July 2, 1935. R. GUTH 2,006,993

MIXING DEVICE

Filed March 12, 1931 2 Sheets-Sheet 1

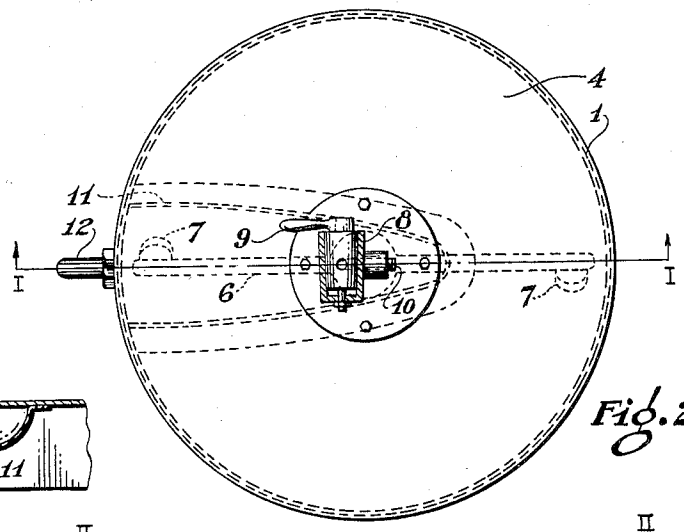


Fig. 2

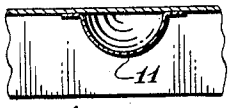


Fig. 3

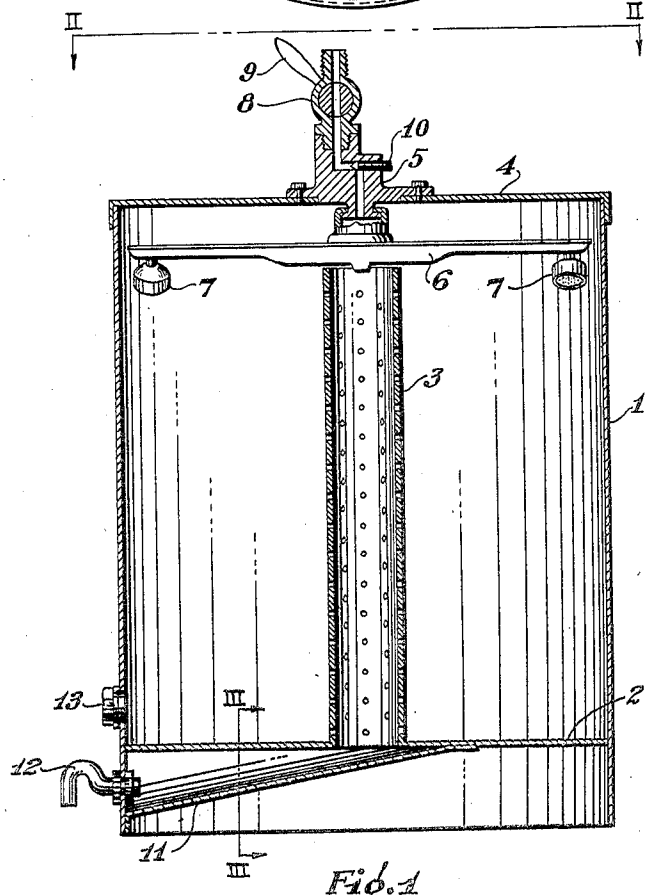


Fig. 1

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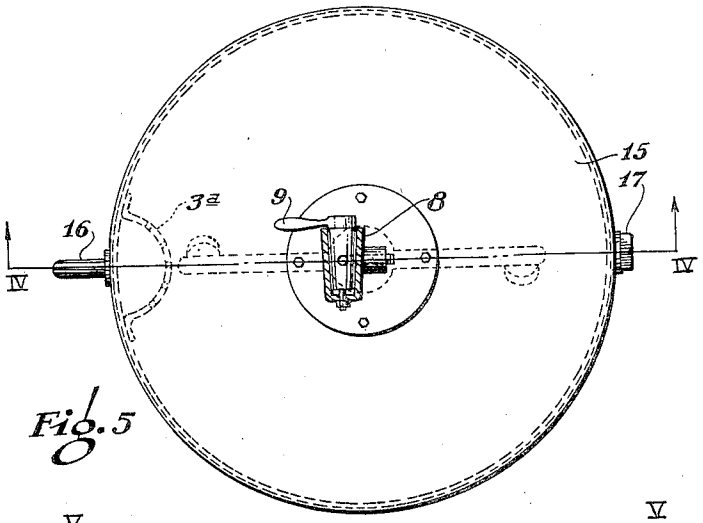


Fig. 5

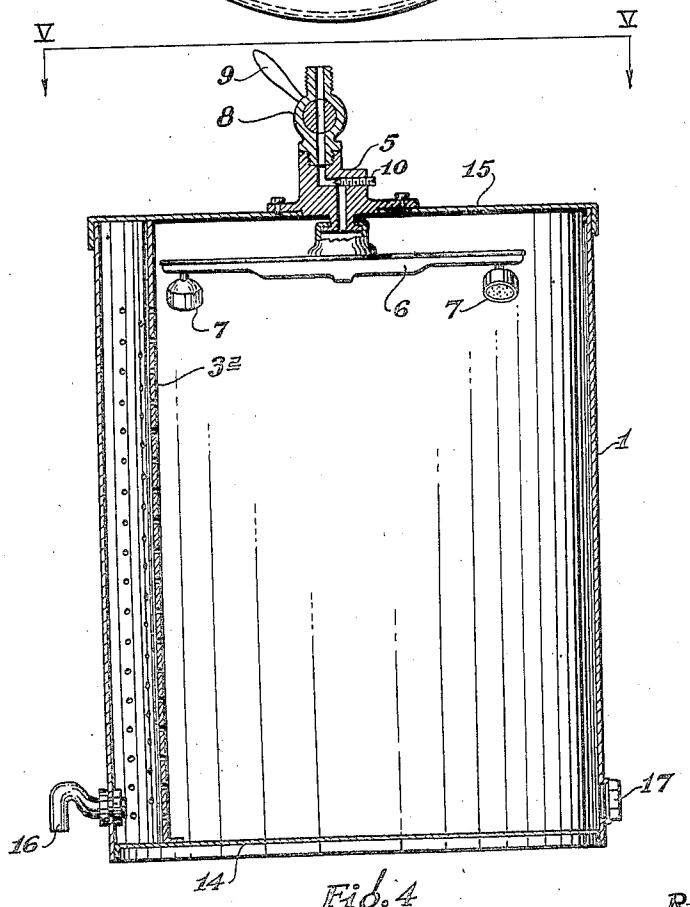


Fig. 4

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UNITED STATES PATENT OFFICE

2,006,993

MIXING DEVICE

Rudolph Guth, Cleveland, Ohio

Application March 12, 1931, Serial No. 522,129

5 Claims. (Cl. 299—83)

This invention relates to an improved form of mixing device of the same general nature as disclosed in my Patents 1,928,128 and 1,934,304, issued September 26, 1933 and November 7, 1933, respectively.

Although the present device is intended especially for the mixing of soap and water into suds for use in connection with the cleaning of automobiles, etc. yet it is to be understood that the invention as herein set forth comprehends any and all uses to which this form of structure may be put and is not limited to the mixing of soap and water, but may be employed in the mixing of other materials.

One object of the present invention consists in devising an improved form of means for spraying the water or other liquid upon the soap or other material within the container.

Another object consists in providing a means which is readily accessible from the outside of the container so as to be capable of adjustment at any time for the purpose of varying the pressure of the water or other fluid as it is supplied to the spraying means located within the container and for the purpose also of thereby varying the speed of movement of the spray device which is rotated by the force of the fluid.

Another object consists in devising an improved form of discharge means extending from the lower end of the container to the outlet thereof.

A further object consists in devising an improved structure and arrangement of perforated tubular member through which the solution of soap and water or other materials passes and which may be located upon the one side of the container with direct discharge connection to the outlet at the bottom of the container.

Other objects will appear from the following description and claims when considered together with the accompanying drawings.

It is to be understood that the present disclosure is merely for purposes of illustration and that other modifications and variations may be made without departing from the spirit of the invention as herein set forth and claimed.

Fig. 1 is a vertical sectional view taken on line 1—1 of Fig. 2; Fig. 2 is a top plan view according to line 2—2 of Fig. 1; Fig. 3 is taken on line 3—3 of Fig. 1; Fig. 4 is a vertical sectional view of a modification taken on line 4—4 of Fig. 5; and Fig. 5 is a top plan view according to line 5—5 of Fig 4.

In the form of device illustrated in Fig. 1 of the drawings, the main body of the container 1 has a raised bottom 2 which supports the centrally disposed perforated tubular member 3 which is supported by the bottom 2 and which registers with a centrally disposed opening in the bottom 2. The soap or other material is adapted to be placed within the container and to surround the tubular member 3.

Upon the closure 4 of the container, there is mounted the nozzle 5 through which extends a passage for supplying water or other liquid to the inside of the container. Swivelly mounted upon the inner flanged end of the nozzle 5, which extends through the cover 4, is a spraying device 6 which comprises a hollow arm extending diametrically of the container and which is provided at its two opposite ends with the spray attachments 7 extending in opposite directions at a slight angle and transversely to the member 6. This device is so constructed and arranged that the force of the water or other liquid as it enters through the nozzle 5 and into the two radially disposed arms of the member 6, will thereby automatically cause rotation thereof about its swivel connection. Also, the water or other liquid will at the same time be sprayed from the attachments 7 onto the top of the soap or other material which is contained within the container 1.

The valve connection 8 of any suitable standard form may be attached to the nozzle 5, and a suitable form of hose or tube connection may be attached to the outer end of the valve connection 8. This valve may be opened and closed by means of the handle 9 and it is to be understood that the present invention is not limited to the particular type of valve herein illustrated but any other form of suitable valve may be employed at this point, as for instance, that disclosed in my co-pending application, Serial No. 507,713, above referred to.

As a means of varying the pressure of the water or other fluid as it is supplied to the rotatable arm 6, I have provided the screw-threaded plug form of valve 10 which may be set at any time so as to obtain the pressure desired through the nozzle 5. In this way, there may be obtained not only the proper degree of pressure for properly dissolving the soap or other material within the container but also the speed of rotation of the spray device 6 may be varied by regulation of the screw plug 10.

Attached to the under side of the raised bottom 2 and extending radially thereof is the tubular formed drain member 11 which extends from a point beyond the lower end of the tubular member 3 to the opposite side of the wall of the container below the bottom 2 so as to communicate

with the goose-neck form of outlet 12. This drain member 11 may be pressed out of sheet metal and attached to the bottom 2 in any suitable manner, as for instance, by welding. The bottom 2 is raised to a sufficient degree to afford suitable housing for the drain member 11.

The plug 13 closes an opening through the wall of the container 1 near the bottom of the main portion of the container wall 1 through which access may be had at any time for ascertaining when the supply of material within the container needs to be replenished.

With the form of device as above described, the force of the water as it enters through the open valve 8 and past the adjustable plug 10 will cause the spray member 6 to rotate about the vertical axis of the container and the water will be sprayed out through the attachments 7. The water as it is thus sprayed upon the top of the soap or other material within the container will be dissolved thereby and the mixture of soap and water will find its way through the apertures in the member 3 through which it will pass by gravity down through the bottom central opening and along the inclined bottom 11 for discharge through the goose-neck 12. When the valve 8 has been fully opened, the force of the flow of water can be varied by adjustment of the plug 10 during operation of the device. In this way, the quantity of water thus delivered to the container can be varied so as to obtain the proper consistency of water and soap solution and at the same time, the speed of rotation of the swivelled spray member 6 can be regulated. When it is desired to discontinue use of the present device, the valve 8 will be closed and practically immediately the tube 3 and the bottom discharge member 11 will be emptied of the soap and water solution and the device will remain in such condition until the next operation. As a result, soap and water solution will not stand in the bottom of the device during periods of idleness.

In the modified form of device illustrated in Figs. 4 and 5, the false bottom of the container 1 is omitted and there is provided a substantially half tubular member 3^a upon the one side of the upright wall of the container. That is, the member 3^a is of substantially semi-circular cross section. This tubular member extends throughout the full height of the container, that is, from the bottom 14 to the top 15 and the goose-neck 16 is provided in the wall of the container at a point adjacent to the lower end of the tubular member. In this form of device, the plug 17 which closes the opening near the bottom of the container for ascertaining the quantity of its contents, is located upon the opposite side of the container, as clearly indicated in the drawings.

In all other respects, the construction illustrated in Figs. 4 and 5 is the same as in the first form of device illustrated in Figs. 1, 2, and 3; that is, the spray device is of the same form except that it is of shorter length because the perforated tubular member in this modified form of device is located to one side of the spray device 6.

When using the modified form of device illustrated in Figs. 4 and 5, the valve 8 will be opened so as to permit the water or other fluid to be sprayed by the attachments 7 upon the soap or other material within the container 1. As in the other form of device, the screw plug 10 may be adjusted so as to regulate the force of flow as well as the speed of rotation of the swivelled spray device 6. The soap and water solution thus formed will find its way through the apertures in the upright tubular member whence it will flow out through the goose-neck 16.

With the particular combination of spray device including the swivelled spray member, there is realized the full benefit of the spraying of the water upon the body of soap without, however, requiring the provision of a circular spraying pipe or other such spray device which requires a more extensive construction than that herein disclosed. In other words, the automatically rotatable spray device which consists merely of a single form of diametrically disposed arm, constitutes a decided simplification of other spray devices which have been heretofore employed. At the same time, there is obtained uniform spraying of the water over the entire top surface of the soap.

Another advantage consists in the possibility of varying the degree of flow of the water at any time during operation of the device. Also, this means for regulating the pressure of flow may be employed without involving any modification in the other valve structure 8 which may be of standard form and hence requiring no special design of valve for the purpose of the present device.

The particular construction of means for draining the soap and water solution from the container affords the further advantage of avoiding accumulation and standing of soap and water solution in the container when not in use.

It is to be understood that the several features hereinbefore referred to or modifications thereof, may be employed together as parts of the same unitary combination or they each may be employed in other combinations with other corresponding elements of modified or different construction. Therefore, the following claims are to be understood as covering the several features of invention herein set forth, either in their specific construction and combinations as herein disclosed or in modified forms, and as parts of other combinations without being limited to their association with the specific detailed construction of the other features of invention also disclosed in the present application.

What I claim is:

1. A mixing device comprising a container having an opening at the otherwise imperforate bottom thereof, a perforated tubular member located upright within said container and communicating with said bottom opening, said tubular member being arranged so as to provide space outside thereof for material to be dissolved the top of said container having a liquid-supply opening therethrough, and a rotatably mounted and diametrically extending liquid-operated, liquid supply means communicating with the inner end of said supply opening, said rotatable means having nozzles at opposite sides of its axis of rotation so arranged as to discharge towards opposite sides of the vertical plane through the axis of rotation and the nozzles and directly upon the soluble material, whereby the liquid will cause rotation of the said supply means so as to distribute the liquid directly upon the material in said space outside said tubular member and which is to be dissolved by the liquid, and the solution thereof may be discharged thence through said tubular member and bottom opening.

2. A mixing device comprising a container having an opening at the otherwise imperforate bottom thereof, a perforated tubular member located upright within said container and communicating with said bottom opening, said tubu-

lar member being arranged so as to provide space outside thereof for material to be dissolved, the top of said container having a liquid-supply opening therethrough, and a rotatably mounted and diametrically extending liquid-operated, liquid supply means communicating with the inner end of said supply opening, said liquid supply means comprising a hollow body and restricted perforated nozzles extending in opposite directions upon the ends of said body and arranged to discharge towards opposite sides of the vertical plane through the axis of rotation and the nozzles and only upon the soluble material, whereby the liquid will cause rotation of the said supply means so as to distribute the liquid exclusively upon the material, which is in the container and which is to be dissolved by the liquid, and the solution thereof may be discharged through said tubular member and bottom opening.

3. A mixing device comprising a container having a raised bottom with a centrally disposed opening therethrough, a perforated tubular member extending upright within said container and being positioned to discharge from its lower end through said bottom opening, said tubular member being arranged so as to provide space outside thereof for material to be dissolved, means at the top part of the container for supplying fluid exclusively to the material within the container, whereby the solution thereof may pass through said tubular member and bottom opening, and an inclined discharge means extending from below said bottom opening and terminating at the side of the container.

4. A mixing device comprising a container having a raised bottom with a centrally disposed opening therethrough, a perforated tubular member extending upright within said container and being positioned to discharge from its lower end through said bottom opening said tubular member being arranged so as to provide space outside thereof for material to be dissolved, means at the top part of the container for supplying fluid exclusively to the material within the container, whereby the solution thereof may pass through said tubular member and bottom opening, an inclined discharge means extending from below said bottom opening to the side of the container and confined within the space afforded between the raised bottom and the bottom end of the device, and an outlet member at the lower end of said discharge means, said outlet member being also located above the bottom end of the device.

5. A mixing device comprising a container having a discharge outlet at one side of the lower end thereof, a perforated tubular member located upright within and at one side of said container so as to provide space to one side thereof for material to be dissolved and communicating with said discharge outlet, the top of said container having a liquid-supply opening therethrough, and a rotatably mounted and diametrically extending liquid-operated, liquid supply means communicating with the inner end of said supply opening, said rotatable means having nozzles at opposite sides of its axis of rotation so arranged as to discharge towards opposite sides of the initial plane through the axis of rotation and the nozzles and upon the soluble material.

RUDOLPH GUTH.