

June 8, 1954

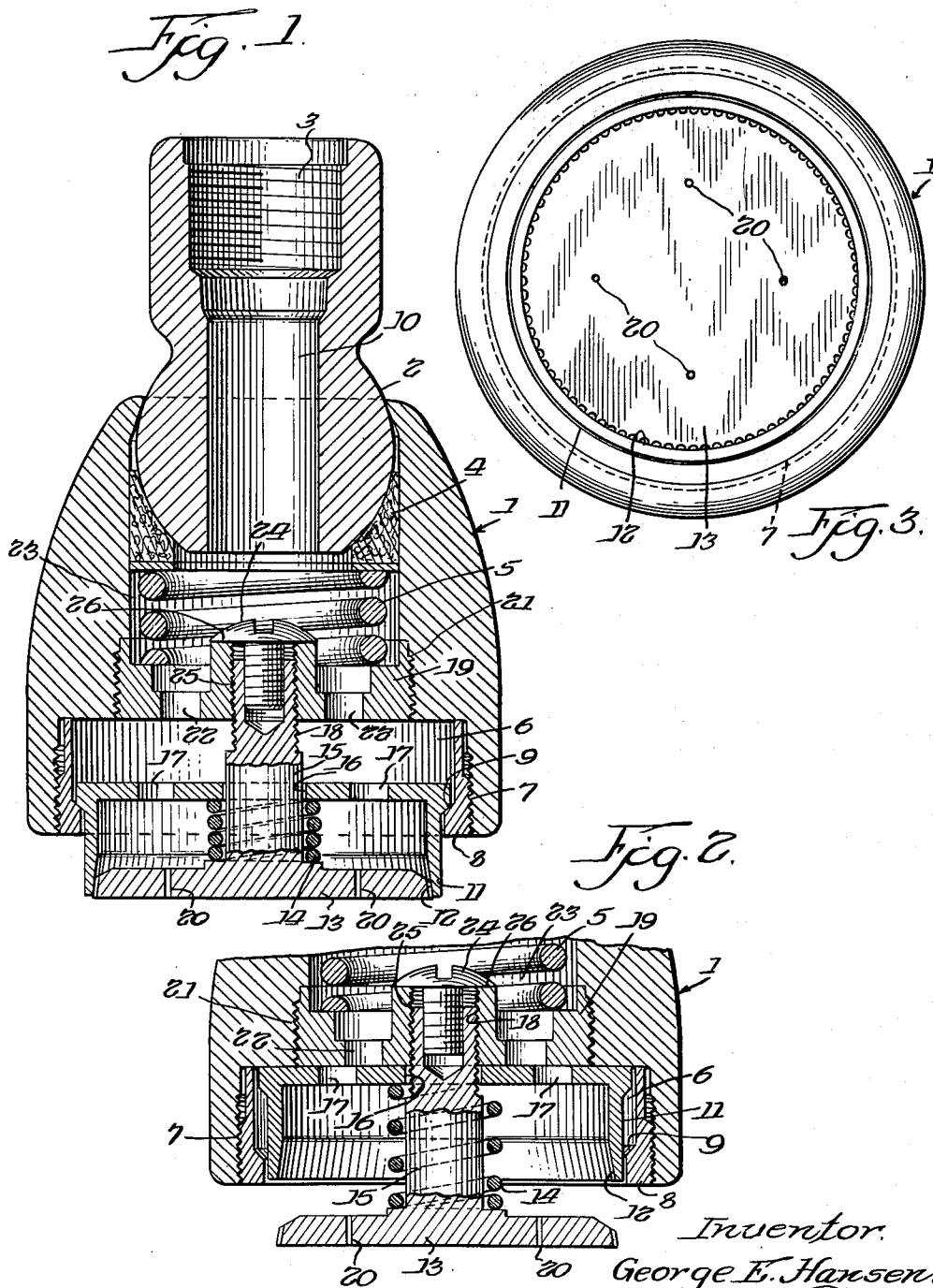
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2,680,649

SELF-CLEANING SHOWERHEAD

Filed Aug. 22, 1951

3 Sheets-Sheet 1



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Fig. 4.

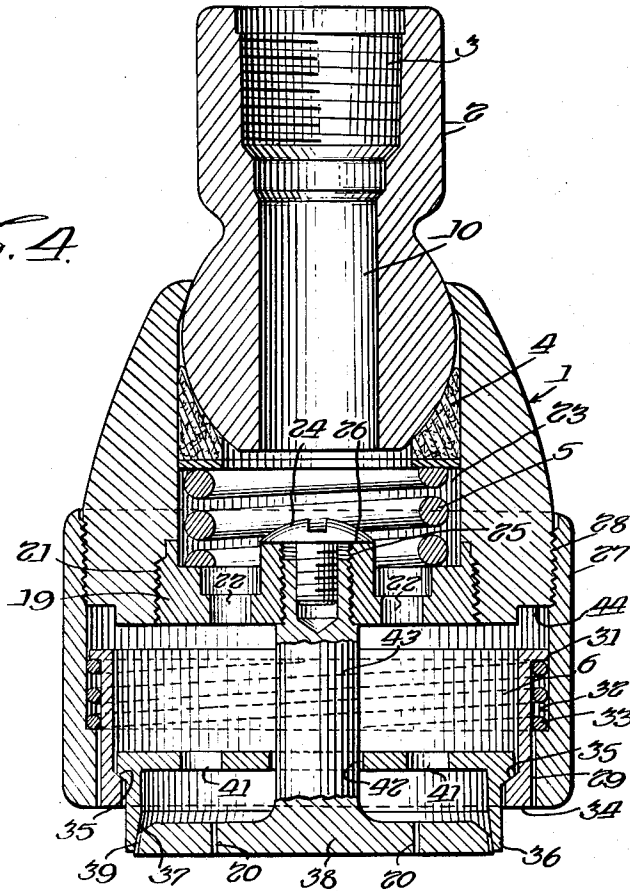
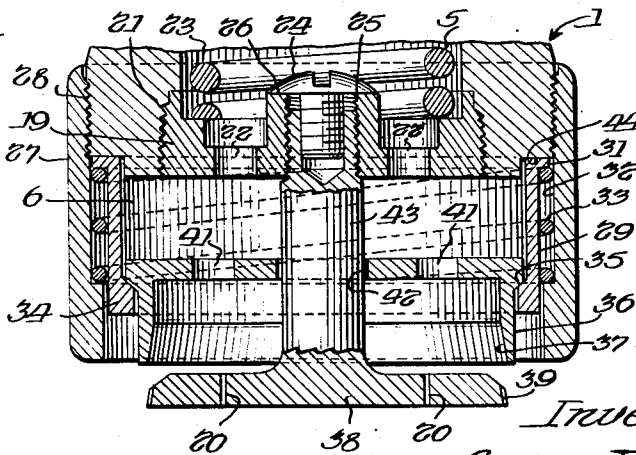


Fig. 5.



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Fig. 6.

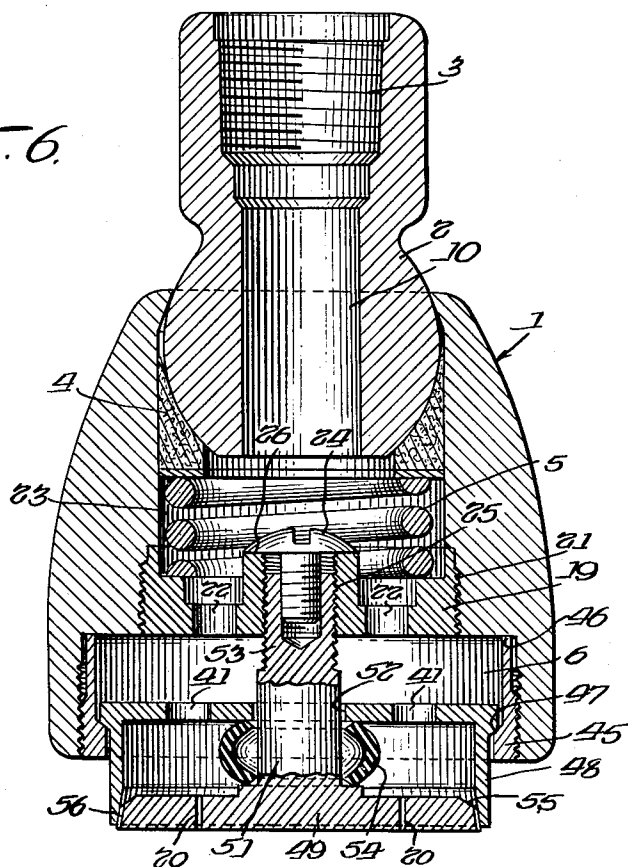
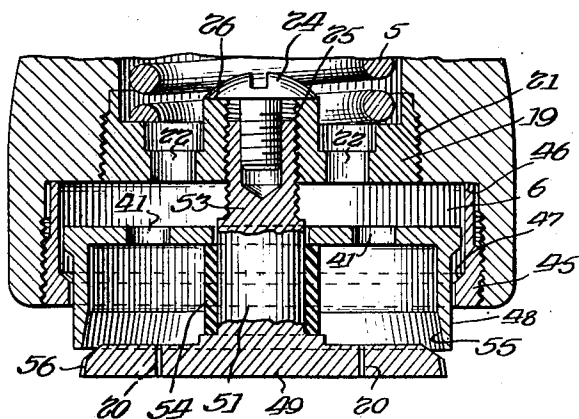


Fig. 7.



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UNITED STATES PATENT OFFICE

2,680,649

SELF-CLEANING SHOWERHEAD

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Application August 22, 1951, Serial No. 243,021

2 Claims. (Cl. 299-59)

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This invention relates broadly to a novel showerhead. More particularly, it is concerned with a showerhead which is self-cleaning.

In acquiring a true appreciation of the value of this contribution, it should be understood that one of the important problems facing users of this type of equipment throughout the country is the objectionable effect of hard water or water containing foreign matter, lime, and so forth, in which the usual perforations of the head in the course of a relatively short period of time become badly clogged to the extent that the performance of the head is badly affected and eventually rendered actually inoperative.

Therefore, one of the more important objects is to provide a device in this critical field which will be virtually self-cleaning by the provision of a relatively large flushing area effective immediately upon shutting off the showerhead. Specifically, provision is automatically made so that when the water pressure is shut off, means are provided to move the shower mechanism from the normal stream-forming contact within the showerhead casing to the extent that the stream-forming faces are then exposed to atmospheric drying with no metal-to-metal contact between the face of the reciprocally movable member or the casing.

Another object is to provide a structure that when the water pressure is removed, the water in the showerhead will drain to the floor and eliminate the usual objectionable dripping thereafter.

Other objects and advantages will become more readily apparent upon proceeding with a description of preferred forms of the device read in light of the accompanying drawings, in which

Fig. 1 is a sectional assembly view of a preferred form of head in a stream-forming position.

Fig. 2 is a fragmentary sectional assembly view of the head in non-stream-forming position and after flow has ceased.

Fig. 3 is an end exterior view of the showerhead.

Fig. 4 is a sectional assembly view of a modified form of head in stream-forming position.

Fig. 5 is a fragmentary sectional view of the head after cessation of flow.

Fig. 6 is a sectional assembly view of a further modification of head.

Fig. 7 is a fragmentary sectional view of the head in Fig. 6 in the position of parts assumed after cessation of flow.

Similar reference numerals refer to similar parts throughout the several views.

Referring now to Fig. 1, the usual showerhead casing, generally designated 1, is shown having the customary tailpiece inlet 2, threaded as at 3,

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to receive the inlet pipe water supply (not shown). The tailpiece 2 is mounted in fluid sealing relation thereto, as at 4, by means of the packing so designated. A coil spring member 5 serves to compress the packing in such sealing relation to the ball configuration indicated. The lowermost end of the casing 1 is provided with a chamber 6 having its lower end threaded as at 7 to receive the annular shoulder member 8. At the inner periphery of the latter member, a surface 9 is provided inclined, as indicated, to receive an interposed stream forming reciprocally movable member 11 having at its lower end portion an annular inclined surface 12 to receive a cooperating reciprocally fixed head 13 which aids in the discharging stream formation as hereinafter described. The latter stationary head is mounted in a resilient manner relative to the member 11 by means of the coil spring 14 and with the shank 15 of such head receivable within the aperture 16. The axially movable stream-forming member 11, in addition to having the aperture 16 is also provided with the annularly arranged ports 17 communicating with the oppositely disposed chamber 6 for reasons hereinafter explained. The inner end of the shank 15 is preferably reduced in diameter and threaded, as at 18, to engage the threaded bushing or spider 19 by means of the threads 21. The member 19 which positions the member 13 firmly in the casing, is also apertured as at 22 to allow for the liquid from the casing chamber 23 to move outwardly and into the chamber 6. In order to lock the head 13 adjustably in position, a flat head screw 24 is threaded into the shank, as at 25, and shoulders on the end surface 26. In actual operation, it will be clear that the spring 14 normally holds the fixed member 13 in spaced-apart relation to the axially movable member 11 so as to thereby force the axially movable member upwardly into abutting relation with the upper limits of the chamber 6, as indicated by the relative position of parts shown in Fig. 2. Here, liquid flow has ceased and with the parts 11 and 13 in spaced-apart relation, the normally entrained water is permitted to drain freely from the showerhead when the water pressure is shut down. Thus, the usual metal-to-metal stream-forming contact between the surface 12 and the tapered serrated periphery on the face of the head 13, as shown more clearly in Fig. 2, is eliminated. However, as soon as the shower is turned on, the liquid pressure within the chamber 6 bearing against the upper surface of the member 11 will cause the latter member to be forced downward and seat on the annular shoulder 9 of the threaded

seat 8, and, in so doing, it places the surface 12 in shower or stream-forming relation to the periphery of the stationary member 13, as shown in the drawing of Fig. 1. The member 13 may also be suitably perforated, as at 20, to allow for a full body of discharging water. It will be clear that when the water pressure is shut off, the spring 14 immediately causes the annular axially movable member 11 to be raised to break contact at the face 12. It has been found that such axial movement between the two members 13 and 11, each time showerhead pressure is shut off, also helps to clean the seat and effectually avoids any tendency for such accumulations to form, which might otherwise interfere with the desired form of the stream body.

Other ways of accomplishing a similar result are available.

For example, referring to the modified form in Figs. 4 and 5 which is similar to that described in connection with Figs. 1 and 2, except that, in this structure, the actuating spring is out of the path of the water flow. More specifically, the showerhead casing 1 is provided with an annular extension 27 threadedly attached to the casing at 28. The stream-forming member 29 is flanged as at 31 to fit slidably within the surface 32 and having therebetween a coil spring member 33. At its lower end portion, the reciprocally movable resiliently mounted member 29 is provided with an inturned flange 34 having an inclined surface 35 upon which the annular stream-forming member 36 is supported as indicated. The inner end of the member 36 is formed with an inclined surface 37 cooperating with the head 38 by means of a suitable annular inclined portion 39 to form the stream in the same manner as described in connection with Fig. 1. The member 36 is provided with a plurality of annularly arranged ports 41 and is also provided with a central aperture 42 to receive the shank 43 of the head 38. In the same manner as described in connection with Fig. 1, the fixed member 38 is attached to the bushing 19 which is threadedly attached to the casing as at 21, and attached in the same manner previously described by the screw 24 shouldered at 25.

In actual operation, it will be clear that upon the cessation of water flow within the shower casing, the spring 33 will lift the member 29 to also carry the member 36, shouldered as at 35, away from its contact with the stream-forming member 38. When pressure is turned on, the member 29 is moved axially downward to overcome the resilience of the spring 33 and thereby draw the members 34 and 36 toward the stream forming member 38 and contacting the adjacent surface 37 as illustrated. Upon relieving pressure, and under the influence of spring 33, the member 29 will move upward to contact the surface 44 as a stop. In all other respects, the shower stream operation is the same as that described previously.

Referring now to a further modified form shown in Figs. 6 and 7, the usual showerhead casing 1 is employed with the threaded seat forming member 45, the latter being shouldered upon the surface 46 to form a fluid sealing contact with the casing being provided with the annular inclined surface 47 upon which the reciprocally movable member 48 normally contacts when the pressure steam is turned on for a shower bath. The showerhead stream-forming member 49 is fixedly mounted against axial movement in the same manner as described in connection with

Figs. 1 to 3, inclusive, so that the shank 51 thereof enters the central aperture 52, the position of the threaded shank 53 with relation to the threaded bushing 19 also being the same as that described in connection with Figs. 1 to 3, inclusive. However, in this construction, instead of employing a coil spring of the type shown in Fig. 1, a tubular rubber spring member 54 is used which will normally be bowed and compressed endwise immediately upon the application of the flow of water. The spring is presently shown in the compressed condition. Upon the cessation of flow, the resilient member 54 springs back to its full height as shown in Fig. 7 and thereby lifts the member 48 from its seat contact at 47 and also break the annular contact between 55 and 56 at the stream-forming surfaces so designated.

Thus, in all embodiments shown and described, it will be apparent that a relatively simple and inexpensive method has been devised to overcome previous objectionable performance traceable to the usual accumulations of foreign matter, calcium-carbonate and the like, at the stream-forming surfaces by the comparatively simple expedient of automatically drawing the stream-forming surfaces apart by the resilient means employed, thereby allowing the normal annular contacts to be broken and at the same time allowing any water accumulations within the head casing to drain therefrom to the floor of the bathtub or shower receptor.

Obviously, the several embodiments shown and described are for illustrative purposes only. The spirit of the invention should, therefore, be measured by the scope of the appended claims.

I claim:

1. In a showerhead or the like, the combination of a casing with an inlet, a reciprocally movable annular member having an annular shoulder slidably engaging an inner annular wall surface portion of said casing, a second reciprocally axially movable annular member mounted in telescoped relation to the said first-named reciprocally movable annular member, a stationary stream-forming member having a shank portion projecting through said second-named annular reciprocally movable member and cooperating with an annular surface on the latter member to form an annular stream, the shank portion annularly guiding the said second reciprocally movable annular member, and resilient means supported by the inner wall of the said casing to predeterminately lift said first-named annular member and draw said second-named annular member from the annular surface contact with said stationary member, the said resilient means being mounted at one end thereof on an inner shoulder of the said casing and at an opposite end bears against the annular shoulder of the first-named movable annular member.

2. In a showerhead or the like, the combination of a casing with an inlet, a reciprocally movable annular member engaging an inner wall surface of said casing, the said latter member having upper and lower annular shoulder portions, a second reciprocally movable annular member telescoped within and being supported on the lower shoulder portions of the said first-named reciprocally movable annular member, a stationary stream-forming member received at least in part within said second-named annular reciprocally movable member and cooperating upon contact with an inner peripheral portion of the lower shoulder of the latter member to form an annular fluid stream therewith, and resilient means

to predeterminately lift said first-named annular member and draw said second-named annular member from said contact with said stationary member, the said latter lifting means being annularly positioned between the upper shoulder of the said first-named reciprocally movable member and an inner shoulder portion on the said casing.

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