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[54] **HYDROTHERAPY TANK**
5 Claims, 3 Drawing Figs.

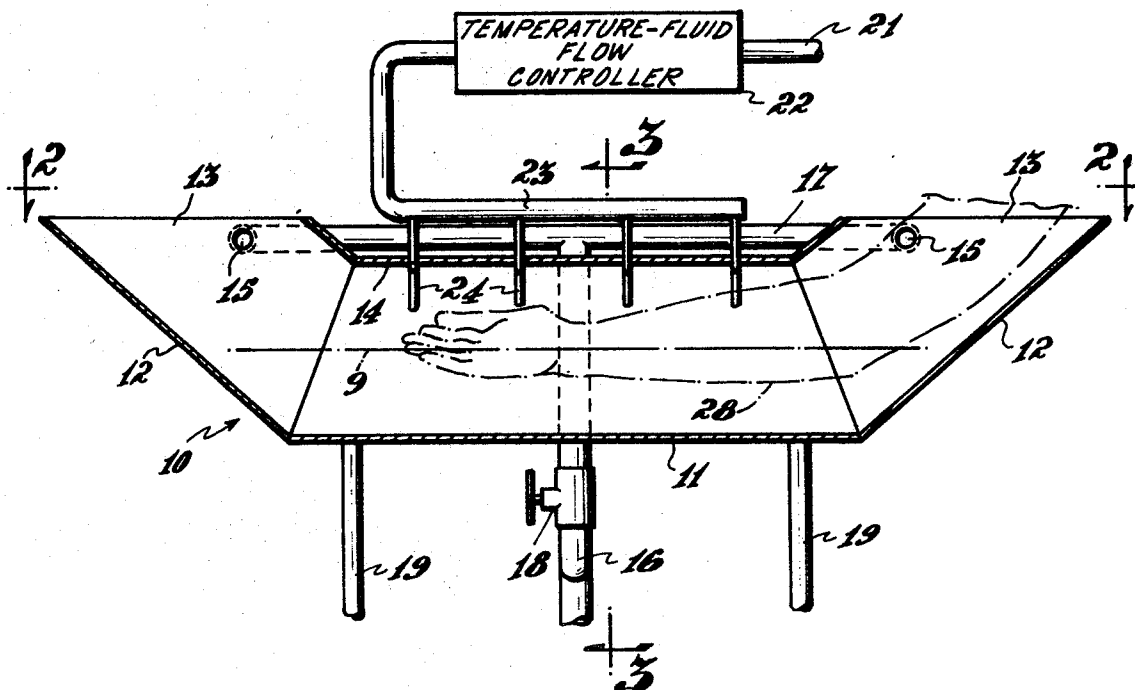
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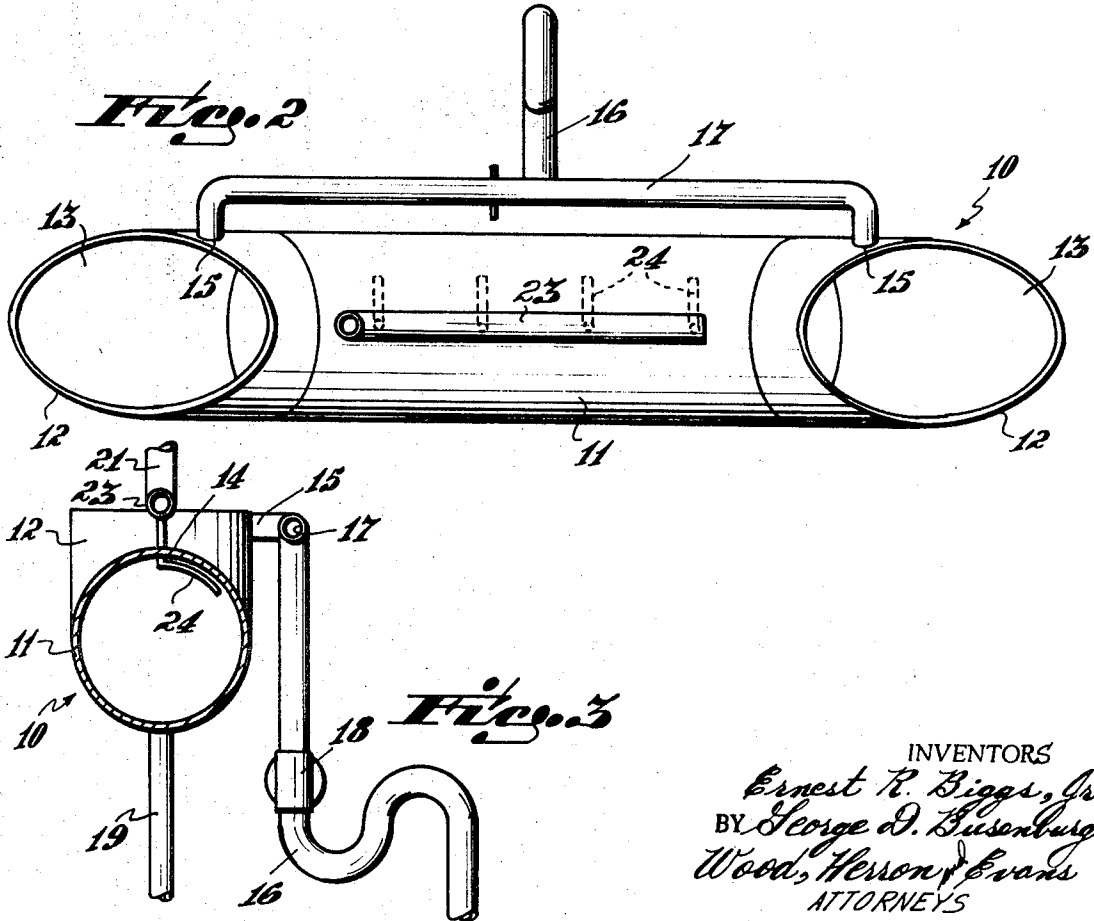
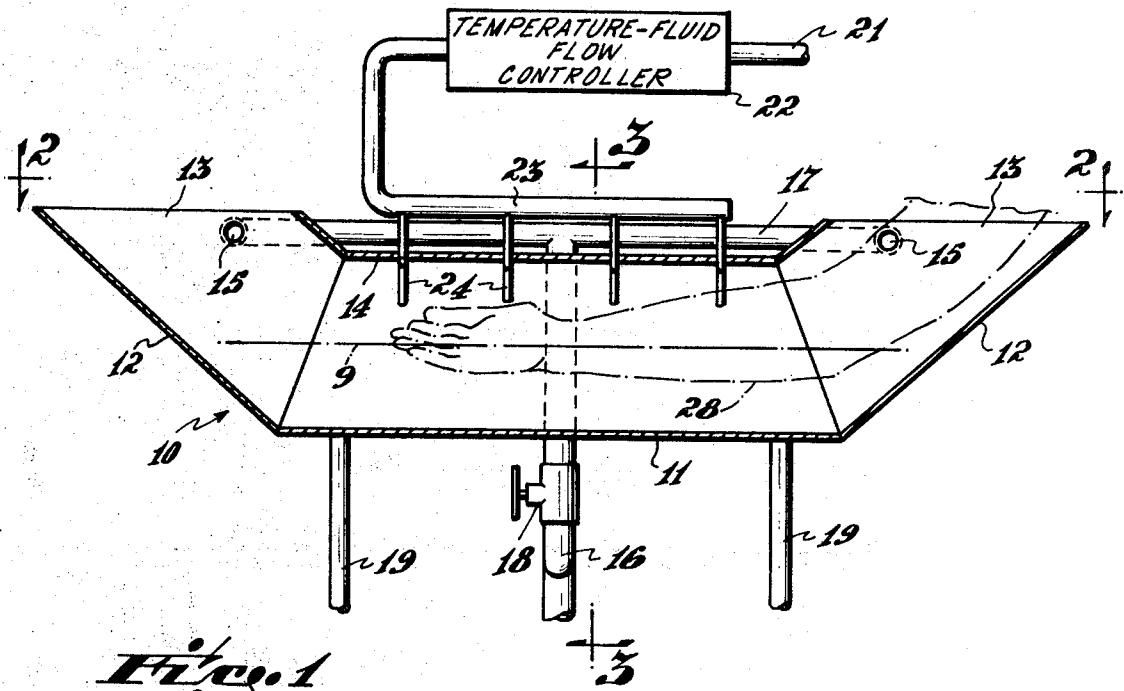
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ABSTRACT: A hydrotherapy tank particularly adapted for the treating of the forearm and hand. The hydrotherapy tank preferably comprises a horizontally positioned cylindrical tank shell having a circulation section and an arm access section, the arm access section defining an arm access port positioned in a plane above the top of the circulation section, and at least two water nozzles mounted inside the tank shell adjacent an inner wall section to discharge water substantially tangential to that inner wall section, the nozzles being evenly spaced along the major axis of the circulation section.





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HYDROTHERAPY TANK

This invention relates to hydrotherapy tanks and, more particularly, relates to a hydrotherapy tank for treating limbs of the human body.

The beneficial effects of hydrotherapy are well recognized. Hydrotherapy is known essentially as the art of massaging disabled or partially disabled portions of the human body by controlled fluid flow, that is, circulation, of water for the treatment of certain pathological conditions in those body areas. Such hydrotherapy or water massage has been used in the past for easing limb bruises obtained in sports such as football, basketball, and the like, and for treating patients suffering from many other types of limb disability such as total or partial paralysis brought on by disease.

Many different tank designs are known for the hydrotherapy treatment of limbs, that is, arms and legs, of the human body. Among such tank designs is one for treating legs where a seated patient places his leg through a port in the side of an open top tank into a horizontal position within that tank, suitable sealing means being provided to prevent escape of the water in the tank through the port while the tank is in use. Water is injected into the tank from a single discharge nozzle, the nozzle being positioned adjacent one end of and at the bottom of the tank. The water stream flows from the nozzle in a generally horizontal direction along the bottom of the tank and water is withdrawn for recycling at the top of the tank above the discharge nozzle to provide the desirable circulatory effect.

Another type of tank design is one for treating arms where a horizontally disposed casing, closed at one end, is provided with a suitable sealing port at the other end through which an arm can be inserted. The inside of the casing is provided with helical ribs. Water is radially injected into the casing at one end, the helical ribs establishing a circulatory effect for the water flow through the casing, and the water is withdrawn from the casing at the other end.

It has been found that the circulatory or whirlpool motion of water within a hydrotherapy tank is substantially nonuniform throughout that tank with such prior art tanks as are known to the prior art. Also, it has been found that even distribution of such whirlpool effects within a hydrotherapy tank are most useful and advantageous in speeding the recovery of body limbs being treated whether the limb be a leg or an arm, this particularly being the case in the treatment of bruises and the like that occur in sports such as football and basketball. Toward this end, the hydrotherapy tank of this invention comprises a tank shell and at least two water nozzles substantially evenly spaced inside along the major axis of that tank. This tank design creates an evenly distributed, whirlpoollike, controlled fluid flow within the hydrotherapy-tank shell.

Thus, it has been one objective of this invention to provide a hydrotherapy tank of the type having a tank in combination with at least two water nozzles spaced inside along the tank's major axis so that the circulatory or whirlpool effect created within that tank is substantially evenly distributed throughout the tank.

It has been a further objective of this invention to provide a hydrotherapy tank of the type described wherein the water nozzles are so positioned within the tank that the water is introduced substantially tangentially to the tank's inner surface for accentuating the circulatory or whirlpool characteristics of the water within that tank.

These objectives, along with other objectives of the invention, will be more apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a partially diagrammatic, cross-sectional view illustrating a hydrotherapy tank fabricated in accordance with the principles of this invention;

FIG. 2 is a top view taken along lines 2-2 of FIG. 1; and

FIG. 3 is a cross-sectional view taken along lines 3-3 of FIG. 1.

The hydrotherapy tank of this invention, as illustrated in FIG. 1, is particularly designed for the treatment of arms. The tank includes a tank shell 10 having a substantially cylindrical circulation section 11, the major axis 9 of that section 11 being horizontally positioned above ground level by suitable leg supports 19. An upturned end or access section 12 is provided integral with each end of the circulation section 11, an arm access port 13 to the circulation section being defined by the open end of each section 12. It will be noted that the plane of each arm access port 13 is well above the top 14 of the circulation section 11, thereby permitting the circulation section 11 to be completely filled with water during use. An overflow port 15 is connected to each access section 12 at a point in that section 12 above the top 14 of the circulation section 11. Thus, the positions of the arm access ports 13 and the overflow ports 15, being above the top level 14 of the circulation section 11, allow the circulation section to be maintained full at all times during use, thereby permitting the desirable whirlpoollike currents to be effectively and evenly maintained by nozzles 24 throughout the entire length of the circulation section. The overflow ports 15 are interconnected with a drain line 16 through a manifold line 17, an overflow valve 18 being positioned in the drain line to control the flow rate of the water overflow, see FIGS. 1 and 2.

The water distribution system for the hydrotherapy tank includes a water supply line 21 with a suitable combination temperature-fluid flow controller 22 of any well-known manufacturer placed therein. The controller 22 functions to vary the temperature as well as the flow rate of the water injected into the tank shell 10 as desired by the user. The water supply line 21 terminates in a manifold 23 to which are connected at least two water nozzles 24, four such nozzles being shown for purposes of illustration in the accompanying FIGS. The nozzles 24 are substantially evenly spaced along the axis of the tank's circulation section 11 so as to effectively distribute water in a substantially equal and even manner throughout that section 11. The water nozzles 24 extend from the manifold 23 into the circulation section 11 and are positioned within that section 11 so as to discharge water substantially tangential to the inner periphery of that section 11, see FIG. 3. This tangential positioning of the water nozzles 24 permits water to be injected from those nozzles around the inner periphery of the circulation section 11 so as to achieve the desired accentuated whirlpoollike or circulatory effect throughout that section 11.

In operation, and as mentioned, the hydrotherapy tank illustrated is particularly useful for treatment of an arm 28, see FIG. 1. The arm 28 is inserted in one of the arm access ports 13 so that the forearm and hand, at least, will extend into the circulation section 11 of the tank shell 10. Water flow is commenced by regulating the temperature-flow controller 22, water being ejected into the circulation section 11 in a tangential manner from the water nozzles 24. The circulation section 11 of the tank shell 10 becomes completely filled of the water so that reinforced circulatory currents can be thereafter evenly and forcefully distributed by the nozzles 24 throughout the axial length of the completely filled circulation section. Water is continuously injected into the tank shell 10 during its use with the excess water being withdrawn from the tank through overflow ports 15 and discharged through the drain line 16.

While the particular structural embodiment of the hydrotherapy tank illustrated has been particularly designed for the treatment of arms, it will be apparent to those skilled in the art that the structure may be modified, within the confines of this invention, for treating legs as well. In such a modification a sealable leg access port need merely be positioned substantially axially of the circulation section 11 so that the patient can insert a leg into that section 11 while in a sitting position. Of course, suitable seal means must be provided in combination with the leg access port to prevent leakage of water therefrom during use.

We claim:

1. A hydrotherapy tank for treatment of human body limbs comprising:

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an elongated tank shell having a water circulation section with a major axis and an access port through which a limb can be inserted into said tank shell substantially parallel to said axis; and
at least two water nozzles mounted inside said tank shell, said nozzles being substantially evenly spaced along the major axis of said tank shell to provide substantially uniformly distributed discharge of water along said axis, thereby uniformly hydromassaging said limb inserted into said tank.
2. A hydrotherapy tank as set forth in claim 1 wherein said nozzles are disposed within said tank shell to discharge water substantially tangential to said tank shell for enhancing the cir-

culuation of water in said tank.
3. A hydrotherapy tank as set forth in claim 2 wherein said tank shell is substantially cylindrical and the major axis of said tank shell is substantially horizontal.
4. A hydrotherapy tank as set forth in claim 3 wherein said tank shell further comprises an upturned access section connected to said circulation section, an access port being formed in said access section above said water circulation section.
5. A hydrotherapy tank as set forth in claim 4 wherein said tank shell further comprises an overflow port in said access section above said water circulation section.

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