

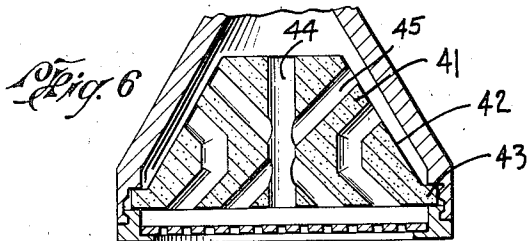
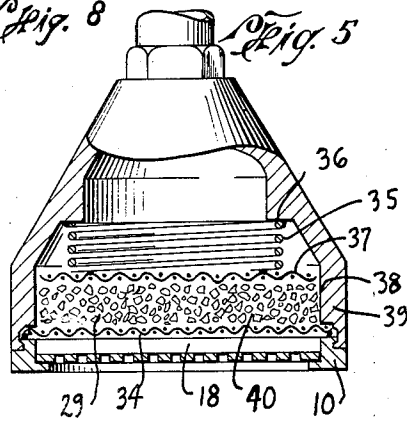
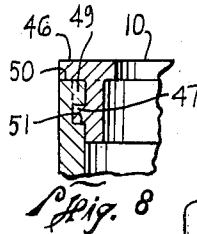
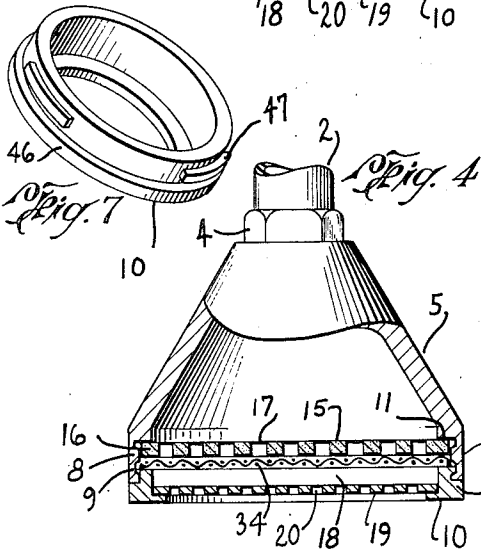
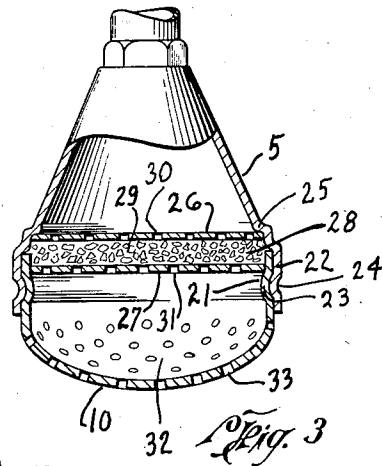
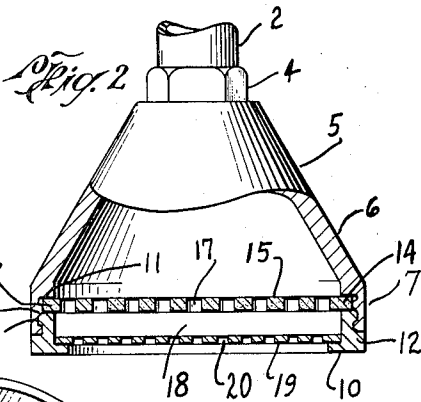
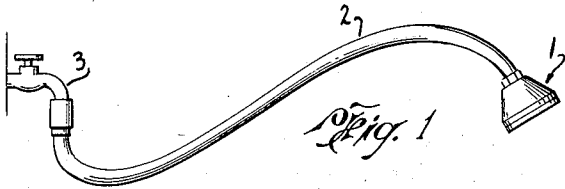
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WATER SOFTENER DISPENSER

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WATER SOFTENER DISPENSER

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1 Claim. (Cl. 299—83)

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This invention relates to a water softener dispenser and to a water softener dispensed thereby and to a method of dispensing a water softener.

It is an object of this invention to provide a water softener and the dispensing medium therefor which may be employed to deliver softened water, as for the purposes of washing or shampooing hair.

This invention also relates to a dispenser and mixer adapted to mix a chemical with fluid passing therethrough.

This invention additionally relates to a dispenser of this class which is adapted to be flexibly connected to a source of water supply as a faucet.

It is yet a further object of this invention to provide a dispenser of this class adapted to have a quantity of water softener easily inserted therein, the quantity of water softener being easily replaced when expended.

It is yet a further object of this invention to provide a water softener of this class which can be adapted for easy installation in a dispenser, and which is adapted to admit the easy passage of water therethrough so that the softener material may be readily worn away and mixed with the water.

It is still a further object of this invention to provide a dispenser of this class which can be employed to deliver, not only a water softener, but alternately a chemical or material such as a hair conditioner, dye coloring, or the like, therethrough.

Other and further objects will be apparent when the specification is considered in connection with the drawings in which:

Fig. 1 is an assembly view of dispenser and flexible line to water connection.

Fig. 2 is a sectional view through one form of dispenser.

Fig. 3 is a sectional view through a second form of dispenser.

Fig. 4 is a sectional view through a third form of dispenser.

Fig. 5 is a sectional view through a fourth form of dispenser.

Fig. 6 is a sectional view through the dispenser shown in Fig. 2, and in this view a modification of water softener construction is shown.

Fig. 7 is a perspective view showing a dispenser cap.

Fig. 8 is a fragmentary sectional elevation showing a dispenser body adapted to receive the cap shown in Fig. 7.

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adapted for connection as by the flexible hose 2 to a water faucet 3. Such faucet 3 may be the water faucet conventionally used to supply water to a wash basin.

In the form of dispenser shown in Fig. 2 the rubber hose 2 is connected as by the nut 4 to the body 5 of the dispenser. Such body is shown of substantially frusto-conical shape with a cylindrical base 7. This base 7 has the internal threads 8 therein to receive the external threads 9 of the cap 10.

A shoulder 11 is provided in the body 5 and a flange 12 is provided on the cap 10. When the cap 10 is threaded full up into the body 5 there is a clearance space 14 between the inner face of the cap 10 and the shoulder 11.

A disc 15 of water softening material, as zeolite or permatite, is installed with rim 16 confined in the space 14 between cap 10 and shoulder 11. The thickness of the disc 15 when originally inserted should be just slightly larger than the width of the space 14. Consequently, when the cap 10 is threaded full up the rim 16 of the disc 15 is bound or firmly constrained between the cap and the body.

The substance of the water softener can be varied to meet the requirements of a wide variety of water and the softening of the water may be carried out on the theory of ion exchange or on the theory of removing the hard material from the water, as by precipitation. Sufficient perforations 17 are made in the disc 15 inwardly in the rim 16 to insure that the water will pass therethrough and wear away the disc.

The interspace 18 is provided between the disc 15 and the perforated cap plate 19 so that the water, with softener mixed therewith may circulate outwardly through the perforations 20 without overlapping of the disc perforations and the plate material or the plate perforations and the disc material.

As shown in Fig. 3 the body 5 and cap 10 may be of a pliable material so that the cap end 21 may be inserted within the body end 22. To insure that this may be accomplished either the end 21 or the end 22 may be slit in one or more places. The groove 23 may be supplied in the cap 20 and the indentation 24 in the body end 22 so that when the cap is inserted the indentation and groove interfit to insure that the water pressure does not force off the cap when the dispenser has water flowing therethrough.

In this construction a shoulder 25 is provided in the body 5 to receive the perforated plate 26 and the perforated plate 27 is provided and rigid-

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ly interfitted into the cap end 21. Thus, when the cap 10 and body 5 are interfitted a space 28 is left between the plates 26 and 27. This space 28 is shown in Fig. 3 filled with granules of water softener 29, but optionally a perforated disc of water softener material may be supplied to fill the space. In such a case the unperforated rim, as the rim 16 shown in Fig. 2, would be confined between the peripheries of the plates or discs 26 and 27.

In this construction water washes through the perforations 30 in the plate 26, passes through the granules 21 and wears them away, and passes through the perforations 21 in the plate 27, carrying water softener material along thereon. The space 32 inwardly of the cap perforations 33 serves as a mixing chamber and the thoroughly admixed water wears away softening material together passing out through the perforations 33.

In the form of dispenser shown in Fig. 4 the cap 10 has a mesh disc 34 connected to the inner end thereof as the element which restrains the disc 15 against the shoulder 11. Thus the water washes through the perforations 17 and through the mesh disc 34 and into the mixing chamber 13, to finally pass out through the perforations 28.

As shown in Fig. 5 a spring 35 is connected to bear against the shoulder 36 and has the mesh disc 37 connected to the outer end thereof to fit within the bore 38 of the body end 39. A mesh disc 34 is also connected to the cap 10. The interspace 40 between the discs 34 and 37 may be filled with either a perforated disc of water softener or a quantity of granules 29 of water softener, as shown. Then, as the water softener wears away the spring 35 urges the mesh disc 37 outwardly to constantly keep the water softener pressed against the mesh disc 34. This keeps the water softener from rattling when it becomes worn.

As shown in Fig. 6 a water softener 41 is provided having a substantially frusto-conical body 42 with a flange or rim 43 at the base thereof. Passages 44 and 45 extend respectively axially and diagonally through the softener and expose considerable surface thereof to the passing of water therethrough. At the same time the rim 43 is constrained between the cap 10 and shoulder 11 so that the softener is held in position until all of the rim 43 may be worn away.

As shown in Fig. 7 the cap 10 has the flange 46 thereon and interrupted lands 47 on the outer surface.

As shown in Fig. 8 the body has grooves or

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cut-away slots 49 radially spaced around the end 50 so that the lands 47 may be fitted in the grooves 49, then rotation of the cap 10 moves the lands 47 along the continued groove 51 in the body and out of communication with the slots 49. If the lands are just slightly larger in axial width than the groove 51, the forcing of the lands 47 into an uninterrupted portion of this groove will insure that the cap 10, in one partial revolution, is firmly locked to the body 5 so that it will not come off when water pressure is exerted thereagainst.

It is herein pointed out that this invention is not limited to any of the forms of water softener shown as regards shape or structure, nor is it limited to chemicals such as zeolite or permatite exclusively.

The theory thereof may also be employed to dispense and mix materials other than water softener with a liquid as water or to admix an expendable material held in the dispenser with any other fluid, either gaseous or liquid.

This invention broadly considers a structure to quickly receive therein an expendable substance having passage means therethrough, and it further considers the means or method of wearing away the substance and its easy replacement.

I claim:

A dispenser for a disc of water softener or the like comprising, a hollow body having an internal shoulder therein, a perforated cap comprising one end of said dispenser and adapted for rigid connection to one end of said body, said cap providing a ledge to receive the outer surface of said disc thereon, and said cap being adjustably connectable to said body to rigidly confine said outer surface between said ledge and said shoulder, said ledge in assembly, being in spaced relation inwardly from the perforations of said cap, flexible means connecting the other end of said body to a pressurized supply, said disc having openings between portions thereof so that water may pass therethrough to wear away the material of said disc, and spray it, with the water, through said cap perforations.

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