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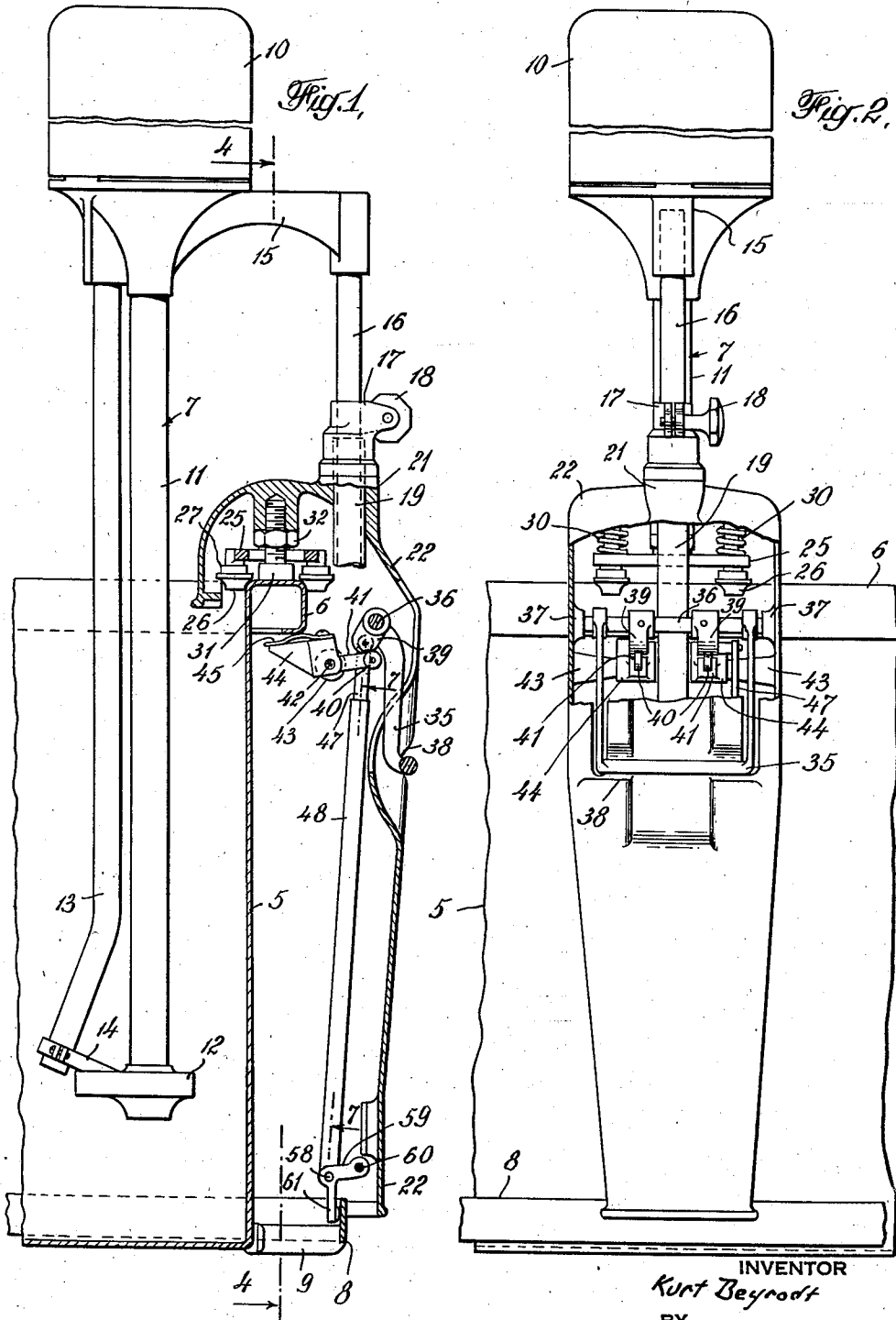
K. BEYRODT

2,428,004

THERAPEUTIC BATH

Filed Nov. 16, 1944

3 Sheets-Sheet 1



INVENTOR

Kurt Beyrodt

BY

Pennie Davis & Edwards
ATTORNEYS

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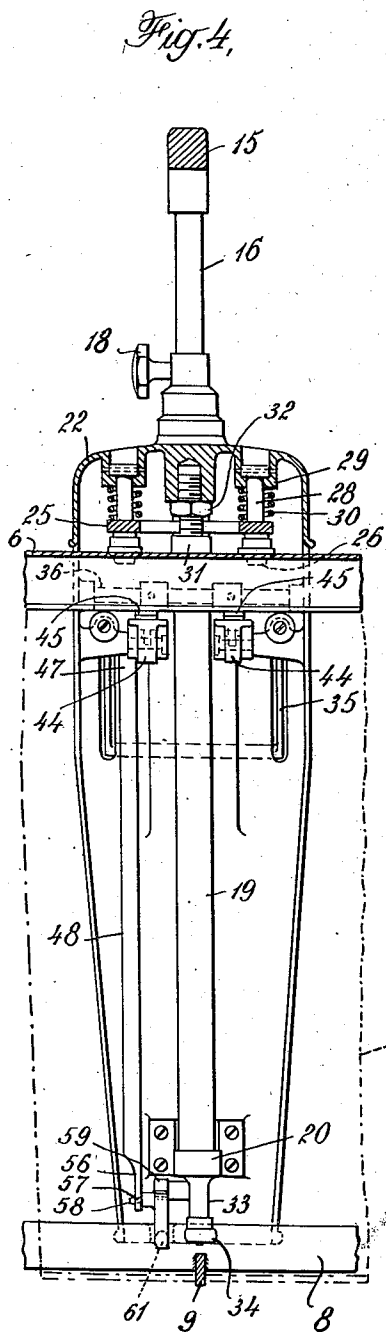
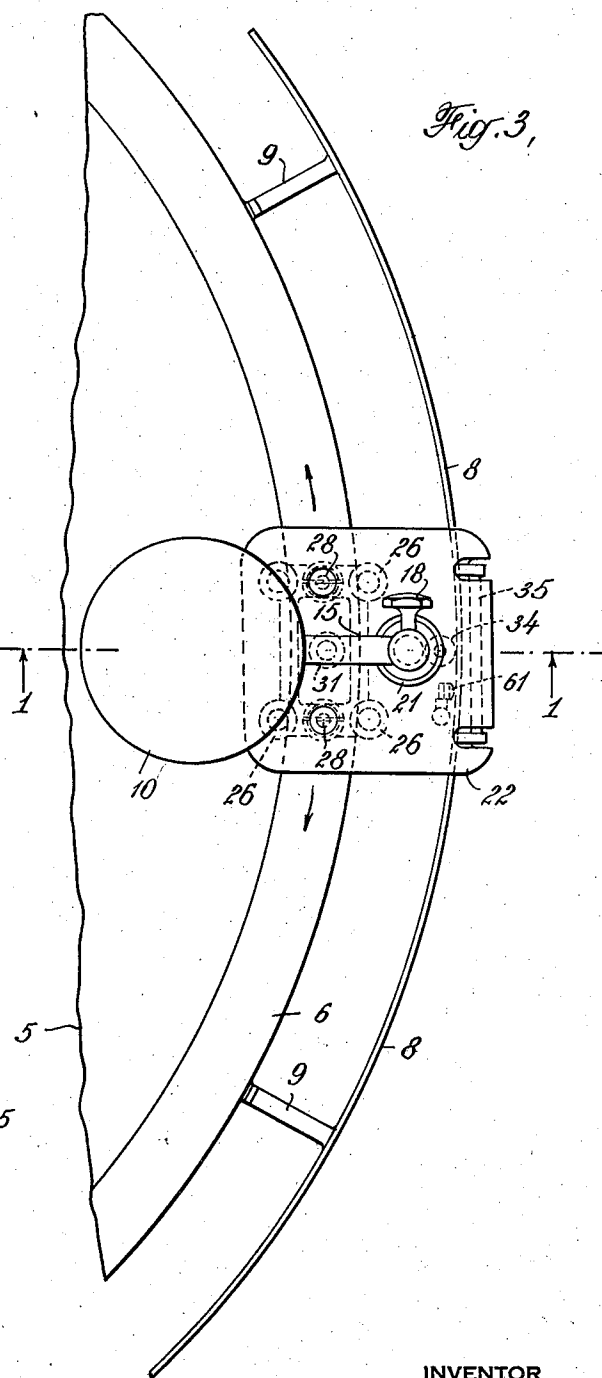
K. BEYRODT

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THERAPEUTIC BATH

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3 Sheets-Sheet 2



INVENTOR
Kurt Beyrodt
BY
Remie Davis & Edmund
ATTORNEYS

Sept. 30, 1947.

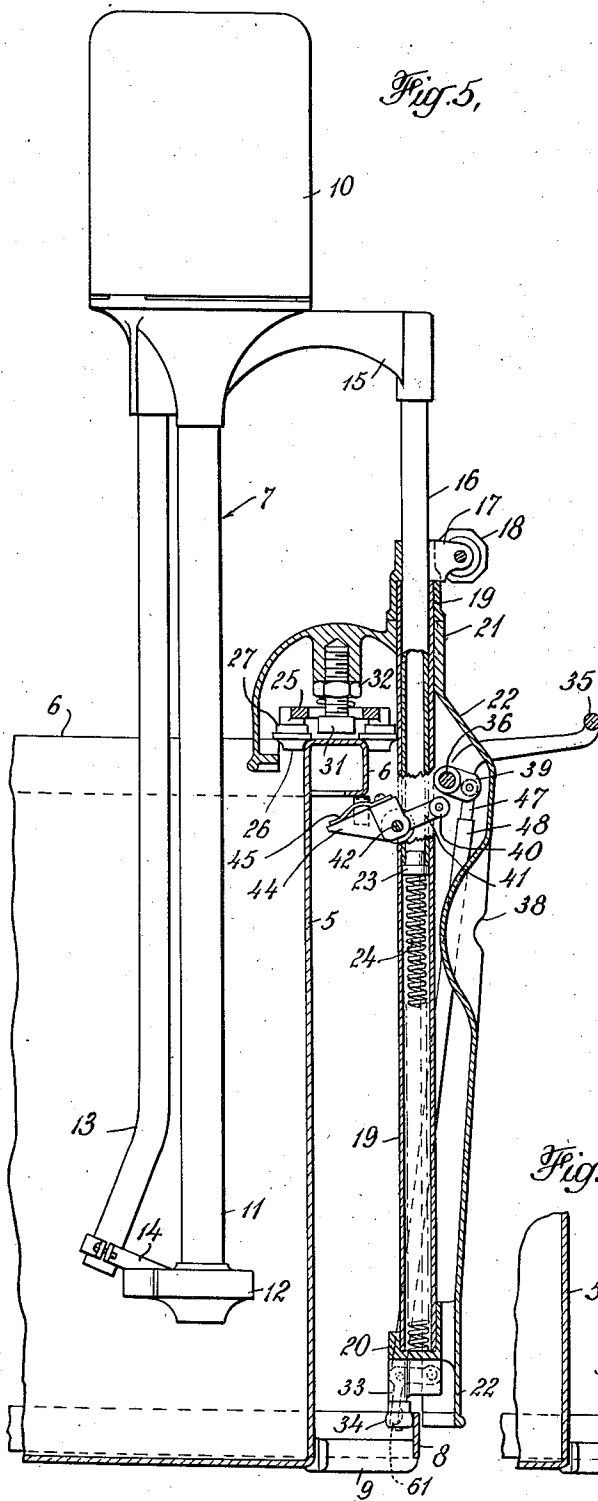
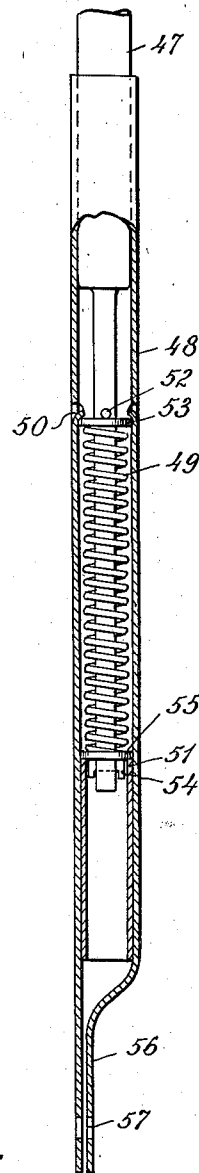
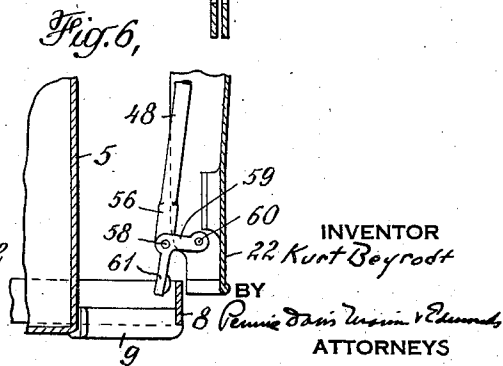
K. BEYRODT

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THERAPEUTIC BATH

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3 Sheets-Sheet 3



INVENTOR

Kurt Beyrodt

BY

Reinhold Dorn, Dorn & Dorn
ATTORNEYS

UNITED STATES PATENT OFFICE

2,428,004

THERAPEUTIC BATH

Kurt Beyrodt, Williston Park, N. Y., assignor to
Floyd W. Ille, Long Island City, N. Y.

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14 Claims. (Cl. 4—180)

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This invention relates to therapeutic bath apparatus and particularly to improvements therein designed to facilitate the adjustment and operation of jet producing mechanism in a therapeutic bath in which portions of the anatomy of a patient are selectively subjected to high velocity water jets with entrained air.

The benefits and advantages of such treatments and apparatus adapted for the purpose have been described in Letters Patents to Floyd W. Ille, No. 2,237,435 and No. 2,237,436, issued April 8, 1941. The treatment of patients in the manner described has been widely adopted and used with remarkably beneficial results in many cases. In particular, many patients with injuries resulting from the present world conflict have been benefited or restored to normal condition by the application of the procedure described in the Ille patents.

It is the object of the present invention to provide improvements in the apparatus and particularly to facilitate manipulation of the jet producing mechanism so that the practitioner may secure the desired results with the minimum of attention to operation of the apparatus.

Another object of the invention is the provision of means permitting locking and releasing of the jet producing mechanism at various points about the periphery of the tank so that the mechanism can be adjusted at will, and with a minimum of effort, to direct the jets as required.

A further object of the invention is the provision of means permitting the vertical and lateral adjustment of the jet producing mechanism in a more facile manner.

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

Fig. 1 is a vertical elevation partially in section illustrating the mechanism in locked position;

Fig. 2 is a front elevation also partially in section of the mechanism as shown in Fig. 1;

Fig. 3 is a plan view illustrating the mechanism applied to a portion of the periphery of the tank;

Fig. 4 is a vertical section on the line 4—4 of Fig. 1;

Fig. 5 is a view similar to Fig. 1 showing the mechanism in released position;

Fig. 6 is a section illustrating the lower locking device; and

Fig. 7 is an enlarged sectional view of the operating rod for the lower locking device.

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The particular means for producing the water jet or jets with entrained air and the formation of the tank employed form no part of the present invention. The jet producing mechanism as disclosed in the Ille Patents No. 2,237,435 and No. 2,237,436 may be employed, or any other suitable mechanism may be substituted therefor. Similarly the tank, with slight modifications to conform to the invention, may be the convoluted tank of the Ille patents or any desired modification thereof.

In carrying out the invention, therefore, I provide a tank 5 of suitable shape and configuration with a rim 6 preferably formed as indicated to support the jet producing mechanism or turbine ejector indicated generally as 7. A guide rail 8 is supported on brackets 9 in spaced relation to and surrounding the lower edge of the tank. The turbine ejector 7 comprises a motor housing 10 connected by a tube 11 to the turbine housing 12. An air pipe 13 also extends from the housing 10 to a point near the outlet from the housing 12 where it is supported by a bracket 14. When in operation, water is drawn into the housing 12 and ejected at high velocity past the end of the air pipe 13, forming a jet with occluded air bubbles which may be directed upon any portion of the patient's anatomy which is to be treated. Further description of the turbine ejector is unnecessary, since it is fully described in the Ille Patents No. 2,237,435 and No. 2,237,436. Any suitable variation of this device may be utilized.

To support the mechanism hereinbefore described so that it may be moved about the rim of the tank, locked in any desired position, adjusted vertically and angularly, it is mounted on a bracket 15 which is pivotally supported on a tube 16 extending through a split clamp 17 having an operating head 18 into a tube 19 which is mounted at its lower end in a step 20 and supported by a boss 21 formed in a housing 22. The lower end of the tube 16 is closed by a plug 23 which rests upon a counterbalancing spring 24 extending to the bottom of the tube 19. The spring is capable of supporting the weight of the turbine ejector 7. Hence by releasing the clamp 17, the turbine ejector may be adjusted vertically to any desired position without substantial effort and locked in that position by the clamp. It is necessary merely to compress the spring when the turbine ejector is lowered or to permit the spring to expand when it is to be raised. The jet of water may thus be directed at the desired level in the tank. By turning the bracket 15 on its

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pivot, the angular direction of the jet may be modified as desired.

The housing 22 is supported on the tank by a carriage 25 having four rollers 26 supported by ball thrust bearings 27 and shaped to engage the rim 6. The carriage 25 is slidably mounted on studs 28 carried in bosses 29 formed in the top of the housing 22. Springs 30 are disposed between the carriage 25 and the bosses 29 so that the weight of the turbine ejector is supported resiliently on the carriage. An adjustable locking stud 31 is threadably mounted in the top of the housing 22 and is adapted to be locked in adjusted position by a nut 32. The end of the stud is adapted to bear on the top of the rim of the tank when the locking mechanism hereinafter described is actuated.

A bracket 33, extending from the step 20, carries a roller 34 which is adapted to engage the inner surface of the rail 8 to offset the turning moment due to the weight of the turbine ejector. When the locking mechanism is released, the housing carrying the turbine ejector can be moved freely about the periphery of the tank to adjust the turbine ejector to the desired point for application of the jet. The weight of the mechanism as indicated is carried upon the rim of the tank through the rollers 26, and the mechanism is held in vertical position by engagement of the roller 34 with the rail 8.

The locking mechanism is designed to simultaneously lock the housing to the rim 6 and the rail 8. To accomplish this purpose a handle 35 is supported on a stub shaft 36 mounted in bearings 37 on opposite sides of the housing 22. A recess 38 is formed in the face of the housing so that the handle does not project but may be grasped readily when the mechanism is to be operated. The shaft 36 carries cams 39 which are adapted to engage rollers 40 on arms 41 which are supported on a shaft 42 mounted in bearings 43 on opposite sides of the housing 22. The arms 41 are connected to a brake member 44 having a spring 45 secured to the face thereof. The spring is adapted to engage the lower edge of the rim 6. Because of the provision of the springs 29 and 45, the cams 38 are permitted to pass the center, thus securely locking the carriage to the rim 6 when the operating handle 35 is in the position indicated in Fig. 1.

As indicated, a separate locking means is employed to simultaneously secure the housing to the rail 8. For this purpose, one of the cams 39 carries a stud 46 to which a rod 47 is secured. This rod, as shown more clearly in Fig. 7, extends into a tubular member 48 which encloses a spring 49 between lips 50 and an abutment 51 within the tube. A pin 52 on the rod 47 engages a washer 53 above the spring 49. The other end of the rod 47 is slotted to receive a pin 54 which engages a washer 55. The lower end of the tube 48 is flattened as indicated at 56 and is provided with an opening 57 to receive a pin 58 which engages a bell crank lever 59 supported at 60 on the bracket 33. The other end 61 of the bell crank lever 59 is adapted to engage the rail 8 when the rod is depressed by movement of the cam 39 to locking position. Provision of a spring 49 affords a resilient connection so that the cam may pass over the center. Engagement of the arm 61 with the rail 8 firmly holds the lower end of the housing 22 in locked position. When the housing is to be released, the handle 35 is lifted to the position indicated in Fig. 5, thus simultaneously releasing the brake 44 and the arm 61. The housing 34 is

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then free so that it may be shifted about the periphery of the tank to any desired position where it may be locked again by movement of the handle 35 to the position indicated in Fig. 1. The structure as described affords a simple and effective means for locking and releasing the housing by a single movement of the handle. Moreover, it permits vertical adjustment by merely releasing the clamp 17. Angular adjustment of the turbine ejector is accomplished by turning the bracket 15 on its pivot. Thus the turbine ejector is capable of required movement in respect to the periphery of the tank with a minimum of effort by the operator to effect desired changes in position. When locked, the housing carrying the turbine ejector is securely held at the point on the periphery of the tank most effective for the particular application of the water jet.

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

I claim:

1. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, separate means on the housing to lock the housing at vertically spaced points, respectively, in adjusted position relative to the periphery of the tank, and means for operating said separate locking means simultaneously.

2. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, separate means on the housing to lock the housing at vertically spaced points, respectively, in adjusted position relative to the periphery of the tank, means for operating said separate locking means simultaneously, jet producing mechanism and means on the housing affording an adjustable support for the jet producing mechanism.

3. In a therapeutic bath apparatus, a tank having a rim and a rail mounted in spaced relation thereto, a housing supported on the rim and capable of movement about the periphery of the tank, means carried by the housing to lock the housing to the rim, means carried by the housing to lock the housing to the rail, and means for simultaneously actuating both of said locking means to lock the housing in adjusted position relative to the periphery of the tank.

4. In a therapeutic bath apparatus, a tank having a rim and a rail mounted in spaced relation thereto, a housing supported on the rim and capable of movement about the periphery of the tank, means carried by the housing to lock the housing to the rim, means carried by the housing to lock the housing to the rail, means for simultaneously actuating both of said locking means to lock the housing in adjusted position relative to the periphery of the tank, jet producing mechanism and means on the housing affording an adjustable support for the jet producing mechanism.

5. In a therapeutic bath apparatus, a tank having a rim and a rail supported in spaced relation thereto, a housing, a carriage having a plurality of rollers adapted to engage the rim and thereby to support the housing, and locking means on the housing operable to simultaneously engage the rim and the rail to lock the carriage in adjusted position with respect to the rim.

6. In a therapeutic bath apparatus, a tank having a rim and a rail supported in spaced relation thereto, a housing, a carriage having a

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plurality of rollers adapted to engage the rim, resilient means between the carriage and housing to support the housing, and locking means on the housing operable to simultaneously engage the rim and the rail to lock the carriage in adjusted position with respect to the rim.

7. In a therapeutic bath apparatus, a tank having a rim and a rail supported in spaced relation thereto, a housing, a carriage having a plurality of rollers adapted to engage the rim and thereby to support the housing, and locking means on the housing operable to simultaneously engage the rim and the rail to lock the carriage in adjusted position with respect to the rim, jet producing mechanism and means on the housing affording an adjustable support for the jet producing means.

8. In a therapeutic bath apparatus, a tank having a rim and a rail supported in spaced relation thereto, a housing, a carriage having a plurality of rollers adapted to engage the rim, resilient means between the carriage and housing to support the housing, and locking means on the housing operable to simultaneously engage the rim and the rail to lock the carriage in adjusted position with respect to the rim, jet producing mechanism, and means on the housing affording an adjustable support for the jet producing means.

9. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a connection between the jet producing mechanism and the housing and resilient means in the connection to balance the weight of the jet producing mechanism.

10. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a connection between the jet producing mechanism and the housing, resilient means in the connection to balance the weight of the jet producing mechanism, and a clamp whereby the jet producing mechanism is held in vertically adjusted position against the action of the resilient means.

11. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a pivotal connection between the jet producing mechanism and the housing, and re-

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silient means in the connection to balance the weight of the jet producing mechanism.

12. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a connection between the jet producing mechanism and the housing, resilient means in the connection to balance the weight of the jet producing mechanism, separate means on the housing to lock the housing at vertically spaced points, respectively, in adjusted relation to the tank, and means for operating said separate locking means simultaneously.

13. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a connection between the jet producing mechanism and the housing, resilient means in the connection to balance the weight of the jet producing mechanism, a clamp whereby the jet producing mechanism is held in vertically adjusted position against the action of the resilient means, separate means on the housing to lock the housing at vertically spaced points, respectively, in adjusted relation to the tank, and means for operating said locking means simultaneously.

14. In a therapeutic bath apparatus, a tank, a housing supported on and capable of movement about the periphery of the tank, jet producing mechanism, a pivotal connection between the jet producing mechanism and the housing, resilient means in the connection to balance the weight of the jet producing mechanism, separate means on the housing to lock the housing at vertically spaced points, respectively, in adjusted relation to the tank, and means for operating said separate locking means simultaneously.

KURT BEYRODT.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,091,167	Solley -----	Aug. 24, 1937
2,237,435	Ille -----	Apr. 8, 1941
2,237,436	Ille -----	Apr. 8, 1941
2,280,979	Rocke -----	Apr. 28, 1942
2,340,616	Watson -----	Dec. 8, 1942