communicating with said bore, a head rotatably mounted on said spindle and having a body provided with a cavity including a lower cylindrical portion in which the cylindrical portion of said spindle is mounted and an upper portion of progressively decreasing diameter from said cylindrical portion to the upper end of said cavity and terminating in an arcuate seat, said body having a plurality of discharge openings communicating with the ports in said spindle, and a freely rotatable ball supported on the upper end of said spindle and normally engaging said seat in said head, said head having light running contact with said spindle above said ports to permit water under pressure to pass between said parts into the upper portion of said cavity and exert upward pressure on said head to relieve said ball of at least a portion of the weight of said head, said spindle and said head having cooperating parts to limit the upward movement of said head with relation to said spindle, and said head having small openings communicating with said cavity above said spindle through which a portion only of the water entering the upper portion of said cavity is discharged.

NELSON M. RIEGER.

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