

July 31, 1923.

W. A. BUCKNER

SPRINKLER HEAD

Filed May 28, 1921

1,463.666

2 Sheets-Sheet 1

Fig. 1.

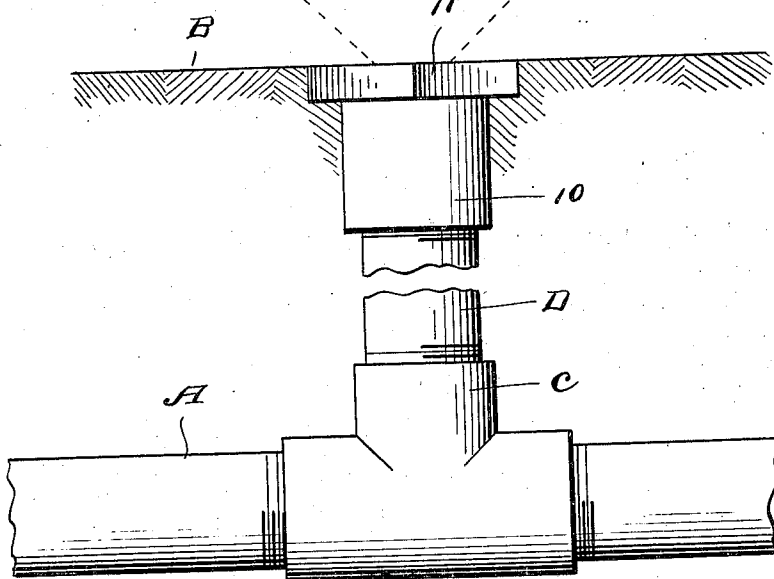


Fig. 3.

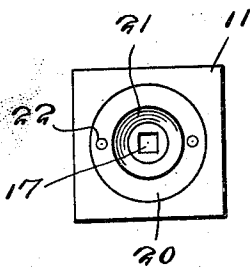


Fig. 2.

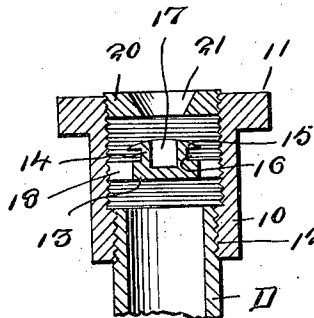
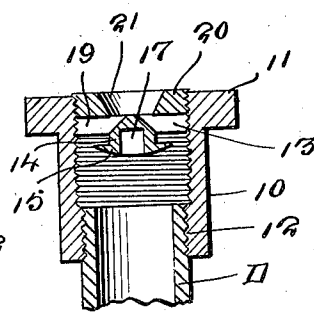


Fig. 4.



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2 Sheets-Sheet 2

Fig. 5.

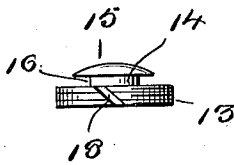


Fig. 6.

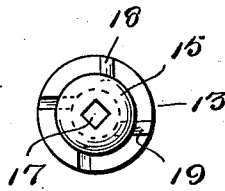


Fig. 7.

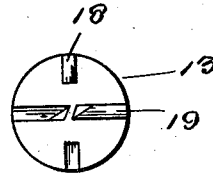


Fig. 8.

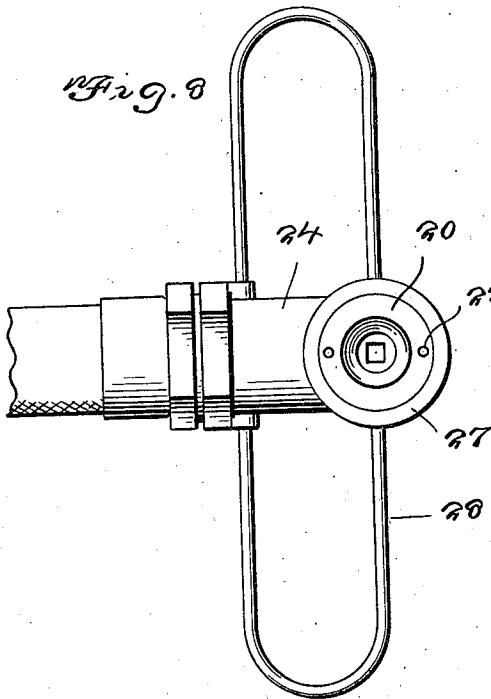


Fig. 9.

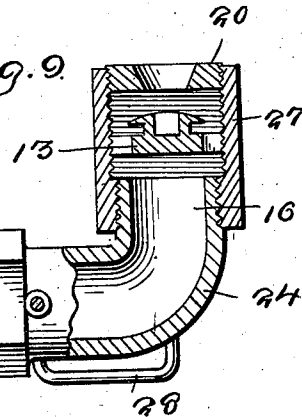
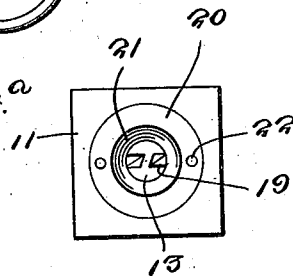


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UNITED STATES PATENT OFFICE.

WILLIAM A. BUCKNER, OF FRESNO, CALIFORNIA.

SPRINKLER HEAD.

Application filed May 28, 1921. Serial No. 473,437.

To all whom it may concern:

Be it known that I, WILLIAM A. BUCKNER, a citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented new and useful Improvements in Sprinkler Heads, of which the following is a specification.

This invention relates to water distribution, particularly to sprinkling devices, and has for its object the provision of a novel sprinkler head adapted for association with and used in connection with either a hose or a buried irrigating pipe, the construction of the head being such that when the parts are arranged in one position the water will be discharged in a circular spray and when the parts are arranged in another position the water will be discharged in a strip like spray particularly advantageous for use in sprinkling parking between sidewalks and curbs, lawns between buildings and other similar places.

Another and an important object is the provision of a sprinkler head which is adjustable so that the proper spray may be obtained in case of variation in the pressure of the water supply and so that either a coarse or a fine spray may be obtained.

Another object is the provision of a sprinkler head of this character which is so constructed that when properly adjusted the flow of water therethrough will be cut off, the advantage of this being that in case a plurality of the sprinkler heads are used in connection with a buried irrigating pipe any one or more of them may be cut out without interfering in any way with the operation of the remaining ones.

Another object is the provision of a sprinkler head of this character which is so constructed that the water will rise higher into the air before being converted into spray, this feature being important inasmuch as it tends to prevent the formation of a puddle in the immediate vicinity of the sprinkler head.

An additional object is the provision of a device of this character which will be extremely simple and inexpensive in manufacture, easily converted from one form for producing a circular spray into the other form for producing a strip spray, which will be highly efficient in use, durable in service and a general improvement in the art.

With the above and other objects and ad-

vantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of my sprinkler head associated with a buried irrigating pipe, the ground being shown in section and the shape of the spray being also indicated.

Figure 2 is a longitudinal sectional view through this form of the device.

Figure 3 is a top plan view.

Figure 4 is a longitudinal sectional view with the baffle member arranged in inverted position for spraying a strip.

Figure 4^a is a plan view with the parts as shown in Figure 4.

Figure 5 is a side elevation of the baffle plate or disk member detached.

Figure 6 is a top plan view thereof.

Figure 7 is a plan view of the opposite side.

Figure 8 is a plan view of the form of the device for use with a hose.

Figure 9 is a longitudinal sectional view therethrough.

Referring more particularly to the drawings and especially Figures 1 to 6, the letter A designates an irrigating pipe buried within the ground indicated at B. It is understood that my sprinkling device to be described may be used in series, that is any desired number of them may be associated with a single irrigating pipe such as is indicated at A. Wherever it is intended to employ one of my sprinkling devices the pipe A has interposed therein a suitable T indicated by the letter C. Rising from the T is a short section of pipe D upon which is mounted my sprinkling device.

My sprinkling device comprises a body 10 preferably of cylindrical form having a square or other preferably angularly shaped top portion 11. This body 10 has a bore 12 the lower portion of which is threaded for engagement upon the pipe section D and the other upper end of which is also threaded as clearly shown. When my sprinkler is installed it is designed that the top of the plate portion 11 be flush with the surface of the ground so that when the lawn is cut the sprinkler will not be in the way of a lawn mower or the like.

Screwed within the upper portion of the bore 12 is a baffle member formed as a disc

13 provided on one side with a reduced extension 14 having a flange 15 which defines an annular groove 16. This reduced extension 14 is formed with an angular socket 17 within which is insertable a suitable key or tool (not shown) whereby to effect rotation of the baffle member for a purpose to be described. This disc 13 is formed with a plurality, preferably four, slots 18 and 19 arranged in pairs, and inclined with respect to the longitudinal axes of the baffle member and body. The slots 19 are of considerably greater length than the slots 18, that is they extend closer to the center of the disc as clearly shown for a purpose to be hereinafter described.

The disc 13 is disposable within the bore of the body with the extension 14 extending either upwardly or downwardly depending upon the character of the spray desired as will be hereinafter explained.

Threaded within the extreme upper end of the bore subsequent to the insertion of the disc 13, is a nozzle plug 20 having a central hole 21 preferably provided with beveled sides, and also having diagrammatically opposite depressions 22 adapted for engagement by a suitable spanner wrench whereby the plug may be turned and screwed down into place.

The operation of the device is as follows:

Assuming that a circular spray is desired, the disc 13 is placed within the bore 12 with the flanged extension 14 extending upwardly and the plug 20 is then screwed into place and will form a nozzle at the upper end of the bore. When the water is turned on through the pipe A, the water upon entering the body 10 will pass through the slots 18 and 19 into the space above the disc 13 and will be given a whirling motion owing to the inclination of the slots. The water will whirl within the annular groove 16 defined by the flange 15 of the head or extension and when it has acquired the proper velocity it will be discharged through the hole 21 in the plug 20. Soon after leaving the body the water will of course break up into spray and be distributed over the surrounding surface. By inserting a suitable key through the hole 21 into the socket and then turning it the disk 13 may be screwed upwardly toward the plug so as to reduce the size of the chamber between the plug and the disc 13, the character of the spray may be altered, that is it may be made fine. By screwing the disc down the spray will be made coarser. Another feature of this adjustment is that when the size of this chamber is reduced by screwing the disk 13 close to the plug 20 a forceful spray may be obtained even though the water pressure is comparatively low. It is to be observed that the whirling occurs principally at the flanged extension

14 so that there will be no material friction against the sides of the bore which might eventually result in wearing out the body especially in case the water happens to be gritty or full of scale. By screwing the disk 13 up against the nozzle, the water supply will be cut off entirely as the extension 14 will close the hole 21.

In case it is desired to obtain a spray in the form of a strip, that is a spray which will cover a comparatively narrow elongated surface, it is first necessary to remove the plug 20 and disc 13, after which the disc 13 is reinserted in inverted position, that is with the extension 14 extending downwardly into the bore. The plug 20 is then inserted within the bore. The proper position is for the disk to be tight against the top of the disc 13 whereupon the slots 18 will be completely covered and only the slots 19 will extend in registration with the hole 21 in the plug. When the water is then turned on through the pipe A and enters into the body there will be no whirling action but the water will pass through the slots 19 and directly through the hole 21 in the plug 20. As the slots 19 are oppositely inclined the two jets of water in passing each other will rub together and will thus break up into spray which will effectually sprinkle a comparatively long narrow surface such as a strip of parking between a side walk and curb or a strip of lawn between houses. This form is shown in Figures 4 and 4^a.

In Figures 8 and 9 I have illustrated my device as adapted for use in connection with a hose instead of in connection with an irrigating pipe. In this event, I make use of a body 24 which is provided at one end with a suitable connection adapted for engagement upon a hose coupling. The opposite end of the body 24 is closed and the top part is externally threaded for engagement thereon of a cylindrical body 27 having a threaded bore within which the disc 13 and the plug 20 are disposed in exactly the same manner as the first described form.

An important feature of this form of the invention is that there must be some means provided for holding the device in proper position so that it will not be upset. This of course might be accomplished in a great variety of ways though for purposes of illustration I have shown the body 24 as provided at its opposite side with laterally extending weight members which might be open frames as indicated at 28 or which might be solid feet members. It is of course to be understood that the operation of this form is exactly the same as the operation of the first described form, and that the adjustability and the reversibility is identically the same.

From the foregoing description and a study of the drawings it will be apparent

that I have thus provided a very simply constructed and consequently inexpensive sprinkler head which is convertible for use either in producing a circular spray or a strip like spray, the device therefore having the great advantage of being capable of use under a wide variety of circumstances. Owing to the simplicity it is to be observed that there is practically nothing to get out of order and that the device should consequently have an extremely long life.

While I have shown and described the preferred embodiment of the invention, it is of course to be readily understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:

A device of the character described comprising a body adapted for connection with

a water conducting pipe and formed with a threaded bore, a disc threaded within said bore and formed with a plurality of slots inclined with respect to the longitudinal axes of the body, said slots being arranged in pairs and the slots of one pair being of greater length than the slots of the other pair whereby to extend nearer to the center of the disc, a reduced extension on one side of the disc having a flange, and a plug threaded within the upper end of the bore and having a central hole, said disc being disposable with said reduced extension extending upwardly whereby to produce a circular spray, and said disc being disposable with said reduced extension extending downwardly and with the plug in close engagement with the opposite side of the disc whereby to cover the shorter slots.

In testimony whereof I affix my signature.

WILLIAM A. BUCKNER.