No. 773,828. PATENTED NOV. 1, 1904.

J. & W. TITUS.

CURATIVE APPARATUS.

APPLICATION FILED AUG. 20, 1902.

NO MODEL.

Fig. 1

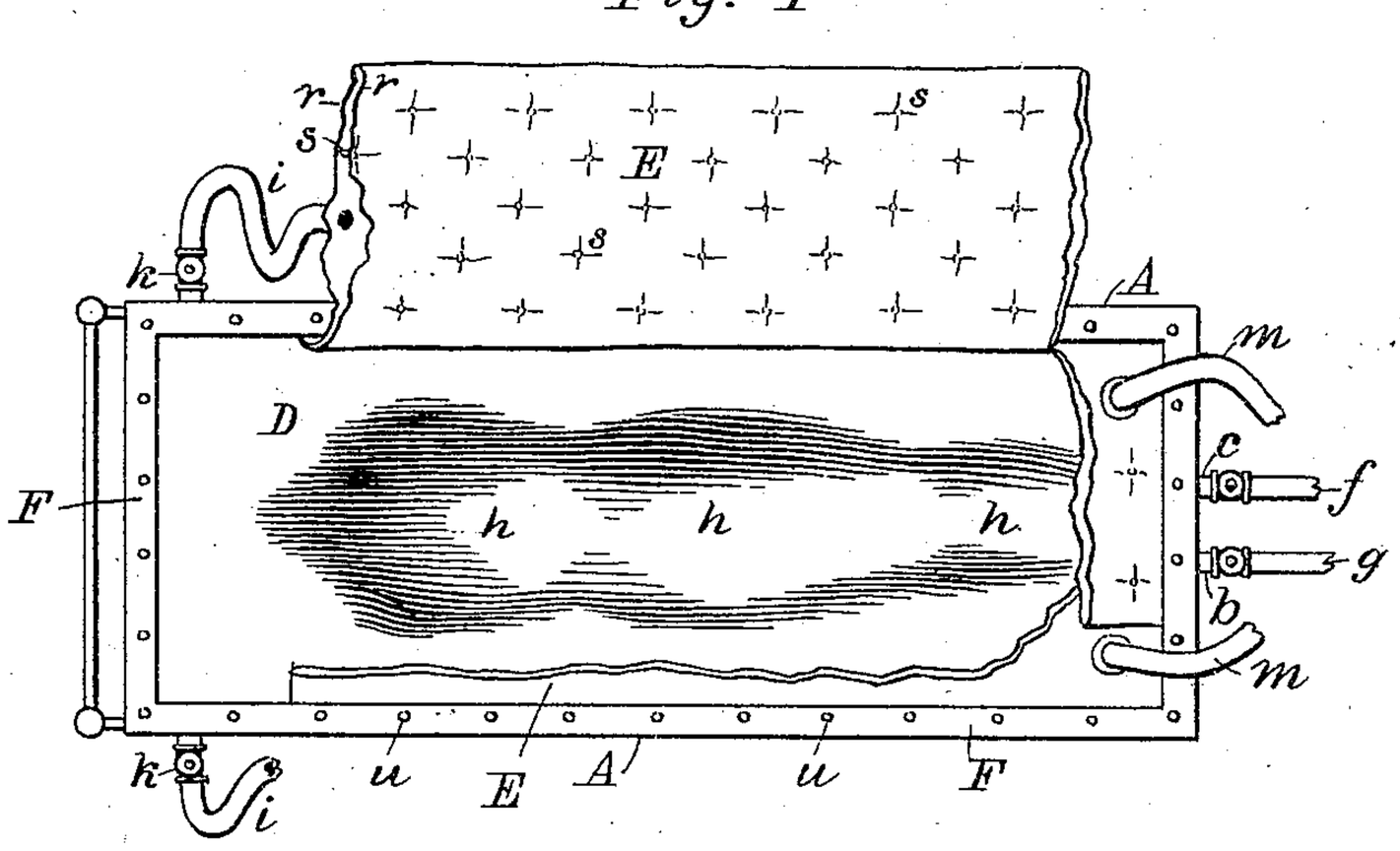


Fig. 2.

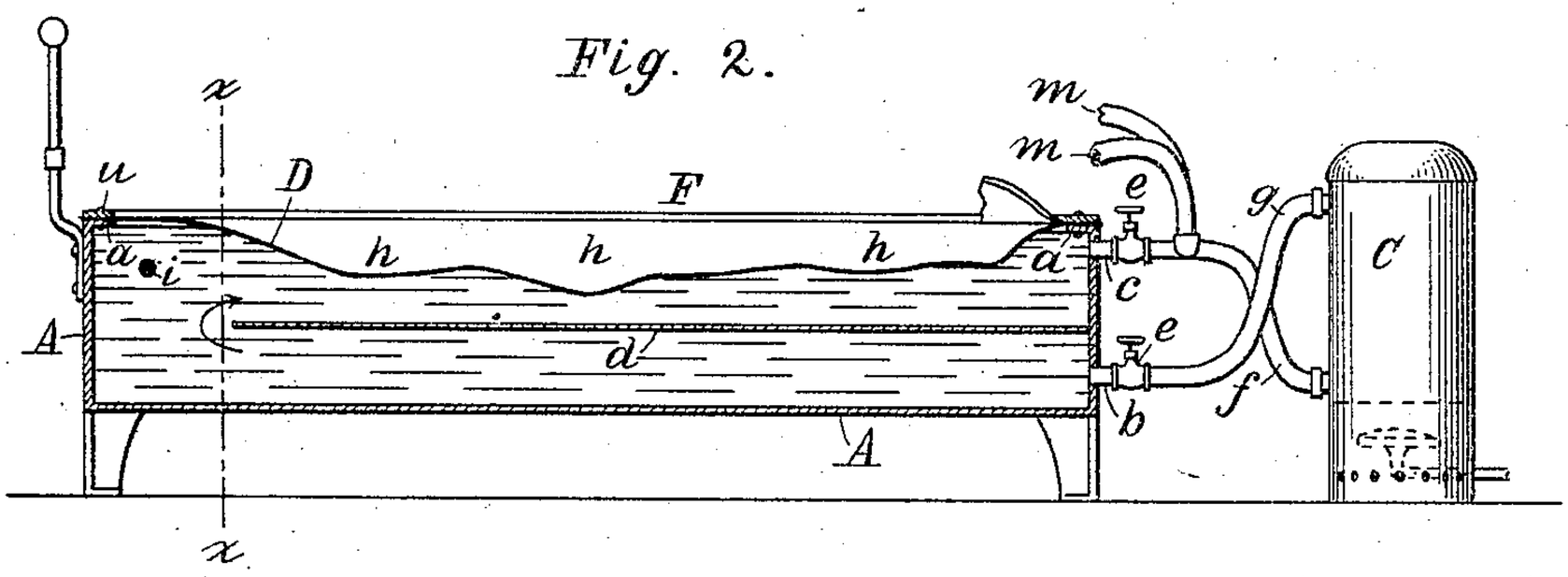


Fig. 3.

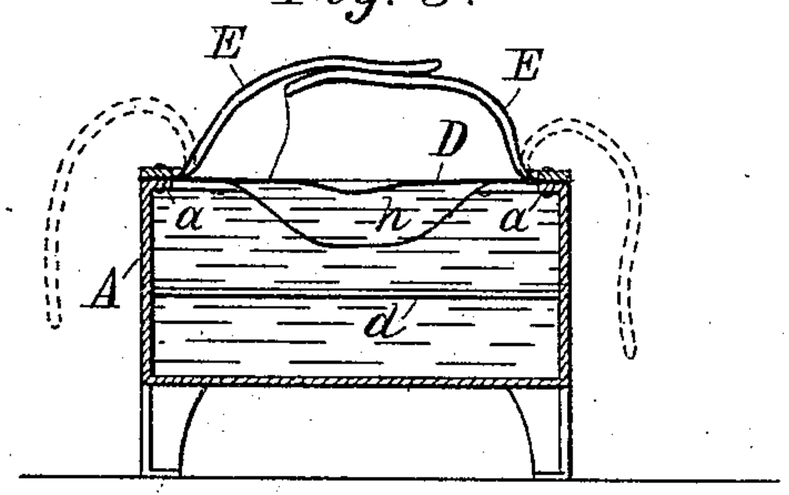
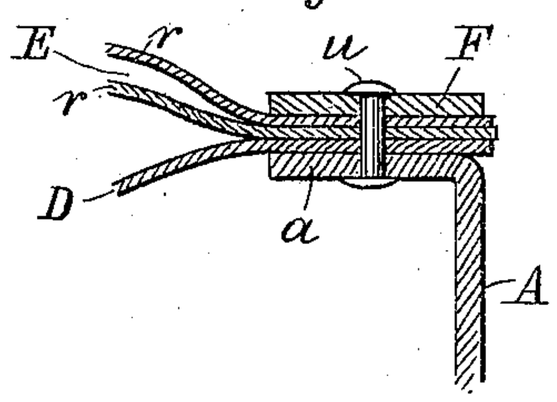


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN TITUS, OF OYSTER BAY, AND WILLIAM TITUS, OF OLD WESTBURY, NEW YORK.

CURATIVE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 773,828, dated November 1, 1904.

Application filed August 20, 1902. Serial No. 120,296. (No model.)

To all whom it may concern:

Be it known that we, JOHN TITUS, a resident of Oyster Bay, and WILLIAM TITUS, a resident of Old Westbury, in the township of North Hempstead, in the county of Nassau and State of New York, citizens of the United States, have invented certain new and useful Improvements in Curative Apparatus; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view and partial section of an apparatus made according to our invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is a vertical transverse sectional view taken in the line *x x* of Fig. 2. Fig. 4 is a detail sectional view, on a larger scale, still further illustrating the construction of said apparatus.

The object of this invention is to provide improved means for subjecting invalids or others to the curative or hygienic action of thermal agencies derived from water of preferred temperatures ranging between wide extremes of heat and cold without bringing the person into actual contact with the liquid.

It composes certain new and useful combinations of parts whereby we provide, for the purposes indicated, an efficient and conveniently-manipulated apparatus adapted to a wide range of uses in the sick-room, the hospital, or the sanitarium.

A is a tank made preferably of sheet metal and with a horizontal flange *a* at its upper edge. This tank is designed to contain circulating water of any desired temperature. It has a suitable inlet *b* and outlet *c*. When the inlet and outlet are adjacent to each other, as in Fig. 2, a horizontal partition *d* is extended back nearly to the opposite end of the tank to provide a circuitous passage for the water, as indicated by the arrows in said figure. The inlet *b* may be connected in any appropriate manner with any suitable source of water-supply, and the water from the outlet *c* may be led away to any suitable receptacle. The rapidity of the circulation will depend upon the energy with which the water is supplied to the tank and upon the extent to which its flow is throttled at the inlet or the outlet, one or both. This throttling may be controlled by a cock or cocks *e*, placed on either the inlet or the outlet, or both. As shown in the drawings, the water-supply is drawn from a boiler C through a pipe *g*, and the outflow from the tank is returned to the boiler through a pipe *f*. This is for use when the apparatus is to be used with heated water. When it is to be used with cold water, the source of supply is of course to be changed to one providing water of the requisite low temperature.

D is what, for convenience, we term a "mattress-sheet," which is securely attached at its circumference to the flange *a* of the tank and which should be of such strength and character that it will support the weight of a person placed upon it without substantial support from the volume of water in the tank below. This sheet may be of any suitable material; but where the question of expense is not necessarily regarded it is preferably of india-rubber, which may not only be readily given the configuration just hereinafter described, but being more or less elastic more readily conforms to the person lying thereon when the apparatus is in use. This sheet has in its upper side a depression *h*, which in size and shape conforms to the posterior portions of the human body and limbs, so that a person lying in said depression *h* will have the back, a portion of the sides, and portions of the limbs sunken below the general surface of the sheet and brought into much closer relation or contact therewith than is possible with a person lying upon a flat or only slightly depressed surface. By this means the action of the temperature of the liquid in the tank and in contact with the under side of the mattress-sheet is caused to act more effectively upon

the person lying upon said sheet than would otherwise be practicable.

Provided at one or both, preferably both, lateral portions of the mattress-sheet D are what, for convenience of designation, we term "water-blankets" E. When each side or lateral portion of the apparatus is provided with one of these water-blankets, the two, folding inward over the mattress-sheet, may overlap at their inner edges to cover or envelop the person lying upon the sheet, as indicated in Fig. 3. When only one such blanket is used, it should be of a width sufficient to extend entirely across the mattress-sheet, with a margin sufficient to permit it to be tucked snugly around the person on the sheet. Each of these water-blankets is composed of flexible waterproof material, is hollow, and is constructed for the circulation of water therethrough. As shown in the drawings, the water is passed into each from the tank through a pipe *i*, which may be furnished with a regulating-cock *k*, the exhaust-water passing from an outlet to and through a pipe *m*, which ultimately connects with the boiler C. Of course when the blankets are to be used for refrigerative purposes the boiler or source of hot-water supply is replaced by a source of cold-water supply, which may be of any suitable kind.

In the use and operation of the apparatus water of the desired temperature is supplied to the tank until it rises into contact with the under side of the mattress-sheet and also rises into the water-blankets until the latter are practically full. The patient or person for treatment lies in the cavity *h* of the mattress-sheet D and the flexible water-blankets are folded and tucked about him in as close contact with the person as may be, thereby subjecting him to the intended temperature—in other words, to the desired degree of heat or cold, as the case may be—transmitted through the mattress-sheet from the water in the tank below and through the inner walls of the water-blankets from the water within the latter, and this without bringing the person into actual contact with water and with practically perfect control of the temperature employed.

The water-blankets may be of any suitable material and construction so long as the same are adapted for use in the manner herein previously set forth. As shown in the drawings, however, each blanket is made of flexible sheet-rubber or like waterproof material folded upon itself, as more clearly shown at *r* in the left-hand portion of Fig. 1, also in Fig. 3, with its edges closely confined at the lateral edges of the mattress-sheet, the two opposing parts of the material in each sheet being stayed one to another by stitches or fastening devices *s*, which keep them when distended with water at a more or less uniform distance—say from one-fourth to three-fourths of an inch, more or less—from each other, so that the blanket when filled with water is a thick sheet-like flexible body which may be readily wrapped over or upon the person lying upon the mattress-sheet.

Our preferred means of securing the edges of the mattress-sheet and those of the material which comprises the sides or walls of the water-blankets is illustrated in Fig. 4. In this the edges of the mattress-sheet D are, as hereinbefore explained, laid upon the flange *a* of the tank. The two edges of the folded sheet material of the adjacent water-blanket E are laid one upon the other and both upon the edge portions aforesaid of the mattress-sheet. A stiff metal frame F of corresponding configuration is then placed upon the superposed edge portions just described of the mattress-sheet and water-blanket through suitable holes and is firmly screwed by rivets or nuts *u* to the flange *a* below. The edges of the blanket material and of the mattress material are thus firmly and tightly clamped between the frame and the flange with joints sufficiently tight to prevent leakage of water therethrough.

What we claim as our invention is—

1. The combination with a tank of a mattress-sheet over the top thereof, and a flexible water-blanket, of means for providing a circulation of water through the tank in contact with the under side of the mattress-sheet, and means for providing a circulation of water through the water-blanket, as described.

2. The combination with a tank and a mattress-sheet over the top thereof, of flexible water-blankets attached at their outer edges along the edges of the mattress-sheet and arranged to fold inward over the mattress-sheet, of means for providing a circulation of water within the tank and in contact with the under side of the mattress-sheet and a flow of water from the tank to and through the water-sheets, as described.

3. The combination with a tank having a circumferential flange at its top, a mattress-sheet over said top with its edge portions upon said flange, a water-blanket composed of flexible sheet material, the edges of which are laid one upon the other and both upon the edges of the mattress-sheet, a frame which in shape and size corresponds to the flange of the tank, and bolts or rivets which connect the frame with the flange to grip the edges of the water-blanket and of the mattress-sheet between them to form water-tight joints, as described.

4. The combination with a tank and a mattress-sheet over the top thereof, of a flexible water-blanket comprising in its structure walls of waterproof material stayed internally to retain said walls in the requisite relation with each other when the blanket is distended, and

means for providing a circulation of water through the blanket, as described.

5. The combination with a tank, a mattress-sheet over the top of the tank and a flexible water-blanket, of means for providing a circulation of water simultaneously through the tank in contact with the under side of the mattress-sheet and through the water-blanket when the latter is folded inward over the said sheet, as described.

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Witnesses:
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AMAZIAH WHITNEY.