

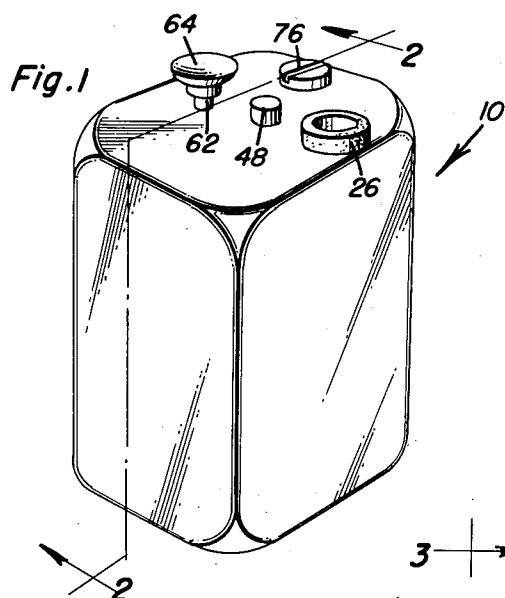
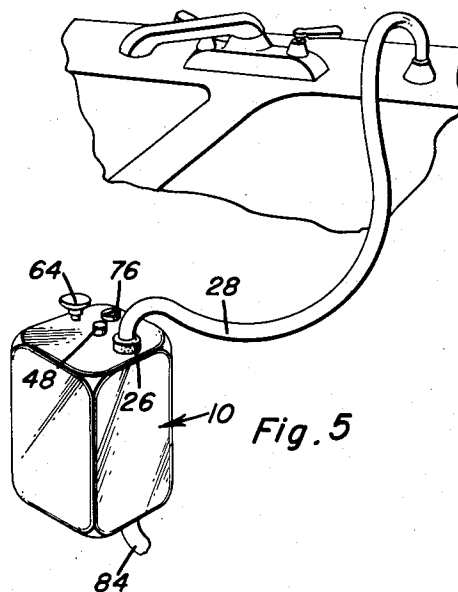
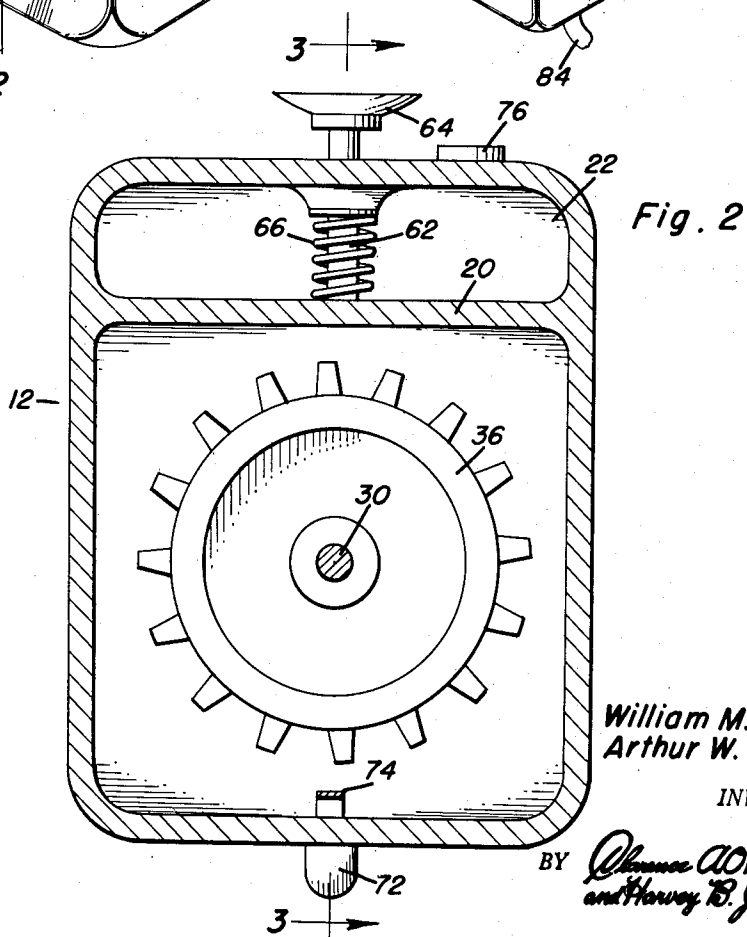
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W. M. EXLEY, JR., ET AL
MIXING VALVE

2,716,544

Filed May 12, 1954

2 Sheets-Sheet 1



William M. Exley, Jr.
Arthur W. Howe

INVENTORS.

BY

Almonce A. O'Brien
and Harvey B. Jacobson
Attorneys

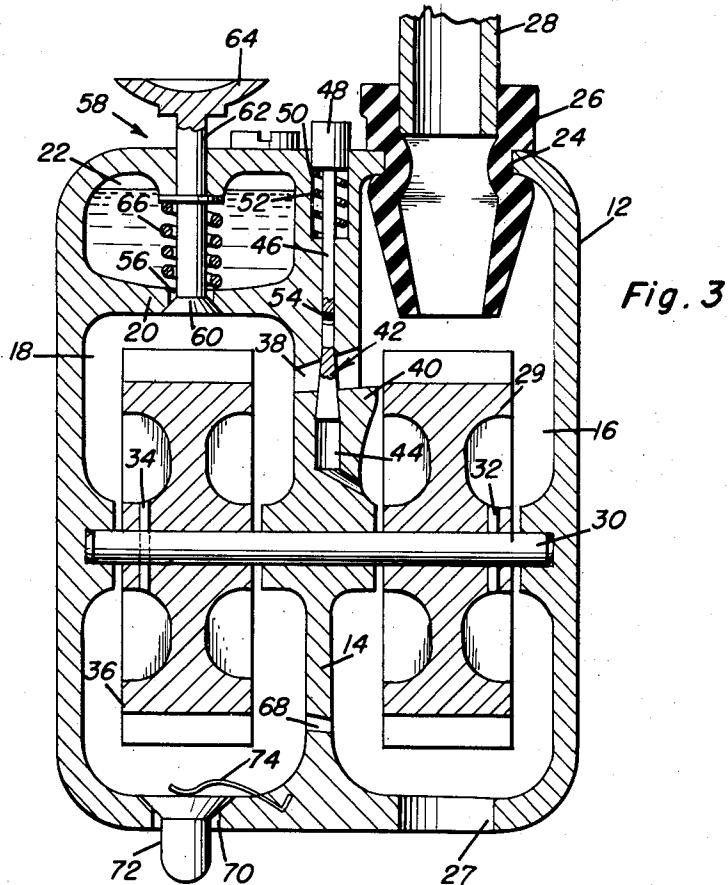
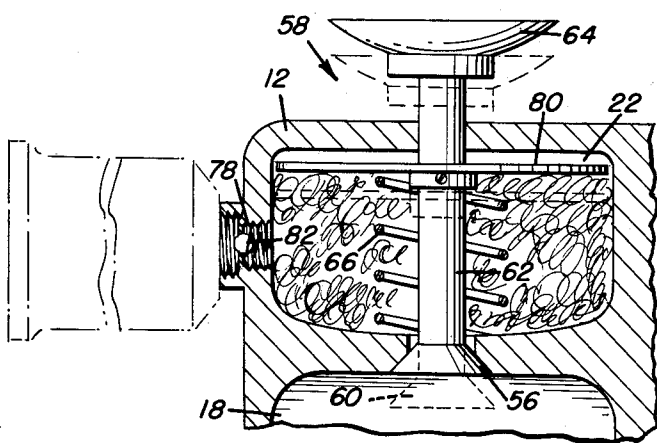
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William M. Exley, Jr.
Arthur W. Howe
INVENTORS

BY *Charles A. O'Brien*
and *Harvey B. Jackson*
Attorneys

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2,716,544

MIXING VALVE

William M. Exley, Jr., and Arthur W. Howe,
Savannah, Ga.

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6 Claims. (Cl. 259—10)

The present invention relates to a device for making lather for shaving and the like.

The primary object of the invention is to provide an apparatus for making hot or cold shaving lather wherein water power is utilized as the driving source for agitating and mixing a quantity of soap with water to create a lather.

An important object of the invention is in the provision of a lather making device which may be conveniently attached to an ordinary sink faucet or the like and rendered operable when water is caused to flow from the faucet through the device, the device thus being rendered operable by water flowing at normal line pressures encountered in city water systems and the like.

Another object of the invention is to utilize a portion of the water flowing through the device to drive the mixing means of the device as the water source for combining with the soap to produce the lather upon agitation.

A further object of the invention is in the provision of a small, compact, unitary casing divided into a plurality of chambers for holding the soap, mixing the lather and driving the lather mixing means.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the lather making device constituting the present invention;

Figure 2 is a cross-sectional view through the device taken substantially along the plane of section line 2—2 of Figure 1;

Figure 3 is a cross-sectional view through the device taken substantially along the plane of section line 3—3 of Figure 2;

Figure 4 is an enlarged cross-sectional view of a portion of the device disclosing a modified soap chamber arrangement for the dispensing of semi-solid soap into the lather mixing chamber; and

Figure 5 is a perspective view of the device set up for operation.

Referring now to the drawings in detail, the water power operated lather mixing and dispensing device is designated in its entirety by the numeral 10. The device consists essentially of a hollow casing 12 divided by an interior partition wall 14 into a water flow chamber 16 and a lather mixing chamber 18. Transverse partition wall 20 in the lather mixing chamber 18 provides a third chamber above the mixing chamber 18 which constitutes a soap receiving and retaining chamber designated by the numeral 22.

Opening into the top of the casing into the water flow chamber 16 is an inlet port 24 within which is mounted a suitable nozzle 26 for receiving the end of an inlet flow conduit 28 which may be rigid or flexible depending upon the conditions necessary for the attachment of the device. Opening into the bottom of the casing 12 in communica-

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tion with the water flow chamber 16 is an outlet port 27. Water wheel 29 is rotatably mounted in the water flow chamber 16 and the path of the water flows from the inlet port 24 through the outlet port 27, whereby the water flow through this chamber will rotate this wheel. To mount the water wheel 29 within the water flow chamber 16, a rotatable shaft 30 is rotatably journaled into the side walls of the casing 12 and through the partition wall 14 so that portions of the shaft are disposed both in the water flow chamber 16 and the lather mixing chamber 18. Water wheel 29 is keyed to this shaft by means of the pin 32 so that rotation of the water wheel by the water flow through the chamber 16 is imparted directly to the shaft 30.

Keyed to the shaft by means of pin 34 and disposed within the lather mixing chamber 18 is a mixing wheel 36. Consequently, upon driving rotation of the water wheel 29, this rotation is imparted through the shaft 30 to the mixing wheel 36 in the lather mixing chamber 18.

Adjacent the upper end of the mixing chamber 18, the partition wall 14 is provided with a transverse passage 38 therethrough communicating the flow chamber 16 with the mixing chamber 18. On the flow chamber side of the partition wall 14, the wall is provided with a projecting portion 40 adjacent the mouth of the passage 38 projecting slightly into the flow chamber 16 to divert a portion of the stream of water flowing through this chamber into the mixing chamber 18. Valve 42 disposed in a vertically elongated bore 44 opening into the upper end of the casing through the partition wall 14 normally retains the passage 38 in a closed condition. The stem 46 of the passage closing valve 42 is provided at its upper end with a press-button 48 which guidingly seats in an enlarged, blind bore 50 opening into the upper end of the casing through the partition wall 14. Resilient means in the form of coil spring 52 seats within the enlarged bore 50 and reacts against the base of the bore and the press cap or button 48 to normally lift the valve 42 upwardly into closing relation with the passage 38. To provide communication of the passage 38 with the flow chamber 16 and the mixing chamber 18, the cap or button 48 may be pressed by the thumb or finger to bring the valve aperture 54 into registry with the passage 38. When such registry is obtained and water is coursing through the flow chamber 16, a portion of this water will be diverted into the mixing chamber 18.

The transverse partition wall 20 constituting the bottom of the soap chamber 22 is provided with a central aperture 56 therethrough which is provided with a beveled edge for the seating of the soap valve 58. The soap valve 58 is ordinarily of the plunger type including the beveled valve 60 at one end thereof seating in the valve seat formed around the aperture 56 and having a valve stem 62 projecting upwardly through the top of the casing and terminating in plunger cap 64 exteriorly of the casing. To normally retain the soap valve 58 in seated, closed position in the valve orifice or aperture 56, resilient spring 66 surrounds the plunger stem 62 and reacts against the top and bottom of the soap chamber 22. By pressing down on the plunger cap 64, soap is released into the mixing chamber 18 for mixing with the water diverted into this chamber. With the mixture of soap and water thus disposed within the mixing chamber 18, upon subsequent rotation of the mixing wheel 36, the mixture is agitated to form a lather. In the event too much lather is formed before dispensing the lather from the casing, the partition wall 14 is provided toward its lower end with a second transverse passage 68 for allowing some of the lather to pass into the flow chamber 16 and thence outwardly from this chamber through the outlet port 27.

The bottom of the casing is provided with a valve orifice 70 opening into the bottom of the mixing chamber 18

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for dispensing lather from this chamber to be utilized in shaving or the like. To retain this valve orifice 70 closed against unwanted expression of lather from the chamber 18, press valve 72 is provided which is normally seated in closing relation to the valve orifice 70 by means of the leaf spring 74 mounted within the casing and pressing against the top of the valve 72. To open the orifice 70, it is only necessary to press upwardly against the action of the spring 74 on the valve stem 72 to cause lather to flow from the mixing chamber 18. Obviously, by utilizing hot or cold water through the flow chamber 16, hot or cold lather may be formed in the mixing chamber 18.

To clean the apparatus, it is only necessary to continually run pure water through the system to the exclusion of the addition of soap from the soap chamber 22.

In order to add soap to the soap chamber 22, the top of the casing is provided with a threaded aperture opening into the casing chamber 22, which aperture is normally closed by the plug 76. Upon removal of the plug, the soap may, of course, be simply poured into the soap chamber 22.

However, in many instances, it may be desirable to use paste soap rather than liquid soap, and to this end, the construction set forth in Figure 4 is utilized. In this modification of the device, the casing 12 is provided with a side wall opening or transverse, threaded bore 78 opening into the soap chamber 22 intermediate the top and bottom thereof. This threaded bore 78 permits the attachment of the end of a paste tube thereto for expressing paste from the tube into the soap chamber 22.

To express the paste soap from the soap chamber 22, the plunger 62 of the valve is provided with a flat plate 80 securely mounted thereon and overlying the body of the soap within the chamber. Thus, upon downward depression of the plunger cap 64 and consequent downward movement of the plunger 62 and opening of the valve 60, the plate 80 positively expresses the paste soap through the orifice 56 into the mixing chamber 18. To prevent re-entrance of the soap back into the tube from which it has been expressed, one-way ball check valve 82 is provided in the transverse bore 78.

In the use of either form of the device, that utilizing the liquid soap or that utilizing the paste soap, the arrangement shown in Figure 5 may be utilized. In this arrangement, the conduit 28 leads from the water line into the nozzle 26 through the water flow chamber 16 outwardly through a drain line 84. As the water thus courses through the flow chamber, the water wheel 29 is rotated, rotating the mixing wheel 36. To add water to the mixing chamber 18, it is only necessary to depress the button 48 to open the passage 38 through the partition wall 14. This need only be a momentary operation, since a large quantity of water in the mixing chamber is not desirable in the production of a good lather. Then, or prior to the admission of the water into the chamber 18, if desired, the valve 60 is opened, allowing passage of soap into the mixing chamber where it mixes with the water and by the rotation of the mixing wheel 36, a large quantity of lather is formed within the chamber. To dispense the lather from the chamber, it is only necessary to press upwardly on the dispensing valve 72 causing the lather to flow from the mixing chamber. The same operation is obvious in the modification of Figure 4, the only change being in the means for admitting the soap to the soap chamber 22 and expressing the soap from the soap chamber 22 by a slight modification of the soap expressing valve means 58. Of course, the device could be attached directly to a water faucet simply by impressing the nozzle 26 over the end of the faucet, if desired.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those

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skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A lather making and dispensing device comprising a hollow casing, means dividing said casing into first and second chambers, said casing having water inlet and outlet ports opening into said first chamber for passing liquid therethrough, means associated with said dividing means for diverting a stream of water into said second chamber from said first chamber, a first water wheel rotatably mounted in said first chamber in the path of the liquid passing through the first chamber, a mixing wheel rotatably mounted in said second chamber and drivingly connected to said water wheel, means for admitting soap to said second chamber for mixing with the stream of water entering this chamber and forming a lather upon rotation of the mixing wheel, and means for dispensing lather from the casing.

2. The combination of claim 1 including said casing having a soap chamber communicating with said second chamber, said soap admitting means comprising a soap valve communicating with said soap chamber with said second chamber.

3. A device for making and dispensing lather comprising a hollow casing having an interior partition wall dividing the same into first and second chambers, said casing having water inlet and outlet ports opening into opposite sides of said first chamber, a water wheel in said first chamber disposed between said inlet and outlet ports, a mixing wheel in said second chamber drivingly connected to said water wheel, said partition wall having a passage therethrough, means for diverting a stream of water from said first chamber into said second chamber, said casing having a soap receiving chamber therein, valve means communicating said soap receiving chamber and second chamber to admit soap into said second chamber, and a dispensing valve on said casing opening into said second chamber for releasing lather from the second chamber.

4. The combination of claim 3 wherein said valve means communicating said soap receiving chamber and said second chamber includes means for positively expressing soap from said soap chamber upon opening of said valve means.

5. The combination of claim 3 including a valve normally closing said passage.

6. A lather making and dispensing device comprising structure forming first and second chambers, said structure having water inlet and outlet ports opening into said first chamber for passing liquid therethrough, means interconnecting said chambers for diverting a stream of water into said second chamber from said first chamber, a first water wheel rotatably mounted in said first chamber in the path of the liquid passing through the first chamber, a mixing wheel rotatably mounted in said second chamber and drivingly connected to said water wheel, means for admitting soap to said second chamber for mixing with the stream of water entering this chamber and forming a lather upon rotation of the mixing wheel, and means for dispensing lather from the second chamber.

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