June 11, 1957 R. E. BLETCHER ET AL 2,795,462

SHOWER HEAD

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2 Sheets-Sheet 1

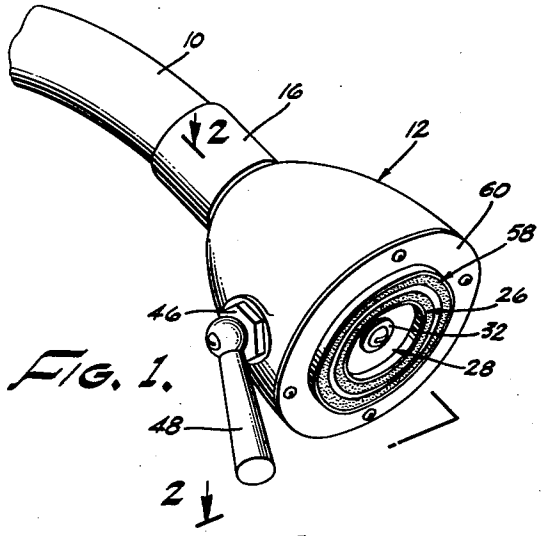


FIG. 1.

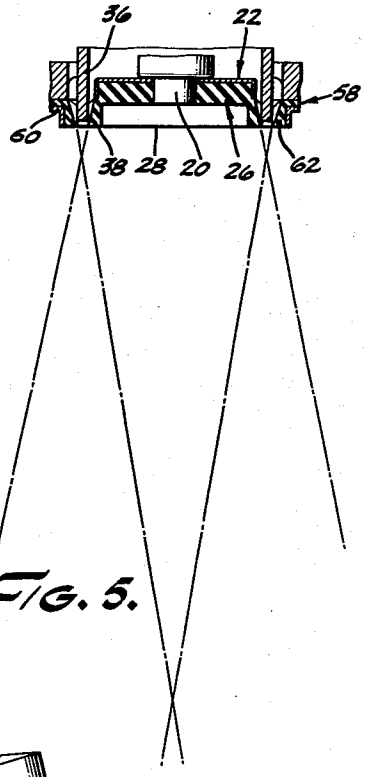
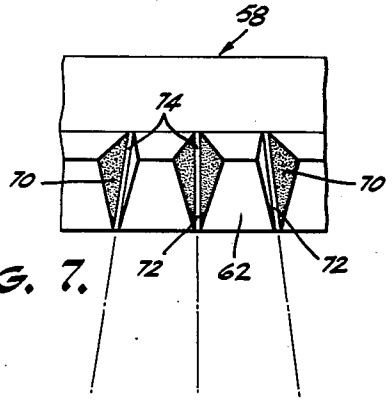


FIG. 5.



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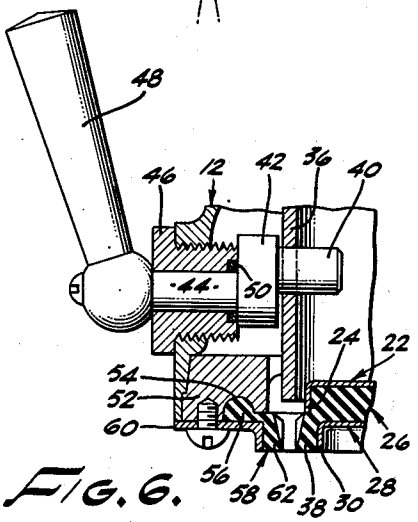

FIG. 6.

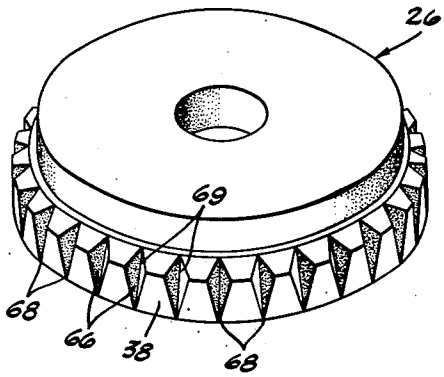

FIG. 8.

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FIG. 2.

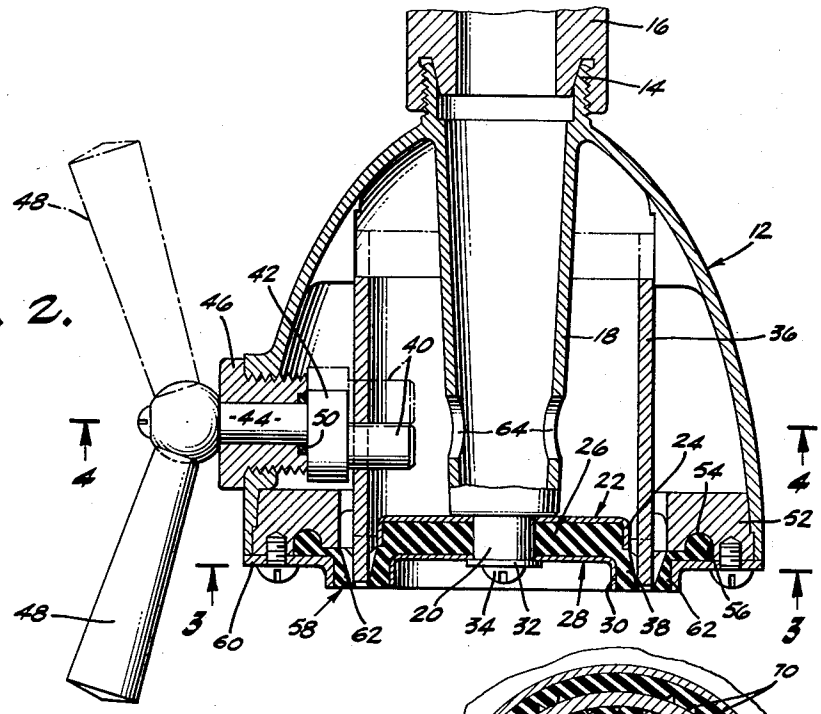
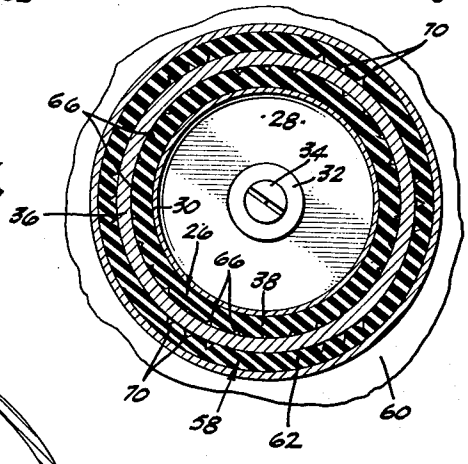


FIG. 3.



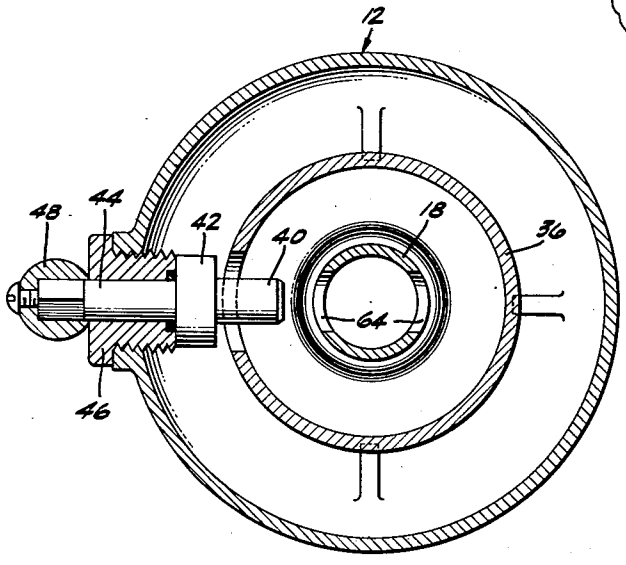


FIG. 4.

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SHOWER HEAD

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Application February 15, 1954, Serial No. 410,152

5 Claims. (Cl. 299—136)

This invention relates to a shower head.

It is an object of this invention to provide a shower head wherein the fineness of the spray is readily controlled.

It is still a further object of this invention to provide a shower head wherein a conical shower is discharged and means are provided to fill the conical shower throughout.

Other objects and advantages of this invention will be readily apparent from the following description.

In the drawings:

Figure 1 is a perspective view of a shower head embodying this invention.

Figure 2 is a section taken along the line 2—2 of Figure 1.

Figure 3 is a section taken along the line 3—3 of Figure 2.

Figure 4 is a section taken along the line 4—4 of Figure 2.

Figure 5 is a fragmentary sectional view, similar to Figure 2, illustrating the flow with the sleeve in the lowered position.

Figure 6 is a fragmentary sectional view, similar to Figure 2, with the sleeve in the upper position.

Figure 7 is a fragmentary view of the outer ring.

Figure 8 is a perspective view of the inner ring.

Water is directed to the shower head through a supply line 10. The housing 12, having a threaded nipple 14 thereon, screws into the coupling member 16.

The housing has a central column 18 into which a flow of water is directed. This column has a post 20 at its extremity which receives a lower retaining cup 22. The lower retaining cup 22 has a downwardly turned flange 24 receiving the inner resilient ring 26 which has a central aperture fitting on the post 20. An upper retaining cup 28 having a downwardly turned flange 30 is apertured to fit on the post 20 with the washer 32 and the screw 34 clamping the inner resilient ring 26 between the retaining cups 22 and 28 and securing same to the column 18.

A reciprocating sleeve 36 is retained in the housing 12 surrounding the column 18 and having an inner diameter substantially equal to the outer periphery of the downwardly turned flange 38 of the inner ring 26. The reciprocating sleeve 36 is apertured to receive the pin 40, mounted on the eccentric 42, which in turn is mounted upon the pin 44 projecting through the plug 46. A handle 48 is mounted on the pin 44. Rotation of the pin 44 raises and lowers the reciprocating sleeve 36 in the housing 12. An O ring 50 surrounds the pin 44 to prevent leakage.

At the lower extremity of the housing a base ring 52 is suitably secured as by solder or the like. The inner periphery of the ring is spaced from the outer periphery of the reciprocating sleeve 36, thus providing a water passage therebetween. The base ring 52 has an annular groove 54 in its lower face to receive an annular flange 56 of the outer resilient ring 58. A retaining plate 60 is mounted on the base ring 52 clamping the body portion of the outer resilient ring 58 between the base ring and the retaining plate.

The outer resilient ring 58 has a downwardly turned flange 62 which terminates at the same level as the flange 38 of the inner resilient ring 26 and the inner periphery of the flange 62 is substantially the same as the diameter of the outer periphery of the sleeve 36.

Water flowing through the column 18 passes out apertures 64 therein and between the sleeve 36 and the downwardly turned flange 38 of the inner resilient ring 26, and is discharged from the shower head. Water also fills the sleeve 36, flows down the outside thereof and is discharged between the sleeve 36 and the downwardly turned flange 62 of the outer resiilent ring 58.

The inner ring 26 is of a suitable resilient material, such as rubber, and has a series of grooves 66 cut in the outer surface of the downwardly turned flange 38. These grooves are triangular in shape with an apex 68 of the triangle at the lower periphery of the flange and are deeper at the base 69 than at the apex 68. Thus, as sleeve 36 is moved from its lowermost point of travel, seen in Figure 5, the size of the opening through which water passes is increased. Thus, the size of the streams of water discharged decreases to very fine needles of water as the sleeve 36 is lowered. At the uppermost position of the sleeve 36 it is above the ring 26 so that the flow through the shower head may flush sand and other foreign matter out of the shower head.

The triangular grooves 66 are equally spaced about the periphery of the downwardly turned flange 38. Thus water discharged through grooves 66 is in the form of diverging streams, forming a hollow cone, due to the difference in the depth of the grooves 66 at their upper extremity 69 and lower extremity 68, which increases in size as the distance from the shower head increases.

To fill this cone the downwardly turned flange 62 of the outer resilient ring 58 is provided with grooves 70. In this embodiment these grooves are in groups of three and are so spaced from one another as to be staggered with respect to the grooves 66. The grooves 70 similarly are triangularly shaped with the apex 72 adjacent the lower edge of the downwardly turned flange 62 and have the upper portion 74 of the groove deeper than the lower portion or apex 72. Thus, as sleeve 36 is raised, the volume of water flowing through the grooves 70 increases. Since the grooves 70 are slanted in the opposite manner from the grooves 66, that is, the depth of the groove is greater at the point 74 than at point 72, streams of water discharging through these grooves converge. Since the grooves 70 are staggered with respect to the streams through the grooves 66, the converging streams pass between the diverging streams and fill the cone. To avoid the converging streams meeting, it is desirable that the outer two grooves in each set of three be at a slight angle with respect to the center groove.

Thus, in operation, water is discharged between the sleeve 36 and the inner resilient ring 26, through the grooves 66 in the form of diverging streams of water forming a hollow cone while water being discharged between the sleeve 36 and the outer resilient ring 58 is in the form of converging streams of water filling the cone. As the sleeve 36 is raised the exposed cross-sectional area of the grooves 66 and 70 is increased, increasing the size of the streams of water. When the sleeve 36 is raised above the upper limits of the grooves, water flow flushes the unit.

While what hereinbefore has been described is the preferred embodiment of this invention, it is readily apparent that alterations and modifications can be resorted to without departing from the scope of this invention, and such

alterations and modifications are intended to be included within the scope of the appended claims.

We claim:

1. A shower head, comprising: a housing, an outer ring mounted in said housing having grooves in the inner periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into converging streams, an inner ring mounted in said housing having grooves in the outer periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into diverging streams, and means in said housing simultaneously diverting water through both sets of grooves.

2. A shower head, comprising: a housing, an outer ring mounted in said housing having grooves in the inner periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into converging streams, an inner ring mounted in said housing having grooves in the outer periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into diverging streams, and a sleeve between said inner and outer rings diverting water through said both sets of grooves simultaneously.

3. A shower head, comprising: a housing, an outer ring mounted in said housing having grooves in the inner periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into converging streams, an inner ring mounted in said housing having grooves in the outer periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into diverging streams, and means in said

housing simultaneously diverting water through both sets of grooves, the grooves in the outer ring being of varying angles with respect to one another.

4. A shower head comprising: a housing, an outer ring mounted in said housing having grooves in the inner periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into converging streams, an inner ring mounted in said housing, having grooves in the outer periphery thereof, said grooves being deeper at the upper extremity than at the lower extremity directing water flow therethrough into diverging streams, and a sleeve between said inner and outer rings diverting water through said both sets of grooves simultaneously, the grooves in the outer ring being of varying angles with respect to one another.

5. A shower head comprising: a housing, an outer ring mounted in said housing having grooves in the inner periphery thereof, an inner ring mounted in said housing having grooves in the outer periphery thereof, means in said housing simultaneously diverting water through both sets of grooves, the grooves in said inner ring being formed to direct water flow therethrough in diverging streams and the grooves in said outer ring being formed to direct water flow therethrough into converging streams passing between said diverging streams.

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