

[54] **HYDROTHERAPY TANK LINER AND METHOD OF GIVING HYDROTHERAPY TREATMENTS**

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[57] **ABSTRACT**

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A hydrotherapy tank liner of a plastic film is provided with longitudinal conduits for connection with a source of pressurized and/or pulsating gas. When used, the liner is placed in a hydrotherapy tank and filled with the treating liquid. Holes are punched or opened in the conduits for passage of the gas therethrough to agitate the liquid closely adjacent thereto. The location of the holes is selected according to the needs of the patient.

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[51] Int. Cl. ....A61h 9/00

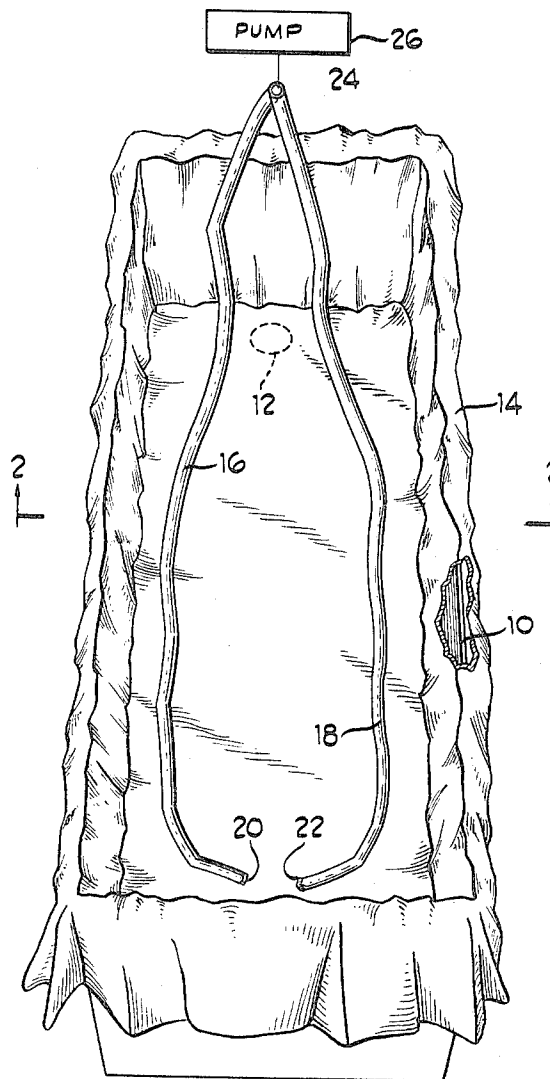
[58] Field of Search ....128/66, 38; 4/180

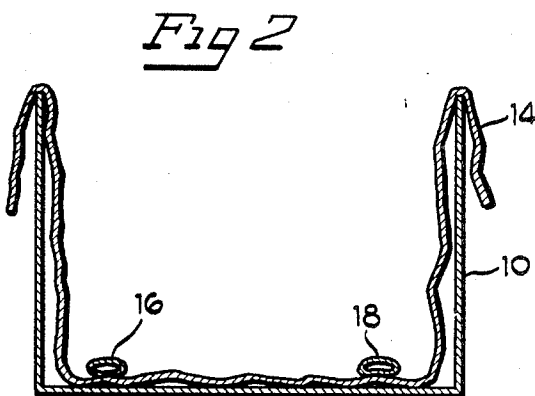
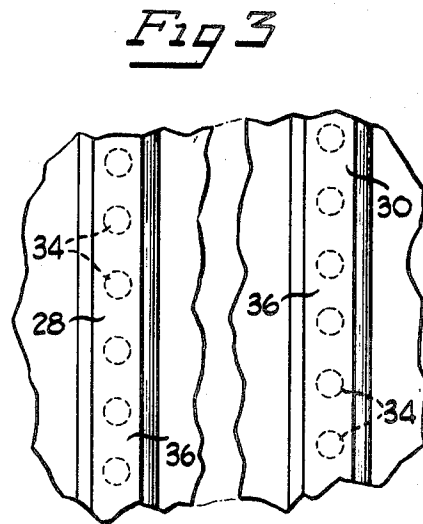
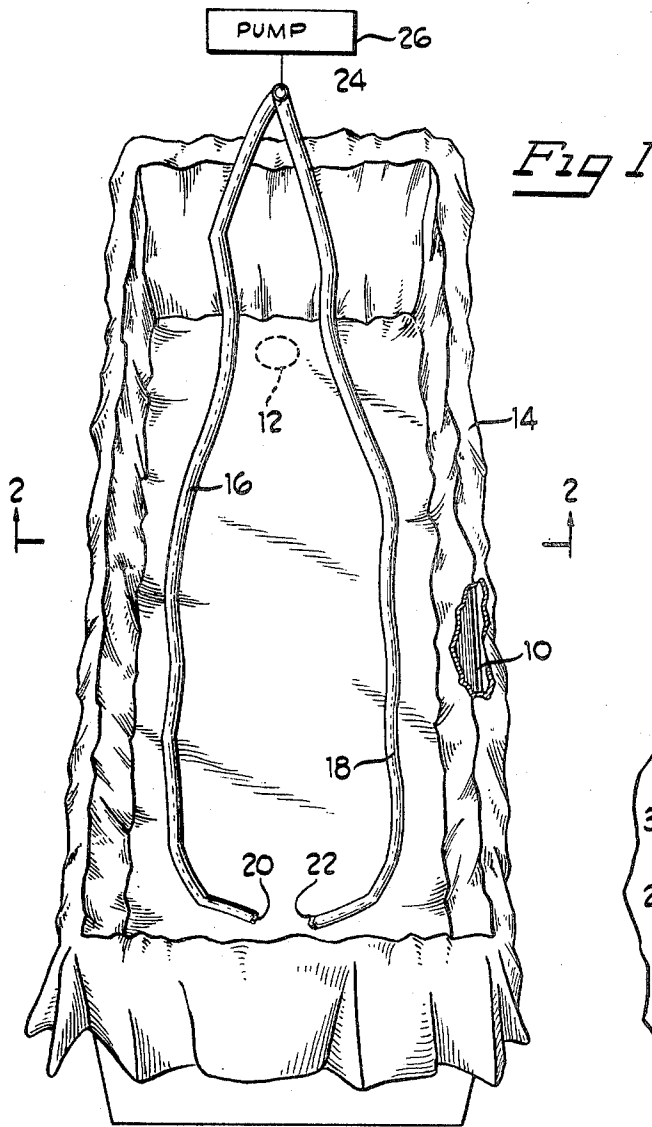
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4 Claims, 3 Drawing Figures

**UNITED STATES PATENTS**

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## HYDROTHERAPY TANK LINER AND METHOD OF GIVING HYDROTHERAPY TREATMENTS

### BACKGROUND OF THE INVENTION

Generally, hydrotherapy treatments are given to patients by agitating hydrotherapy liquid in which the patient is at least partially immersed. The liquid may be warm water and can be agitated by passing a gas, such as air, therethrough. In the past, a pad or the like having one or more conduits with a series of holes along the length thereof and generally evenly spaced there along is immersed in the hydrotherapy tank prior to putting the patient therein. The conduit or conduits are connected to an air source whereby the hydrotherapy liquid is agitated by passing air through the holes.

According to the invention herein to be described a disposable plastic film with conduits adhered thereto or formed integrally therewith is placed in a hydrotherapy tank so as to form a liner for the tank. The conduits are connected to a source of pressurized and perhaps pulsating gas and the tank is filled with the hydrotherapy liquid, as for example warm water. The hydrotherapist places the patient in the tank and then selects where and only where agitation of the liquid is desirable, such selection being based upon the needs of the patient. The hydrotherapist then selectively punches or opens holes in the conduits, so that the air can pass therethrough and agitate the hydrotherapy liquid adjacent to the hole or holes. After the hydrotherapy treatment an opening is made in the liner at the location of the tank drain, so that the liquid can flow through the drain and be disposed of. The plastic film liner is then removed from the hydrotherapy tank and is disposed of. This insures a sanitary hydrotherapy bath for each patient and eliminates the necessity of sterilizing the hydrotherapy tank for each patient.

### THE DRAWINGS

FIG. 1 is a perspective view of a hydrotherapy tank with a liner made according to this invention therein, illustrating the conduits connected to a source of pressurized gas;

FIG. 2 is a sectional taken on line 2—2 of FIG. 1; and

FIG. 3 is a fragmentary view of another embodiment of the invention.

### THE PREFERRED EMBODIMENTS

The drawings illustrate a hydrotherapy tank 10 having a drain 12 for the passage of waste liquid therethrough. A liner 14 constructed of a plastic film and having longitudinal conduits 16 and 18, each closed at one terminal end 20 and 22 respectively covers the interior of the tank 10. The conduits 16 and 18 are joined at the other end, in a connection 24 which is connected to a source of pressurized and perhaps pulsating gas, such as a pump 26.

In the embodiment illustrated in FIG. 3, the longitudinal conduits 28 and 30 of the liner 32 are provided with a plurality of openings 34 spaced along their lengths which are covered by a pressure sensitive cover 36. To use, selected portions of the tape cover 36 are removed to expose the desired openings 34.

### OPERATION

The liner 14 is placed over the tank 10 and the conduits are joined to the pump 26. The liner is filled with hydrotherapy liquid and a patient is placed therein. The hydrotherapist selects the zone or zones in which agitation of the liquid is desired depending upon the requirements and needs of the patient. Holes are punched or opened at the selected locations by any suitable punching means, such as a common paper punch, or probe or a pressure sensitive cover is removed from selected pre-formed openings. The pressurized and perhaps pulsating gas flows through the holes and agitates the liquid adjacent thereto. After the treatment, the pump is inactivated, the patient removed from the tank and an opening is formed in the liner adjacent the drain, so that the liquid may be disposed of. The liner is removed and is disposed of.

There are at least three requirements on the plastic used for the tank liner:

A. Safety. No potentially harmful compounds may be leached or otherwise removed from the plastic under conditions of use. This places certain limits on plasticizers and pigments. It need only be remembered that nerve endings are essentially exposed in burn cases, for example, and free acid radicals could hurt. Moreover, the plastic surface should be no more slippery than the present stainless steel now used for hydrotherapy tanks, in order to avoid slips and falls when patients are entering and leaving the tank.

B. Physical strength. Sufficient strength to resist tearing and accidental puncturing are necessary. The liner must also be flexible to conform to the tank shape.

C. Cost. Since the liner is disposable, cost is evidently an important factor. Plastic films of polyethylene of about 0.001 inch to 0.008 inch and above in thickness have proved to be successful and can be used. As long as puncture and tear resistance remain high, thin films are preferred from the standpoint of flexibility and cost. Low density, "no-slip" polyethylene without added pigment in a thickness of 0.002 inch has proved successful and has been found to be less slippery than stainless steel when wet.

In addition to polyethylene films, polyvinyl chloride films can be used. In all cases, the requirements set out above must be considered.

What is claimed is:

1. A method of giving hydrotherapy treatments to localized areas only of a patient's body, as determined by the particular requirements and needs of that patient, by agitating a liquid in a hydrotherapy tank in which the patient is at least partially immersed comprising:
  - 35 providing a hydrotherapy tank with a liquid therein; disposing a conduit in the tank for the passage of a gas therethrough; supplying gas to said conduit; selecting the zone or zones in which agitation of the liquid is desired in order to treat only those localized areas of the patient's body requiring treatment; and making openings in said conduit adjacent said zone or zones, so that gas flows through the openings and agitates the liquid adjacent thereto.
  - 45 2. A hydrotherapy tank liner for containing a liquid bath comprising:
    - 48 a plastic film covering the liquid containing area of the tank; tubular portions associated with the liner; said tubular portions being closed at one terminal end and open at the other end for connection to a source of gas; and
    - 50 said tubular portions being selectively provided with openings therethrough for passage of said gas to agitate liquid of said bath closely adjacent thereto.
  - 55 3. A method of preparing a hydrotherapy bath having selected zones of agitation comprising:
    - 58 placing a disposable liner in a hydrotherapy tank; said liner covering the interior of said tank and having conduits for the passage of a gas;
    - 60 flowing liquid into said tank and liner and over said conduits; connecting said conduits to a source of said gas; punching holes in said conduits at selected locations where agitation of the liquid is desired; and
    - 65 flowing said gas through said holes to agitate the liquid adjacent thereto.
    - 70 4. A method of preparing a hydrotherapy bath having selected zones of agitation comprising:
      - 72 placing a disposable liner in a hydrotherapy tank; said liner covering the interior of said tank and having conduits for the passage of a gas;
      - 75 said conduits having openings therethrough covered by a removable cover;
      - 78 flowing liquid into said tank and liner and over said conduits;

connecting said conduits to a source of said gas;  
removing said cover over said openings at selected locations  
where agitation of the liquid is desired; and  
flowing said gas through said openings having the cover  
removed to agitate the liquid adjacent thereto.

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