July 20, 1937. J. J. HICKS 2,087,286

INVALID BATH APPARATUS

Filed Dec. 1, 1936 2 Sheets-Sheet 1

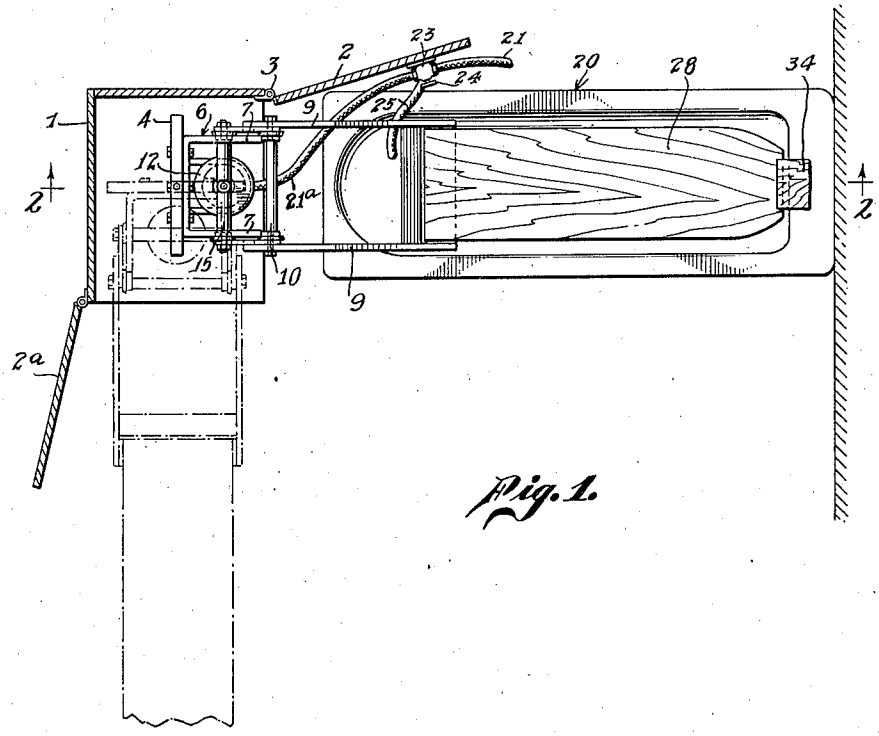


Fig. 1.

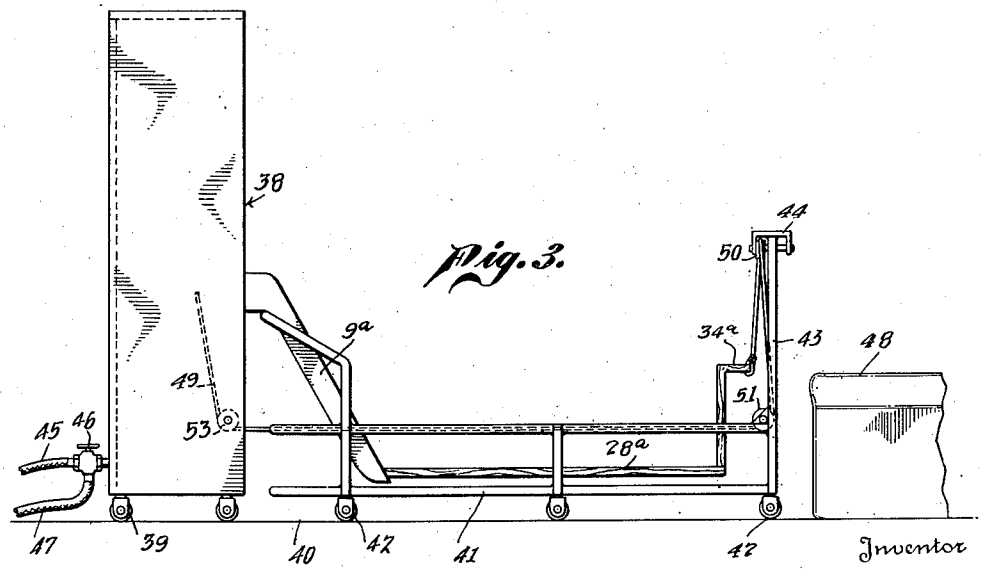


Fig. 3.

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Filed Dec. 1, 1936 2 Sheets-Sheet 2

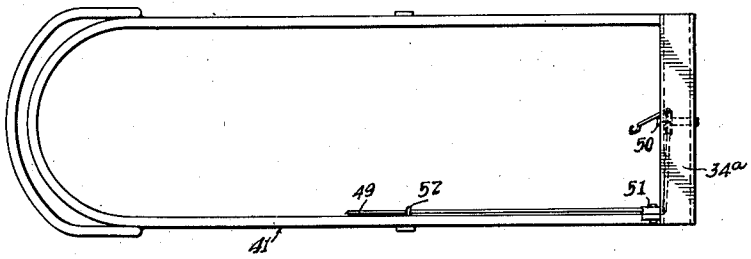


Fig. 4.

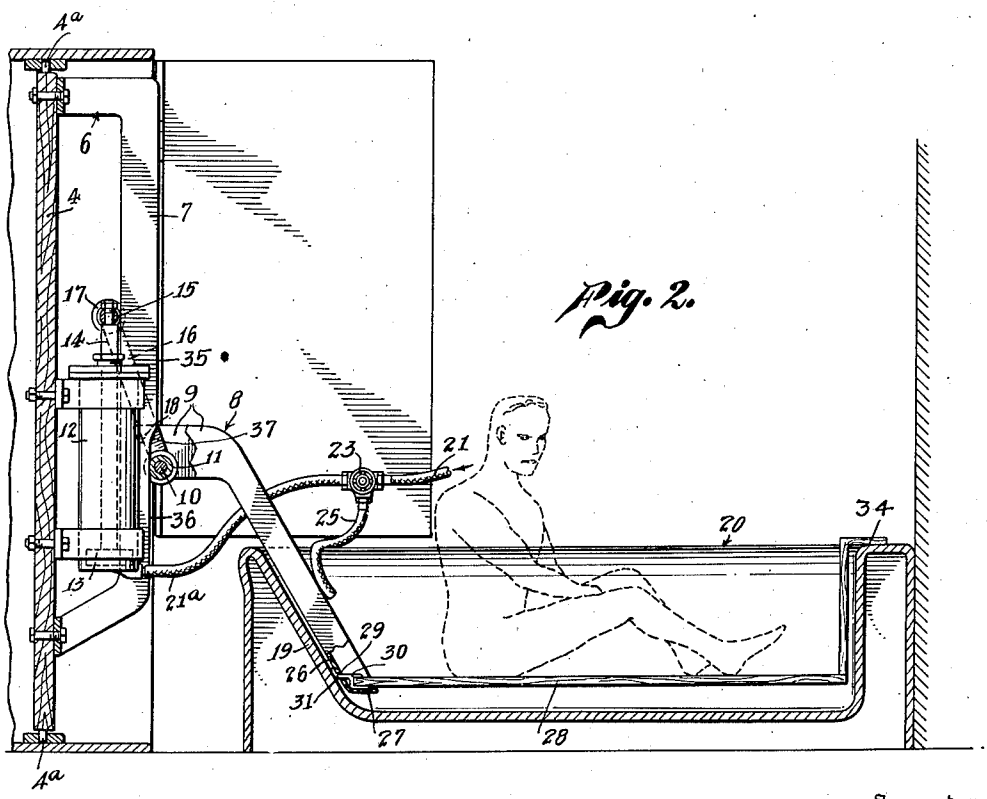


Fig. 2.

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UNITED STATES PATENT OFFICE

2,087,286

INVALID BATH APPARATUS

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10 Claims. (Cl. 4—185)

This invention relates to bath apparatus to be used by invalids, or feeble persons, to facilitate their entering and leaving an ordinary bath tub. When a bath tub has the usual curved bottom, which may be slippery from soapy water, there is considerable danger of a bather's foot slipping when getting in or out of the tub. Accidents have happened in this way, and such an accident involving the falling onto the tub of an invalid, or feeble person, might cause great injury.

One of the objects of the present invention is to provide simple apparatus involving the use of a rest, seat, or shelf, on which the patient's body may rest, and to provide simple means capable of being operated to bring the seat, or shelf, into line with the tub, and lowered so as to immerse the invalid, or other person in the bath.

One of the objects of the invention is to provide a construction for the apparatus, which will facilitate its being attached in a closet, or cabinet, with a door which can be swung open when the apparatus is to be used; also to provide a construction which will enable the apparatus to be held in the folded condition within the cabinet, or closet, but enabling it to be readily extended so as to support a shelf, or seat, for the invalid in a substantially horizontal position. The apparatus may be pivoted within the closet, swung down into position alongside of the patient's bed to receive the patient, and thereafter swung around so as to bring the seat over the tub to enable the patient to be lowered down into the bath.

A further object of the invention is to provide an embodiment of the apparatus in which the mechanism carrying the shelf may be normally supported in a portable cabinet, and to provide a portable frame to cooperate with the mechanism when the shelf is extended, to support the shelf and facilitate the trundling of the cabinet and the portable frame into a position to enable the shelf, or support, to be aligned over the tub preparatory to lowering the shelf to immerse the patient in the bath.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient invalid bath apparatus.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Fig. 1 is a plan illustrating an embodiment of the apparatus in which the mechanism of the apparatus is mounted within a closet, or cabinet, that is held in a fixed position; for example, secured to the floor. In this view the apparatus is indicated in dotted lines in a position with one of the cabinet doors open, and illustrating how the seat, or shelf, of the apparatus may be presented at the side of the invalid's bed. In full lines the apparatus is illustrated extending over a tub.

Fig. 2 is a vertical section through a tub, and illustrating the apparatus in side elevation, but partially broken away. This view shows the apparatus with the seat, or shelf, carrying the invalid, depressed down into the tub.

Fig. 3 is a side elevation illustrating a portable cabinet, and a portable frame to cooperate with the same to enable the apparatus to be trundled about on a floor; for example, a hospital floor, to enable a patient to be carried on the apparatus from his bed to the tub. This view illustrates the end of a tub with which the apparatus is cooperating.

Fig. 4 is a plan of the portable frame illustrated in Fig. 3, unassociated with the cabinet and shelf supporting apparatus illustrated in Fig. 3.

Before proceeding to a more detailed description of my invention, it should be stated that in one embodiment of the invention the mechanism of the apparatus can be attached to a hinge or swivel support, and such hinge or swivel support may, if desired, be placed in a cabinet or closet.

In some cases, however, it may be desirable to have the apparatus completely portable. The difficulty about this is that if the apparatus is extended from a portable cabinet, the weight of the invalid's body on the extended shelf, or seat, would ordinarily be sufficient to upset the cabinet, or at least move it out of its upright position, and permit the patient's body to descend to the floor. In other words, in this embodiment of the invention an upright cabinet would not have sufficient stability to support the extended shelf, or seat for the invalid when it carried the invalid's body. In order to meet this difficulty, in one embodiment of the invention I provide a portable frame cooperating with the cabinet to support the invalid's body, and enabling the invalid to be wheeled from his bed over to the tub.

Referring more particularly to the parts, and especially to Figs. 1 and 2, 1 indicates a cabinet or closet, fixed to the floor. The cabinet, or closet 1, is preferably provided with a swinging

door 2 mounted on a hinge connection 3 (see Fig. 1). This door is a half-door and will clear the tub when swung open. In the closet, or cabinet, I support a movable frame, which is capable of being extended outwardly from the cabinet, or closet, and which carries a seat, or shelf, for the invalid's body. In order to accomplish this, I prefer to provide a relatively fixed frame preferably in the form of a track 6 secured to a swiveled support, or board 4, within the closet. This frame includes two oppositely disposed substantially parallel upright rails 7. The upper and lower ends of the frame board 4 have pintles 4a (see Fig. 2) on which the board 4 swivels.

Mounted to move up and down on the rails 6, I provide a movable frame 8 preferably comprising two side arms 9. The upper ends of these side arms 9, in the extended position of the movable frame, are connected by a cross bar 10, and the ends of this cross bar carry rollers 11, which run on the forward edges of the vertical fixed frame bars 7. Any suitable means may be provided for raising and lowering the movable frame 8. This may be accomplished by suitable power means, and may involve the use of hydraulic power, compressed air, electricity, or any other suitable power. In the present instance, however, the apparatus is illustrated as employing a power cylinder 12, which may conveniently be operated as a hydraulic cylinder. This cylinder is secured to the swivel board 4, and carries a piston 13, the piston rod 14 of which extends through the upper head of the cylinder, and carries a cross head, or cross bar 15, similar to the rod 10. The ends of this cross head 15 are connected by inclined links 16 to the ends of the cross rod, or bar 10, and the ends of the cross head 15 are further provided with rollers 17 similar to the rollers 11, and these rollers 17 run up and down on the inner edge of the track bars 7.

It will be evident that the axis of the cross bar 10 operates as a pivot for the movable frame 8, to enable the same to be swung down from an upright folded position into a position such as that illustrated in Fig. 2; and in this position lugs 18 at the rear ends of the side bars 9 engage the inner edges of the links 16 to limit the downward movement of the movable frame.

The bars 9 of the movable frame 8 are preferably offset or inclined downwardly so as to have substantially the same inclination as the inner face 19 of the end of the tub 20 that is adjacent to the apparatus (see Fig. 2).

Suitable means is provided for controlling the admission of operating fluid to the lower end of the cylinder 12. In the present instance, this operating fluid is water under the usual city pressure, which water may be led to the lower end of the cylinder through a hose 21 (see Fig. 1). This hose 21 leads to a hand-controlled three-way valve, or cock 23, attached to the inner face of the door 3. It has an operating handle, or wheel 24. From the valve 23 a discharge hose 25 extends over to a drain, or into the tub, as illustrated in Fig. 2. In one position of the handle 24, the water pressure will be admitted through a hose 21a to the under side of the piston 13, and this will raise the cross head 15 and also elevate the links 16, thereby carrying up the movable frame 8 to an elevated position.

Referring again to Fig. 2, the lower ends of the arms 9 are connected by a rigid cross web 26, which is preferably shaped as shown in Fig. 2; that is to say, this web at its lower end 27 extends in a substantially horizontal direction. A seat, or shelf 28 is provided, which is preferably removably attached to the lower ends of the arms 9 and preferably by means of this cross web 26. For this purpose the cross web may be provided with a slot 29, and the inner end of the shelf 28 may be provided with a metal fitting 30 that has a tongue 31, which projects upwardly and which may be inserted through the slot so that the inner edge of the shelf, or seat 28, of suitable length, is supported on the projection 27 of the web. When the seat is lowered into the tub it is supported at its outer end on an extension with a flange 34 that rests on the edge of the tub (see Fig. 2).

In order to increase the range of swing of the apparatus, the cabinet 1 may have a hinged side door 2a.

As there is a tendency for the weight of the invalid's body on the shelf to depress the seat, or shelf, at its outer end, I prefer to construct the rails 7 of the track so that when the movable frame 8 is in an elevated position the outer end of the seat, or shelf 28, will be relatively high. In order to accomplish this, the outer edge of the rail 7 is preferably provided with a relatively "high" edge 35 and a relatively low edge 36 connected by a cam edge 37 (see Fig. 2). It will be evident that when the rollers 11 have passed the cam edge 37 they will have swung slightly outwardly on the axis of the cross head 15. This will hold the frame 8 tilted upwardly toward its outer end, and thereby cause the outer end of the shelf 28 to be held more elevated.

In the embodiment of the invention illustrated in Figs. 3 and 4, the construction of the apparatus illustrated in Fig. 1, is substantially the same. The difference, however, is that instead of having a fixed cabinet, I provide a portable cabinet 38 mounted on caster wheels 39 enabling the cabinet to be readily trundled across the floor 40. When the movable frame supported within this cabinet 38 is extended, its arms 9a will extend into the interior of a portable frame, or crib 41, so as to support the shelf 28a a short distance above the floor 40. This portable frame is mounted on caster rollers 42, and is in the form of a substantially rectangular frame as indicated in Fig. 4, provided at its outer end with an end frame comprising vertical posts 43 connected by a horizontal cross bar 44. The hydraulic cylinder within the cabinet 38 is provided with operating fluid through a hose 45 connected to a two-way valve, or cock 46, and leading from a fluid supply such as water under city pressure. The outlet port of the valve 46 is connected with a hose 47 leading to a drain, or to the tub. The apparatus as illustrated in Fig. 3, after receiving the invalid on the seat, or shelf 28a, would be wheeled over into line with the end of the tub 48, and the valve 46 would then be operated to raise the arms 9a and the shelf or seat 28a until the seat is above the upper edge of the tub 48. The cabinet and frame 41 would then be trundled forward so as to bring the portable frame over the tub. After the portable frame is properly positioned over the tub, the valve 46 would be operated to lower the arms 9a, and thereby enable the shelf 28a to descend to substantially the position in which it is indicated in Fig. 3. If desired, means may be provided for raising and lowering the outer end of the shelf 28a through the medium of the power device, or power means, within the cabinet 38. In order to accomplish this, a pull wire or cord 49 may be provided, attached to the flange 34a, said pull wire or cord being carried up over pulleys 50 and 51 (see Fig.

4) and thence extending along through guides such as the guide 52, to a pulley or sheave 53 mounted on the inside of the side wall of the cabinet (see Fig. 3). From this point the cord or wire 49 would pass upwardly and be attached to a cross head corresponding to the cross head 15. With this construction it will be evident that when the cross head rises, it will take up the pull cord 49, thereby pulling upwardly and raising the outer end of the seat, or shelf 28a.

It is understood that the embodiment of the invention described herein is only one of the many embodiments this invention may take, and I do not wish to be limited in the practice of the invention, nor in the claims, to the particular embodiment set forth.

What I claim is:

1. In an invalid bath apparatus, the combination of a support mounted to swing on a substantially vertical axis, a downwardly extending movable frame mounted on the said support, a seat or shelf carried by the lower end of said movable frame, said support capable of being swung into a position to enable the seat or shelf to align with a tub, and means associated with the frame enabling the same to be lowered to depress the seat or shelf into the bath tub, and to enable the same to be raised thereafter out of the tub.

2. In an invalid bath apparatus, the combination of a case or cabinet held in a fixed position, a door hingedly secured to the case, a downwardly extending movable frame pivotally mounted on the inner side of the cabinet, a seat or shelf carried by the lower end of said frame, said movable frame capable of being extended when the door is in an open position to support the seat in a position to receive and support the invalid's body, said hingedly supported door enabling the frame to be swung with the door into a position substantially in alignment with a tub, and means for raising and lowering the frame to lower the seat into the tub and raise the same out of the tub.

3. In an invalid bath apparatus, a movable support, a relatively fixed frame attached to the said support, said frame including a track disposed in a substantially upright position, a relatively movable, downwardly and outwardly extending frame mounted on said track, means for moving the said movable frame at will up and down on the said track, and a seat or shelf carried by the lower end of the movable frame to receive the body of the invalid, and operating to enable the invalid to be immersed in the water in a tub, and lifted out of the tub thereafter.

4. In an invalid bath apparatus, a movable support, a relatively fixed frame attached to the said support, said frame including a track disposed in a substantially upright position, a relatively movable frame mounted on said track, means for moving the said movable frame at will up and down on the said track, said movable frame having rollers including a pair of coaxial rollers running on the said track, said frame capable of movement on the axis of said pair of rollers to swing up into a folded position adjacent said movable support, and a seat or shelf removably attached to the said movable frame to receive the body of the invalid, said parts cooperating to enable the invalid to be lowered into the water in the tub and lifted out of the same thereafter.

5. In an invalid bath apparatus, a portable support, a movable folding frame mounted on the support, capable of being extended from the support, a seat or shelf carried by the extended portion of the movable frame for supporting the body of the invalid, a portable frame for supporting the extended portion of the movable frame, power means mounted on the support for raising and lowering the movable frame, said portable frame and said cabinet cooperating to enable the said shelf or seat to be brought into alignment with the tub while the seat or shelf is in an elevated position, and cooperating to enable the seat or shelf to be lowered thereafter into the bath in the tub.

6. An invalid bath apparatus constructed as described in claim 5, and provided with means connecting the portable frame to the outer end of the shelf or seat, and means for utilizing the power means on the support to raise and lower the said outer end of the shelf or seat.

7. In an invalid bath apparatus, a cabinet, a relatively fixed frame associated with the cabinet, a relatively movable frame mounted on the relatively fixed frame, a seat or shelf carried on the movable frame to receive the body of the invalid, and power means mounted within the cabinet for raising and lowering the movable frame to enable the seat or shelf to be raised above the tub and brought into line with the same, and lowered thereafter to immerse the invalid's body in the bath.

8. In an invalid bath apparatus, the combination of a support provided with substantially vertical rails, a crosshead in rolling engagement with said rails, power means carried by said support and operably connected to said crosshead, a downwardly and outwardly extending frame pivotally connected at its upper end to said crosshead whereby said frame may be folded into substantially vertical position when not in use, and a body receiving portion extending from the lower end of said frame, said portion being adapted to receive a body and to lower the same into a tub.

9. In an apparatus of the character described in claim 8, the provision of cam means carried by said rails for changing the angularity of said body receiving portion when said frame is raised and lowered by said power means.

10. In an invalid bath apparatus, the combination of a support provided with vertical rails, a downwardly and outwardly extending frame in rolling contact with said rails, power means carried by said support and in operative engagement with the upper end of the frame for moving said frame along said rails, and a body receiving portion or shelf extending from the lower end of said frame whereupon a body may be lowered into or raised from a tub.

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