April 13, 1965 G. M. WALLACE ETAL 3,177,868

SHAMPOOING AND MESSAGING DEVICE

Filed May 17, 1962 2 Sheets-Sheet 1

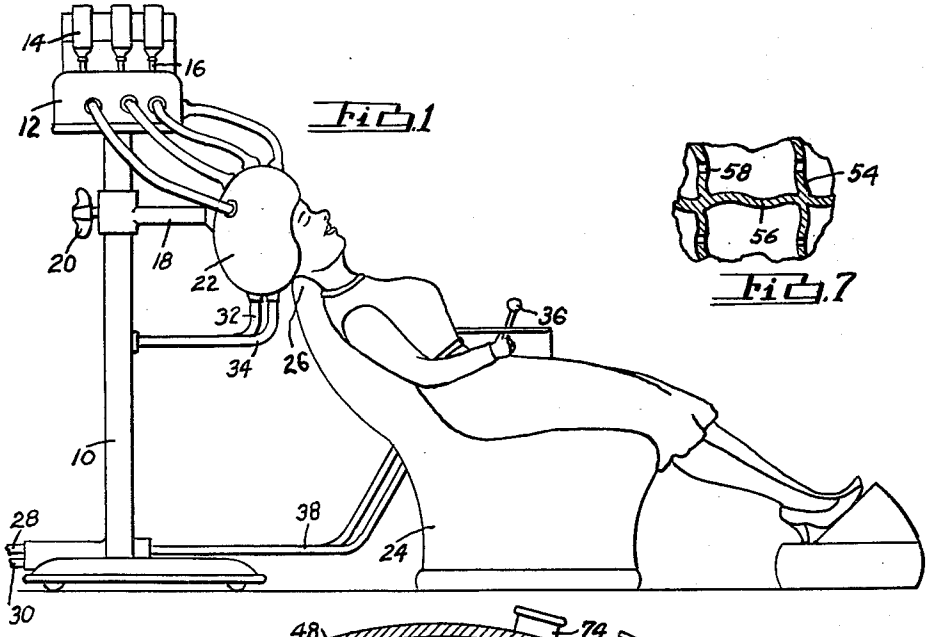


Fig. 1

Fig. 7

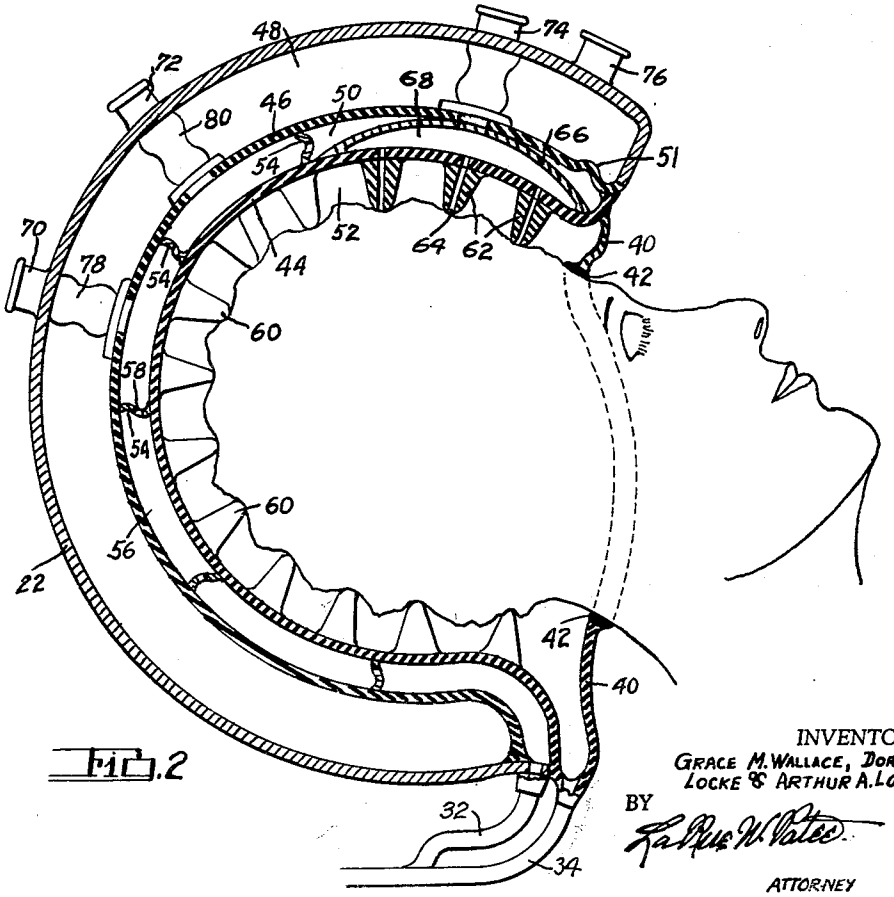


Fig. 2

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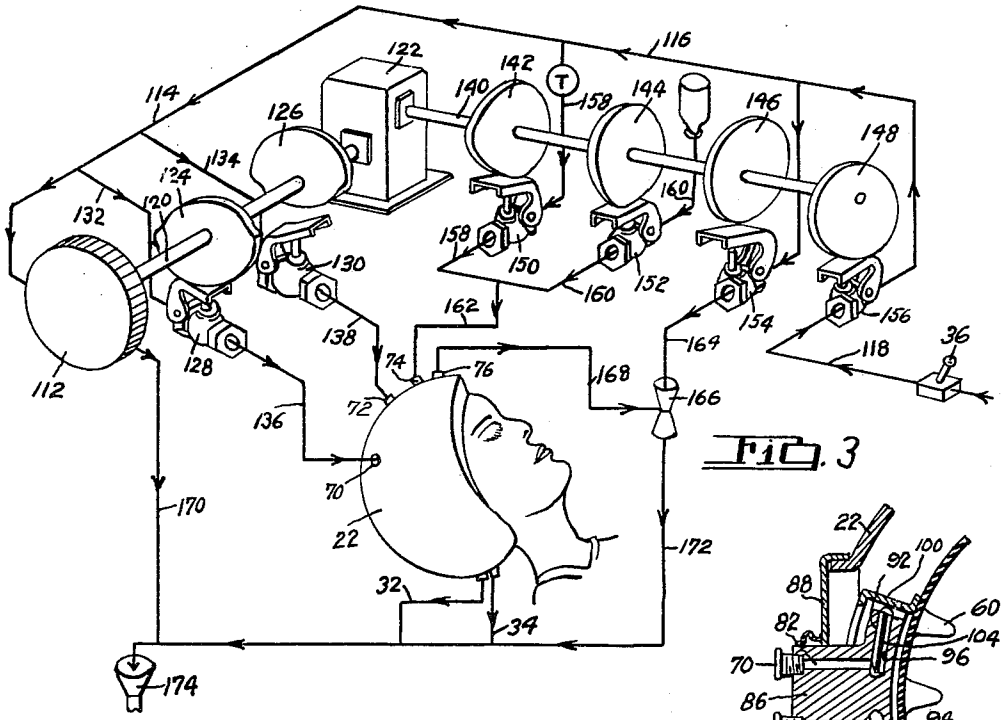


Fig. 3

Fig. 5

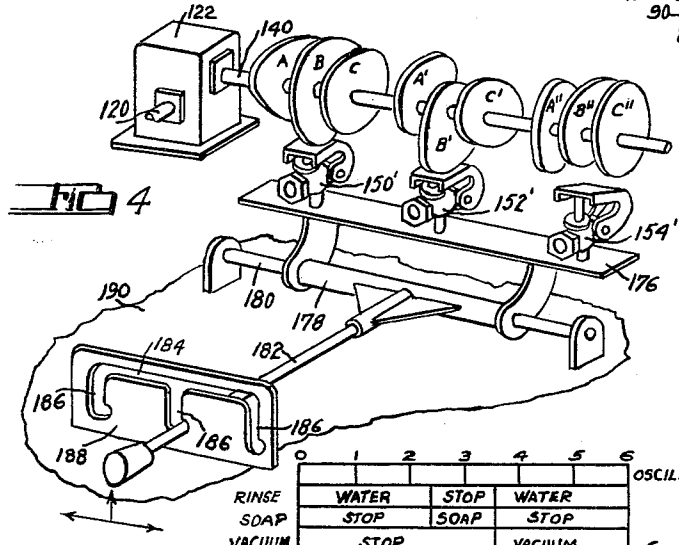


Fig. 4

	0	1	2	3	4	5	6	
								OSCILLATE
RINSE	WATER			STOP		WATER		
SOAP	STOP			SOAP		STOP		
VACUUM	STOP					VACUUM		

Fig. 6

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SHAMPOOING AND MASSAGING DEVICE

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3 Claims. (Cl. 128—65)

This invention relates generally to hair and scalp treating apparatus, and more particularly to apparatus for performing shampoo, massage and like operations on the hair and scalp, as the application of waving lotion, neutralizing solution, color rinse, dye and the like in a continuous operation without moving the individual from place to place.

Heretofore shampooing, massage and like treatments of the hair and scalp have been carried out manually by beauticians or other professional hairdressers. Further, such applications and treatments of the hair and scalp as conventionally carried out are tiring to the hair dresser and unpleasant to the individual receiving the treatment by reason of the necessary moves from one station to another.

It is a primary object of the present invention to provide an apparatus which functions automatically to perform the required operations in sequence and in timed relation, utilizing one operating station with much greater convenience to the operator and with less fatigue to the individual.

Another object of the invention is to provide a helmet adapted to fit over the head and which carries a flexible diaphragm having a plurality of finger elements which are oscillated in a maner similar to human fingers in massaging by a hair dresser and to support the finger elements from the flexible diaphragm within the helmet.

Another object of the invention is to motivate the action of the moving parts and controls by fluid pressure which may be supplied from a water pressure tap utilized in supplying water to the hair thus avoiding the use of electricity in motor drive which would be dangerous to the individual.

A further object of the invention is to provide apertures through a portion of the finger elements for admitting certain soaps, dye, bleach or neutralizing solution to the hair and to thereafter apply a rinsing fluid through the same apertures, the former applications having been automatically shut off.

A still further object is to provide means for adjusting the timing of the valve mechanism whereby the programing cycle may be predetermined.

Another object is to provide a vacuum chamber between the helmet and the flexible diaphragm for raising the latter and its flexible fingers from the scalp.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a side elevational view of the mechanism illustrating the helmet fitted to the head of an individual and connected for use;

FIG. 2 is an enlarged sectional view through the helmet showing its operable parts;

FIG. 3 is a perspective view diagrammatically illustrating the program selectors, the valve operating mechanism and the direction of water pressure flow;

FIG. 4 is a perspective view showing an adjustable mechanism for varying the sequence of operation;

FIG. 5 is a fragmentary sectional view illustrating a modified form of pulsating drive means for the finger movement;

FIG. 6 is a chart illustrating the timing of the program selections; and

FIG. 7 is a fragmentary sectional view illustrating the several compartments formed by baffles connecting an inner wall with an intermediate wall.

Referring to the drawings the invention has been illustrated and described in connection with a specific form of apparatus to provide an automatic device operable in sequential timing, although modifications may be made in the device without departing from the spirit of the invention.

The apparatus disclosed comprises a movable pedestal 10 or cabinet for supporting the driving mechanism located within a casing 12 which also supports soap, dye, neutralizing agents or bleach containers 14 with connections 16 leading to the interior of the casing 12. A vertically adjustable supporting rod 18 is slidably mounted on the pedestal 10 and is held in a predetermined location by wing nut 20. The rod 18 supports a helmet 22 to be fitted over the head of the individual to receive a treatment in a reclined position on a chair 24 having a neck rest 26 in front of and adjacent the helmet 22. The motive power selected for the controls is herein described as water, it being more economical and readily available. The inlet conduit 28 leading from a water tap extends through the pedestal 10 to the mechanism within the casing 12, and an outlet 30 extends through the pedestal 10 to outlet conduits 32 and 34 at the lower end of the helmet 22. A control 36 is mounted within the reach of the individual on the chair 24 and is connected through a flexible connection 38 to a valve for controlling the water inlet pressure through conduit 28. This is for the individual to have control of the mechanism to start or stop the mechanism when so desired.

Referring now particularly to FIG. 2, wherein the helmet 22 is more fully illustrated, the helmet 22 is formed from a material such as aluminum, stainless steel, fiberglass or hard plastic. It may be formed from transparent material so that the operation of the movable parts and massaging action may be observed. The peripheral edge of the helmet opening is preferably formed with an inwardly extending curtain 40 of water proof material which is flexible and has a sponge rubber or inflatable seal 42 around the inner edge of the curtain 40 which may be formed integral with the curtain or attached thereto by any preferred means such as cementing. Thus when the helmet is applied, the area surrounding the hair line is completely sealed against the exterior so as to prevent the leakage of fluid down over the face and shoulders of the individual.

The helmet 22 is generally semi-globular and larger in diameter than the head of the individual. It includes an inner wall 44 and an intermediate wall 46. These walls are spaced from each other and from the inner surface of the helmet forming three compartments 48, 50 and 52. The walls 44 and 46 have their peripheral edges connected to the peripheral edge of the helmet 22 by flexible portions 51. The compartment 48 will be later referred to as a vacuum chamber, the compartment 50 as a pulsating water chamber, and the compartment 52 as the massaging finger chamber. The wall 44 and wall 46 are formed of water proof flexible material such as sheet rubber and are connected together by spaced radially extending baffle strips 54 and circumferentially extending strips 56 of less resiliency than the walls 44 and 46. Apertures 58 are formed through each baffle for admitting water to each of the several compartments formed by the baffles 54 and 56. An intermittent pulsating flow of water pressure causes the baffles 54 connected to the inner wall 44 to alternately impart an oscillation to the inner wall 44.

A plurality of radially extending fingers 60 integral with the inner surface of the inner wall 44 form the mas-

saging fingers which are oscillated in response to the oscillations of each of the inner walls controlled by the oscillating baffles 54 and 56. There may be one or more fingers integral with each section. When water pressure is applied alternately to either side of the baffles 54 and 56, or when water pressure is applied intermittently to one side only the resiliency of the material in the baffles and inner wall produces the oscillations.

A portion of the fingers 62, preferably those at the upper front portion of the scalp, are provided with apertures 64 through the inner wall 44 and terminal end of the fingers. Encompassing these fingers 62 is a wall 66 spaced from and sealed to the inner wall 44, forming a chamber 68 for soap, dye, bleach, or other solutions, and as will later be explained in the cycle of operation, forms a chamber for a rinse liquid supplied to the hair. The soap and rinse water are drained through the conduit 34. The intermittent pulsating water is drained through the conduit 32 leading from the compartment 50.

The helmet 22 is provided with fittings 70, 72 and 74 for receiving the liquid pressure supply leading to the chambers 50 and 52, and a fitting 76 for receiving a connection through which a vacuum is produced in chamber 48 for lifting the walls 44 and 46 away from the scalp when the operations are completed. The fittings 70 and 72 are for the pulsating fluid pressure supply and are provided with tubular flexible conduits 78 and 80 leading to different compartments formed by the baffles 54 and 56 between the walls 44 and 45 as shown in FIG. 6. The alternate fluid pressure flow causes a movement of the fingers 60 and 62 fore and aft and transversely.

An alternate means for producing intermittent pulsations within the chamber 50 is shown in FIG. 5. Two water inlet passages 82 and 84 are provided in a body member 86 which is slidably mounted within a cap 88 secured to the helmet 22 and sealed therewith by a flexible closure member 90. The water inlet passages 82 and 84 communicate with cylinder bores 92 and 94 having their axes substantially at right angles to the axes of the passages 82 and 84. Floating pistons 96 and 98 are received in the cylinder bores 92 and 94. The pistons project through the open ends of the bores 92 and 94 and have their outer ends in contact with radial projections 100 and 102 secured to the outer space of the wall 44 which carries the fingers 60. When the pistons are alternately reciprocated by the intermittent fluid pressure through passages 82 and 84, the flexible inner well 44 and the fingers 60 are reciprocated to produce the massaging action. Each piston is provided with a longitudinal slot in its outer periphery, shown at 104 for draining the water from the cylinder bore when no water pressure is applied and the piston is moved inwardly of the bore while the opposite piston is outwardly moving.

Referring now to FIG. 3 there is shown diagrammatically a programming of the control mechanism for the apparatus, including the pressure controls. A fluid pressure turbine motor 112 rotated by a fluid pressure through conduits 114, 116 and 118 form a source of water supply to the fluid turbine motor from a water tap. The rotatable motor 112 drives a shaft 120 which is connected to a reducing drive device located in a housing 122. Rotatable with the shaft are two cams 124 and 126 for opening and closing valves 128 and 130 which alternately open and close conduits 132 and 134 leading from the supply conduit 114, through the valves 128 and 130 to conduits 136 and 138 to the interior of the helmet 22 through fittings 70 and 72. The drive shaft 120, through reduction gearing, drives a shaft 140 at a reduced speed. Cams 142, 144, 146 and 148 are fixed to the shaft 140 to rotate therewith and for operating fluid pressure valves 150, 152, 154 and 156. The valve 150 regulates the flow of fluid pressure through conduit 158 leading from the conduit 116 for the rinse fluid. There is provided a temperature regulating valve T in the conduit 158 to control the fluid temperature. The valve 152 regulates the flow

of soap, dye or bleach through conduit 160. The two conduits 158 and 160 may be united at their outlet ends into a conduit 162 leading to the fitting 74 in the helmet 22. The valve 154 controls a fluid pressure through conduit 164 leading to a venturi device 166 which produces a suction through conduit 168 for the vacuum through fitting 76 in the helmet 22. The valve 156 controls the fluid pressure supply and serves as a means for starting or stopping the entire mechanism. The control 36 can be used by the operator to further the fluid pressure flow to the entire merchanism. The drain fluid is through conduits 32, 34, 170 and 172 to an outlet 174.

The cams 124, 126, 142, 144, 146 and 148 have high and low peripheral portions arranged in predetermined sequence so that the timing of the control valves 128, 130, 150, 152, 154 and 156 for obtaining the timing and sequence of operation, as shown in FIG. 5. The shaft 120 is driven at a speed much greater than the speed of the shaft 140 to produce many alternate pulsations of the fluid through conduits 136 and 138, as compared to a single revolution of the shaft 140 during a complete cycle of operation. The numerals in FIG. 6 designate minutes for the sequence of operation of a selected program timing.

In FIG. 4 there is illustrated a mechanism for obtaining three different programming treatments. Here the shaft 140 is provided with three groups of three cams each in side by side relation, A, B, C; A′, B′, C′ and A″, B″, C″; each cam having a different predetermined peripheral surface to actuate the valves for controlling the flow of fluid pressure. The valve 150′, 152′ and 154′ are supported by a plate 176 which is secured to a slidable tube 178 mounted on a rod 180 so that the valves can be moved longitudinally with respect to the axis of the shaft 140; thus moving the valves directly beneath the cams A, A′, A″; B, B′, B″; or the cams C, C′, C″ in radial alignment with the valve operating mechanism. A control arm 182 is secured to the tube 178 and is movable in a horizontal slot 184 and vertical slots 186 in a vertical plate 188 mounted on a support 190 which also supports the rod 180. Thus, by moving the arm 182 from one of the vertical slots 186 to another, a selection may be made as to which of the cams operate the valves, either by the cams A, A′, A″; B, B′, B″ or C, C′, C″.

In operation the beautician properly adjusts the helmet 22 over the individual's head with the seal in close fitting relation with the neck and face of the individual to receive the treatment in liquid proof relation whereby there is no leak between the helmet and the neck or face. A selection of cams is made for the desired programming by adjusting the rod 182 to one of the slots 186. The control 36 is moved to a position to permit a fluid flow through the conduits 118, 116 and 114, and the valve 156 opened to permit a fluid flow to the motor 112. The cams 124 and 126 alternately open and close the valves 128 and 130 providing a pulsating fluid flow through conduits 136 and 138. As before explained, this alternate pulsating flow causes the fingers 60 and 62 to move in a shampooing or massaging motion to the hair. At the same time the cam 142, operating at a reduced speed, opens the valve 150 to supply the hair with liquid. The valve 150 is then closed and the valve 152 opens admitting soap or other solution to the hair. The valve 150 is opened to admit a rinse fluid to the hair which also removes the residual soap in the conduit 162. After the duration of the rinse solution the valve 154 is opened admitting a suction through the fitting 76 lifting the massaging fingers away from the scalp and hair. The valve 156 closes and the shampooing cycle is completed, it being understood that the cycle can be stopped at any time by closing the manually operable valve 36.

It will be understood that various shaped cams may be used to produce the timed programming applications of fluid or vacuum to the flexible walls within the helmet 22, and while it has been illustrated and described in connection with a specific mechanism, the invention is not necessarily limited to such a design, as many changes including

the size, shape and arrangement of parts may be made, and it is not our intention to limit its scope other than by a reasonable interpretation of the meaning of the terms in the appended claims.

We claim:

1. An apparatus for use in applying treatment to the human head, comprising a helmet adapted to be fitted onto the head and to substantially cover the scalp area when so fitted, an inner flexible wall secured to the open edge of said helmet, a plurality of fingers projecting from the inner surface of said wall, an intermediate flexible wall secured to the open edge of said helmet providing a first fluid chamber between said inner wall and said intermediate wall and a second chamber between said intermediate wall and the inner surface of said helmet, flexible operated baffles connecting said intermediate wall with said inner wall, two fluid inlet connections to said first named chamber, means for supplying an intermittent alternate fluid pressure through said fluid inlets to said first named chamber for moving said inner flexible wall and said fingers, a portion of said inner flexible wall having apertures therethrough and through said fingers opposite the apertures, a wall surrounding the apertures to isolate them from said first named chamber, a fluid passage extending through said helmet for admitting fluid to the apertures through said fingers, and a suction passage extending through said helmet connecting with the chamber between said helmet and said intermediate wall.

2. An apparatus for use in applying treatment to the human head, comprising a helmet adapted to be fitted onto the head and to substantially cover the scalp area when so fitted, an inner flexible wall secured to the open edge of said helmet, said inner wall being spaced from the inner surface of said helmet, a plurality of fingers projecting from the inner surface of said inner wall, two fluid pressure inlet fittings connected to said helmet for supplying a fluid pressure between said helmet and said inner flexible wall, flexible baffle plates connected to said inner wall between said two fluid pressure inlet fittings, and valve means for alternately shutting off the fluid flow through said two fluid pressure flow inlet fittings.

3. An apparatus for use in applying treatment to the human head, comprising a helmet adapted to be fitted onto the head and to substantially cover the scalp area when so fitted, an inner flexible wall secured to the open edge of said helmet, said inner wall being spaced from the inner surface of said helmet, a plurality of fingers projecting from the inner face of said inner wall, a portion of said fingers having apertures therethrough and through said wall, a wall forming a chamber isolating said apertured fingers from the space between said inner wall and said helmet, a fluid flow fitting leading to the isolated chamber, two fluid pressure inlet fittings connected to said helmet for supplying a fluid pressure between said helmet and said inner flexible wall, baffle plates connected to said inner wall and between said two fluid pressure inlet fittings, and valve means for alternately opening and closing said two fluid pressure inlet fittings leading to the space between said helmet and said inner flexible wall.

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