Lawn Sprinkler and Flushing Opening Seal

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This invention relates to lawn sprinklers and the like, and has for one of its objects the production of a simple and efficient sprinkler assembly which is so arranged and constructed as to shield the flushing opening of the sprinkler and prevent foreign matter such as dirt or grit from being washed down into the body of the sprinkler and thereby interfering with the proper operation of the plunger member which supports the sprinkler head.

A further object of this invention is the production of a shielding flange which is carried by the plunger member and which flange is adapted to fit snugly over the flushing opening of the cap of the assembly so as to prevent the entrance of foreign matter into the body of the sprinkler, such for instance as during rain storms or floods.

Other objects and advantages of the present invention will appear throughout the following specification and claim.

The present invention is an improvement upon my previous application filed March 6, 1940, Ser. No. 322,493, relating to Lawn sprinkler bodie, Patent No. 2,269,919, issued January 13, 1942.

In the drawing:

Figure 1 is a side elevational view of the sprinkler assembly;

Figure 2 is a vertical sectional view;

Figure 3 is a vertical sectional view with an assembly in an extended position, certain parts being shown in elevation;

Figure 4 is a transverse sectional view taken on line 4-4 of Figure 2; and

Figure 5 is an enlarged sectional view taken on line 5-5 of Figure 1, certain parts being shown in elevation.

By referring to the drawing, it will be seen that 10 designates the hollow body of the sprinkler assembly which is provided with a base 11 having a depending threaded extension 12 for connection with the water supply main 13 shown in dotted lines. The body 10 is provided with an externally threaded upper end 14 over which is threaded a cap 15, this cap 15 having a tapering outer end 16 and a beveled ring-receiving seat 17.

The hollow body 10 is provided with a central bore 18 at its lower end, and the lower threaded end 19 of the hollow vertically extending overflow tube 20 is threaded into this bore 18, as shown in Figure 2. This overflow tube 20 is provided with a beveled outer end 21, as shown in Figures 3, 4 and 5.

A hollow plunger member 22 is mounted for longitudinal sliding movement within the hollow body 10 and this plunger member 22 is provided with a hexagonal flange 23 at its lower end, the corners of the flange having sliding contact with the inner face of the hollow body 10 and the flat portions of the flange being spaced from the inner wall of the body 10 to permit the passage of water from a point below the flange 23 to a point above the flange. The plunger 22 is provided with a longitudinally extending channel 24 upon one side and a set screw 25 is carried by the cap 15 for fitting in the channel 24 when desired, to hold the plunger 22 against rotation within the body 10 when for instance, a directional sprinkler head is carried by the plunger member 22. The plunger member 22 is provided with an externally threaded upper end 26 upon which is threaded a suitable sprinkler head 27 of the desired type, a conventional head being illustrated in the drawing.

The plunger member 22 is provided with an annular flange 28 which may be fastened or soldered to the plunger, or in any desired manner attached thereto, the flange 28 being carried at a point just below the head 27, as shown in Figures 2, 3 and 5. The flange 28 is provided with a beveled inner face 29 along its lower edge and this beveled face 29 is adapted to fit snugly upon the beveled ring-receiving seat 17 to provide a seal therefor.

The flared portion 21 of the flushing tube 20 fits loosely within the hollow plunger member 22, as shown in Figure 5, and this flared portion extends slightly above the cap 15 and acts as a brace for the hollow plunger member as the plunger member 22 moves longitudinally. This flared portion also provides means to assist in holding the hollow plunger member 22 in spaced relation from the inner bore 30 of the cap 15, as shown in Figure 5, the spacing of the bore 30 from the side wall of the plunger 22 providing a flushing channel communicating with the outer end of the cap 15 and which channel is adapted to be closed by the flange 28 when the sprinkler assembly is in a retracted position, such as is shown in Figures 2 and 5. The upper face of the flange 28 is preferably beveled, as at 31, and the inner end of the bore 30 is preferably provided with a beveled seat 32 against which the beveled face 31 of the flange 28 is adapted to abut.

A very important point in connection with the present structure is that the flange 28 fits down over the cap 15 and keeps the soil pressed down well below the cap at all times so that if any dirt or grit should be washed down during the time...
the sprinkler is operating, this dirt or grit will be lodged against the side of the cap 15 and will shed away from the flushing opening formed between the cap 15 and the plunger 22 and there will be no tendency for this foreign matter to be forced down into the flushing opening and cause the plunger 22 to clog within the cap 15 and prevent the plunger from operating. The soil or dirt would be pressed down each time the tube 21 and head 27 drop back to a retracted position, shown in Figure 2, and the flange 28 would form a seal upon the beveled seat 17 so that no foreign matter could enter the device from any cause when the device is in a closed position, even during rain-storms or floods.

Through the medium of the present device, it is possible to mount the structure below the surface of the ground and thereby permit a mowing machine to easily pass over the sprinkler without injury. Furthermore, the arrangement of the flange 28 provides an efficient shielding for the flushing opening, this flange tending to push any accumulated matter down away from the flushing opening and force the accumulated matter down the inclined face 18 of the cap 15. The present device permits the assembly to be placed below the surface of the ground as stated, so that the sprinkler head may be below the level of the ground or grass where the heads are practically invisible when the device is not in operation. The device, however, is adapted to raise automatically by water pressure when the water is turned on, allowing the sprinkler head to operate with the utmost efficiency and without obstruction, and also permitting the parts to automatically return to a retracted position by force of gravity when the water supply is shut off. Through the medium of the flushing opening formed by spacing the wall of the bore 30 from the outer wall of the plunger 22 the device will be self-cleaning and the operation of the structure will prevent foreign matter such as grass and dirt from entering the body 10 and also from obstructing and interfering with the operation of the parts due to the fact that there will be no suction created tending to draw the foreign particles as the water is cut off.

When the water is turned on the plunger member 22 will rise vertically and water will also pass into the body 10 and be forced out through the flushing opening in the cap 15 around the plunger 22, thereby keeping the flushing opening clean. As the plunger 22 recedes when the water is turned off, the flange 23 will permit the water from the body to pass from a point below the flange to a point above, and the displacement of water from the body 10 by movement of the plunger member 22 into the body will cause water to be ejected through the flushing opening between the cap 15 and plunger 22, thereby providing a self-cleaning means ad-

jacent the beveled seat 17, and causing any foreign matter to be shed away from the outer end of the cap 15. As the flange 28 drops upon the upper end of the cap 15, the inclined face 23 will rest upon the seat 17 and provide an efficient seal. It should be understood that the inclined face or seat 17 is inclined downwardly and outwardly and the inclined face 23 is complementary thereto and is inclined outwardly and downwardly. Water passing over this seat 17 will tend to wash away all debris or at least maintain this debris, mud, and the like, to such an extent as to permit the weight of the cap 15 to force foreign matter downwardly and outwardly from between the seat and flange by a squeezing action.

It should be understood that the flange 28 may be of any suitable or desired material, and may be connected and supported upon the plunger 22 in any desired manner without departing from the spirit of the invention.

Having described the invention, what I claim as new is:

A sprinkler assembly of the class described comprising a hollow body having a lower end adapted to be connected to a water supply line, said body having an open upper end, an overflow tube concentrically secured in the hollow body, a hollow plunger member longitudinally slidable within said hollow body and surrounding the said overflow tube, said plunger being adapted to move upwardly relative to the body and outwardly through the open upper end thereof, said plunger member having an upper water discharge end, a sprinkler head carried by the upper water discharge end of said plunger member and adapted to be raised with the plunger member as water passes into the lower end of said body, a cap carried by the upper end of said body, the cap having an open upper end surrounding said plunger member in spaced relation relative to the plunger member to provide a water outlet means, a beveled seat carried by the cap and surrounding the water outlet means, and being inclined downwardly and outwardly from the water outlet toward the outer edge of the seat, a flange carried by said plunger member, said flange having a beveled under face inclined downwardly and outwardly from its inner toward its outer edge and being adapted to fit snugly upon said beveled seat when the flange is in a closed position upon the cap, the inclined faces of the seat and flange being adapted to direct drainage and accumulated debris from between the seat and flange, and the weight of the plunger member and sprinkler head being adapted to force foreign matter downwardly and outwardly from between the seat and flange by a squeezing action.

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