

July 11, 1961

W. C. BRASS

2,991,482

BATH TUB

Filed Nov. 1, 1960

4 Sheets-Sheet 1

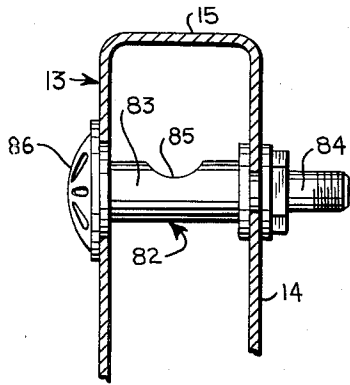


FIG.- 5

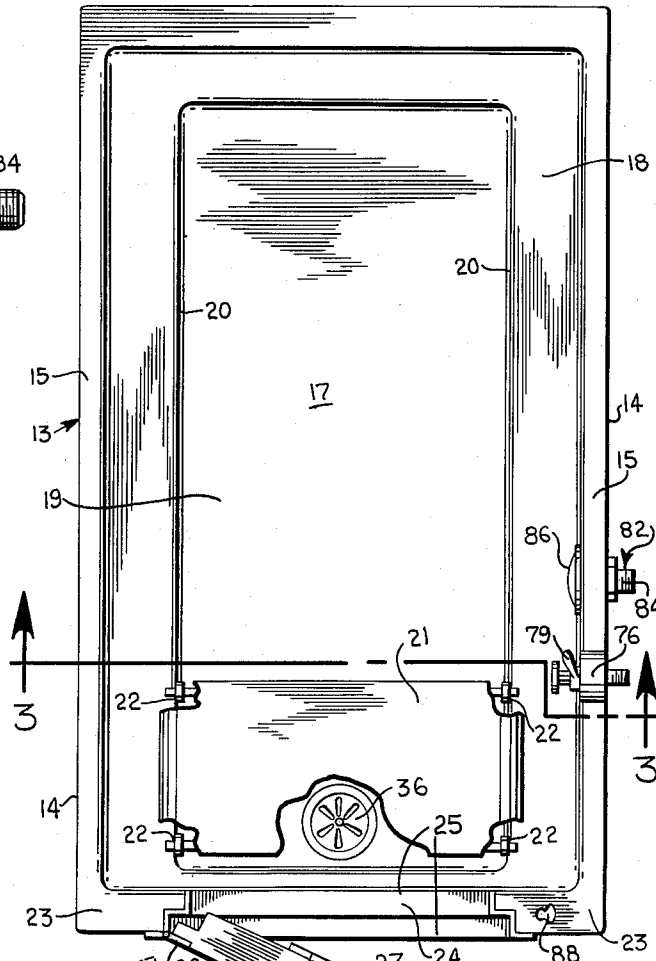


FIG.- 2

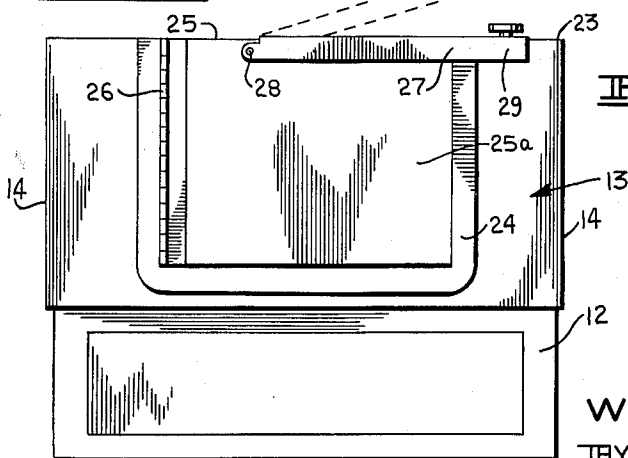


FIG.- 1

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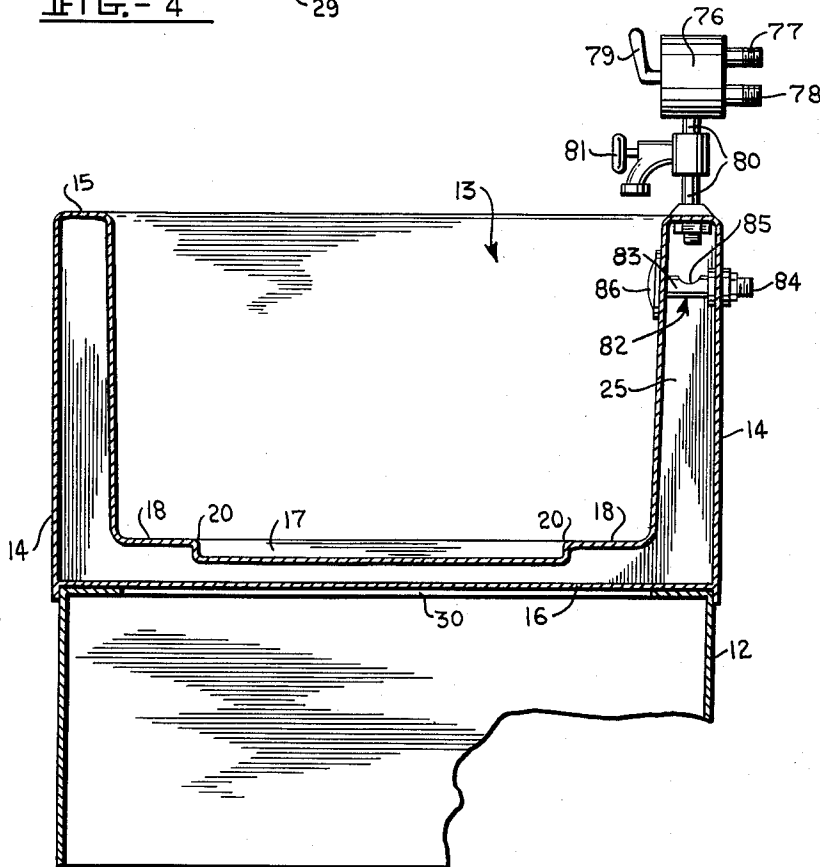
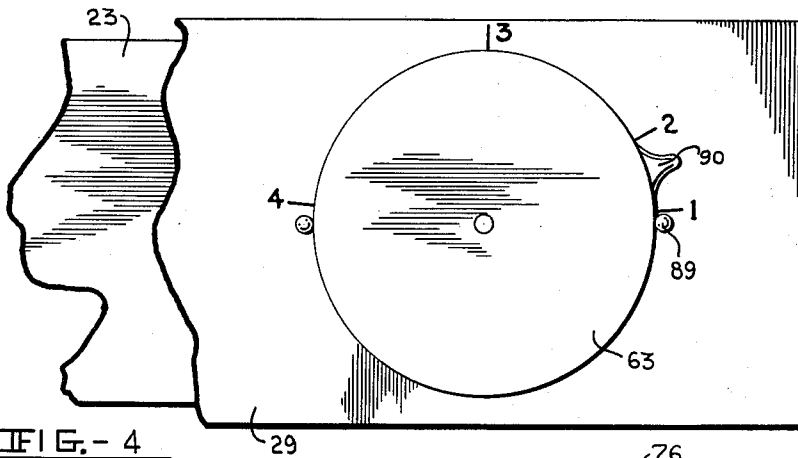
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BATH TUB

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4 Sheets-Sheet 2



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FIG. 9

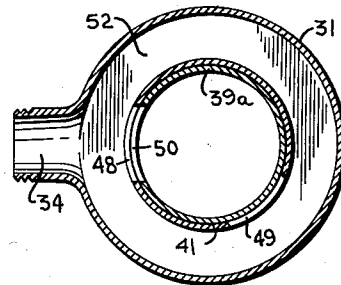
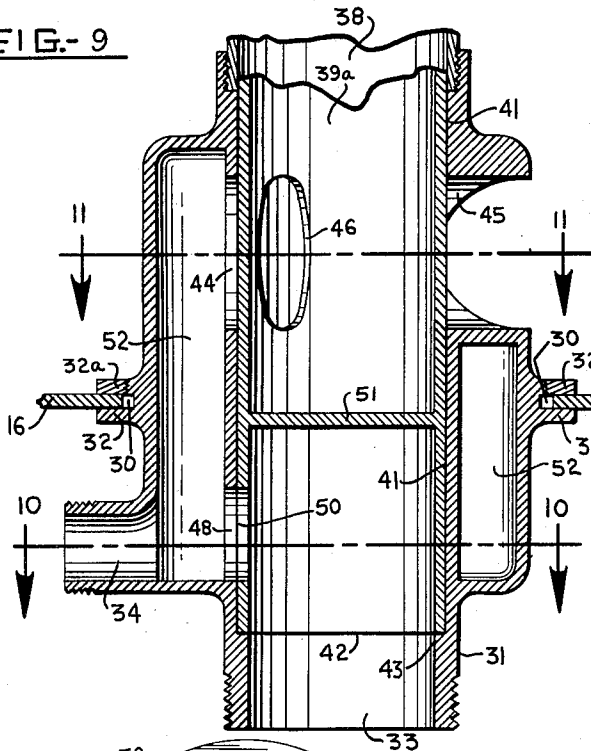


FIG. 10-a

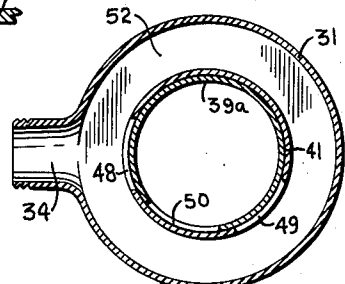


FIG. 10-b

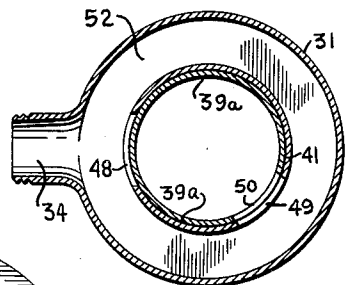


FIG. 10-c

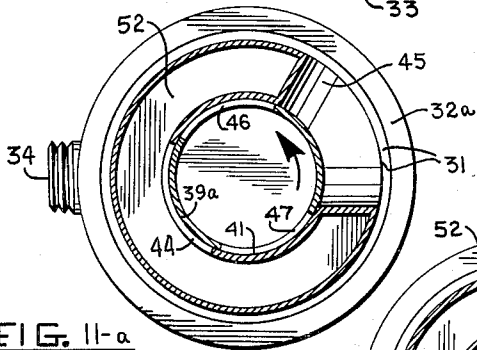


FIG. 11-a

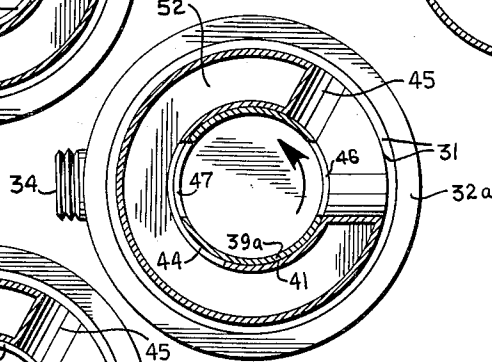


FIG. 11-b

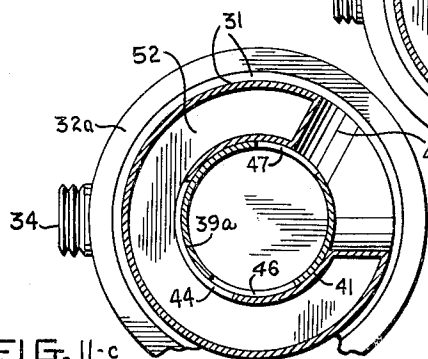


FIG. 11-c

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2,991,482

BATH TUB

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6 Claims. (Cl. 4-173)

This invention relates to a bath tub construction primarily designed for use by those who may be handicapped, ill, or otherwise limited in activities and strength, and which also may be used in the ordinary conception of a bath tub.

A primary object of the invention is to provide a structure which may have a door opening through a side or an end of the tub, and toward which opening a seat may be moved over the floor of the bath tub, the floor of the tub being at that elevation above a room floor so that the bather may turn around and sit down on the seat of the tub through the opening, the same as though sitting down in a chair. The bather may then push himself into the tub while on the seat, close the door, and fill the tub with water.

A further primary object of the invention is to provide means for heating the wall of the tub prior to the entrance therein of the bather. By having the tub wall preheated, there is no shock to the bather upon coming into contact with the wall of the tub.

A further primary object of the invention is to provide a recessed floor in the tub over which the seat is carried in shiftable positions and in which recess a floor mat may be placed and kept from sliding about on the floor by reason of its position within the recess.

A still further important object of the invention is to provide a simplified means for coordinating the control of water into and out of the space about the bath tub wall which is used in preheating the wall, and in filling the tub and draining it only in the condition of the door to the tub being closed to prevent flowage of water onto the floor outside of the tub.

The construction also incorporates means for permitting selective flow of pretempered water into the tub itself in the absence of preheating the bath tub wall all in the normal use of tubs as heretofore had.

These and many other objects and advantages of the invention will become apparent to those versed in the art in the following description of one particular form of the invention as illustrated in the accompanying drawings, in which:

FIG. 1 is a view in top plan of a structure embodying the invention;

FIG. 2 is a view in end elevation;

FIG. 3 is a vertical section on the line 3-3 in FIG. 1;

FIG. 4 is a detail on an enlarged scale in top plan view of a door latch and water control member;

FIG. 5 is a view also on an enlarged scale and in vertical section in detail of a tub and jacket overflow;

FIG. 6 is a view on an enlarged scale in vertical section through the upper end of the door latch and valve control;

FIG. 7 is a view in transverse section on the line 7-7 in FIG. 6;

FIG. 8 is a detail in vertical section through the lower end of the tub;

FIG. 9 is a view in vertical section through the valve controlling holding of water in a heating jacket, drainage of water therefrom, and drainage of water from the tub itself;

FIGS. 10-a, 10-b, and 10-c, are views in section on the same line 10-10 in FIG. 9 showing the valve member rotated to three different positions; and

FIGS. 11-a, 11-b, and 11-c, are cross-sections on the same line 11-11 in FIG. 9 illustrating an upper portion

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of the valve member in three different rotated positions.

On a suitable base 12, a bath tub 13 is supported within a surrounding jacket 14. The jacket 14 is closed between the top of the tub 13 and the top of the jacket as at 15. The jacket 14 also has an enclosing base floor 16. The jacket 14 rests over the top of the base 12. The tub 13 may be made in any desired shape such as being generally rectangular or specifically in square form, herein shown as being in an elongated rectangular form.

A recessed area 17 is formed in the floor 18 of the tub 13, FIGS. 1 and 3, so as to leave preferably a portion of the floor 18 entirely therearound, with the recess 17, however, traversing the major length and width of the floor 18.

A mat 19 made out of a suitable anti-slip material such as rubber, synthetic rubber, or the like, is carried in this recess 17 to fit it closely around the bounding edges so that the mat 19 will have no tendency to slide in any direction. The recess 17 has a margin or a shoulder 20 therearound extending downwardly from the floor 18 to the bottom of the recess 17 to define the marginal sides of the recess.

A seat 21 is provided with rollers 22 mounted in a concealed manner thereunder. These rollers 22, herein shown as four in number, are flanged as indicated in FIGS. 1 and 8, to ride on the shoulders 20 whereby the seat 21 is guided in travel over the recess 17.

The end 23 of the tub 13 has an opening through its wall as does also the jacket 14. Surrounding these two openings is a frame 24 carried across the space 25 between the jacket wall 14 and the wall 13 of the tub. The frame 24 sealably interconnects these two walls so that there may not be any leakage from within the space 25 to the outside of the tub 13, that is outside of the jacket 14, nor may there be any leakage from that jacket around this frame into the tub 13 from that space. A closing door 25a is vertically hinged by the hinge 26 along one side of this frame 24 to swing outwardly from the tub as indicated in FIG. 1. The door 25a as well as the frame 24 are provided with rabbets for a sealing connection between the door 25a and the frame 24 so as to prevent water leakage from the tub past the door when the door is closed and secured.

The door 25a is held in the closed condition by any suitable means, herein shown as by a latch bar 27 hinged as at the pivot pin 28 on the door, to extend beyond the vertical side of the door opposite the hinge side by an end 29 which is in the nature of a channel so that it may drop down over the inside and outside of the jacket 14 and tub 13. That is, the portion 29 straddles the top of the end 23.

As indicated in FIGS. 3 and 8, the upper side of the base 12 is primarily open, and the floor 16 of the tub jacket 14 extends thereacross. Through an opening 30 in the floor 16 of the tub 13, there is inserted upwardly a valve body 31 having an under flange 32, FIG. 9, abutting the underside of the floor 16 of the jacket 14 and a locking nut 32a screw-threadedly engaging the body 31 from the top side of the floor 16 so as to effect (through a gasket not shown), a water tight seal and mounting of the body 31 on this floor 16. The body 31 extends upwardly into the space 25. A water drain connection 33 extends downwardly from the body 31, and a water flow nipple 34 extends laterally from the body 31 to interconnect through a fitting 35 to the underside of the tub 13, with a tub drain fitting 36 disposed within a drain depression 37 at the end of the recess 17 adjacent the door 25a. The connection 35 extends sealably through the jacket floor 16.

A tubular column 38 is fixed by its lower end in any suitable manner, herein shown as by screw-threads, to the upper end of the body 31 and extends through the

tub end 23, FIG. 6. A tube 39 is rotatably fitted with a rather close sliding fit within the tube 38 and abuts by its upper end the underside of a cap 40 which extends over the top side of the column 38 and preferably onto the top side of the tub end 23.

The inner tube 39 extends downwardly and into the valve body 31 by a lower portion designated by the numeral 39a rotatably fitted within a bore 41 provided within the body 31. The lower end of the portion 39a is shown as being held against downward longitudinal travel by means of the end 42 bearing on the shoulder 43 provided around the bore 41.

The body 31 is provided with two opposite ports 44 and 45 substantially diametrically across one from the other at an upper level, opening into the bore 41. The tube end portion 39a is likewise provided with port openings 46 and 47 diametrically across one from the other, the centers of which are on the axis of the centers of the body ports 44 and 45.

The body 31 is provided with a lower port 48 on one side and spaced angularly therearound less than 180 degrees, such as approximately 130 degrees as herein shown (FIG. 10-c) is a second port opening 49, the central axes of these two ports 48 and 49 being in a common horizontal plane.

The tube end 39a is provided with a single port 50 opening therethrough and having an axis in common with the axes of the port openings 48 and 49. Intermediate the planes of the axes of the upper ports 46 and 47 and of the lower ports 48 and 49 is a diaphragm 51 completely closing off the tube end 39a between those two sets of ports, FIG. 9.

The body 31 is provided with an annular chamber 52 therearound and into which chamber 52, the body ports 44, 48, and 49 open. The nipple 34 is in communication with this space 52, and is preferably centered on the axis of the port opening 48.

Toward the upper end of the column tube 38 there is mounted a rocker 54 on a bracket 55 which in the present form extends outwardly and upwardly from a band 56 encircling the tube 38. The tube 38 is provided with a vertical slot opening 57 extending therethrough. This tube 38 through its connection with the body 31 is held against circumferential rotation. The tube 39 is provided with a window 57a therethrough extending from an edge 58, FIG. 7, to an edge 59 with the end 54a of the rocker 54 rockable therein, so that during rotation of the inner tube 39 in a counterclockwise direction, FIG. 7, the tube 39 may be rotated the distance between the edge 58 and the edge 59. There is a top closure 60 fixed in the tube 39.

This closure 60 is spaced downwardly from the upper end of the tube 39 to have its top side 60a above the normal inner end 54a of the rocker 54, FIG. 6. The closure 60 has a central circular opening therethrough, designated by the numeral 61, of a diameter which will slidably receive the stem 62 on which a handwheel 63 is fixed. This stem 62 extends rotatably through the plate 40, the latch end 29, and a boss extending upwardly therefrom. The closure 60 is provided with a generally triangular opening extending vertically therethrough and of the shape of a section of a pie defined by the lines 64 and 65 which extend from the hole 61 to the inner side of the inner tube 39, FIG. 7. A foot 66 of a shape which will slidably fit through this opening between the lines 64 and 65 is fixed to the lower end of the stem 62 to extend laterally therefrom so as to enter the opening and travel downwardly therein upon depressing the handwheel 63. This opening is generally designated by the numeral 67. The side 65 of this opening 67 is undercut to leave an overhanging lip 68 under which an edge of the foot may be received upon pushing the stem 62 downwardly and turning the foot 66 by means of the handwheel 63 a sufficient degree to bring the foot edge under that lip. The stem 62 is normally urged into an

upper position by means of a spring 69 bearing between the underside of the wheel 63 and the topside of the latch member 29. Thus the foot 66 would remain seated under the lip 68 and against the under wall face 70 of the closure 60. With the foot 66 carried to that position, the latch bar 29 may not be lifted, and thereby the door 25a remains in a fixed closed position. The rocker end 54a will normally have that end portion bearing against the periphery of the closure 60 as it is exposed through the inner tube opening 57a between the lines 58 and 59, the closure 60 extending over that opening for that express purpose.

A bracket 71 is carried at the lower end of the tube 38, either on the valve body 31 or on the tube 38 itself, herein shown as being on the tube 38, and a lever 72 is rockably mounted on this bracket 71. This is a first class lever carrying a ball float 73 on one end and having a rod 74 pivotally connected to the other end to extend upwardly to the rocker 54, FIGS. 6 and 8. If the float 73 is lifted, then the rocker 54 has its end portion 54a lifted.

The control rod 74 and the float 73 are located within the space between the tub and the jacket wall.

Referring to FIGS. 1 and 3, a hot and cold water mixer valve 76 of any suitable design is interconnected with hot and cold water supply pipes 77 and 78 respectively and operated by a control handle 79, preferably located toward that end of the tub 13 which has the opening 24 therethrough. The discharge pipe of this mixer valve 76 designated by the numeral 80 opens into the jacket space 25. A bypass control valve 81 is provided and connected into the discharge line 80 so as to intercept the flow of water from the mixer valve 76 and instead of permitting that water to discharge into the space 25, the flow thereto may be cut off and directed into the tub 13. There is an overflow generally designated by the numeral 82. In the present form, this overflow 82 consists of a pipe 83 horizontally disposed across the jacket space 25 opening by a nipple 84 to any suitable disposal. The top side of the pipe 83 has an opening 85 on its top side within the space 25. This pipe 83 also opens into the tub through any suitable fixture 86 through which water upon reaching that level in the tub 13 may flow outwardly within the pipe 83 to the disposal end 84. Thus this overflow means 82 will control the height of the water both in the jacket space 25 and within the tub 13.

Operation

The tub end 23 has a top opening 88 therethrough of the contour which will permit the stem 62 and its foot to be inserted therethrough.

The door 25a is closed and latched into closed position by dropping the latch end 29 down over the tub end 23 by pushing down on the handwheel 63 to carry the foot 66 downwardly through the opening 88 to bring the foot 66 downwardly through the opening in the tube closure 60 and then rotating the wheel 63 a slight distance, counterclockwise, to shift the finger 90 from the stop pin 89 which is fixed to and extends upwardly from the latch end 29 to be normally in the path of the indicator finger 90 extending radially from the wheel 63, FIG. 4. When the finger 90 is in the position indicated in FIG. 4, or is carried to the limit of the number 2 finger position, the valve tube 39 will be positioned, FIGS. 9, 10a, and 11a, for that condition when the tub is empty, the jacket space 25 is empty, drainage is had through the nipple 34, and the jacket space 25 is closed off from water flow therefrom into the tub 13. In that condition, door 25a may be opened only by turning the wheel back to bring the finger 90 against the pin 89.

If the tub walls are to be preheated or warmed, the wheel 63 remains in the position indicated in FIG. 4 and water from the pipe 80 is flowed into the jacket space 25 to the desired depth to the limit of elevation of the drain hole 85, FIG. 3.

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When the water in the jacket approaches the level of the tub floor 18, the float 73 (normally primarily below the floor 18) rises. The rod 74 rocks the lever 54 to carry the end 54a through the slot 57 and the window 57a to extend over the top side of the foot 66 exposed across the diaphragm opening 67. The door 25a may not be opened as long as the water in the jacket has a level above the floor 18 of the tub, regardless of accidental or purposeful turning of the wheel 63.

To put water into the tub 13, after the preliminary warming of the tub walls, the wheel 63 is turned counterclockwise to the number 3 position of the finger 90 whereby the foot 66 rotates the tube 39 to the port positions indicated in FIGS. 10b and 11b. In this number 3 position, the drainage port 48 remains closed, and the ports 44 and 45 are uncovered to allow jacket water to flow through the nipple 34 and upwardly through the tub fitting 36. Water may be added from the pipe 80 from the mixture valve 79 to bring the water level in the tub 13 to the desired level, or water may be added to the inflowing jacket water through the valve 81.

After the bath, the wheel 63 is turned to carry the finger 90 to the number 4 position. In this wheel turning the tube 39 is rotated to achieve the port relations as indicated in FIGS. 10c and 11c. This sets up the tub drainage condition, wherein the ports 44 and 45 are still uncovered in parts at least and the drainage flow from the tub is had from through the nipple 34, around in the body 31, through the registered ports 49 and 50, and down through the end of the tube 39, and out the body discharge end 33.

The door 25a may not be opened until after the wheel 63 is rotated to bring the finger 90 back to its number 1 position, and then only when the float 73 drops upon the water level falling below the bottom at least of the door opening 25, when the rocker lever 54 carries the end 54a outwardly to permit the raising of the wheel 63 and its foot 66 allowing the latch bar 29 to be rocked upwardly.

Therefore while I have herein shown and described my invention in the one particular form, it is obvious that variations may be had such as in the specific design of control valves, all without departing from the spirit of the invention, and I therefore do not desire to be limited to this particular form beyond the limitations which may be imposed by the following claims.

I claim:

1. A bath tub construction comprising a tub; a water jacket having walls and a floor extending in spaced relation from and around the side and end walls and under the floor of the tub defining a space therearound; one of said walls of the tub and a corresponding jacket wall each having a matching opening therethrough from the top thereof to approximately the tub floor; a door selectively closing said tub opening; means sealably interconnecting said tub wall around its said opening with said jacket wall around its opening; means for latching said door in closed position across the tub opening and said sealing means; means for admitting water into said jacket; a valve selectively holding in said jacket and admitting water therefrom into said tub; said tub having a discharge drain connected with said valve; said valve further selectively opening said drain and said jacket to discharge externally water from both the jacket and the tub; means associated with said latch operating said valve; and float actuated means retaining said latch means in a closed door condition subject to water being present over said tub floor.

2. The structure of claim 1 in which said latch and associated valve means comprise a valve engaging member; said valve having a body with ports and a ported valve member shiftable in the body into port registry and non-registry in respect to said body ports to effect said selection of water flow control; a latch member passing through said tub structure into the space between the tub

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and jacket walls; a foot on said latching means releasably engaging said valve engaging member; and a float means member retaining said foot engagement when said valve is operated to admit selectively water into said jacket and therefrom.

3. The structure of claim 1 in which there is a depressed area in said tub floor and said drain leads from said area; said area having a shoulder therearound merging into the tub floor; the under edge of said door opening being approximately at said floor elevation; said area being filled with a non-slip mat through which water may drain to said tub drain; and there is a seat shiftable mounted on said shoulder to move to and from said door.

4. The structure of claim 1, in which said door latching means comprises a bar pivotally carried by said door and extending over the top of said tub; a rotatable member carried by said bar and extending between a tub and a jacket wall; said valve being carried at the bottom of said jacket; a tubular column extending upwardly from said valve within said space; a valve operating member within said column connecting with said valve; a head fixed on said tube; and a foot on said rotatable member detachably engaging said head and retaining said rotatable member against upward vertical travel, and turning said valve engaging member upon rotative travel of that rotatable member.

5. The structure of claim 4 in which said float means comprises a rocker pivotally mounted to have an end rockable over said foot to retain said rotatable member in its door latched position; a rod engaging said rocker; and a float mounted at the bottom of said jacket space also engaging said rod; the lifting of the float shifting said rocker end over said foot, and the lowering of the float removing the rocker end from over said foot.

6. A bath tub construction comprising a tub; a water jacket defining a water containing space around the sides, ends and under the floor of the tub; said tub having an opening from through the jacket and into the tub in one wall opening from the top of the tub down to approximately the level of the floor of the tub; a door selectively closing said tub opening; means sealably interconnecting said tub wall around its opening and across said jacket; means for latching said door in a closed position across the tub opening sealably closing the tub opening; means for admitting water into said jacket; said tub door latching means comprising a bar pivotally carried by said door and extending over the top of said tub; a rotatable member carried by said bar, vertically and circumferentially shiftable in connection therewith and entering said jacket space; said valve being carried at the bottom of said jacket space; a tubular column extending upwardly from said valve within said space; a valve operating member within said column connected with said valve; a head fixed on said valve operating member; and a foot on said rotatable member detachably engaging under a part at least of said head by downward depression of the rotatable member, and retaining said rotatable member against upward vertical travel, said rotatable member turning said valve engaging member upon rotative travel of the rotatable member; said valve comprising a body and a valve member in the body both ported to provide in proper port registry, selectively, by valve member movement drain flow from said tub and to close off flow from the jacket to the tub; a closed drain and a flow from said jacket space into the tub; and a tub drain flow and a jacket drain flow; said valve body having a connection between one of its ports and said jacket space and also a connection between one of its ports and said tub drain.

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