March 23, 1965 H. WIESMANN 3,174,690

LAWN SPRINKLER OR THE LIKE

Filed Aug. 15, 1963

Fig. 1.

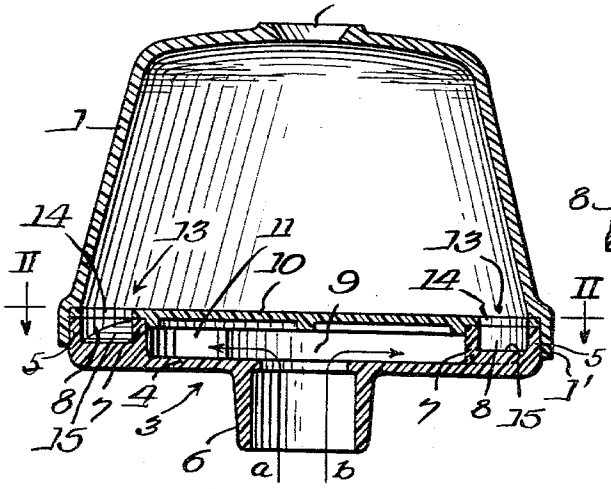


Fig. 3.

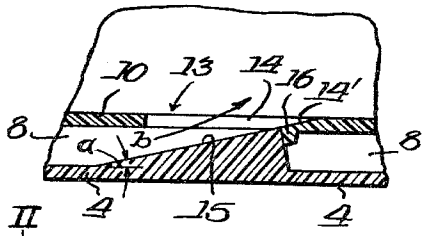


Fig. 4.

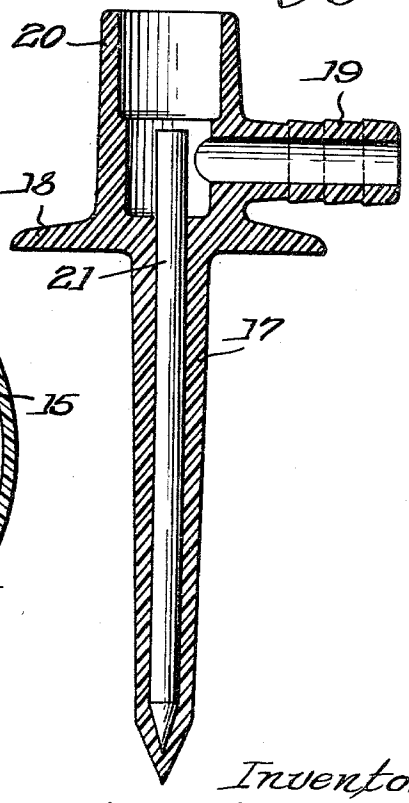
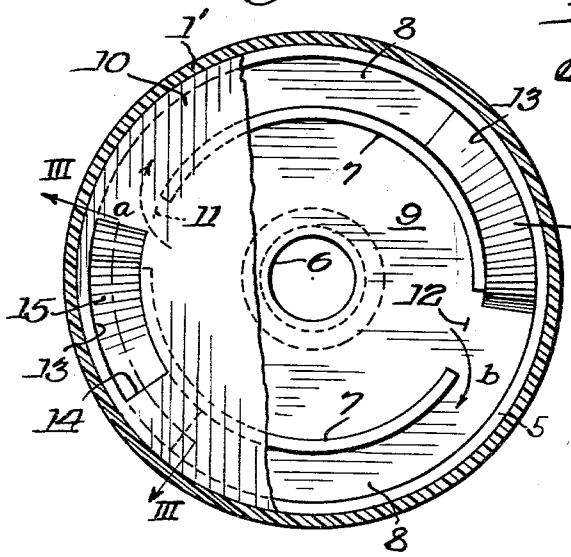


Fig. 2.



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LAWN SPRINKLER OR THE LIKE

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5 Claims. (Cl. 239—276)

The invention disclosed herein is concerned with a lawn sprinkler and the like, having a sprinkler head which comprises means for causing water injected thereinto to gyrate along circular paths for exit through a discharge port in the form of a more or less pronounced mist.

There is a sprinkler head known consisting of a circular housing which is closed on all sides, tapering conically in an upward direction and having a discharge port at the top and a central inlet opening at the bottom thereof. In this known sprinkler head are provided one or more closed peripheral arcuate grooves or channels, extending in a horizontal plane from a central water inlet approximately to the inner housing wall, and having openings at the ends thereof so that the water can enter into the housing tangentially and flow with increasing velocity to the discharge port through a circular path of motion.

This known sprinkler head entails considerable difficulties so far as the fabrication thereof is concerned. This applies particularly to the formation of the arcuately extending grooves or channels.

It is, therefore, the object of the invention, to improve the initially indicated sprinkler head so as to considerably simplify its production without detrimentally affecting or changing the function thereof.

The improvement comprises, in connection with a sprinkler head of the known, initially indicated kind, the provision of a plate, fixedly arranged above and spaced from the bottom thereof, and means for subdividing the space below said plate by webs to form peripheral grooves or channels and a centrally disposed cylindrical water inlet chamber lying above the inlet port, the water inlet chamber being at two or more points in communication with the peripheral grooves, from which the water is injected into the housing interior, via exit openings provided in the plate, in peripherally circular gyrating motion.

The bottom of the water circulating grooves preferably rises in the region of the exit openings in the plate, obliquely upwardly up to the plate, and jointly with the adjacent rim of the exit opening, delimits the peripheral grooves in the flow direction. Each communicating point of the cylindrical water inlet chamber lies appropriately with one of the peripheral grooves disposed directly in back of the water exit of another peripheral groove. The circular bottom is advantageously provided with an upright outer rim and with arcuate webs which delimit the water inlet chamber and the peripheral grooves, and form with the water inlet bushing a unitary part. The plate may lie on the bottom part and may be fixedly connected with the outer rim and the webs, for example, by cementing or welding. The bell shaped housing head may overlie the bottom part with the plate, and both parts may be connected together by cementing, welding or the like. A unitary diecast part forms a base or mounting made of synthetic material and having a spike-like part and a water connection bushing, such part being used for supporting the sprinkler head at the ground. If desired, a reinforcing metal pin may be provided in the spike-like member of the base.

Further details of the invention will appear from the description of an embodiment thereof which is rendered

below with reference to the accompanying drawing, wherein

FIG. 1 shows in cross-sectional representation a spinkler head according to the invention;

FIG. 2 is a sectional view taken approximately along line II—II of FIG. 1;

FIG. 3 indicates a sectional view along line III—III of FIG. 2; and

FIG. 4 shows in sectional representation the spike-like base or mounting for securing the sprinkler head at a point on the ground.

The sprinkler head comprises an upwardly tapering cross-sectionally circular bell-shaped housing part 1 having an inwardly tapering water discharge port 2 formed at the top thereof, as well as a bottom part indicated as a unit by numeral 3. The bottom part 3 comprises a circular bottom plate 4 having an upwardly extending rim 5 and a centrally disposed downwardly extending water inlet 6. The bottom part 3 is also provided with interiorly disposed arcuate webs 7 which extend upwardly to a level coinciding with the upper edge of the rim 5, such webs serving, jointly with corresponding parts of the rim, to delimit peripheral grooves or channels 8 with respect to the centrally disposed cylindrical water inlet chamber 9 extending above the water inlet 6.

A circular plate 10 is disposed above and spaced from the bottom 4, such plate overlying the central cylindrical water inlet chamber 9 as well as the peripheral grooves or channels 8 and thus separates these parts from the interior of the bell shaped housing 1. The plate 10 lies in engagement with the upper edge of the outer rim 5 as well as in engagement with the upper edges of the webs 7 and is, at the corresponding areas fixedly connected with the bottom part 3. The bottom part 3 with its plate 10 is connected with the housing head or bell 1, the latter being for this purpose provided with the stepped lower rim 1' which overlies the upwardly extending rim 5 of the bottom part 3.

All parts, that is, the bell 1, the bottom part 3 and the plate 10, are appropriately made of elastic, shock proof and corrosion-resistant synthetic material, and connected with one another by means of a suitable cement or bonding in the manner of welding. The bottom part 3 with its parts 4, 5, 6 and 7 is advantageously made as a unitary part of synthetic material which is suitably formed by diecasting or pressure molding and the like.

As will be seen from FIG. 2, the arcuate webs 7, forming with the outer rim 5, the peripheral grooves or channels 8 form radially directed openings 11 and 12 for communication with the cylindrical centrally disposed water inlet chamber 9, so that the water entering the inlet 6 flows into the inlet chamber 9, and along the paths *a* and *b* into the peripheral channels 8. The water flows from the openings 11, 12 along the peripheral arcuate channels 8 respectively to axially direct exits 13 which are formed by cutouts 14 provided in the plate 10. As shown particularly in FIG. 3, the bottom 15 of the respective peripheral channels 8 rises advantageously at an angle α, forming with the obliquely shaped edge 14' of the openings 14 water tight joints, the oblique edge 14' being provided with a stop 16 for engagement with the upper edge of the angularly rising bottom 15, the joining parts being cemented together, thus providing a continuous angular water exit surface 15, 14'. Each of the communicating openings 11, 12, between the water inlet chamber 9 and the respective peripheral channel lies directly in back of the water exit formed by the angular surface 15 and the opening 14 in the plate 10, thus providing for an arcuate path of sufficient length along which the water can flow in the respective channel 8 with increasing speed and assume a circular or gyrating motion upon exit into

the bell **1**. It is understood that there may be provided more than two openings such as **11**, **12**, for communication with the water inlet chamber **9** and the peripheral channels **8**, in which case there will be provided a corresponding number of water exits.

The water passes throught the exit openings **14** formed in the plate **10**, entering into the bell **1** in tangential and circularly gyrating streams the velocity of which increases along the upwardly conically tapering inner wall of the bell, heading for the discharge port **2**, the inwardly tapering wall of the port, which forms a sharp inner edge, acting somewhat in the manner of a venturi, accelerating the discharge velocity of the water and causing the water to leave the port **2** to the outside in the form of a more or less pronounced mist.

A base or mounting shown in FIG. 4 is provided for operatively positioning the sprinkler head on the ground. The mounting comprises a spike-like member **17** which is driven into the ground, a flange **18** for limiting the extent to which the spike **17** can be driven into the ground, a horizontally extending hose connector **19** and an axially upwardly extending bushing **20** for receiving the sprinkler head. The mounting with its parts **17**, **18**, **19**, **20** is constructed as a unitary part made of suitable synthetic material. The spike-like part **17** may be made solid but may also be provided with a reinforcing steel pin **21** so as to prevent breakage thereof upon driving it into the ground. The sprinkler head may be inserted directly into the bushing **20** or may be connected therewith with the aid of an intermediate tubular connecting member of desired length, not shown, which may be cemented in the bushing **20** of the mounting member.

Changes may be made within the scope and spirit of the appended claims which define what is believed to be new and desired to have protected by Letters Patent.

I claim:

1. A lawn sprinkler or the like having a sprinkler head comprising a bell-shaped cross-sectionally circular upwardly tapering housing having a discharge port formed therein at the top thereof, a unitary bottom assembly connected with said housing, said bottom assembly comprising a bottom plate having an axially upwardly exding outer rim which is connected with said bell-shaped housing and having a tubular axially downwardly directed water inlet bushing, arcuate webs extending axially upwardly from said bottom plate and being radially inwardly spaced from said outer rim, an intermediate plate disposed in engagement with the top edges of said rim and said webs and being fixedly connected therewith, said intermediate plate forming with said rim and said webs peripherally extending arcuate channels and also forming a central cylindrical water inlet chamber above said water inlet bushing, the respective ends of said arcuate webs being spaced apart to form radially inwardly facing openings for communication with said water inlet chamber, water flowing from said chamber through said openings radially into said channels and flowing therethrough for exit therefrom through axially directed openings formed in said intermediate plate, to flow at accelerated velocity tangentially and along circularly gyrating paths into said bell-shaped housing toward said discharge port, for outflow therefrom in the form of a more or less pronounced mist.

2. A lawn sprinkler according to claim 1, wherein the bottom of the respective peripheral channels rises angularly within the area of the respective axially directed exit openings, the end of said rising portion being in watertight connection with an edge of the intermediate plate which defines the respective axially directed exit opening.

3. A lawn sprinkler according to claim 2, wherein each radially inwardly directed opening communicating with said water inlet chamber lies directly in back of the axially directed water exit opening of another peripheral channel.

4. A lawn sprinkler according to claim 3, wherein said discharge port is formed by an opening provided in the top wall of said bell-shaped housing, centrally of said top wall, the wall of said opening tapering axially inwardly of said housing to form a sharp edge along which the gyrating accelerated stream of water is discharged to the outside, said opening providing a venturi-like action which is operative to impart to the discharging water further acceleration, said sharp edge contributing toward breaking up the discharging water so as to exit to the outside in the form of a more or less pronounced mist.

5. A lawn sprinkler according to claim 4, comprising a unitary base for mounting said sprinkler head for sprinkler action on the ground, said base comprising a spike-like part to be driven into the ground, a flange for limiting the extent to which the spike-like part can be driven into the ground, a connection for attaching a hose to said base disposed above said flange and laterally extending with respect thereto, and a tubular axially upwardly directed bushing for connection with the axially downwardly directed water inlet bushing of said sprinkler head.

References Cited in the file of this patent

UNITED STATES PATENTS

484,074	Wilgus	Oct. 11, 1892
579,873	Edwards	Mar. 30, 1897
581,785	Smith	May 4, 1897
713,670	Ocumpaugh	Nov. 18, 1902
1,216,630	Tuthill	Feb. 20, 1917
1,376,767	Hess	May 3, 1921
2,511,945	Rowley	June 20, 1950
2,814,526	Blair	Nov. 26, 1957
3,067,950	Goldman	Dec. 11, 1962