

March 18, 1947.

F. W. ILLE

2,417,499

THERAPEUTIC BATH

Filed June 28, 1944

2 Sheets-Sheet 1

Fig. 1.

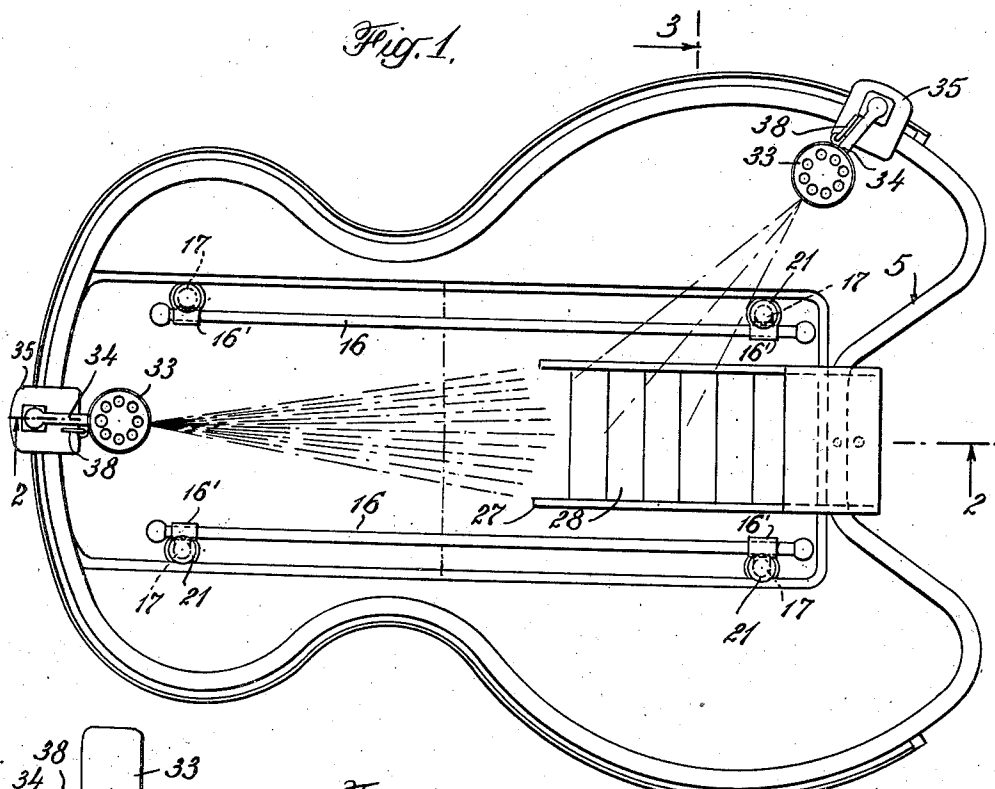
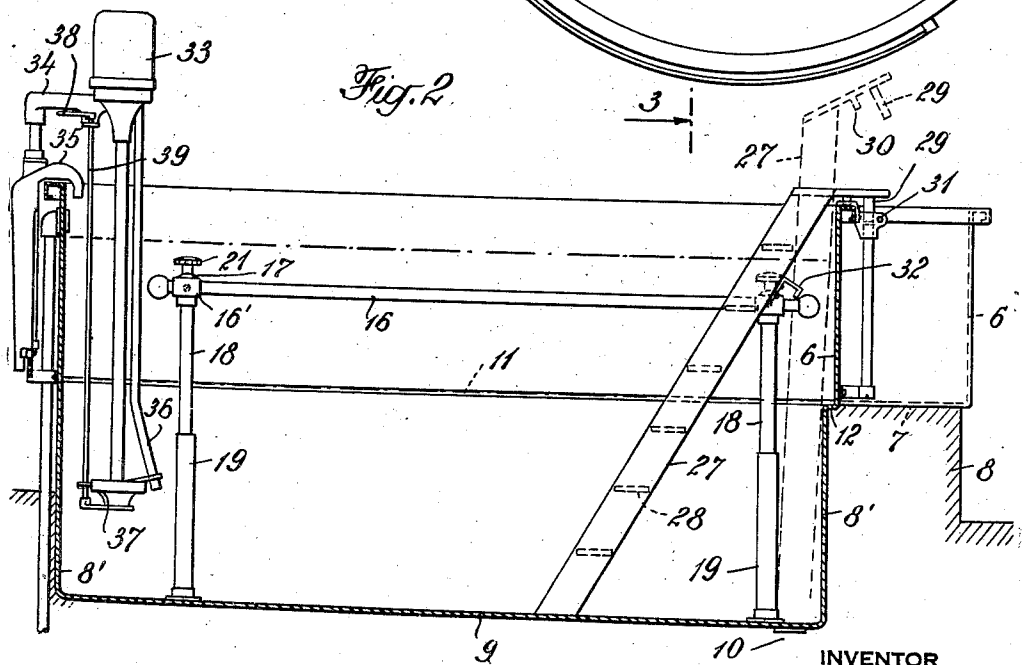


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

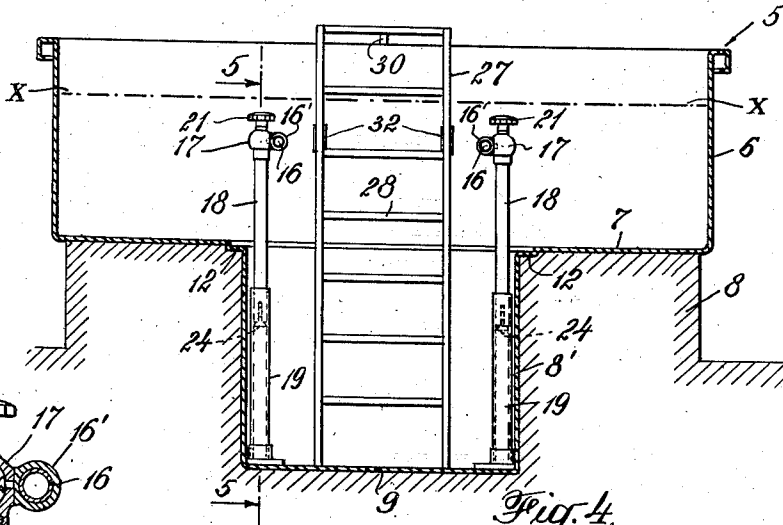


Fig. 4.

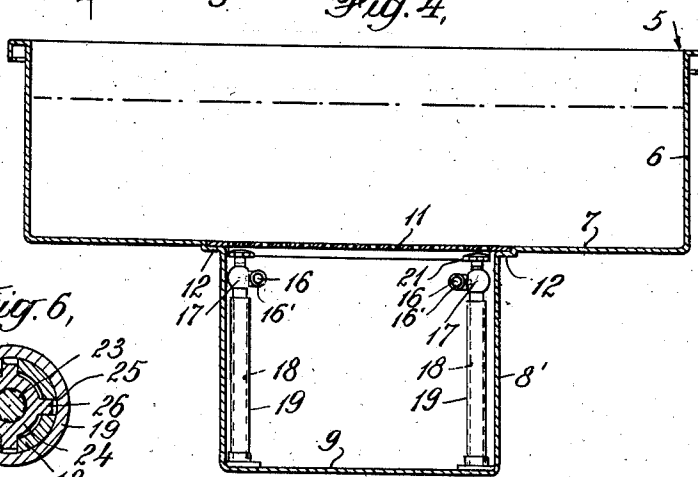


Fig. 6.

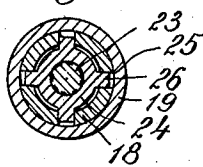


Fig. 7.

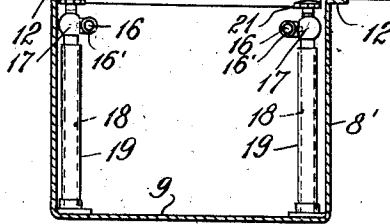
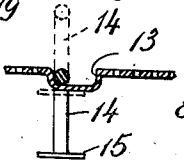
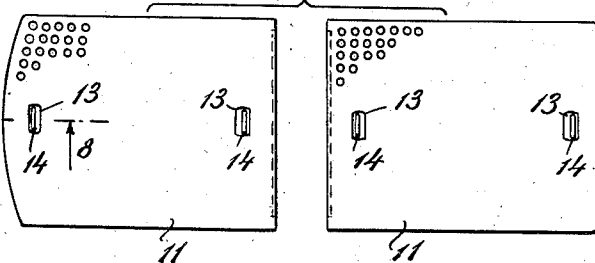


Fig. 8.



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THERAPEUTIC BATH

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Application June 28, 1944, Serial No. 542,562

7 Claims. (Cl. 4—180)

1

This invention relates to apparatus for effecting massage and stimulation of tissues of human beings during submergence and more particularly to an improved apparatus permitting the application of water currents with entrained air bubbles traveling at high velocity to the limbs and other parts of the body of a patient while the latter is submerged in water. The invention is an improvement in apparatus described in Patents Nos. 2,237,435 and 2,237,436 issued to me on April 8, 1941.

In the patents referred to, I have described the advantages of therapeutic treatments involving the use of jets of water with entrained air, and apparatus wherein such treatments can be carried out in a relatively shallow tank with suitable mechanism to provide and direct the jet or jets of water with entrained air bubbles.

It is the object of the present invention to provide an apparatus of more general utility and particularly one in which the patient may stand upright for wading treatment while the jet or jets are directed against the lower limbs, thus affording the advantages of exercise of the muscles in connection with the therapeutic treatment, the apparatus being constructed so that it is readily convertible to permit submergence of the body in a reclining position when the latter form of treatment is desirable.

Other objects and advantages of the invention will be apparent as it is better understood by reference to the following specification and the accompanying drawing, in which

Fig. 1 is a plan view of an apparatus embodying the invention;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1;

Fig. 3 is a vertical section on the line 3—3 of Fig. 1;

Fig. 4 is a vertical section similar to Fig. 3 showing the parts adjusted to afford a relatively shallow tank;

Fig. 5 is an enlarged section on the line 5—5 of Fig. 3;

Fig. 6 is an enlarged section on the line 6—6 of Fig. 5;

Fig. 7 is a plan view of the removable floor sections of the tank; and

Fig. 8 is an enlarged section on the line 8—8 of Fig. 7.

Referring to the drawings, the tank 5 may be constructed of various materials appropriate for such use, although preferably it is made of sheet metal such as stainless steel or any other metal coated to avoid the possibility of corrosion and

2

to facilitate maintenance in a sanitary condition. The tank is provided with vertical walls 6 and a bottom 7 supported upon a suitable foundation 8. The vertical walls 6 may have any suitable conformation, but for convenience in handling and treating the patient, they preferably are shaped generally as indicated in Fig. 1 of the drawing. Extending longitudinally of the tank is a well formed by vertical walls 8' and a bottom 9 supported in a suitable depression in the foundation 8. The well thus provided permits the patient to stand and walk therein while he is submerged in water to the level indicated by the line x—x on Fig. 3. The upper level of the water may, of course, be modified as desired to suit the particular conditions of treatment. The bottom 9 is preferably sloped slightly in the direction of an outlet pipe 10 to facilitate drainage of the tank when the treatment is completed.

When the tank is to be used for treatments with the body in a reclining position, or in the manner described in my prior Patents Nos. 2,237,435 and 2,237,436, removable floor sections 11 are supported as indicated in Fig. 4 on shoulders 12 formed in the bottom 7 of the upper section of the tank. The floor sections 11 have depressions 13 with openings therein through which U-shaped handles 14 extend. Bars 15 on the bottoms of the handles are adapted to engage the underside of the floor sections 11 when the handles are lifted to the dotted position (Fig. 8) to permit lifting and withdrawal of the floor sections. When the floor sections are in place, the patient may be placed in the tank in a reclining or other position to facilitate treatment. When, however, it is desired to permit the patient to wade or stand in the tank, the floor sections 11 are lifted therefrom, permitting access to the well.

Since patients requiring such therapeutic treatments are frequently partially crippled in the lower limbs, it is necessary to provide means whereby the patient may support and guide himself by means of his arms. For that purpose, I provide longitudinally extending bars 16 which are slidably supported in fittings 16'. The latter are pivotally secured to brackets 17 on upright members 18 telescopically mounted in hollow upright members 19 which are secured to the floor 9 adjacent the walls 8. The bars 16 may, before the floor members 11 are inserted, be lowered to the position indicated in Fig. 4. When required for use, the bars are raised to the position indicated in Fig. 3. The sliding and pivotal connections between the bars and the brackets 17

prevent binding due to misalignment when the bars are raised or lowered.

In order to hold the bars 16 firmly at a suitable and adjusted height, I provide means for locking the upright members 18 and 19 in adjusted position. Any suitable means may be used for this purpose, but I prefer to employ rods 20 extending through the brackets 17 and provided with operating handles 21 with collars 22 which prevent longitudinal movement while permitting rotation of the rods 20. At their lower ends, the rods are threaded as indicated at 23 and carry tapered nuts 24 which are adapted to engage the split ends 25 of the upright members 18, forcing them outwardly into clamping position or releasing them to permit adjustment as may be required. Wings 26 on the nuts 24 are disposed between the slotted ends 25 so that rotation of the nuts is prevented.

To facilitate access to the tank, a ladder 27 with steps 28 may be disposed at one end of the tank and held against movement by lugs 29 and 30 which engage appropriate openings in a bracket 31 secured to the edge of the tank. When the patient has entered the tank, the ladder may be moved to the position indicated in dotted lines in Fig. 2, so that the patient may move freely within the well of the tank. A bracket 32, secured to the ladder, is adapted to engage the edge of the tank to hold it in the dotted line position. When the floor sections 11 are to be introduced, the ladder will be lifted from the tank and stored for future use.

The mechanism for maintaining and directing jets of water with entrained air at high velocity forms no part of the present invention. Mechanism similar to that illustrated in my earlier patents above referred to may be utilized for that purpose. In general it consists of a motor 33 mounted on a bracket 34 which is adjustably supported for vertical movement on a carrier 35. The latter is adapted to be adjusted at various positions about the periphery of the tank, and one or more such devices may be utilized as indicated in Fig. 1. The motor 33 drives a shaft carrying an impeller (not shown) which draws water from the tank and ejects it at high velocity past the end of an air tube 36 which is connected with the casing of the motor 33. The jet of water traveling at high velocity entrains the air and thus affords the water jet containing air bubbles which is directed onto the surface of the parts of the body to be treated. The amount of water drawn in and ejected by the impeller may be controlled by a valve 37 which is actuated by a handle 38 through a rod 39 or by any other suitable valve mechanism. Means may be provided to direct the jet of water and air as required, and any means may be utilized to heat the water in the tank and to maintain it at the temperature best suited for the particular treatment. In general, as indicated in my prior patents above referred to, the water temperature is usually above that which can be borne comfortably by the patient in the absence of air. When, however, air is mixed with the jet of water, the patient tolerates a higher temperature, and the beneficial effects of temperature and massage are realized as a result of successive treatments properly supervised by a skilled operator.

As indicated in Fig. 2, the device for supplying the jet of water with entrained air is, when the device is used as a wading tank, lowered so that the jet may be directed upon the lower extremi-

ties of the patient as he stands or moves in the well of the tank. The additional benefit of movement by the patient during the treatment is well understood by those skilled in treatments of this type. Such movements are utilized also when the patient is disposed in a reclining position in a relatively shallow tank as when the floor sections 11 are in place. The provision of the well permits the patient to stand with more or less of his weight carried by the lower extremities while the latter are subjected to the effect of the high pressure and high velocity jets of water with entrained air.

The apparatus as described affords means whereby various types of therapeutic bath treatment can be carried out readily, the apparatus being convertible with a minimum of effort to permit wading treatment or reclining treatment as may be desired.

The parts are so arranged that those required for wading treatment can be adjusted to permit insertion of the floor sections whenever such modification of the tank may be desired.

Various changes may be made in the form and arrangement of the apparatus without departing from the invention or sacrificing the advantages thereof.

I claim:

1. In a therapeutic bath including a tank and means for directing a jet of water with occluded air bubbles into the tank; the improvement which comprises a well extending longitudinally of the tank, upright supports in the bottom of the well, telescoping members mounted in the said supports, hand rails carried by the telescoping members, and means for locking the telescoping members in adjusted positions in said supports.

2. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, a removable floor adapted to cover the well, and means associated with the tank to direct a jet of water with occluded air bubbles into the tank, said means being positionable with respect to the tank so that it is vertically above a part of the well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well when said floor is removed and to be raised to a position in which it is above the level of said floor when the floor is in place.

3. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, a removable floor adapted to cover the well, and means to direct a jet of water with occluded air bubbles into the tank, said means being mounted for movement about the edge of the tank and to a position in which it is vertically above a part of said well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well when said floor is removed and to be raised to a position in which it is above the level of said floor when the floor is in place.

4. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, a removable floor adapted to cover the well, means associated with the tank to direct a jet of water with occluded air bubbles into the tank, said means being positionable with respect to the tank so that it is vertically above a part of the well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well when said floor is removed and to be raised to a position in which it is above the level of said floor

5

when the floor is in place, and hand rails within said tank, said hand rails being adjustable to positions within said well and above the level of the removable floor.

5. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, a removable floor adapted to cover the well, means associated with the tank to direct a jet of water with occluded air bubbles into the tank, said means being positionable with respect to the tank so that it is vertically above a part of the well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well when said floor is removed and to be raised to a position in which it is above the level of said floor when the floor is in place, hand rails within said tank, said hand rails being adjustable to positions within said well and above the level of the removable floor, and means for locking the hand rails in adjusted positions.

6. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, a removable floor adapted to cover the well, means to direct a jet of water with occluded air bubbles into the tank, said means being mounted for movement about the edge of the tank and to a position in which it is vertically above a part of said well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well when said floor is removed and to be

6

raised to a position in which it is above the level of said floor when the floor is in place, and a ladder having means thereon to hold it in two positions within the tank.

7. In a therapeutic bath, a tank having a longitudinally-extending well in the bottom thereof, means to direct a jet of water with occluded air bubbles into the tank, said means being mounted for movement about the edge of the tank and to a position in which it is vertically above a part of said well, said means also being adjustable for vertical movement, the range of adjustment being such as to permit said means to be lowered into the well and to be raised to a position in which it is above the level of the top of the well, hand rails within said tank, said hand rails being adjustable to positions within said well and above the level of the top of the well, and means for locking the hand rails in adjusted position.

FLOYD W. ILLIE.

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