April 1, 1952 L. R. NELSON 2,591,282

SPRINKLER HEAD FOR USE ON UNDERGROUND WATER SYSTEMS

Filed Dec. 10, 1948

FIG. 1.

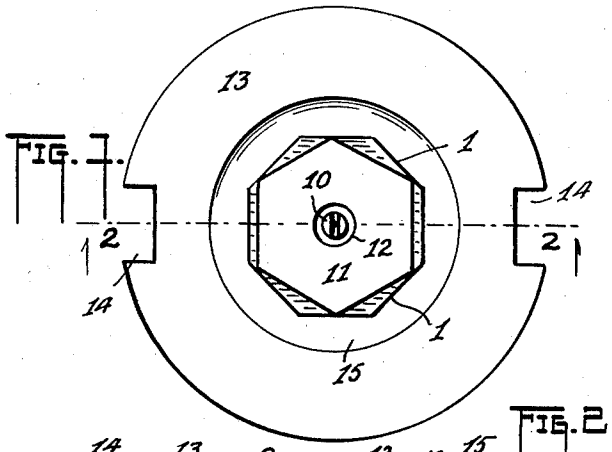


FIG. 2.

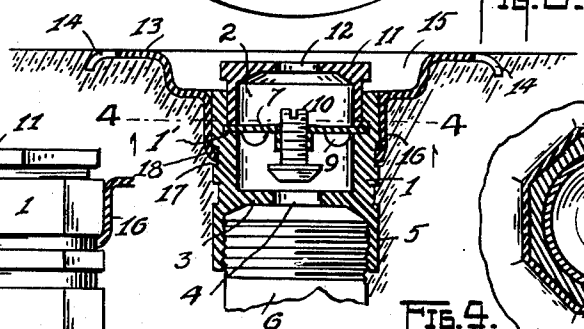


FIG. 3.

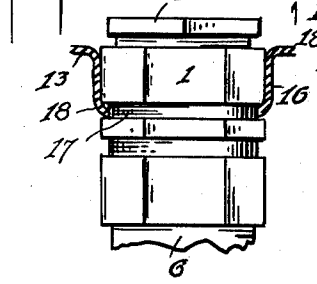
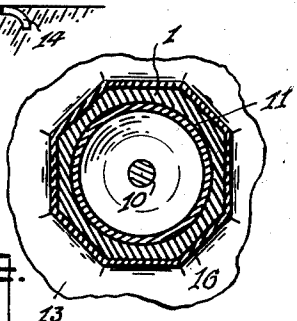


FIG. 4.



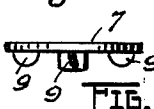


FIG. 5.

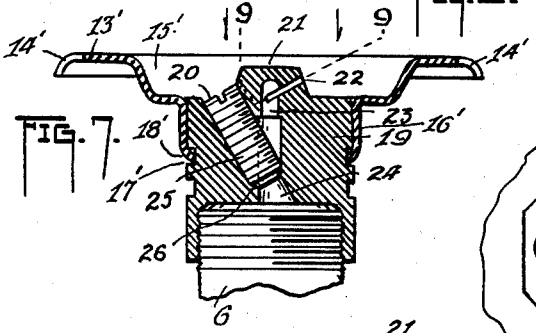


FIG. 6.

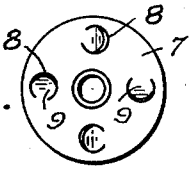
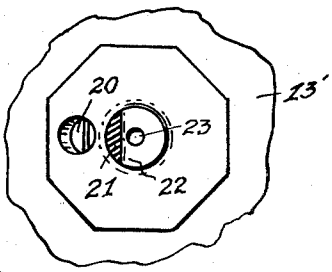


FIG. 7.



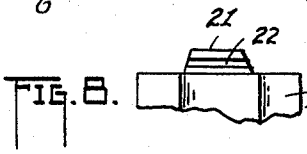


FIG. 8.

FIG. 9.

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SPRINKLER HEAD FOR USE ON UNDERGROUND WATER SYSTEMS

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3 Claims. (Cl. 299—149)

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This invention pertains to improvements in sprinkler heads for use on underground sprinkler systems.

One of the objects of the invention is that of producing sprinkler heads rapidly at low cost as compared with the present day method of production by machining operations.

A further object is that while providing the usual body of a sprinkler, to employ a sheet metal shield for application thereto, said shield having a wide spread upon the ground surface at the sprinkler head by which to limit grass growth at said head, such growth usually interfering with the water stream, by choking the outlet for the same.

Again, an object lies in providing a sprinkler head of an irregular surface form and provide therefor a sheet metal grass shield which by stamping and forming tools may be produced and securely fixed to the head so that it cannot rotate about the same nor shift therealong.

Further, an object lies in providing a full and perfect stoppage of water-flow from the sprinkler head by forming a shoulder within the flow-passage of said head upon which the usual adjustable control screw is adapted to seat tightly and firmly.

These objects are accomplished by the structure now to be described, aided by the appended drawing forming part hereof, and wherein Fig. 1 is a plan of a sprinkler head constructed according to the present invention;

Fig. 2 is a longitudinal sectional elevation of the sprinkler head produced on line 2—2 of Fig. 1;

Fig. 3 is a side elevation of part of the structure of my invention;

Fig. 4 is a transverse section of Fig. 2 produced on line 4—4 of the latter;

Fig. 5 is a side or edge elevation of a plate shown in Fig. 2;

Fig. 6 is a plan of the under side of the plate shown in Fig. 5;

Fig. 7 is a longitudinal sectional elevation of the invention in one of its forms;

Fig. 8 is a side elevation of part of which is shown in Fig. 7, and

Fig. 9 is a transverse section of part of Fig. 7 produced on line 9—9 of the latter.

It is well known that in sprinkler heads of the nature herein considered the spray issuing therefrom is interfered with by grass blades growing close to said heads with the result that a thorough and uniform sprinkling of the area adjacent the heads is not possible.

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In view of this situation one of the purposes herein is to provide a shield of a comparatively wide spread around the discharge nozzle by which the growth of grass toward and directly at the nozzle is prevented.

By the provision of this type of shield it is the purpose herein, also, to construct that member of light sheet metal formable to shape and requirement by suitable dies, not necessary to illustrate, and to affix it to a machined head or body of the sprinkler structure. In this manner a lighter weight sprinkler is provided, a minimum of machining being involved while providing a readily assembled whole by die-forming or "bumping" methods.

In addition to the above, the usual forms of sprinkler heads are lacking in proper and effective means of cutting off the water and therefore there is a constant leakage of water. This fault is remedied in the sprinkler of the present construction, which, together with the above will presently appear. In the first five figures of the drawing is shown one assembled form of sprinkler entering into the invention, together with parts thereof.

The sprinkler body is denoted at 1, this comprising a part which, in this instance, is made from octagonal brass rod provided with a cavity 2 created on an automatic screw machine, not shown, and has a wall 3 provided with an opening 4 to communicate with a threaded skirt portion 5 connected with a water supply pipe 6.

The said body 1 is counterbored to enlarge the cavity 2, creating a shoulder 1' receiving thereon a disc 7 shown in Figures 5 and 6, said disc having a series of openings 8, together with depending angularly positioned baffles 9 thereat, as in usual practice, for imparting a whirling motion to the water forced through said openings into said cavity 2. Central of the disc is a screw 10 adjustable to control the flow of water through the opening 4.

The wall of the cavity 2 is counterbored and receives a threaded cap 11 provided with a discharge opening 12 for issue of the water spray.

Thus far, the structure is not unlike existing devices. However it has been customary to provide the head or body 1 with a circular integral portion to rest upon the ground surface as a support for said body. As differing from such a structure a separate wide-spreading shield of stamped sheet metal is employed in the present instance, this being identified at 13. This member is provided with two oppositely located recesses 14, in its edge to conveniently accommo-

date a spanner wrench, not shown. Centrally of the shield is created a recess 15 which as shown in Fig. 1 accommodates the named cap 11, the shield terminating in a centrally disposed neck portion 16 which encircles the body 1 as illustrated in Fig. 4.

Since the body 1 is in this instance octagonal as it appears in transverse section, the said neck portion 16 is formed complementary thereto, its facets abutting the several angular surfaces of said body. The latter is provided with an annular recess 17 into which the terminal 18 of the neck portion is forced by a proper tool such as a die, for example, not shown. By the employment of such arrangement the shield is firmly secured to the head 1 and can neither turn with respect to the latter or shift along the same. In providing the mentioned recesses or notches 14, a wrench applied therein, jointly, serves to readily apply the whole structure, as a unit, to the water supply pipe 6.

The wide spread of the shield at the ground surface, it may be seen, prevents grass growth from interfering with the spray issuing from the outlet opening 12.

Such a structure provides for a minimum of metal weight, consequently, and less machining for its production, while being thoroughly dependable.

The drawing illustrates two forms of the same general arrangement in Figs. 2 and 7, the latter figure merely providing for a "half circle" sprinkling as compared with a "full circle" as in the former figures. That is to say, in Fig. 7 the body 19 employs a water control screw 20 lying at an angle as distinguished from Fig. 2, said screw thus making way for a central nozzle 21, provided with a slit 22 for discharge of water from a bore 23.

Said screw serves to control water flow to said bore 23 by adjustment at a bore 24 supplied from the pipe 6; it being observed that the screw has an angular extremity 25, of greater diameter than the said bore 24, the latter being less in diameter than the screw thus providing for a seat denoted at 26 by means of which a positive closing of said bore 24 is insured together with positive control of the water stream issuing from the slit 22 in the nozzle 21, no such required control being used in sprinklers of this general type heretofore produced. The annular seat 26 is thus effectively formed in the wall of the bore of the sprinkler and is in a plane which lies at an angle to the main axis of said bore, the screw type valve element 25 extending at right angles to the plane of the seat 26 so that its head, at 20, lies exposed in the shoulder between the nozzle 21 and the main body of the sprinkler.

It is seen that Fig. 7 includes the same structure as that shown in Fig. 2 in respect to the arrangement of the shield which in this instance is identified by the character 13'.

While the head 1 of Fig. 3 and that of Figs. 7 and 8 are shown as octagonal it is understood that other types of irregular form may be used with which the neck of the shield can be intimately associated in order that said shield may have full control of said head 1 when turned by a wrench.

Conceivably, a shield of flexible material, such as rubber or plastic, for example, may replace the metal shield. Such a type could enclose the body 1 at the ground surface and could be readily drawn aside to permit a wrench to be applied to said body for turning it with respect to the pipe 6.

I claim:

1. In a sprinker head of the class described, the combination of a body member adapted at its bottom end for attachment to an underground water pipe and provided with an internal bore, said body member having an irregular outer surface and a transversely extending annular recess in said surface; valve means comprising a valve seat in said bore, an apertured disc seated in said bore at a point above said valve seat, and a screw type valve member carried by said disc and cooperating with said seat, the upper end of said valve member being adapted for engagement with a suitable tool for adjustment relative to said seat; a removable nozzle forming a top closure for said body member engaged in said bore and seated against said apertured disc to secure said disc in said bore, said nozzle extending above the top of said body member and including a water discharge outlet vertically aligned with said screw type valve member; and a metal shield of sheet form arranged transversely of said body member to position the same relative to the surface of the ground, said shield comprising an outer annular flange, a central tubular neck portion embracing the irregular outer surface of said body member below the top thereof and having an inturned flange engaged in said annular recess, and an intermediate recessed portion joining said outer flange and said tubular neck portion, the bottom of said intermediate recessed portion lying substantially in the same plane as the top of said body member, said outer annular flange and said recessed portion extending laterally outward from said body member, and said intermediate recessed portion being of such depth that said outer annular flange is positioned above the highest point of said nozzle, said intermediate recessed portion establishing a free space surrounding said nozzle and allowing access to said nozzle for removal thereof.

2. A sprinkler head for the purpose described including in its construction a body adapted at one end for attachment to an underground pipe and having a bore leading from the latter including an outlet opening for discharge of water at its other end, a perforate disc seated in said bore and separating said bore into separate cavities, an adjustable screw in said disc, a member held in the body to engage the disc and secure it in position, said body having an irregular outer surface therearound together with an annular recess in said surface, a separate disc-like shield of greater diameter than the body and surmounting the same, said shield having a centrally disposed tubular neck portion engageable with said irregular outer surface of said body, and also having a terminal inturned flange engageable in said annular recess, and said shield having therein a central recess a wall of which is spaced from said outlet opening of the body toward the inlet end thereof, the side walls of the recess being spaced laterally from the discharge end of said body wholly exposing that end, the marginal portion of the shield lying in a plane substantially at right angles to the axis of the bore of the body and spaced outwardly away from the latter in a direction paralleling said axis of said bore, and said marginal portion having a form adapted for receiving a wrench.

3. In a sprinkler head of the class described, the combination of a body member adapted at its bottom end for attachment to an underground

water pipe and provided with an internal bore, said body member having an irregular outer surface and a transversely extending annular recess in said surface; valve means comprising a valve seat in said bore, an apertured disc seated in said bore at a point above said valve seat, and a screw type valve member carried by said disc and cooperating with said seat; a removable nozzle forming a top closure for said body member engaged in said bore and seated against said apertured disc to secure said disc in said bore, said nozzle extending above the top of said body member and including a water discharge outlet aligned vertically with said screw type valve member; and a ground engaging shield arranged transversely of said body member, said shield comprising an outer annular flange, a central tubular neck portion embracing the irregular outer surface of said body member below the top thereof and having an inturned flange engaged in said annular recess, and an intermediate recessed portion joining said outer flange and said tubular neck portion, said outer annular flange and said recessed

portion extending laterally outward from said body member and said intermediate recessed portion establishing a free space surrounding said nozzle and allowing access to said nozzle for removal thereof.

LEWEN R. NELSON.

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