

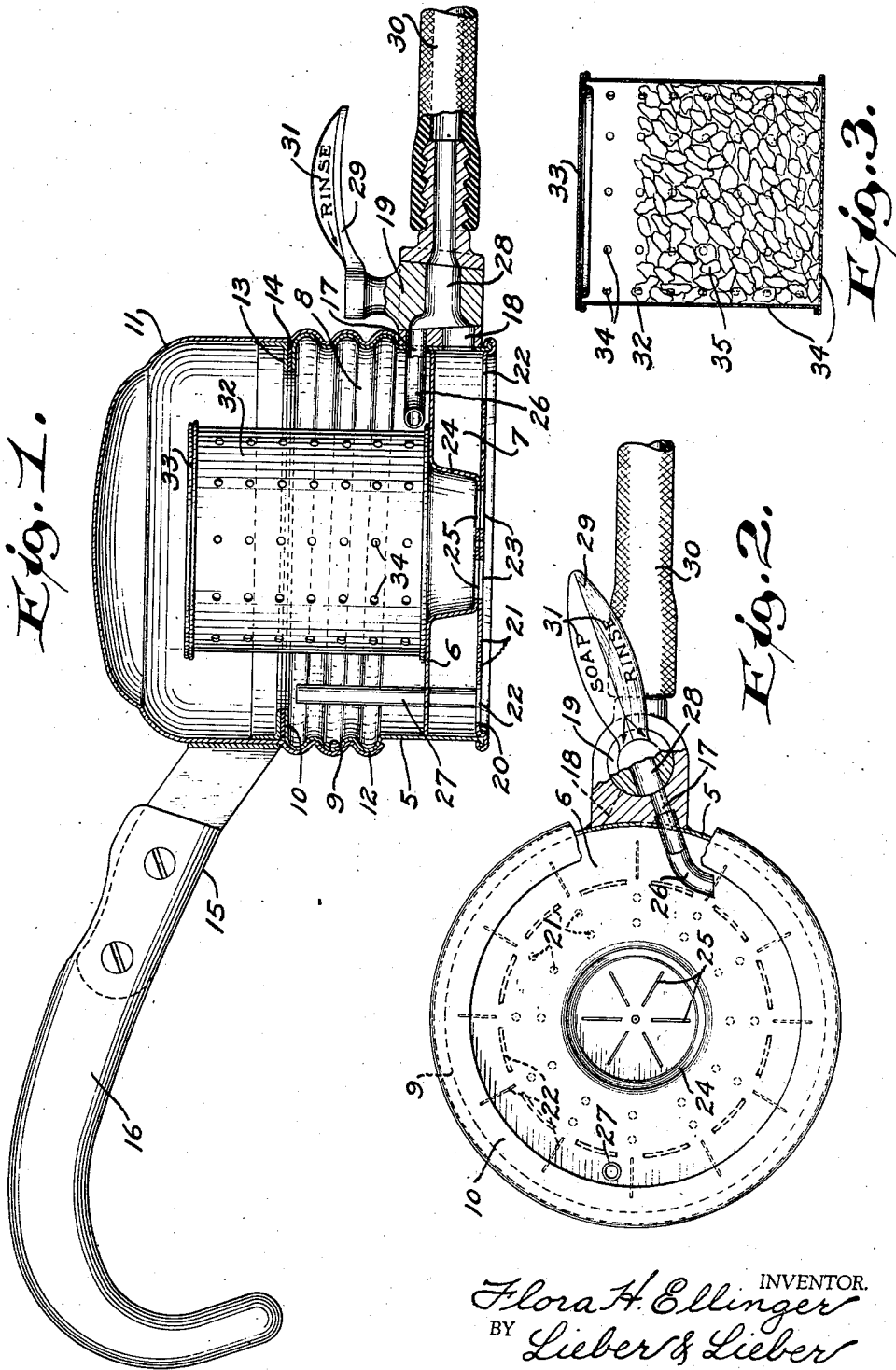
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SPRAYING DEVICE

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SPRAYING DEVICE

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My present invention relates generally to improvements in cleansing apparatus, and relates more specifically to improvements in the construction and operation of water sprays adapted to produce jets of soapy liquid for washing purposes or jets of clear liquid for rinsing purposes.

Generally defined, an object of the invention is to provide an improved spraying device, especially useful for washing dishes or the like, which is simple in construction and highly efficient in operation.

A more specific object of my invention is to provide a portable spraying device adapted to be associated with any suitable source of liquid supply, so as to effectively produce various desired mixtures of soapy water by direct action of the liquid, whether bar soap, or soap chips, or flake soap is utilized.

A further specific object of the present invention is to provide a spraying device which may be conveniently manipulated and controlled by a novice without danger, when using hot water or other liquid.

A still further specific object of the invention is to provide an improved rigidly constructed spraying device which may be readily dismantled for cleaning, or for soap replacement, and which may likewise be readily reassembled.

An additional specific object of my invention is to provide a spray head having an independent soap mixing chamber which may be quickly and automatically drained of soapy liquid, when a spray of soap-free water for rinsing is desired.

Another specific object of my invention is to provide a container for chip or flake soap, especially adapted for use with my improved spraying device, and which may be readily manufactured from standard stock at low cost.

Still another specific object of the present invention is to provide a spraying unit for washing and rinsing which is highly attractive in appearance, flexible in use, and which may be manufactured, sold and operated at moderate cost.

These and other specific objects and advantages of my invention will be apparent from the following detailed description.

A clear conception of the several features constituting my present improvement, and of the mode of constructing and of utilizing spray devices built in accordance with my invention, may be had by referring to the drawing accompanying and forming a part of this specification wherein like reference characters design-

nate the same or similar parts in the several views.

Fig. 1 is an approximately central vertical section through the improved spraying device, showing a flake or chip soap container positioned therein;

Fig. 2 is a top view of the assemblage with the cover and soap container removed therefrom, a portion having been broken away to more clearly disclose the valve construction; and

Fig. 3 is a central vertical section through an improved soap chip or flake container, showing the same partially filled with soap flakes.

While the invention has been shown herein as being applied to a portable spraying device especially adapted for dish washing purposes and wherein soap and water are utilized for the cleansing operations, it is not my desire or intent to thereby unnecessarily restrict the scope or utility of the improvement.

Referring to Figs. 1 and 2, the improved spraying device comprises in general, a cup-shaped lower casing 5 having a transverse partition 6 therein. The said partition 6 is formed with a flat bottomed, cup-shaped depression in its central portion and divides the casing 5 into an annular rinse water passage 7 and an upper soap confining chamber 8. The casing 5 also has the upper portion thereof rolled into screw-thread formation 9 with an integral inwardly directed flange 10 formed at its extreme upper edge, and an inverted cup-shaped cover 11 provided with a screw-thread formation 12 at its lower portion is adapted for coaction with the threaded casing portion 9 to retain the cover 11 in position. The cover 11 also has an inwardly directed flange 13 at its lower end disposable directly above the casing flange 10 and cooperable with a washer 14 to seal the joint between the flanges 10 and 13 when the cover 11 is tightly applied to the casing 5. A handle 15 having a heat insulated gripping portion 16 and being firmly attached to the cover 11 serves to manipulate the device when in use, and to also aid in removing and applying the cover 11. An upper liquid inlet port 17 is formed in the casing 5 above the partition 6 for admitting liquid to the chamber 8, and a lower liquid inlet port 18 likewise formed in the casing 5 below the partition 6 is provided for admitting liquid to the passage. A rotating plug valve 19 is associated with the ports 17, 18 for regulating the flow of liquid thereto.

The casing 5 has a bottom spray plate 20

formed with a multiplicity of small circular openings 21, radial slots 22 located near the outer edge thereof, and radial slots 23 located about and closely adjacent to its central axis, and the partition 6 has a cup-shaped flat bottomed central portion 24 which is secured to the plate 20 and is provided with radial slots 25 registering with the slots 23 and positioned directly thereabove. If so desired, the plate 20 and partition 6 may be made relatively adjustable about the central axis so as to vary the effective area of the slots 23, 25. The liquid inlet port 17 is provided with a pipe 26 which preferably extends into the soap confining chamber 8 at a tangent thereto, and the chamber 8 is provided with a vent pipe 27 communicating directly with the ambient atmosphere at a point below the spray plate 20 in order to admit air to and escape of air from the chamber 8, while also facilitating drainage thereof and permitting escape of excess liquid should the amount of liquid in the chamber 8 become too great.

The liquid inlet port 17 is located above the port 18 and is of relatively small diameter entering the chamber 8 at an angle, while the liquid inlet port 18 is considerably larger and enters directly into the annular passage 7. The plug valve 19 has a single through passage 28 enlarged at its outlet end so that it may communicate with both of the ports 17, 18 and has a control handle 29 for turning the valve to direct the flow of fresh liquid, supplied from a faucet or the like through a flexible hose 30, through the passage 28 to either both the port 17 and the port 18, or to the port 18 alone. For enabling the user to ascertain through which port the flow is being directed, markings 31 may be applied to the handle 29. For convenience and safety, it is preferable to have the handle 15 so positioned on the cover 11 that it will be located remote from the valve 19 when the device is assembled, and in this position, the hand of the user is farthest away from the source of supply and not in danger of being burned by hot water admitted to the device, and the spray unit may also be more readily manipulated.

The soap may be inserted into the chamber 8 by first removing the cover 11 with the aid of the handle 15, and either bar soap or chip or flake soap may be utilized. If it is desired to utilize chip or flake soap, a special container 32 for the same is preferably provided, as shown in Figs. 1 and 3. This container 32 may be manufactured of a standard tin can and is provided with a removable cover 33 and with a multiplicity of openings 34 in the side walls and bottom thereof. Chip or flake soap 35 may be introduced into the container 32 upon removal of the cover 33 and the liquid admitted to the chamber 8 flows into and out of the openings 34, agitating the soap and causing suds. When the chamber 8 is emptied, the water remaining in the container 32 drains through the bottom openings 34.

After soap has been placed in the chamber 8 and the cover 11 firmly screwed into position, the liquid under pressure may be supplied from the source thereby forcing liquid through the hose 30 and valve passage 28. If soapy water for washing purposes is desired, the valve handle 29 may be properly positioned to permit flow of the liquid from the passage 28 to the port 17 into the chamber 8 through the pipe 26 and directly into the annular passage 7 through the port 18. The liquid admitted tangentially to the chamber

8 will thoroughly agitate and swirl the soap, whether bar soap or chip or flake soap is being used, and will cause the same to mix with the liquid and to produce suds to a greater or lesser extent depending upon the pressure of the liquid admitted to the chamber 8. The soapy liquid thus produced will be forced from the chamber 8 through the radial slots 25, 23 onto the objects being washed, and should the amount of liquid become excessive in the chamber 8, the pipe 27 will additionally conduct the overflow liquid to the zone of washing.

The water admitted to the passage 7 will be distributed throughout said passage and will subsequently be forced through the circular openings 21 and radial slots 22 of the spray plate 20 to intermingle with the soapy liquid from the chamber 8 before reaching the zone of washing. The formation of the slots and circular openings insures thorough mixing and intermingling of the jets issuing therefrom, and thus insures constant production of the proper washing mixture.

After the washing operation has been completed, the valve 19 may be turned to "rinse" thereby cutting off the flow of liquid to the chamber 8 and admitting fresh liquid only to the annular passage 7 from which jets of clear liquid are directed through the openings 21 and slots 22 to the objects for rinsing. When the liquid supply is cut off from the chamber 8, air is admitted to this chamber through the vent pipe 27, thus permitting free escape of the liquid from the chamber 8 through the slots 25, 23 by gravity.

From the foregoing detailed description it will be apparent that my present invention provides an improved portable spraying device which is simple, compact, and durable in construction, and which is moreover highly efficient and universal in use. The improved spraying device may be readily dismantled and assembled and may be utilized with soap in bar form as well as in chip or flake form, and any suitable source of pressure supply may be used. Most of the parts may be readily manufactured of sheet metal stampings, and the chip soap container may be made of a standard tin can with the aid of a punch. The device may be readily and safely manipulated by means of the handle 16 located remote from the source of hot water supply, and this handle is preferably hook-shaped to permit suspension from a point near a sink or the like. All parts of the assemblage are readily accessible for cleaning, inspection, and adjustment; and the device may be freely converted from washing with a soapy mixture to rinsing with a clear soap-free liquid, and vice versa. The device is attractive in appearance, can be manufactured and sold at moderate cost, and has proven highly successful in actual use. The passage 28 may also obviously be so formed as to permit flow of liquid from the hose 30 directly to the chamber 8 independently of the passage.

It should be understood that it is not desired to limit this invention to the exact details of construction, or to the precise mode of use, herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

I claim:

1. A spraying device comprising, a casing, a partition dividing said casing into a chamber and a passage, means for supplying liquid to said chamber and passage, a valve in said means operable to deliver liquid under pressure directly either to said chamber and said passage or to

said passage alone, and an air vent communicating with said chamber.

2. A spraying device comprising, a casing, a partition dividing said casing into a passage and a soap housing chamber adjacent to said passage, a liquid inlet passage communicating with said chamber, a liquid inlet passage communicating with said passage, a source of liquid supply, a valve for directing liquid from said source either to said chamber and said passage or to said passage alone, and means providing an open passage leading to said chamber from a point below said passage.

3. A spraying device comprising, a casing, a partition dividing said casing into a passage and a soap housing chamber adjacent to said passage, a removable cover for said chamber, liquid supply means associated with said chamber and said passage, and a manipulating handle associated with said removable cover remote from said liquid supply means for facilitating removal of said cover and for handling the device.

4. A spraying device comprising, a casing, a partition dividing said casing into a passage and a soap housing chamber adjacent to said passage, means including a valve operable to deliver water directly either to said chamber and said passage or to said passage alone, and means for permitting escape of liquid from both upper and lower portions of said chamber to a point below said passage when water is being delivered to said chamber.

5. A spraying device comprising, a casing, a partition dividing said casing into a passage having an apertured bottom wall and a soap housing chamber adjacent to said passage, a wall separating said passage from said chamber, and means for delivering water directly either to said chamber and said passage or to said passage alone, said wall having a central depression extending downwardly to the bottom of said passage and being apertured to permit escape of fluid from said chamber to a point below said passage when water is delivered to said chamber.

6. In a spraying device, a casing, a partition dividing said casing into a passage and a chamber adjacent to said passage, a receptacle having perforated side walls and bottom and a removable cover, said receptacle being adapted to re-

ceive soap in various forms and being formed for confinement within said chamber, a liquid supply passage leading into said chamber exteriorly of said receptacle at a tangent thereto, and means for directing liquid under pressure through said passage into said chamber about the exterior of said receptacle.

7. In a portable spraying device, a cylindrical casing comprising a soap confining chamber and having a passage at one end separated from said chamber by a partition, a removable closure at the opposite ends of said chamber, means for injecting liquid tangentially into one side of said chamber and radially into the same side of said passage, and a handle for manipulating said casing and for effecting removal of said closure associated with the opposite side of said casing.

8. In a portable spraying device, a cylindrical casing comprising a soap confining chamber and having a passage at one end separated from said chamber by a partition, a removable closure at the opposite end of said chamber, means for injecting liquid tangentially into one side of said chamber and radially into the same side of said passage, a handle associated with the opposite side of said casing for manipulating said casing and for effecting removal of said closure, and an auxiliary soap container loosely confined within the cylindrical casing.

9. A spraying device comprising, a casing, a partition dividing said casing into an annular lower passage and a chamber above said passage, means for supplying liquid to said passage and chamber including a valve operable to deliver liquid under pressure directly either to said passage alone or to said chamber and said passage, and an air vent communicating with said chamber through said partition.

10. In a spraying device, a casing, a partition dividing said casing into an annular lower passage and a chamber above said passage, said partition having a central depression extending downwardly through the center of said passage and being apertured to permit direct escape of fluid from said chamber at a point below said passage, and means for delivering water tangentially into said chamber and radially into said passage.

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