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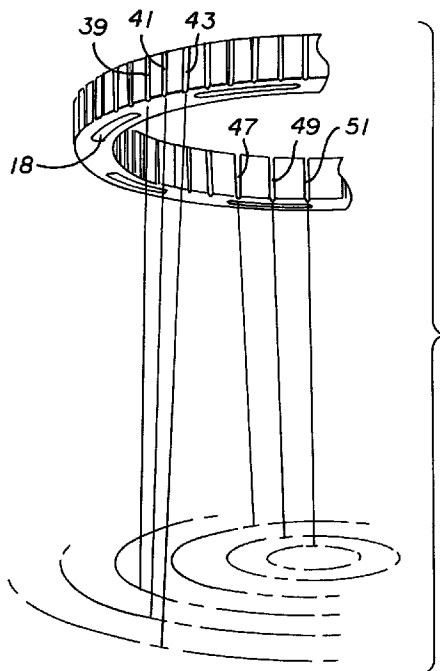
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(54) **ANNEAU DE PULVERISATION A ANNEAUX INTERNE ET
EXTERNE**

(54) **INNER/OUTER SPRAY RING**



(57) Anneau de pulvérisation comportant une circonférence intérieure et une circonférence extérieure. Une série d'évidements sont distribués entre les circonférences intérieure et extérieure. Les évidements sont utilisés pour coupler l'anneau de pulvérisation à une tête de douche. Trois séries de rainures sont pratiquées à la circonférence extérieure et une autre série de rainures sont pratiquées à la circonférence intérieure. L'angle de chaque série de rainures est réglé de manière à produire trois jets différents. Les rainures intérieures convergent vers l'intérieur et les rainures extérieures sont orientées vers l'extérieur. Les rainures ont de plus un profil conique pour faire varier la puissance des jets. Le déplacement latéral de l'anneau de pulvérisation permet de régler la pulvérisation d'un jet de fort diamètre à un jet fin. En outre, l'anneau de pulvérisation peut être facilement enlevé de la tête de douche aux fins de nettoyage.

(57) A spray ring includes an inner circumference and an outer circumference. A series of apertures are located between the inner and outer circumferences. The apertures are used for coupling the spray ring to a shower head. Three sets of grooves are disposed along the outer circumference and a second set of grooves disposed along the inner circumference. Each set of grooves is angled to produce three different sprays. The inner grooves converge inwardly while the outer grooves diverge outwardly. The grooves also taper to produce spray patterns of varying strengths. As the spray ring is moved laterally within the shower head, the sprays vary from coarse to needle. Further, the spray ring may be moved entirely out of the shower head to flush deposits out of the ring.

INNER/OUTER SPRAY RING

ABSTRACT OF THE DISCLOSURE

5 A spray ring includes an inner circumference and an outer circumference. A series of apertures are located between the inner and outer circumferences. The apertures are used for coupling the spray ring to a shower head. Three sets of grooves are disposed along the outer circumference and a second set of grooves disposed along the inner circumference. Each set of grooves is angled to produce three different sprays. The inner grooves converge inwardly while the outer grooves diverge outwardly. The grooves also taper to produce spray patterns of varying strengths. As the spray ring is moved laterally within the shower head, the sprays vary from coarse to needle. Further, the spray ring may be moved entirely out of the shower head to flush deposits out of the ring.

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INNER/OUTER SPRAY RING

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a spray ring for use with a handheld or fixed shower head. In particular, the spray ring includes grooves along both its inner and outer edges to direct water inwardly and outwardly from the spray ring, respectively.

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2. Background

A shower head directs water from a shower fixture or pipe to a user in a stream or spray. Adjustable shower heads permit the user to select a wide variety of shower spray options. For example, a user may select a "fine" spray that distributes water in thin streams. Similarly, a user may select increasingly stronger sprays that distribute water in stronger, thicker streams. Fine sprays are often used to provide gentle rinsing action over a wide area. Strong sprays are used to provide intense massage action to one particular area.

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Strong massage sprays are produced by directing all water flow through a central opening in the shower head. Fine spray is often produced by using a spray ring disposed in the shower head. A spray ring is a circular ring coupled axially beneath the shower head. The spray ring is usually coupled to the shower head by its inner edge. The inner edge grips a portion of the shower head and permits water to flow along the outer edge of the ring. The ring includes several grooves along its outer edge. The grooves are angled away from the ring so as to permit water flowing from the shower head to diverge outwardly from the shower head. The varying combinations of angles causes different spray patterns to emerge from the spray ring.

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Prior art spray rings, however, are generally limited to producing diverging spray patterns--those patterns that cause water to flow outwardly from the spray ring. Thus, the spray patterns of prior art spray rings often include a large center point that lacks water spray.

Accordingly, it is an object of this invention to provide a spray ring capable of causing water to flow inwardly from the spray ring.

Further, it is an object of this invention to provide a spray ring capable of producing varying-intensity sprays.

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SUMMARY OF THE INVENTION

The present invention is directed to a spray ring capable of causing water to flow inwardly from the spray ring. The spray ring of the present invention further provides sprays of varying widths.

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In particular, the spray ring includes an inner circumference and an outer circumference coupled to the inner diameter. The spray ring is coupled to a shower head by a group of apertures disposed circumferentially around the spray ring between the inner and outer circumferences. The spray ring includes a group of grooves disposed along the inner diameter and a second group of grooves disposed along the outer diameter of the spray ring. The group of grooves along the inner diameter includes three different sets of grooves, each set of grooves having differing angles from the axis of the spray ring. Similarly, the group of grooves along the outer diameter includes three different sets of grooves having differing angles from the center axis. Each groove has a tapering depth that produces sprays of varying widths. As the spray ring is moved up and down, the water flow enters the grooves at narrower or wider portions to produce the variable-width and intensity sprays.

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The use of apertures along the circumference obviates the need to use the inner diameter for coupling. Accordingly, grooves may be placed along the inner diameter to produce a spray that converges inwardly. Further, the tapering depth of the grooves allows the spray ring to produce coarse or fine sprays.

A more complete understanding of the spray ring will be afforded to those skilled in the art, as well as a realization of additional advantages and objects thereof, by a consideration of the following detailed description of the preferred embodiment. Reference will be made to the appended sheets of drawings which will first be described briefly.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a handheld shower using the spray ring of the present invention.

Fig. 2 is a view taken along the lines 2-2 of Figure 1.

5 Fig. 3 is a perspective view of water flowing through the spray ring of the present invention.

Fig. 4 is a top view of the spray ring.

Fig. 5 is a view taken along the lines 5-5 of Figure 4.

Fig. 6 is a view taken along the lines 6-6 of Figure 4.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference will now be made in detail to the preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

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With reference to FIGURE 1, a handheld shower unit 20 or fixed shower head 60 (as shown in FIG. 2) delivers water from a pipe or faucet (not shown) to a user. The pipe or faucet forces water through a hose 23 into a handle 27 that is angled to force the water downward through a handheld shower head 30 and out to the user. The handheld shower head 30 is generally cylindrical and includes one or more valves and other components as shown in FIGURE 2. The spray ring 10 of the present invention is designed to be coupled axially to components within the handheld shower head 30.

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Specifically, as shown in FIGURE 2, a shower assembly 60 is composed of a shower shell 26 which allows the flow of water from a pipe. The shower head 60 further includes an outer selector cover 29 that rotates about the shower shell 26. A plurality of handles 59 are attached to an outer edge of the selector cover. The selector cover 29 is rotatably coupled to a cam ring 62 disposed within the interior of the shell 26. Axial rotation of the selector cover 29 moves the cam ring 62 upwardly and downwardly within the shower shell 26. The cam ring 62 is coupled to a generally

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cylindrical spray ring retainer 27. The spray ring retainer 27 moves upwardly and downwardly with the movement of the cam ring 62. The spray ring 10 of the present invention is coupled to the spray ring retainer 27 by apertures 18 (see FIGURE 4). Axial rotation of the selector cover 29 moves the cam ring 62, thus moving the spray ring 10 laterally within the shell 26.

The spray ring 10 is a generally cylindrical ring preferably formed of an elastomer material or other suitable elastic material. The spray ring 10 includes an inner ring or circumference 13 and an outer ring or circumference 15 molded to the inner ring. The molding provides a smooth upper edge 19. As shown in FIGURE 4, a plurality of apertures 18 are located between the inner ring 13 and the outer ring 15. The apertures 18 have a generally oval shape, although other shapes may be used. The apertures 18 are used to grip to an underside of the shower component 30 or shower head. Accordingly, apertures 18 having shapes other than oval may be used to couple the spray ring 10 to different shower heads. The lower surface 17 of the spray ring 10 includes a further indentation molded therein.

FIGURE 5 shows an outer edge 25 of the outer ring 15 of the spray ring 10. The outer edge 25 includes a plurality of grooves defined therein. More particularly, three sets of grooves are alternately formed into the outer edge 25. The first set of grooves 39 are parallel to the axis of the spray ring 10. The grooves 39 maintain a constant width along the outer edge 25 of the outer ring 15. The second set of grooves 41 diverge outwardly from the upper edge 19. Preferably, the angle of divergence from the upper edge 19 to the lower edge 17 is approximately 4.5 degrees. Further, the width of the second set of grooves 41 tapers inwardly from the upper edge 19 to the lower edge 17 to provide a varying width of spray as the height of the ring is adjusted. The third set of grooves 43 diverges outwardly from the upper edge 19 at a preferred angle of approximately 9 degrees. The width of the grooves 43 tapers inwardly from the upper edge 19 to the lower edge 17.

FIGURE 6 shows an inner edge 23 of the inner ring 13 of the spray ring 10. The inner ring similarly includes a plurality of grooves defined therein. Three sets of grooves are alternately formed into the inner edge 23. The first set of grooves 47 are parallel

to the center axis of the spray ring 15. The second set of grooves 49 converge inwardly from the upper edge at a preferred angle of approximately 1 degree. The third set of grooves 51 converge inwardly from the upper edge 19 at an angle of approximately 2 degrees. The width of the grooves tapers inwardly from the upper edge to the lower edge 17.

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FIGURE 3 shows the spray patterns produced by the spray ring 10 of the present invention. The grooves along the inner ring 13 force water inwardly to produce three rings of spray. The grooves along the outer ring 15 force water outwardly to produce three rings of spray. Water is directed from the shower head through each groove at the predetermined angle of the groove. Moreover, as the selector cover moves the spray ring 10 upwardly, the force of the spray varies according to the taper of the groove. Thus, the force of the varying sprays can vary from coarse to needle, depending upon the width of the groove. Each inner and outer ring of spray is coaxial with the spray ring 10. The spray ring 10 can further be moved to a point exterior to the shell 26. When the spray ring 10 is placed in this exterior position, the shower is placed in a "flush" position, allowing water to flow along the entire exterior and interior of the spray ring 10. Specifically, as discussed above, the spray ring 10 is formed of elastomer, a flexible resilient material that resists calcium deposits. In the "flush" position, the calcium deposits can be cleaned by the hot water flowing from the shower head. Thus, the spray ring 10 need not be removed for cleaning.

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Having thus described a preferred embodiment of a spray ring, it should be apparent to those skilled in the art that certain advantages of the within system have been achieved. It should also be appreciated that various modifications, adaptations, and alternative embodiments thereof may be made within the scope and spirit of the present invention.

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CLAIMSWhat is Claimed is:

- 5 1. A spray ring comprising:
 an outer circumference;
 an inner circumference;
 a first plurality of grooves disposed along the outer circumference; and
 a second plurality of grooves disposed along the inner circumference.
- 10 2. The spray ring, as recited in Claim 1, further comprising:
 means for coupling the spray ring to a shower unit.
3. The spray ring, as recited in Claim 2, wherein the coupling means further
15 comprises a plurality of apertures disposed circumferentially around the spray ring
 between the inner and outer circumferences.
4. The spray ring, as recited in Claim 3, wherein the second plurality of grooves
 are capable of directing water inward from the spray ring.
- 20 5. The spray ring, as recited in Claim 4, wherein the first and second plurality
 of outer grooves have a generally tapering shape.
6. The spray ring, as recited in Claim 1, wherein the second plurality of grooves
25 further comprises a first plurality of inner grooves capable of directing water at a first
 predetermined angle.
7. The spray ring, as recited in Claim 6, wherein the second plurality of grooves
30 further comprises a second plurality of inner grooves capable of directing water at a
 second predetermined angle.

8. The spray ring, as recited in Claim 7, wherein the second plurality of grooves further comprises a third plurality of inner grooves capable of directing water at a third predetermined angle.

5 9. The spray ring, as recited in Claim 1, wherein the spray ring is formed of a flexible resilient material.

10 10. The spray ring, as recited in Claim 1, wherein the spray ring is formed of elastomer.

11. A shower spray ring for use with a shower assembly, the spray ring comprising:

an outer ring having a first plurality of grooves disposed along an outer edge thereof;

15 an inner ring coupled to the outer ring and having a second plurality of grooves disposed along an inner edge thereof; and

a plurality of apertures disposed between the outer ring and the inner ring for coupling the spray ring to the shower assembly;

20 wherein the first plurality of grooves are capable of directing water outward from the spray ring. and

wherein the second plurality of grooves are capable of directing water inward from the spray ring.

25 12. The spray ring, as recited in Claim 11, wherein the second plurality of grooves further comprises a first plurality of inner grooves capable of directing water at a first predetermined angle.

30 13. The spray ring, as recited in Claim 12, wherein the first plurality of grooves further comprises a second plurality of inner grooves capable of directing water at a second predetermined angle.

14. The spray ring, as recited in Claim 13, wherein the first plurality of grooves further comprises a third plurality of outer grooves capable of directing water at a third predetermined angle.

5 15. A shower assembly comprising:

a shower shell coupled to a water source, the shell permitting a flow of water therethrough;

a selector cover rotatably coupled to an outer edge of the shell;

10 a cam ring disposed within the shell and coupled to the selector such that axial rotation of the selector cover moves the cam ring in a direction parallel to an axis of the shell;

a spray ring retainer coupled to an end of the cam ring; and

15 a spray ring coupled to the spray ring retainer, the spray ring having a first plurality of grooves along an inner circumference and a second plurality of grooves along an outer circumference;

wherein axial rotation of the selector cover causes a lateral movement of the spray ring within the shell.

20 16. The shower assembly, as recited in Claim 15, wherein the spray ring may be moved to a position outside of the shell for removing deposits from the spray ring.

25 17. The shower assembly, as recited in Claim 16, wherein the first plurality of grooves includes a first plurality of inner grooves angled at a first predetermined direction.

18. The shower assembly, as recited in Claim 17, wherein the first plurality of grooves includes a second plurality of inner grooves angled at a second predetermined direction.

19. The shower assembly, as recited in Claim 18, wherein the first plurality of grooves includes a third plurality of inner grooves angled at a third predetermined direction.

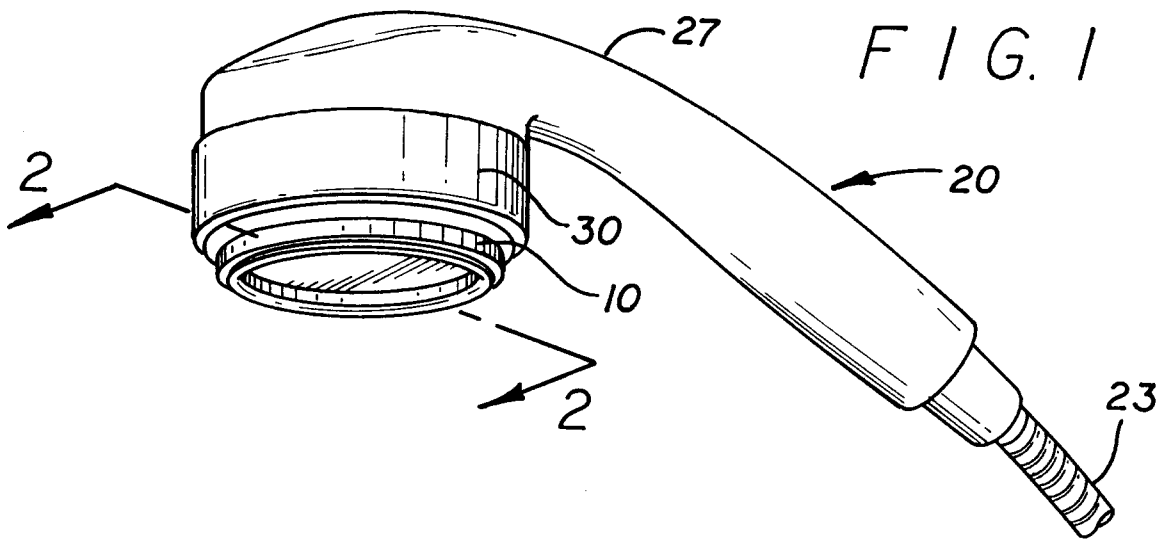


FIG. 2

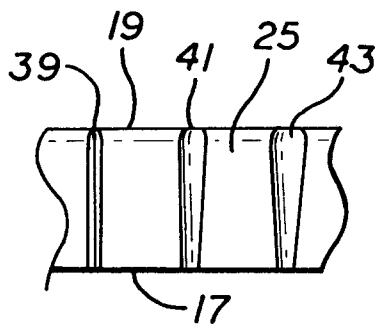
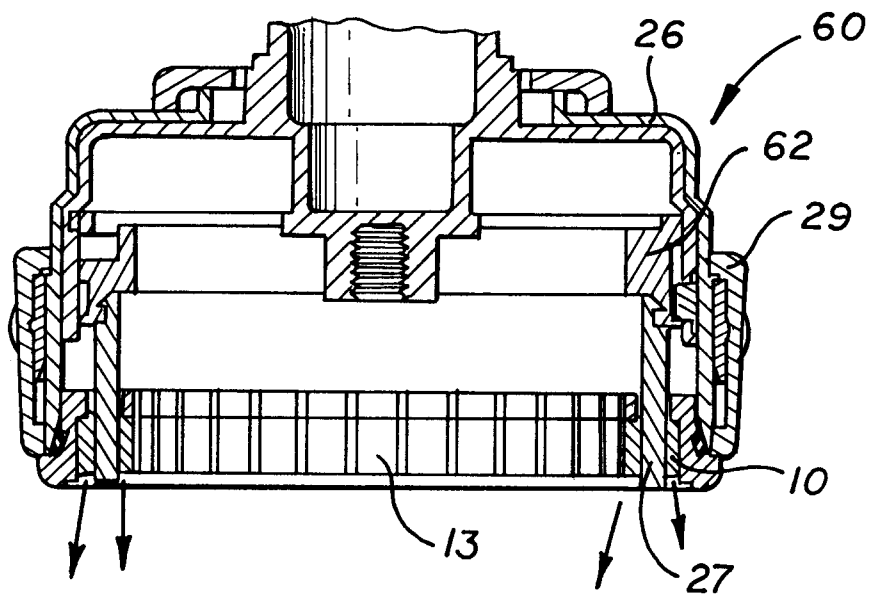


FIG. 5

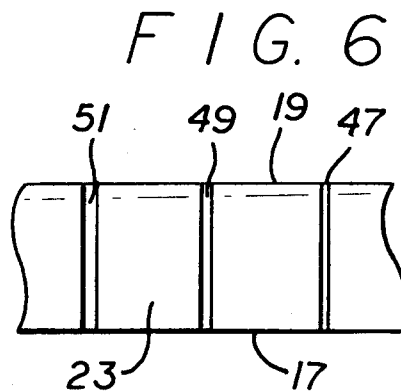


FIG. 3

