Oct. 8, 1940. L. G. SIMJIAN 2,216,791

FOAM BATH APPARATUS

Original Filed Sept. 2, 1937

Fig. 1

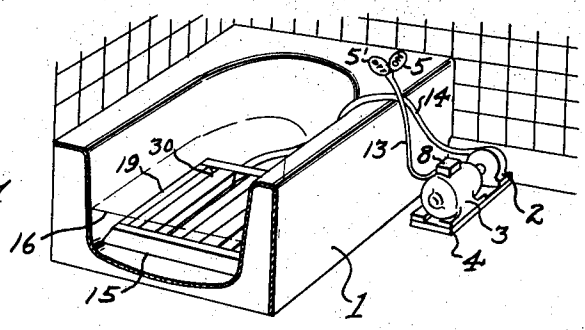
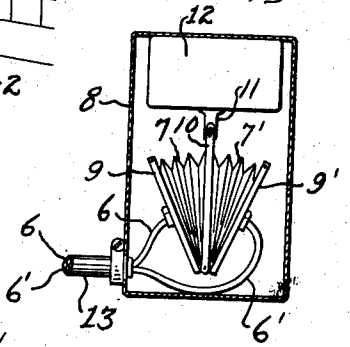


Fig. 6



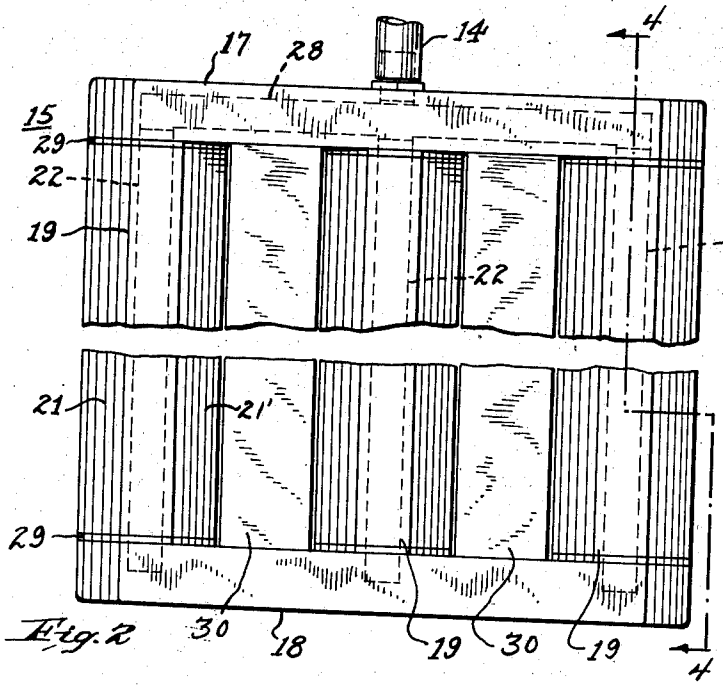
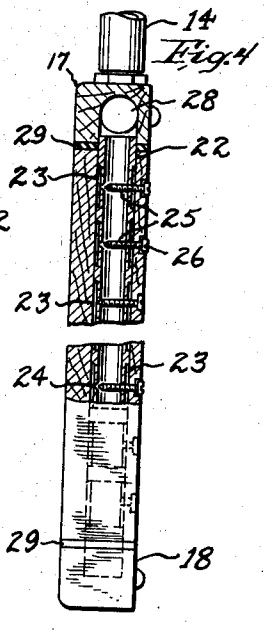


Fig. 2

Fig. 4



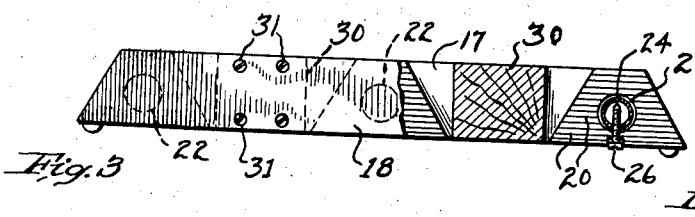
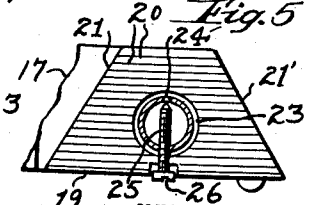


Fig. 3

Fig. 5



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Patented Oct. 8, 1940 2,216,791

UNITED STATES PATENT OFFICE

2,216,791

FOAM BATH APPARATUS

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Application September 2, 1937, Serial No. 162,110
Renewed March 1, 1940

3 Claims. (Cl. 261—122)

This invention relates, generally, to apparatus for producing foam in fine bubbles and the invention has reference more particularly, to a novel foam bath apparatus especially suited for use in giving foam baths.

Apparatus of this character heretofore produced generally consisted of one or more series of special wood blocks having a porosity substantially as fine as the human skin, such blocks being arranged in a row or rows and having aligned air passages interconnected by couplings. Air under moderate pressure was supplied through said air passages to all of the blocks, so that with the same immersed in a suitable liquid, fine bubble foam was produced. However, in use such apparatus has not proven satisfactory owing to the tendency of one or more of the blocks of a row or rows to clog up after a time and become useless, necessitating the disconnection of the blocks of the row and the replacement of the defective block or blocks, which is a somewhat lengthy and expensive procedure. Also, owing to the multiplicity of couplings necessary for interconnecting the blocks of each row, leaks ofttimes resulted at such couplings, requiring repair or replacement.

The principal object of the present invention is to provide a novel foam bath apparatus that overcomes the above mentioned defects, the said apparatus employing but a single bar or relatively long porous block of suitable wood or other material in place of a row of blocks heretofore used, means being provided for supplying the air or other fluid under pressure to consecutive portions of such bar or block, the air pressure at each such portion, and hence the rate of air flow through the pores of the block into the liquid of the bath, being adjustable by suitable valve means to compensate for any tendency of portions of the block to clog.

Another object of the present invention lies in the provision of a novel foam bath apparatus of the above character wherein the electric air or fluid pump driving motor is remotely controlled by pneumatic means, thereby eliminating the possibility of electric shock to the occupant of the bath equipped with the apparatus of the invention.

Other objects and advantages will become apparent from the specification, taken in connection with the accompanying drawing wherein one embodiment of the invention is illustrated.

In the drawing,

Fig. 1 is a perspective view, partly in section, showing a bath tub equipped with the novel foam producing apparatus of the present invention.

Fig. 2 is a plan view, partly broken away, of the foam distributor.

Fig. 3 is an end view, partly in section, of the structure shown in Fig. 2.

Fig. 4 is a part sectional view taken along the line 4—4 of Fig. 2, looking in the direction of the arrows.

Fig. 5 is an enlarged fragmentary view of a portion of the structure of Fig. 3, and

Fig. 6 is an enlarged sectional plan view of the motor switch operating mechanism.

Similar characters of reference are used in all of the above figures to indicate corresponding parts.

Referring now to the said drawing, the reference numeral 1 designates a bath tub equipped with the novel foam bath apparatus of this invention. This apparatus comprises the air pump 2 driven from the electric motor 3, the pump-motor unit being mounted on a base 4 that is adapted to be placed in any convenient location in the bathroom.

In order to prevent electric shock to the user of the apparatus, the motor 3 is adapted to be remotely controlled by pneumatic means. This means is illustrated as consisting of "on" and "off" bulbs 5 and 5', respectively connected through flexible tubes 6 and 6' to two complementary bellows 7 and 7' mounted within a switch control casing 8 fixed on top of the motor 3. The outside walls 9 and 9' of the bellows 7 and 7' are fixed, whereas the common inner wall 10 is movable and is connected to the snap switch arm 11 of the "on" and "off" switch 12. Tubes 6 and 6' are shown enclosed in a common tube 13.

To start the motor 3, it is only necessary to compress the "on" bulb 5, whereupon air is conveyed through tube 6 to bellows 7, thereby swinging the inner wall 10 toward the right, as viewed in Fig. 6, to effect movement of switch arm 11 to "on" position, whereas when it is desired to stop motor 3, it is merely necessary to squeeze the "off" bulb 5', thereby forcing air into bellows 7' and moving switch arm 11 in the opposite direction to effect the disconnection of motor 3 from the electric supply.

The output of air pump 2 is connected through tubing 14 to the distributor, designated as a whole by the reference numeral 15, which distributor is adapted to be placed upon the bottom of the bath tub 1 so as to be surrounded by water 16 contained therein. The water 16 has intermixed therein a small quantity of a suitable foam forming agent such as saponin.

The distributor 15 consists of transverse end members or heads 17 and 18 which are rigidly interconnected by spaced bars 30 of wood or other suitable material, the bars 30 being shown secured to heads 17 and 18 as by screws 31. Especially prepared bars or blocks 19 also extend between the end members 17 and 18 alongside of the bars 30. The bars or blocks 19 are of wood or other suitable material, such as molded sawdust, lamb's wool, glass fiber, etc., that is provided

with vascular tissue or analogous pores 20 extending transversely of these bars and disposed throughout the height thereof. The pores 20 are substantially as fine as those of the human skin. The bars 19 are preferably of trapezoidal cross section having beveled sides 21 and 21', as especially shown in Fig. 5, to prevent confluence and interference of the minute bubbles of air or other gas issuing from the pores of wood or other material forming the bars 19.

Each of the bars 19 is provided with a longitudinally extending circular bore for snugly receiving a pipe or tube 22, which pipe is provided along the length thereof with a series of exterior annular grooves 23 that are slightly spaced from one another, as especially shown in Fig. 4. Each of the grooves 23 communicates with the interior of pipe 22 through a valve aperture 24, the effective cross-sectional area of which aperture may be varied by means of a needle valve screw 25 that is threaded through the wall of pipe 22 opposite the aperture 24. The head of each screw 25 is readily accessible at the under side of the block 19 and is provided with a screw driver slot 26, whereby this screw may be readily adjusted to vary the effective area of the aperture 24, and hence the effective pressure obtaining within the annular groove or space 23 provided between pipe 22 and the wall of the longitudinal bore of bar 19.

Air from tubing 14 is supplied to the pipes 22 through a passage 28 provided in the end member 17. The ends of pipes 22 preferably project somewhat into the passage 28, as especially shown in Fig. 4, while the joint between each such pipe and the end member 17 is sealed by a suitably shaped gasket 29, as of rubber.

In use, the distributor 15 is placed upon the bottom of the tub 1 and water containing the foam forming agent is placed in the tub so as to extend somewhat above the distributor, whereupon the motor 3 is started by pressing bulb 5, thereby producing the desired foam. When sufficient foam is produced, the user presses the bulb 5', thereby stopping the motor 3.

Should any portion of a bar or bars 19 tend to clog as the result of long usage, such tendency is readily corrected by adjusting the needle valve screws 25 of that portion so as to open valve apertures 24 slightly more, thereby raising the air pressure in the corresponding annular space 23 to effect the desired feed of the fluid through the pores 20 of the bar.

Inasmuch as each block 19 extends all the way from head 17 to head 18, a longitudinally continuous seating surface is provided for the user of the distributor, thereby greatly adding to his or her comfort, while the elimination of many small blocks also eliminates leaks ordinarily occurring at the couplings therebetween. In the event one of the blocks after long usage should become clogged, so that full opening of the valves 24 does not provide sufficient flow of air, such block may be readily and easily replaced by another by disconnecting head 17 and without the necessity of inserting a great many gaskets, as heretofore necessary in prior devices of this character.

Owing to the use of pneumatic control of the motor 3, any possibility of electric shock is eliminated, thereby rendering the device absolutely safe in use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In a foam bath apparatus, a distributor provided with a continuous porous bar having a longitudinal bore, the pores of said bar extending from said bore to the exterior surface of said bar, a snugly fitting fluid conduit member extending within said bore and having a series of exterior annular grooves facing upon the wall of said bore, said conduit member having communicating passages extending between the interior thereof and said grooves, and valve means for individually controlling the effective area of said passages, whereby the fluid pressures in said series of grooves may be controlled at will so that a uniform flow of fluid passes through the pores of said bar from said grooves all along the length of said bar regardless of the varying filtering capacities of consecutive portions thereof.

2. In a foam bath apparatus, a distributor provided with a porous bar having a longitudinal bore therein, the pores of said bar extending from the bore to the exterior surface thereof, a fluid conducting conduit member extending snugly within said bore, said conduit member having a plurality of mutually spaced annular depressions in the exterior surface thereof adjoining the wall of said bore, said conduit member having fluid conducting openings extending from the interior thereof to said respective annular depressions for supplying fluid thereto, and valve means extending into said openings and operable to regulate the flow of fluid therefrom and into said respective annular depressions to be fed therefrom through the pores of said bar to the exterior surface thereof, said valve means serving to effect a uniform flow of fluid from said depressions through the pores of said bar all along the length thereof regardless of the varying filtering capacities of consecutive portions thereof.

3. In a foam bath apparatus, a distributor comprising end members interconnected by mutually spaced longitudinal bars, one of said end members having a passage for receiving pressure fluid from an external source, certain of said bars being transversely porous and having longitudinal bores communicating with the passage of said one end member, the pores of said bar extending from said bores to the exterior surfaces thereof, pipes fitting snugly within said bores and having a series of mutually spaced exterior annular grooves, said pipes having communicating passages extending between said grooves and the interior of said pipes, and valves for regulating the areas of said passages and hence the fluid pressure within each of said grooves whereby the quantity of fluid issuing from the exterior surface of said bars is substantially uniform all along the lengths thereof regardless of the varying filtering capacities of consecutive portions thereof.

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