



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 1 360 993 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**12.11.2003 Bulletin 2003/46**

(51) Int Cl.7: **B05B 1/16, B05B 1/18**

(21) Application number: **03007196.3**

(22) Date of filing: **29.03.2003**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IT LI LU MC NL PT RO SE SI SK TR**  
Designated Extension States:  
**AL LT LV MK**

(72) Inventors:  
• **Magris, Erme**  
**33086 Montereale Valcellina, Pordenone (IT)**  
• **Borghese, Alladino**  
**33086 Montereale Valcellina, Pordenone (IT)**

(30) Priority: **07.05.2002 IT PN20020026 U**

(74) Representative: **Giugni, Valter**  
**PROPRIA S.r.l.,**  
**Via Mazzini 13**  
**33170 Pordenone (IT)**

(71) Applicant: **UNIFLEX UTILTIME S.p.A.**  
**I-33086 Montereale Valcellina (Pordenone) (IT)**

(54) **Multi-function watering sprinkler**

(57) Watering sprinkler of the multi-function type, comprising a contoured body (10) provided with a fit-in coupling (11) for connection with a water supply hose, and a spray head (12) that is closed frontally by a surface provided with a plurality of perforations.

The spray head (12) is provided with at least two perforated surfaces (21, 22), in which the first one has

a concave profile and the second one a convex or planar profile. These surfaces close the outlet end portion of respective conduits (131, 132) provided inside the body (10) and supplied via selector means (14).

This solution enables water jets of differing form, both diffuse and concentrated, but at a same, i.e. unaltered flow-rate for a same water supply pressure.

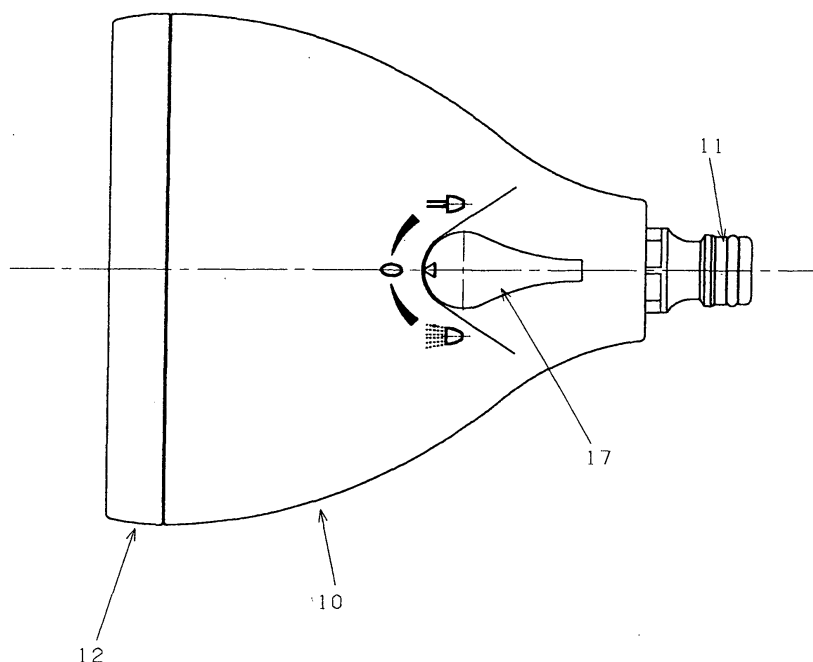


Fig. 1

EP 1 360 993 A2

## Description

**[0001]** The present invention refers to a watering sprinkler of the multi-function kind that is adapted to be connected, by means of a fit-in coupling and possibly a connector, to a water hose for the irrigation of gardens and the like.

**[0002]** Multifunction-type watering sprinklers are usually constituted by an appropriately contoured body that comprises a spray head provided with nozzles for issuing a jet of liquid, i.e. water under pressure.

**[0003]** In its simplest form, the spray head of a multi-function watering sprinkler is provided with a surface with a plurality of small-diameter perforations that produce a diffuse jet, and with a central nozzle with a larger diameter that generates a concentrated jet. In a more complex solution, the spray head of a multi-function watering sprinkler comprises, further to said perforated surface, two or more nozzles having different diameters which enable jets of a differentiated form (i.e. a straight jet, a fanlike spreading jet, an atomized jet, etc.) according to the particular kind or pattern of irrigation required. Usually, the selection of the various kinds of jets of a multi-function watering sprinkler is done by accordingly rotating a ring nut, which the sprinkler head is provided with. By rotating such a ring nut, in fact, the nozzles corresponding to the required kind of jets are selectively opened and closed.

**[0004]** However, a substantial drawback that is generally found in prior-art watering sprinklers of the above described kind lies exactly in the fact that their heads are fitted with nozzles featuring different cross-section areas. In other words, this means that, for a same supply pressure of the water flowing in from the mains, the flow-rate of the sprinkler does not remain constant, but rather varies when the type of jet is changed.

**[0005]** In view of doing away with such a drawback, watering sprinklers have been developed, which are provided with adjustment devices, such as for instance cock-like devices or push-button devices, so as to be able to vary both the form of the jet and the flow-rate thereof. Quite clearly, solutions of this kind tend however to make these watering sprinklers rather complicated from a construction point of view, as well as delicate from a functional point of view.

**[0006]** It therefore is a main purpose of the present invention to provide a multi-function watering sprinkler that is capable of delivering differentiated jets at a substantially unaltered, i.e. same water flow-rate for a same supply pressure of the water delivered from the mains.

**[0007]** A further purpose of the present invention is to provide a multi-function watering sprinkler of the above cited kind, which is as simple and reliable as possible.

**[0008]** According to the present invention, these and further aims are reached in a multi-function watering sprinkler incorporating the characteristics as recited in the appended claims.

**[0009]** Anyway, features and advantages of the multi-

function watering sprinkler according to the present invention may be more readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a plane top view of the multi-function watering sprinkler according to the present invention;
- Figure 2 is a cross-sectional view of the watering sprinkler shown in Figure 1, along a central vertical plane thereof;
- Figure 3 is a cross-sectional view of the watering sprinkler shown in Figure 1, along a central horizontal plane thereof; and
- Figure 4 is an enlarged front perspective view of the watering sprinkler shown in Figure 1.

**[0010]** The watering sprinkler according to the present invention comprises a shaped body 10, which is provided on the rear with a fit-in coupling 11 for connection with a water supply hose (not shown) and, on the front side, with a water delivery head 12 that is closed by a surface provided with a plurality of perforations (see Figures 1 and 4).

**[0011]** Preferably, the shaped body 10 is made in the form of a shell (Figure 2) which, at its rear end portion, closes up around the tang or tail piece of the fit-in coupling 11 and, at its front end portion, engages the head piece 12 and the end portion of a conduit 13 that forms the extension of the fit-in coupling 11 into the body 10. In an intermediate position between the fit-in coupling 11 and the conduit 13 there is provided a valve member 14 that comprises a perforated pan or disk 15 (Figure 3). This disk 15 is supported by a pin 16 that protrudes from the body 10 and is capable of being actuated rotatably about its axis by means of a lever 17. This lever 17 is preferably snap-fitted onto the pin 16.

**[0012]** The disk 15 is provided with two substantially opposite perforations 18 and 19 so as to selectively enable, through the rotation of the pin 16 by means of the lever 17, the fit-in coupling 11 to be switched into communicating with two conduit branches 131 and 132, into which the conduit 13 shoots out downstream of the valve member 14. In addition, the disk 15 can be rotated into a further position, lying at an intermediate point between the above-cited ones, in which both branches 131 and 132 of said conduit are shut off. As a result, while basically representing a simple flow diverting means, the valve member 14 also acts as a shut-off valve for the watering sprinkler.

**[0013]** As this can be best noticed in Figures 2 and 3, the flow conduits 131 and 132 are essentially co-planar with respect to each other and the fit-in coupling 11. Furthermore, the disk 15 of the valve member 14 is arranged on a plane that lies substantially parallel to the

one containing the axes of said conduits 131 and 132 and said fit-in coupling 11. The pin 16 of the valve member 14 is orthogonal to the disk 15 of said valve member.

**[0014]** An essential feature of the watering sprinkler according to the present invention lies in the fact that the delivery head 12 thereof is provided with two separate perforated surfaces 21 and 22 (see in particular Figure 4), which close the outlet openings of the two flow conduits 131 and 132 formed in the body 10. These surfaces are fastened by means of screws 23 (Figure 2) to the outflow openings of said conduits 131 and 132. The surfaces 21 and 22 themselves are substantially co-planar and have perforations that have substantially the same diameter. However, they feature different or, more exactly, opposite curvatures. In fact, while one of these surfaces has a concave contour, the other one has a convex contour. It has been found experimentally that such a solution proves effective in producing two definitely differentiated kinds of water jets, i.e. a diffuse jet from a surface and a concentrated jet from the other one. The selection of either one or the other kind of jet, which is carried out by the rotation of the lever 17, is indicated by corresponding marks provided on the body 10 (Figure 1).

**[0015]** It will of course be appreciated that differentiated water jets can also be obtained by providing the second delivery surface 22 with a planar contour, instead of a convex one. In this case, such a surface 22 will deliver a diffuse jet, whereas the concentrated jet will be issuing from the first surface 21.

**[0016]** The above described construction and arrangement are therefore such as to enable all of the afore specified aims to be reached, with particular reference to the one calling for the ability of producing jets of different form, but at a same flow-rate for a same water supply pressure from the mains. Anyway, it can be fully appreciated that it is possible for a further differentiation of the jets to be obtained by varying the size, i.e. the diameter of the perforations of the two surfaces 21 and 22. As a result, the multi-function watering sprinkler according to the present invention proves very effective when used in practice, as well as very reliable thanks to the very simple construction thereof.

## Claims

1. Watering sprinkler of the multi-function type, adapted to deliver a plurality of differentiated jets, comprising a contoured body (10) provided with a fit-in coupling (11) for connection to a water supply hose, and a spray head (12) that is closed frontally by a surface provided with a plurality of perforations, selector means (14) being provided in said body (10) to activate the various kinds of jets, **characterized in that** the spray head (12) is provided with at least two separate, substantially co-planar perforated surfaces (21, 22), one of which has a concave con-

tour, in which said surfaces (21, 22) close the outlet end portion of respective conduits (131, 132) that are provided inside the body (10) and are supplied with water via selector means (14) constituted by a simple flow diverter.

2. Watering sprinkler according to claim 1, **characterized in that** the second surface (22) has a planar contour.

3. Watering sprinkler according to claim 1, **characterized in that** the second surface (22) has a convex contour.

4. Watering sprinkler according to any of the preceding claims, **characterized in that** the perforations of the two surfaces (21, 22) of the spray head (12) have substantially the same diameter.

5. Watering sprinkler according to any of the preceding claims, **characterized in that** the perforations of the two surfaces (21, 22) of the spray head (12) have different diameters.

6. Watering sprinkler according to any of the preceding claims, **characterized in that** the flow diverter (14) is constituted by a pan or disk valve (15) provided with perforations (18, 19) adapted to enable the fit-in coupling (11) for connection with the water supply hose to be selectively switched into communicating with said conduits (131, 132).

7. Watering sprinkler according to any of the preceding claims, **characterized in that** the fit-in coupling (11) for connection with the water supply hose and the two conduits (131, 132) formed within the contoured body (10) are substantially co-planar.

8. Watering sprinkler according to any of the preceding claims, **characterized in that** the flow diverter (14) is hinged on a seat within the contoured body along an orthogonal axis with respect to the water flow direction, and is capable of being actuated rotatably by means of a lever (17) protruding outside the same contoured body.

9. Watering sprinkler according to any of the preceding claims, **characterized in that** the flow diverter (14) is adapted to be adjusted into a setting in which the disk valve (15) cuts off the connection of both flow conduits (131, 132) with the fit-in coupling (11) of the water supply hose, so as to act as a shut-off valve.

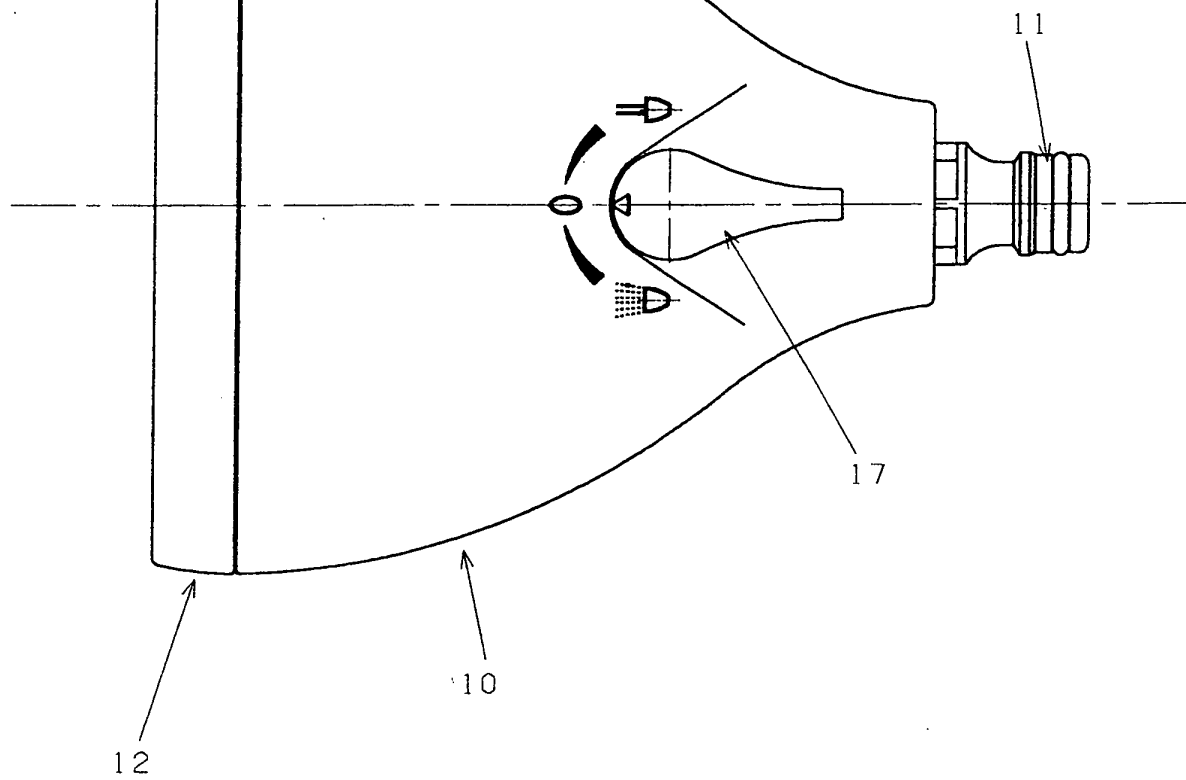


Fig. 1

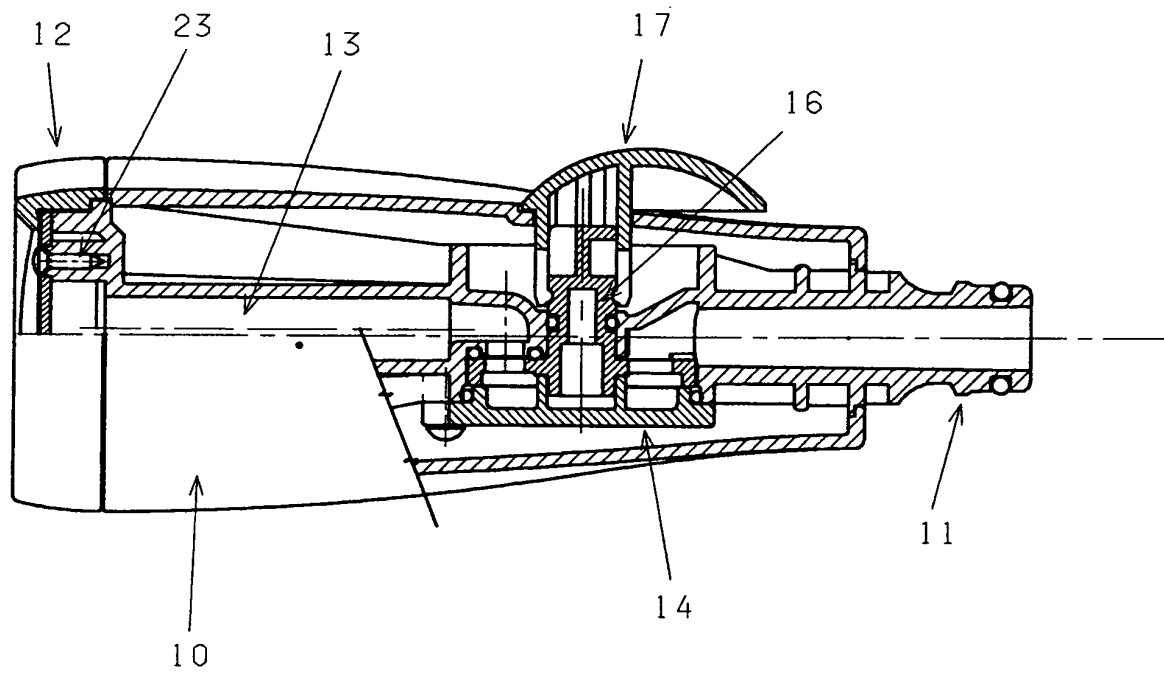


Fig. 2

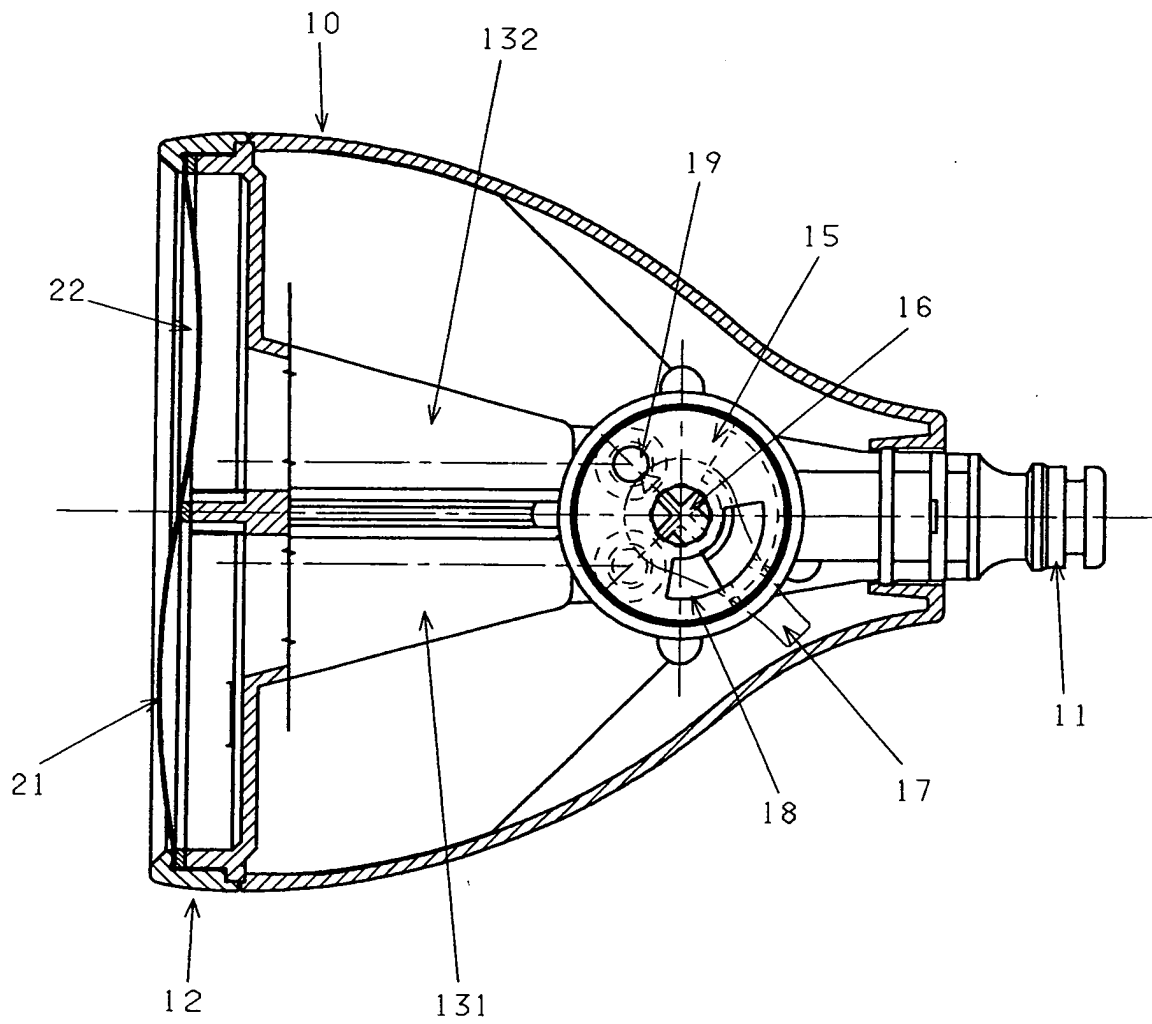


Fig. 3

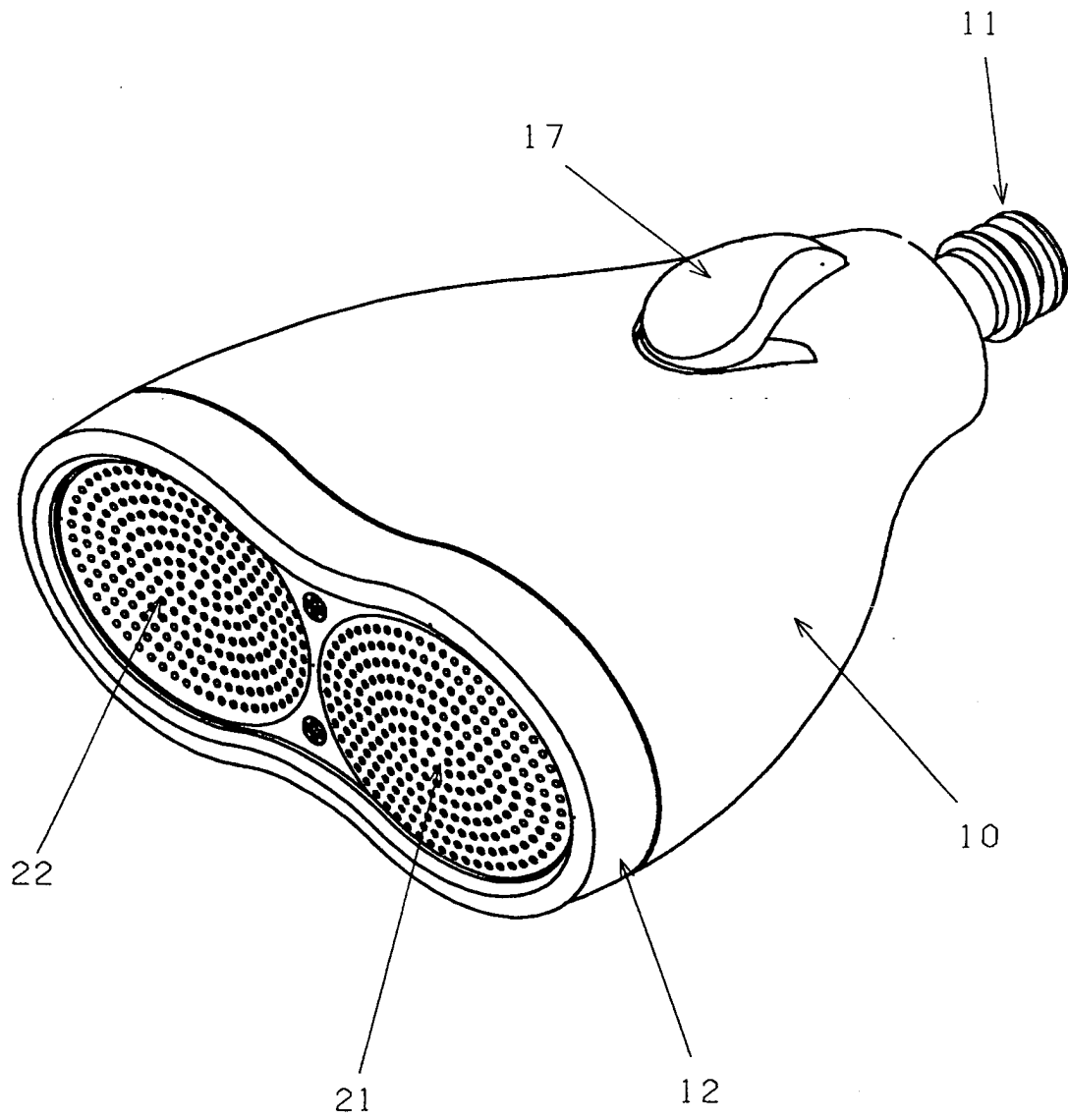


Fig. 4