July 17, 1928. 1,677,645

T. A. LUTHANDER

SUDS PRODUCING MEANS

Filed Dec. 3, 1924

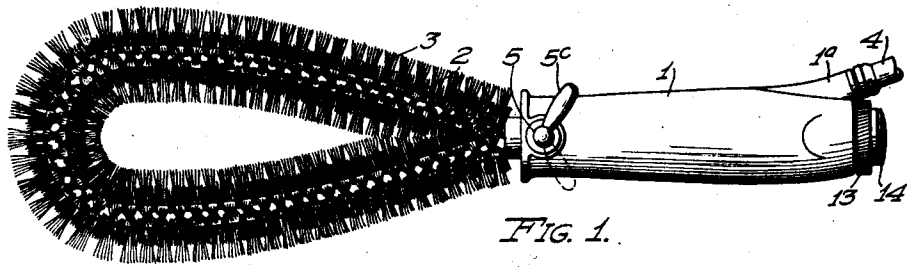

FIG. 1.

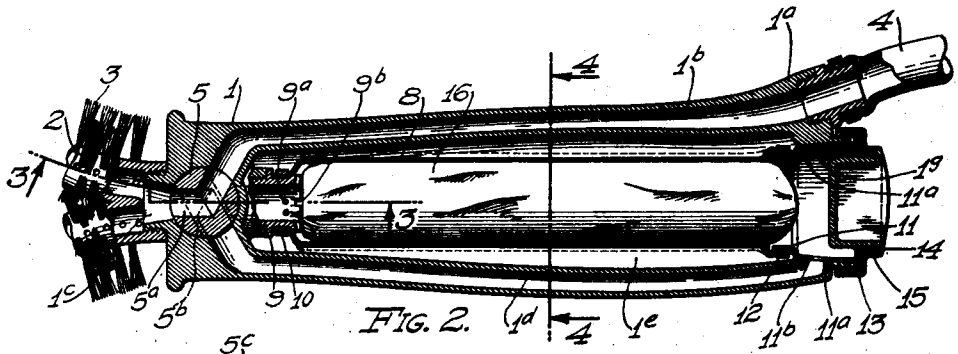

FIG. 2.

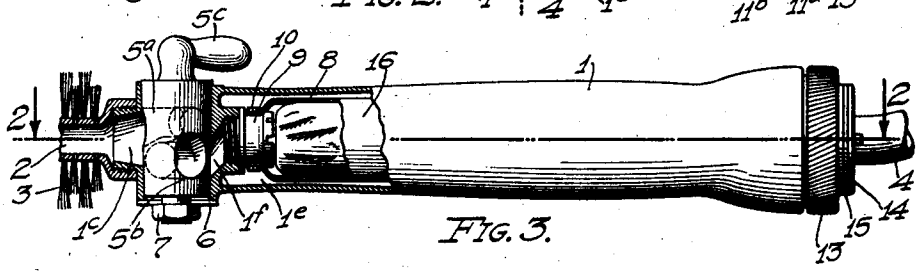

FIG. 3.

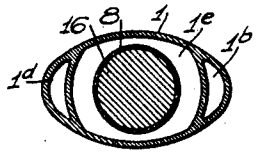

FIG. 4.

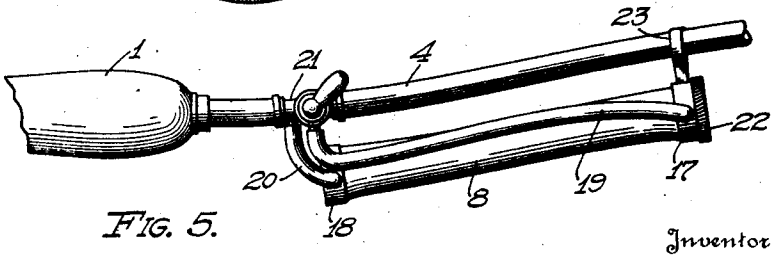

FIG. 5.

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UNITED STATES PATENT OFFICE.

THURE A. LUTHANDER, OF SAN DIEGO, CALIFORNIA.

SUDS-PRODUCING MEANS.

Application filed December 3, 1924. Serial No. 753,655.

My invention relates to suds producing means, more particularly adapted to be used in connection with cleaning devices such as brushes, and the objects of my invention are: First, to provide a suds producing means whereby suds may be produced as they are being used; Second, to provide a means of this class which may be connected to a water conductor for supplying soapy water or suds at the outlet end thereof; Third, to provide a means of this class which may be positioned in the conductor itself to provide economy of space; Fourth, to provide a means of this class in combination with a brush having a conductor communicating with the bristles thereof, whereby the soapy water produced by the means is changed to foam when mixing with the bristles and air; Fifth, to provide a cleaning brush having a hollow handle with a suds producing means in the hollow portion of said handle; Sixth, to provide a soap producing means having an elastic soap container through which water or other liquid is adapted to ooze in contact with soap for producing the suds; Seventh, to provide a mixing means of this class having an elastic container through which a liquid is adapted to ooze in contact with its contents for forming a concentrated solution of said contents, when dissolved, with said liquid; Eighth, to provide a novelly arranged valve means in combination with a suds producing means; Ninth, to provide a novelly constructed and arranged valve mechanism for my suds producing means when embodying the invention in the hollow handle of a brush; Tenth, to provide as a whole a novelly constructed and arranged suds producing means; Eleventh, to provide a novelly constructed brush handle for supporting the soaping means and conducting the water therethrough and for controlling the flow of fresh or soapy water to the bristles of the brush, and Twelfth, to provide a suds producing means which is very simple and economical of construction, durable practical, efficient, and which will not readily deteriorate or get out of order.

With these and other objects in view, as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Figure 1 is a side view of a bath brush connected to a flexible water conductor or hose, showing by dotted lines the valve handle in a position to admit soapy water or suds to the bristles of the brush; Fig. 2 is an enlarged longitudinal sectional view of the handle portion of the brush shown in Fig. 1, with the section taken through 2—2 of Fig 3 and showing certain parts and portions in solid to facilitate the illustration; Fig. 3 is a partial sectional and partial side view of the handle portion of the brush, with the sectional portion taken through 3—3 of Fig. 2; Fig. 4 is a transverse sectional view thereof, taken through 4—4 of Fig. 2, and Fig. 5 is a fragmentary view of a slightly modified form of construction and arrangement of my suds producing means in combination with a brush, showing the brush handle and the water conductor therefor fragmentarily.

Like characters of reference refer to similar parts and portions throughout the several views of the drawings.

The handle member 1, bristle supporting conductor 2, bristles 3, water conductor 4. valve member 5, washer 6, nut 7, flexible container 8, coupling member 9, band 10, flexible container positioning member 11, band 12, retaining cap 13, cover 14, gasket 15, and the soap cake 16, constitute the principal parts and portions of my suds producing device in one form of construction.

In the one form of construction of my means, as illustrated in Figs. 1, 2, 3 and 4 of the drawings, my suds producing means is embodied in a bath brush and the handle member 1 thereof forms a casing for the means and conductors for the liquid. At the front end of the handle member is screwably secured the one end of a loop shaped perforated conductor 2 in which are secured the bristles or bunches of bristles forming the brush portion. The handle member is provided at its back or opposite end with an angularly diverting portion 1^a to which is connected the flexible water conductor 4. This conductor 4 communicates, by means of a passage 1^b at one side of the handle member, with a tapered valve member 5 rotatably mounted at the front or head end of the handle member. This valve member is provided with a pair of ports 5^a and 5^b, the former having its inlet and outlet positioned at an angle with each other, and the

other being straight and extending through the axis of the valve member. With the handle portion 5^c of the valve member 5 in the position shown by solid lines in Fig. 1, the passage 5^a of said valve member is adapted to connect the passage 1^b of the handle member with the outlet 1^c thereof and with the conductor 2. When the handle portion 5^c of the valve member is rotated counter-clockwise until it assumes a position shown by dotted lines in Fig. 1, the passage 5^a of said valve member connects the passage 1^b of the handle member at one side thereof with a corresponding passage 1^d at the opposite side of the handle member. It will be here noted that the passage 5^a of the valve member is positioned slightly to one side of the plane passing through the longitudinal axis taken on the line 2—2 of Fig. 3 and that the passage 5^b is positioned on the opposite side of said plane, thus necessitating directing the passages 1^b and 1^d from the positions shown in Fig. 4, to one side of the handle member, in order to make the same register with the ends of the passage 5^a.

The valve member 5 is preferably secured in position at the head end of the handle member by means of a washer 6 and a nut 7, as shown best in Fig. 3.

In the central compartment 1^e of the handle member is positioned the flexible soap container 8 which is preferably made of rubber or other suitable, readily contractible material, so as to be contracted automatically around the soap cake 16 positioned therein. The one end of the container 8 is secured, by means of a band 10, around the coupling member 9, which is screwably secured to the head end of the handle member inside of the recess 1^e. This coupling member 9 is adapted to communicate with the passage 5^b of the valve member, when the same is rotated as shown by dotted lines in Fig. 2, through a downwardly directed port 1^f, as shown in Fig. 3. It will be also noted that in order to make the passages 5^a and 5^b of the valve member properly register with the outlet passage 1^c of the handle member, said passages are preferably enlarged at their one ends, as shown by the passage 5^a in Fig. 3.

To the opposite end of the flexible container 8 is secured the one end of the annular positioning member 11, by means of a band 12. This annular positioning member 11 is provided with an annular tapered portion 11^a which conforms with and is adapted to seat in a corresponding tapered recess 1^g at the outer end of the handle member. The passage 1^d of the handle member communicates with the interior of the annular container positioning member 11 through a port 11^b in the tapered wall portion of said member, as shown best in Fig. 2. This member 11 is provided at its outer end with a shoulder which is adapted to be engaged by a retaining cap 13 for securing the member 11 securely in its tapered seat or in any other leak-proof position relatively to the handle member. This cap 13 is internally threaded at its outer end and is adapted to receive a cap or cover 14, there being provided a gasket 15 intermediate said cap and said cover to provide a leak-proof joint. The cover 14 is adapted to be removed when desiring to replace the cake of soap 16, the cap 13 being removed only when desiring to remove the soap container.

To prevent the soap cake when worn down from passing through the coupling member 9 and clogging the same, there is preferably provided a grate 9^a at the one end thereof to retard such action by the reduced soap cake. It will be noted that the slots 9^b at the one end thereof, against which the soap cake is adapted to be positioned, perform a double function, that of permitting the soapy water or suds to flow from the container 8 through the coupling or connection member 9, and also that of permitting the inner end of the member 9 to be secured in position within the handle member.

When desiring to produce soapy water or suds with the means as shown, the valve handle is shifted from the solid line to the dotted line position, as shown in Fig. 1, which permits the water from the conductor 4 to pass to and through the passage 1^d and thence to the normally rear end of the flexible container 8. The water entering the container 8 under pressure causes the walls thereof to expand, which permits the water to flow alongside the cake of soap under pressure and dissolve or soften a certain amount thereof before it is discharged through the conductor 2 supporting the bristles of the brush. As the soapy water is discharged through the perforations in the conductor 2, the same mixes with air and forms the bubbles or foam in the bristles. It will be noted that the member 5 is so positioned relatively to the flexible container 8 that the pressure of the water flowing thereto can be easily regulated. It will be also noted that if the valve member 5 is positioned at the outlet end of the container 8 only, the total pressure of the water is exerted on the walls of the container 8, expanding the same to the maximum, which reduces the suds producing action and therefore the efficiency of the means.

The modified form of construction of my soap producing means, shown in Fig. 5 of the drawings, consists of a flexible rubber container 8 provided with rigid end members 17 and 18, which are connected respectively, by means of flexible tubes 19 and 20, with the valve 21. The valve 21 is positioned in the conductor 4, which in this modified form of construction is con-

nected with the end of and directly with the interior of the handle member 1, shown fragmentarily. The tube 19 is so connected with the valve that the same may be connected with the conductor 4 when the valve handle is turned clockwise, whereas the tube 20 is at all times connected with the valve intermediate the shiftable valve member thereof and the brush handle member 1. The member 17 is provided with a removable head 22 for filling the container 8 with a soap cake. The latter end of the container 8 is preferably secured to the conductor or tube 4 by means of a strap 23 or any other suitable means.

It is obvious from this construction, as illustrated in the drawings and disclosed in the foregoing specification, that there is provided a suds producing means as aimed at and set forth in the objects of the invention, and though I have shown and described a particular construction, combination and arrangement of parts and portions and a certain modification thereof, I do not wish to be limited to this particular construction, combination and arrangement nor to the modification, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a means of the class described, the combination with a liquid conducting means provided with a two-way valve, the one position thereof permitting unobstructed flow of the liquid in said conductor means, other conductor means adapted to be connected with said first mentioned conductor means through said valve when the same is shifted to the other position, an unobstructed flexible and contractible container adapted to fit snugly around a bar of soluble substance and communicating at one end with said other conductor means, and a third conductor means adapted to connect the other end of said container with said first mentioned conductor means beyond said valve.

2. In a means of the class described, the combination with a liquid conducting means provided with a two-way valve, the one position thereof permitting unobstructed flow of the liquid in said conductor means, of other conductor means adapted to be connected with said first mentioned conductor means through said valve when the same is shifted to the other position, an unobstructed flexible and contractible container adapted to fit snugly around a bar of soluble substance and communicating at one end with said other conductor means, a third conductor means adapted to connect the other end of said container with said first mentioned conductor means beyond said valve, said container being provided with a large opening at its one end for filling the same, and a readily removable cap for closing said filling opening.

3. In a means of the class described, an unobstructed, flexible and contractible container adapted to fit snugly around a bar of soluble substance and clamped at its opposite ends over tubular supports, said supports being registered at opposite ends of a rigid outer casing surrounding in spaced relation said container, and inlet and discharge means communicating with the ends of said container.

4. In a means of the class described, an unobstructed, flexible and contractible container adapted to fit snugly around a bar of soluble substance and clamped at its opposite ends over tubular supports, a rigid outer casing registering said supports and surrounding in spaced relation said container, a removable cap for one of said tubular supports serving as a filling opening for said container, an inlet conductor communicating with one end of said container, and an outlet conductor communicating with the other end thereof.

5. In a means of the class described, an unobstructed, flexible and contractible container adapted to fit snugly around a bar of soluble substance and clamped at its opposite ends over tubular supports, said supports being registered at opposite ends of a rigid outer casing surrounding in spaced relation said container, inlet and discharge means communicating with the ends of said container, and valve means supported at one end of said rigid outer casing and adapted to regulate the flow of liquid through said container.

In testimony whereof, I have hereunto set my hand at San Diego, California, this 15th day of November, 1924.

THURE A. LUTHANDER.