Feb. 28, 1933. E. G. MUNZ 1,899,711

SELF CLEANING SPRAY HEAD

Filed Nov. 18, 1929

Fig 1

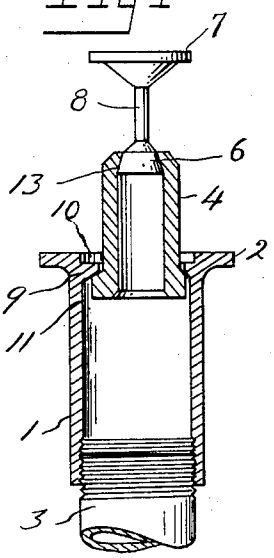


Fig 2

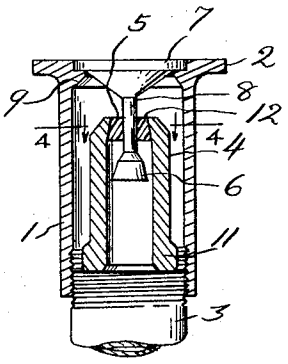


Fig 3

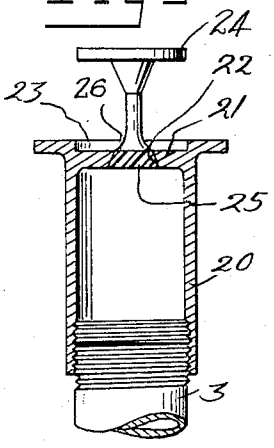




Fig 4.

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SELF-CLEANING SPRAY HEAD

Application filed November 18, 1929. Serial No. 408,047.

This invention relates generally to spray heads adapted for use in sprinkling systems for lawns and the like, and is particularly applicable in systems where the spray heads are permanently installed in the ground to be normally flush with the surface thereof.

One of the essential objects of the invention is to provide a self-cleaning spray head in which the spray forming elements of the nozzle are washed and cleansed by the water supply both before and after a spray has been projected therefrom.

Another object is to provide a spray head of this type in which one of the spray forming elements is rigid with the nozzle and the other spray forming element is separable from the first-mentioned element and is movable freely with respect to the nozzle.

A further object is to provide a spray head in which the movable spray forming element is normally spaced from the cooperating element and is movable to and from the said element by fluid under pressure and by gravity.

With the above and other objects in view the invention consists of certain novel features of construction, combinations and arrangements of parts that will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a vertical sectional view through a spray head embodying my invention and showing the nozzle, plug and cover in raised position;

Figure 2 is a view similar to Figure 1 with the nozzle, plug and cover in normal lowered position;

Figure 3 is a view similar to Figure 1 but showing a slightly modified construction.

Figure 4 is a section on the line 4—4 of Figure 2.

Referring now to the drawing, 1 is a casing of tubular formation, preferably buried in the ground and having a lateral flange 2 at its upper end substantially flush with the upper surface of the ground, 3 is a pipe connected to the casing 1 at the lower end thereof and adapted to supply water under pressure from a suitable source to the casing, 4 is a nozzle slidable longitudinally of the casing and having a water discharge orifice 5 in its upper end, 6 is a plug movable longitudinally of the nozzle 4 and adapted to be received in the orifice, 7 is a cover for the casing 1 and nozzle, and 8 is an intermediate stem extending through the orifice 5 and terminally connected to the plug 6 and cover 7.

As shown, the casing 1 is provided at its upper end with an inwardly extending annular flange or shoulder 9 and is provided just above this flange with an annular upwardly opening recess 10. The nozzle 4 is tubular in form and has a lateral flange or shoulder 11 at its lower end for engagement with the flange 9 of the casing to limit upward movement of the nozzle. The orifice 5 is substantially frustro-conical in form and has its restricted end 12 uppermost. Preferably this orifice has inclined serrations 13 extending longitudinally of its side walls and is adapted to receive the plug 6.

When forced upwardly by water pressure the plug 6 seats within the orifice 5 and cooperates with the serrations 13 to form a series of small holes through which the water is sprayed. This engagement of the frustro-conical plug 6 with the serrations on the inclined walls of the frustro-conical orifice also prevents the plug from passing upwardly through the orifice. Normally the nozzle 4 is in the casing 1 adjacent its lower end and the cover 7 is in the recess 10. However, when water is first turned on it raises the nozzle 4 and cover 7 and in doing so flows around and over the plug 6 and serrations 13 and washes both until the pressure is sufficiently strong to force the plug 6 within the orifice 5 whereupon water will be projected in spray form from the nozzle. In this connection it will be noted that the plug 6 is entirely separate from and is movable freely relative to the nozzle.

When the water is turned off the plug 6 drops down, and the serrations 13 and plug 6 are flushed free from any dirt that may have collected thereon while the nozzle was in operation. Thus the orifice 5 and plug 6 constituting the spray forming elements of

the nozzle are cleaned both before and after a spray is projected therefrom.

In Figure 3 I have illustrated a slight modification in which the casing 20 serves as the nozzle and is provided at its upper end with an inwardly extending flange 21 having a smooth frustro-conical discharge orifice 22 for water from the pipe 3. With this construction the recess 23 for receiving the cover 24 is just above the flange 21, and the serrations 25 are formed on the inclined faces of the frustro-conical plug 26. Thus when the plug 26 is within the orifice 22 the smooth walls of the orifice will cooperate with the serrations to form small holes through which the water is sprayed. In use when the water is turned on it will unseat the cover 24 and in doing so will flow over and wash the serrations 25 and the walls of the orifice 22. When the pressure is sufficiently strong to force the plug 26 within the orifice 22 water will then be projected in spray form from between said parts, and when the water is turned off the plug 26 will drop and the serrations 25 and walls of the orifice will be flushed free of dirt that may have collected thereon while the nozzle was in operation.

Likewise the same effect may be accomplished, even though the walls of the orifice were cylindrical in shape. The plug then, of course, would be cylindrical too and some other means for preventing the plug from passing through the orifice would have to be provided. This might be accomplished by means of lugs or some other similar devices on the inner portion of the nozzle.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim as my invention is:

1. A spray head comprising two relatively movable spray-forming elements, one of said elements having an orifice and the other of said elements having a plug adapted to fit within said orifice, the walls of said orifice and plug being substantially parallel, one of said walls having serrations formed therein to cooperate with the other wall to sub-divide the fluid into a series of finely divided streams and means for closing said orifice when the water pressure is removed, said means being out of the path of said finely divided streams when said elements are in spray-forming position.

2. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls parallel to the walls of said orifice, said plug being arranged within said casing and adapted to be moved from a position remote from said orifice into a position within said orifice by fluid pressure and serrations in one of said conical elements at the point of discharge from said device for subdividing the discharged fluid into a series of finely divided streams.

3. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls parallel to the walls of said orifice arranged within said casing and adapted to be moved into said orifice by fluid pressure, said plug having a series of closely spaced serrations therein at the point of discharge from said device cooperating with said orifice to sub-divide the discharged fluid into a series of finely divided streams, said plug being movable out of said orifice to expose the serrations thereon to flushing action.

4. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls arranged parallel to the walls of said orifice, said conical discharge orifice having a series of closely spaced serrations formed therein, said plug being normally spaced from said serrated orifice to permit the flushing of said serrations but its conical walls being movable into closely spaced relation with said serrated orifice by fluid pressure, thereby cooperating with said serrations to laterally discharge a series of finely divided streams.

5. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls parallel to the walls of said orifice, said plug being arranged within said casing and adapted to be moved from a position remote from said orifice into a position within said orifice by fluid pressure and closely spaced helically inclined serrations in one of said conical elements at the point of discharge from said device for sub-dividing the discharged fluid into a series of finely divided streams.

6. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls parallel to the walls of said orifice arranged within said casing and adapted to be moved into said orifice by fluid pressure, said plug having a series of closely spaced helically inclined serrations therein at the point of discharge from said device cooperating with said orifice to subdivide the discharged fluid into a series of finely divided streams, said plug being movable out of said orifice to expose the serrations thereon to flushing action.

7. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug with conical walls arranged parallel to the walls of said orifice, said conical discharge orifice having a series of closely spaced helically inclined serrations formed therein, said plug being normally spaced from said serrated orifice to permit the flushing of said serrations but

being movable into closely spaced relation with said serrated orifice by fluid pressure, thereby cooperating with said serrations to laterally discharge a series of finely divided streams.

8. A spray head comprising a vertical casing, a nozzle head axially movable within said casing and having a vertical discharge orifice with an inwardly and upwardly tapering conical wall, a second axially movable member within said nozzle head having a plug adapted to seat within said conical orifice by water pressure and to withdraw therefrom by gravity, said plug having a conical wall substantially parallel to said conical orifice, and helically inclined closely spaced serrations on one of said conical walls.

9. A spray head comprising a vertical casing, a nozzle head axially movable within said casing and having a vertical discharge orifice with an inwardly and upwardly tapering conical wall, a second axially movable member within said nozzle head having a plug adapted to seat within said conical orifice by water pressure and to withdraw therefrom by gravity, said plug having a wall substantially parallel to said conical orifice wall and helically inclined closely spaced serrations on the wall of said conical orifice cooperating with the wall of said plug to form a series of finely divided streams.

10. A spray head comprising a vertical casing, a nozzle head axially movable within said casing and having a vertical discharge orifice with an inwardly and upwardly tapering conical wall, a second axially movable member within said nozzle head having a plug adapted to seat within said conical orifice by water pressure and to withdraw therefrom by gravity, said plug having a wall substantially parallel to said conical orifice wall, helically inclined closely spaced serrations on one of said conical walls, a stem extending from said plug through said orifice and a cap carried by said stem adapted to seat in said vertical casing and arranged to be out of the path of the fluid when said conical elements are in spray-forming position.

11. A device for irrigating large areas comprising a casing having a conical discharge orifice, a plug arranged within said casing and adapted to be moved from a position remote from said orifice into a position within said orifice by fluid pressure, said plug having a wall cooperating with the wall of said conical discharge orifice, one of said walls having a series of closely spaced helically inclined serrations at the point of discharge of the fluid from said device, said serrations being adapted to sub-divide the discharged fluid into a series of finely divided streams.

12. A device for irrigating large areas comprising a casing having a discharge orifice, a plug arranged within said casing and adapted to be moved from a position remote from said orifice into a position within said orifice by fluid pressure, said plug having a wall cooperating with the wall of said discharge orifice, one of said walls having a series of serrations at the point of final discharge of the fluid from said device, said serrations being adapted to sub-divide the discharged fluid into a series of finely divided streams, and means out of the path of the fluid for supporting said plug in said remote position.

In testimony whereof I affix my signature.

ELMER G. MUNZ.