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MASSAGE APPARATUS

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Fig. 1.

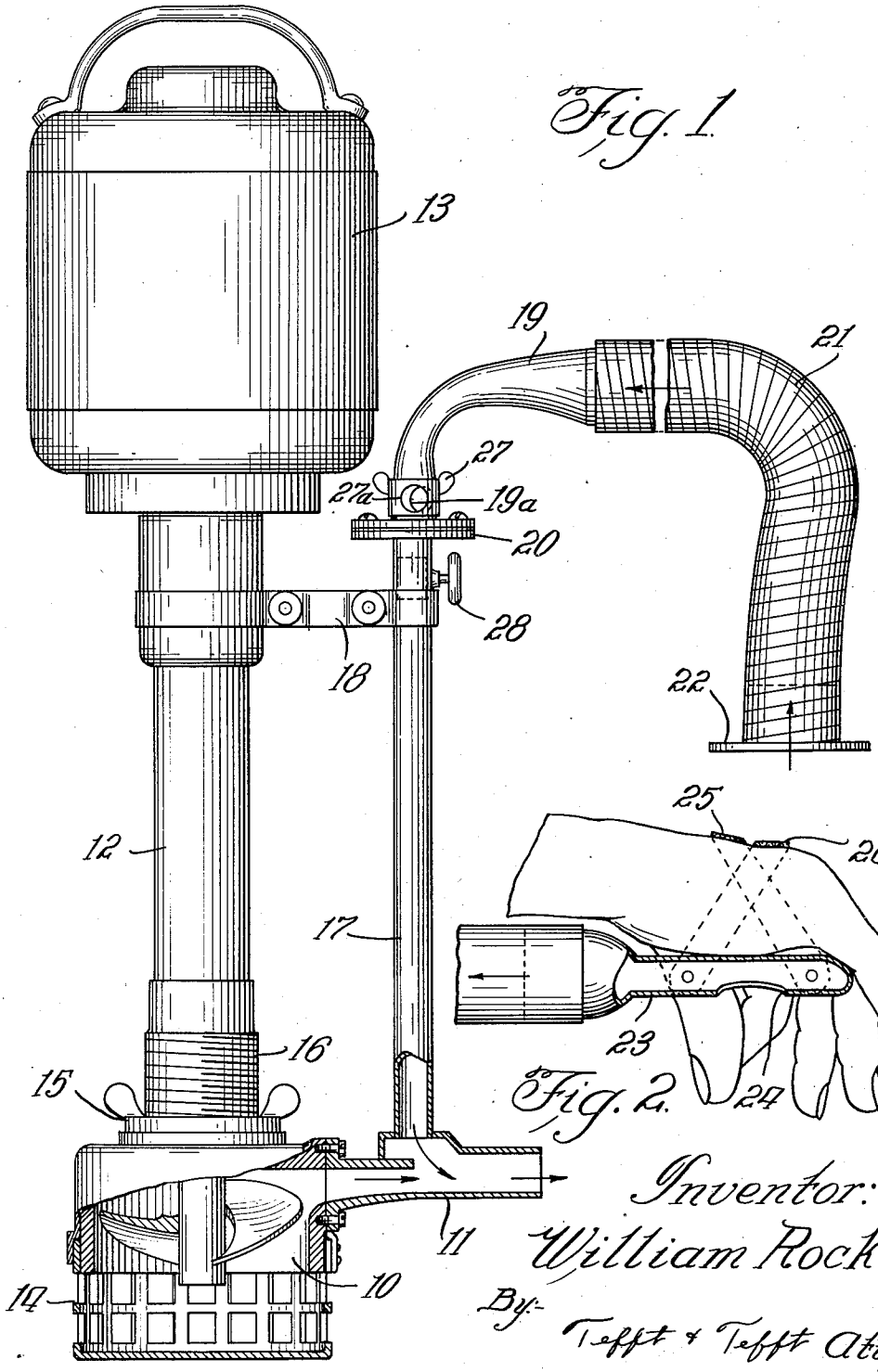


Fig. 2.

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MASSAGE APPARATUS

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Continuation of application Serial No. 412,797, September 29, 1941. This application October 7, 1944, Serial No. 557,631

6 Claims. (Cl. 128—67)

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This application is a continuation of my prior application for Massage apparatus, Ser. No. 412,797, filed September 29, 1941, which in turn was a continuation-in-part of my copending application for Adjustable hydrotherapy nozzle, Ser. No. 378,839, filed February 13, 1941, now patent, No. 2,272,585, granted February 10, 1942.

This invention relates to massage apparatus, and particularly to a massaging device for providing variable vacuum for massage purposes concurrently with hydrotherapy treatment.

One object of this invention is to provide for a vacuum or suction massage which may be applied to the skin in conjunction with a circulation current hydrotherapy treatment, with or without air injection into the water currents or only vacuum treatment of the patient out of water even outside the tank, to obtain materially improved treatment effects as a result of separate or a combination of these actions, with greatly improved beneficial results.

A further object of this invention is to improve the construction of the vacuum massage apparatus to obtain materially improved beneficial results from vacuum treatment, particularly in the character of nozzle used for the application of suction to the skin while permitting manipulation of the skin with the fingers, thus obtaining better effect in treatment, and also providing for the control of the suction effect, as well as of air admission in connection therewith.

Other objects and benefits will be disclosed by the following descriptions and drawings, in which:

Fig. 1 is a broken elevational view partly in section showing one form of my invention; and

Fig. 2 is a broken elevational view partly in section, showing a special form of massage nozzle, as will later be explained.

Now referring to Fig. 1, I show my centrifugal pump 10 with a discharge nozzle 11 mounted on a vertical tube 12 and driven by the motor 13. This pump apparatus is designed to be inserted in a hydrotherapy tank with the pump and nozzle adjacent the bottom of the tank and the motor above the water line. The length of the tube 12 is determined by the length and depth of the tank, it being understood that my circulator pump 10 is adapted to be used in any type or depth of tank.

On the bottom of the circulator pump 10 I provide a perforated adjustment member 14 which is slidable vertically by the screw adjustment nut 15 on the threaded portion 16 attached to the tube 12. By this arrangement the volume of water fed to the pump 10 may be controlled from full-flow position, as illustrated, or to closed position where the bottom of the member 14 abuts and closes the lower end of the housing of the circulator pump 10.

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On the nozzle 11 mounted in injector relationship is an air tube 17 supported by the bracket 18, and on top of the air tube 17, I mount a vacuum tube fitting 19 by means of a conventional flange structure 20. This flange structure is of the character which will permit ready separation or detachment of the fitting 19 from the air tube 17 when desired, as for instance when the vacuum treatment may not be required. This detachable connection may be by means of screws as shown which will permit ready separation of the parts thereof.

To the fitting 19, I attach a flexible rubber vacuum hose 21. This hose may be of any desired length and may be equipped with any type of nozzle, such as the plain, round nozzle 22 or the special form of hand massage nozzle as shown in Fig. 2. The plain nozzle 22 would apply suction or vacuum to the skin when moved about over the skin as by a staccato action. For some treatments, this may be sufficient in association with the circulatory effect created in the water in the tank by the nozzle 11, which will have a tendency to manipulate the skin at points adjacent the points of application of the nozzle 22 as the suction nozzle 22 is applied to the skin.

In Fig. 2, I provide a thin, flat nozzle 23 having a central opening 24 and hand straps 25 and 26. These hand straps are adapted to attach the nozzle to the hand, as shown in the illustration, and by this arrangement it is obvious that the operator may combine vacuum treatment through the opening 24 with hand massage by the fingers, as shown. It will be evident that the nozzle 23 is of such size and proportions that it may be confined substantially within the palm of the human hand so that the fingers may extend downwardly around the nozzle in positions to be free thereof for manipulation of the skin manually at points adjacent the application of suction applied by the nozzle. This may be desirable particularly on exposed portions of the skin to obtain beneficial treating effects therewith. The nozzle 23 would be attached to the end of the hose 21 in place of the nozzle 22, as is evident from Figs. 1 and 2.

It will be appreciated that the water currents injected through the nozzle 11 will induct air through the tube 17 by reason of the injector relationship between the nozzle 11 and the bottom opening of the tube 17, as has been fully explained

in my prior application Ser. No. 378,839, now patent, No. 2,272,585, above referred to. The amount of air flow through the tube 17 may be completely controlled by the butterfly valve 28.

I further provide another valve 27 in conjunction with the attachment member 19. This valve is a conventional type of rotating sleeve valve wherein openings in the rotating member 27a and openings 19a in the attachment member 19 are controlled by the rotation of the member 27. The valve 27 may be opened to the desired extent to admit outside air into the tube 17 for injector action at the nozzle 11. The amount of outside air thus admitted will depend upon the kind of treatment to be administered and also whether the nozzle is being used above or below the surface of the water. When used below the surface of the water, more outside air may be required for aerating purposes. On the other hand, when the nozzle is used only on exposed portions of the skin, additional outside air may not be required and therefore the valve 27 may be closed. It is evident that the flow of air through the pipe 17 may be so controlled by the valve 17, as to be drawn entirely through the fitting 19 and hose 21 or a part of the air taken from the atmosphere through the valve 27. The valve 28 is used also to control the admission of air to the nozzle 11, or communication through the pipe 17 may be discontinued, when air injection in the water may not be desired. Thus by partially closing the valve 28 when the fitting 19 is attached to the pipe 17, the amount of suction applied to the skin at the nozzle 22 or 23 may be reduced or regulated as desired.

The amount of the vacuum can be controlled completely by the nozzle 23 when the valve 27 is closed. When the valve 27 is partially open the amount of vacuum at the nozzle 22 will be cut down in proportion to the area of the opening and at the same time air will be inducted into the water stream through the nozzle 11. These valves 27 and 28 are arranged in proportion to permit the operator to obtain a wide range of variable vacuum effects on the vacuum nozzles as well as variable air-water currents through the nozzle 11, and thus I provide a variable vacuum massaging attachment for my adjustable hydrotherapy nozzle which may be used in conjunction with any type of circulating hydrotherapy water currents.

The motor 13 affords a constant source of power to actuate the pump at a uniform speed and thus effect a constant flow of water through the injector nozzle at uniform pressure and speed so long as flow of water into the pump chamber equals the discharge thereof through said nozzle.

The maximum degree of suction of air into and through the pipe 17 and the consequent maximum degree of vacuum at the nozzle 22 is created and maintained when the valve 14 and the butterfly valve 28 are fully open and the valve 27 is closed. This degree of vacuum may be too great in many instances and cause injury to the patient if, by chance, the operator fails to adjust the butterfly valve 28, or the valve 27, or both, to reduce the vacuum before applying the nozzle 23.

By means of the valve 14 the said maximum degree of vacuum may be reduced to almost any desired extent by closing the same to a point at which the volume of flow of water into the pump chamber is less than sufficient to enable the pump to discharge the same volume of water per minute. Thus the speed of flow of water through the injector nozzle will be reduced and a corresponding decrease in volume of air drawn into and through the pipe 17 effected, thereby decreasing the maximum degree of vacuum aforesaid proportionately to the extent to which the valve 14 is closed.

The same result may be obtained by setting the valve 28 in a partially open position and further controlling the degree of vacuum at the mouth of the nozzle 23.

It will be understood from the foregoing that the injector 11 through which air is introduced in a circulating stream of water discharged from the pump will cause aeration of the water together with circulation thereof in the bath. This will produce a steady, smooth, even circulating massaging and stimulating action on the skin of the patient immersed in the water. The action of the water is increased or decreased by the air intake valve. The effects of whirling aerated water thus produced is such that it provides a form of massage applied to the skin at or adjacent the point where suction is applied thereto also by means of the nozzle 22 or 23. The result is that the skin is manipulated both by the massaging effect of the water and by the suction effect applied thereto, which greatly increases the beneficial results obtained. The massaging effect of the water tends to loosen and flex the skin so as to allow the vacuum or suction applied thereto to obtain more ready manipulation of the skin, producing a massaging and stimulating effect, far more effective than could be obtained by suction alone.

While the circulator pump and its nozzle 11 must operate under water to create a suction or vacuum, the hand massage will operate either under water or out of water or when the patient is partly submerged. When the massage apparatus is under water, it sucks water into the tube. When it is out of the water, it sucks in air. When it is operated at the surface of the water with the patient partly submerged, it may take in both air and water.

When the massage suction nozzle is firmly applied to the body or skin of a patient, it would exclude both air and water therefrom, thus producing a vacuum applied to the skin, whether within or outside the water. When this nozzle is applied to the patient at a point below water level, it would not fit so tightly on the skin ordinarily as to exclude all water therefrom and create an effective vacuum, so that some water would be drawn into the tube, or the same would be true if applied at an exposed point to the skin of the patient. At the same time, the circulating stream of water will coact with the area of the skin around or adjacent the point of application of the nozzle thereto, so as to facilitate the loosening of the skin and the massaging of the patient. The operator can apply massage as the case demands, increasing or decreasing the amount of vacuum according to how firmly the nozzle is applied to the patient, or by adjusting the valves as described.

By thus combining a vacuum massage nozzle with a water circulating injector, the apparatus is capable of wide latitude of application of different massaging actions and effects, obtaining the combined benefits of such massage actions of both water circulation and vacuum which affect each other.

I claim:

1. Massage apparatus comprising means adapted to be submerged in a hydrotherapy bath for

creating a liquid circulation in said bath to apply a massaging action to the skin in the bath, a suction nozzle adapted to apply suction to the skin under massage by the circulation in the bath, and means for connecting the nozzle with the circulating means for creating suction in the nozzle by the action of the circulating means.

2. Massage apparatus comprising injector means adapted to be submerged in a hydrotherapy bath for creating a circulation in said bath to apply massage action to the skin of a patient in the bath, an air tube connected with the injector means for supplying air thereto, a suction nozzle adapted to apply suction effect to the skin under massage by the circulation in the bath, and means connecting said nozzle with the air tube for creating suction in the nozzle by the injector action.

3. Massage apparatus comprising injector means adapted to be submerged in a hydrotherapy bath for creating a circulation in said bath to apply massage action to the skin of a patient in the bath, an air tube connected with the injector means for supplying air thereto, a suction nozzle adapted to apply suction effect to the skin under massage by the circulation in the bath, means connecting said nozzle with the air tube for creating suction in the nozzle by the injector action, and valve means connected with the air tube for admitting air thereto to mix with the fluid drawn from the nozzle.

4. In massaging apparatus including a pump portion having an inlet and an outlet constituting a discharge nozzle, with said inlet and outlet adapted to be submerged in a hydrotherapy bath, means for operating said pump portion, vertically extending means carried on said pump portion for supporting said operating means out of the water in said bath, and a vertical air tube adjacent to said supporting means having its upper end above the water level of the bath and its lower end connected with said outlet to provide an air flow through said tube in response to a flow of water through said outlet, with said air flow creating a suction pressure at the upper end of said air tube, the combination of manual massage means including a flexible connection to the air tube for applying suction massage pressure.

5. In massaging apparatus including a pump portion having an adjustable inlet and an outlet constituting a discharge nozzle, with said inlet and outlet adapted to be submerged in a water receptacle, means for operating said pump portion, means carried on said pump portion for supporting said operating means out of the water in said receptacle, and an air tube extending adjacent said supporting means having one end

open to the atmosphere and an opposite end connected with said outlet to provide a flow of air through said tube in response to a flow of water through said outlet, with said air flow creating a suction pressure at the one end of said tube, means for adjusting said inlet to define a maximum suction pressure at the one end of said tube, and valve means adjacent said one tube end for varying the suction pressure over a range of pressures below said maximum pressure, the combination of manual massage means including a flexible connection to the air tube for applying suction massage pressure.

6. In massaging apparatus including a pump portion having an inlet and an outlet constituting a discharge portion, with said inlet and outlet adapted to be submerged in a hydrotherapy bath, means carried on said pump portion for supporting said operating means out of the water in said bath, and an air tube extending adjacent said supporting means having one end open to the atmosphere and an opposite end connected with said outlet to provide a flow of air through said tube in response to a flow of water through said outlet, with said air flow producing a suction pressure at the one end of the said tube, the combination of manual massaging means connected with said one tube end comprising a substantially closed hollow member adapted to be carried in the palm of the hand of the operator of said apparatus, with the fingers of the operator extended over said hollow member, said hollow member having an opening in one side opposite the side thereof adjacent the palm of the operator to provide for a massage treatment by said suction pressure concurrently with a massage treatment by the fingers of the operator.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,179,129	Maxam	Apr. 11, 1916
961,379	Siebert	June 14, 1910
1,755,936	Stanley	Apr. 22, 1930
2,135,148	Roy	Nov. 1, 1938
996,974	Chellis	July 4, 1911
946,972	Manning	Jan. 18, 1910
167,642	Bulkley	Sept. 14, 1875
2,011,224	Kobiolke et al.	Aug. 13, 1935
118,472	Munzinger	Aug. 29, 1871
1,936,129	Fisk	Nov. 21, 1913
1,058,330	Page	Apr. 8, 1913