Jan. 14, 1941. R. HETHERINGTON 2,228,626

SHOWER UNIT

Filed May 7, 1938 2 Sheets-Sheet 1

Fig. 1.

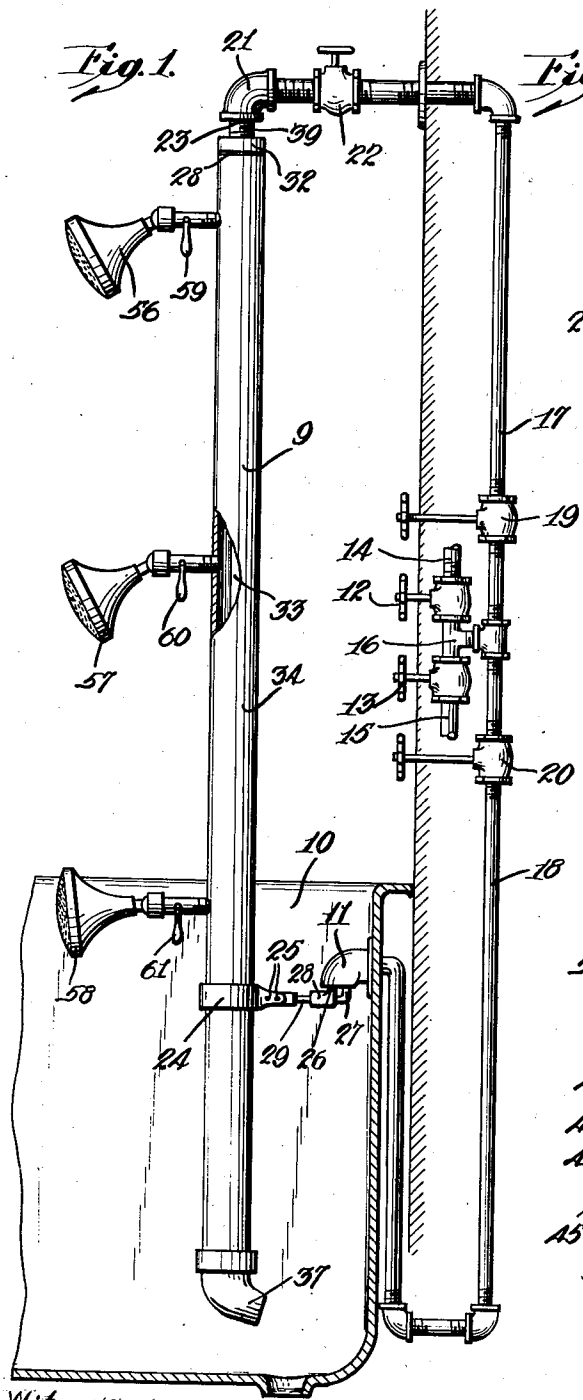


Fig. 2.

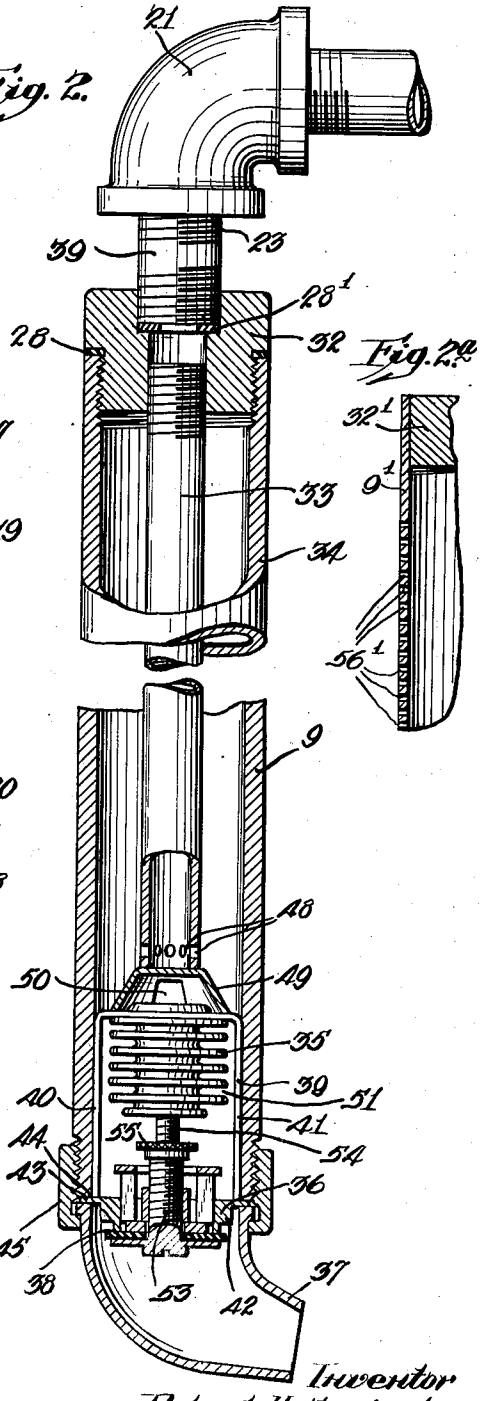


Fig. 2a

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Fig. 3.

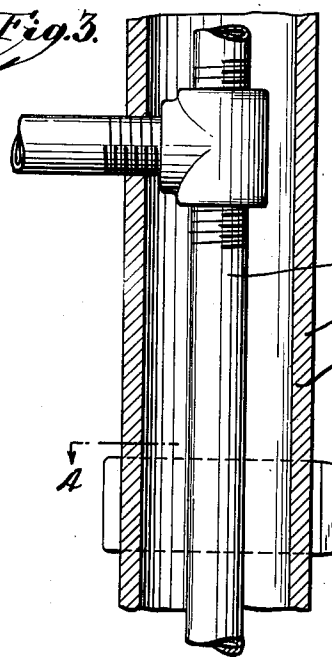
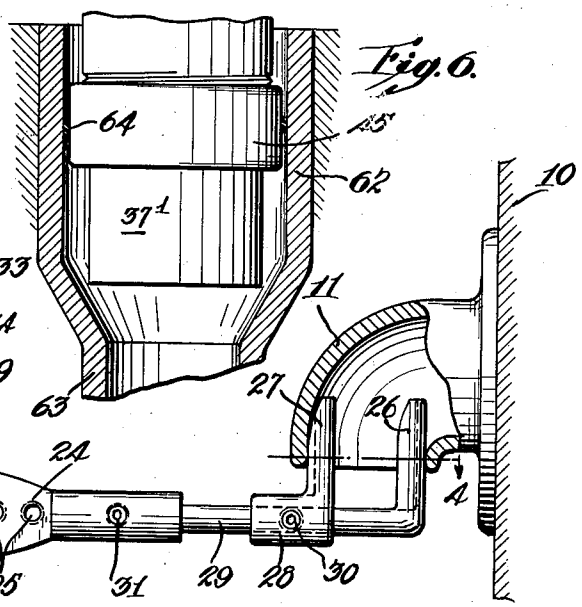


Fig. 6.



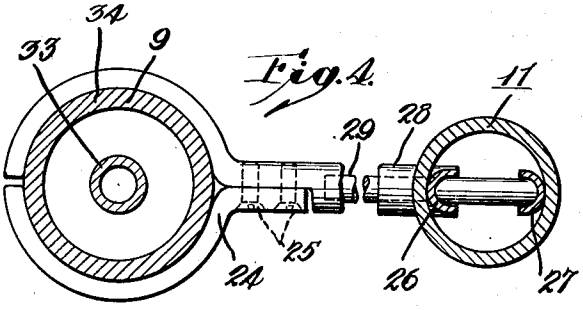


Fig. 4.

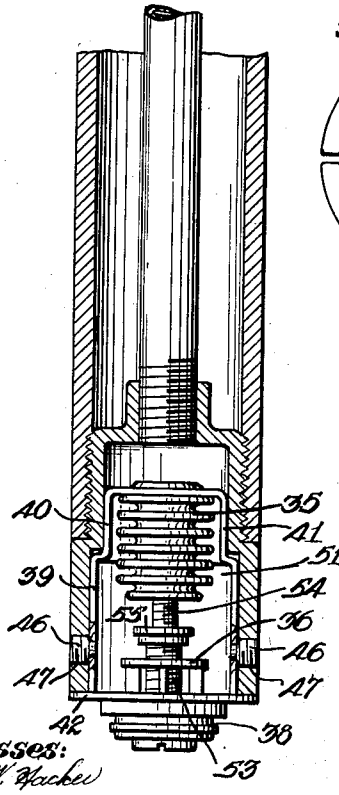
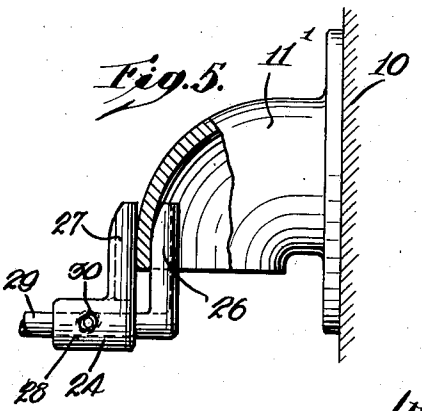


Fig. 5.



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SHOWER UNIT

Robert Hetherington, Sharon Hill, Pa.

Application May 7, 1938, Serial No. 206,553

14 Claims. (Cl. 236—93)

The present invention relates to a shower unit intended for use with bath tubs, particularly with tubs which have already been installed and in shower stalls.

A purpose of the invention is to provide novel and inexpensive structure of the character indicated for easy connection and disconnection with any of the widely variant bath tubs already installed or/and to be installed.

A further purpose is to provide a spray unit having inside and outside pipes from a common inlet fitting at the top, one or more valved spray heads from the side, a safety thermostatic valve outlet at the bottom and removable support at top and side or bottom respectively from a mixed hot and cold water-inlet pipe and a water inlet fitting of the tub or a stall wall.

A further purpose is to surround a water inlet pipe with an outside discharge pipe having one or more valved spray heads from an upper portion or upper portions thereof and a thermostatically controlled safety discharge to waste from the lower end.

A further purpose is to present a shower unit as an easy and convenient safe hand hold for the shower user.

A further purpose is to brace a shower unit near its lower end from a bath tub fitting, preferably from one or both of the interior curved walls of a bath tub water-inlet fitting, while supporting the unit from the top by suitable connection to a preferably downwardly directed mixed hot-and-cold water supply pipe.

A further purpose is to provide a novel bracket for easy application at one end to the inside walls of variant water inlet fittings of different bath tubs and at the other end adapted to be vertically adjustable along and in use clamped to the body of a spray unit.

Further purposes will appear in the specification and in the claims.

I have elected to show one main form only of my invention showing however a modification thereof and selecting a form that is practical and efficient in operation and which well illustrates the principles involved.

Figure 1 is a vertical elevation, in part sectioned, showing a desirable embodiment of my spray unit applied to a conventional bath tub and with diagrammatic showing of hot and cold connections.

Figure 2 is an enlarged broken section of the spray unit of Figure 1, omitting a clamp connection thereof to the bath tub water supply fitting.

Figure 2*a* is a fragmentary section of an alternative form.

Figure 3 is a broken sectional elevation corresponding to a modified lower portion of Figure 2 and showing clamp structure omitted in Figure 2 but shown to smaller scale in Figure 1.

Figure 4 is a section of Figure 3 taken upon the line 4—4 thereof.

Figure 5 is a view corresponding to Figure 3 but showing the bracket structure connected to a bath tub water-inlet fitting in a way different from that of Figure 3.

Figure 6 is a fragmentary side elevation, partly sectioned, of an alternative form.

Describing in illustration and not in limitation and referring to the drawings:

My shower unit 9 in Figures 1 and 2 is shown assembled for use removably with a conventional bath tub 10 having a conventional water-inlet fitting 11. Hot and cold water supply valves 12 and 13 respectively, are indicated in hot and cold water supply pipes 14 and 15 that connect intermediate their valves 12 and 13 with a mixed hot-and-cold water pipe 16 having upward and downward branches 17 and 18 respectively which through valves 19 and 20 feed shower supply 21 and normal tub fitting 11. Either valve 19 or valve 22 can be used as a limit to speed of water inlet and the other can be used to turn the water on or off.

The shower unit 9, is shown as set in approximately vertical position as would be the case where it is to stand in a tub and where it is to be stayed by a tub inlet fitting. Some features of the invention are equally operative with the unit in other positions, even in horizontal position. In the illustration the inlet end is at the top where it is threaded removably upon and supported by the outlet end 23 of the fitting 21. Toward its lower end it is braced from swinging movement in any direction by an adjustable hook connection into the open end of the tub fitting 11.

This hook connection is effected by a clamp bracket 24 which at its inner end is tightened by screws 25. The clamp can be set upon the body of the shower unit at any height. At its farther end the bracket is provided with cooperating upwardly presented outer and inner prongs 26 and 27, of which the inner prong 27 extends upwardly from a sleeve 28 upon a rod portion 29 of the bracket. A suitable set screw 30 holds the sleeve 28 and thereby the prong 26 to best accommodate the spread of the prongs 26 and 27 into the fitting 11, maintaining the prongs firmly against the contact walls of the fitting 11.

It will be understood that the fitting 11, intended for any usual or suitable tub fitting, whether or not already installed, may have any of quite widely different dimensions. Usually however as illustrated in Figures 1 and 3, the fitting outlet is large enough to receive both of the prongs 26 and 27, so set as to engage opposite inside walls of the fitting. However the bracket may connect to a fitting 11' as in Figure 5. From its character it will be seen that the outlet may be of smaller bore than the bore of outlet 11. Here the outer prong 26 only of the bracket hooks into the open end of the fitting and the inner prong 27 presents its outer edge to the outside of the fitting.

It will be seen that whether or not both or one only of the prongs 26 and 27 as thus presented fit within the outlet opening of the fitting the bracket is blocked at its prongs from any horizontal movement, whether laterally or longitudinally of the bracket. Firm support of the body of the shower unit from any horizontal movement is thus secured.

It also will be seen that the shower unit can be connected and disconnected easily and quickly. By loosening the screws 25 the bracket 24 will slip downwardly to release its hook engagement with tub fitting 11 and the unit may be then unscrewed from the permanent fitting 21.

Replacement is equally easy, the unit being first screwed at the top into the fitting 21 and being afterward firmly supported from horizontal movement by sliding the bracket 24 upwardly into firm hook engagement with the tub fitting 11, as already explained, setting the bracket by tightening the screws 25. Suitable washers—such as that at 28—may be used to prevent leakage.

When the shower unit 9 is to be connected and disconnected repeatedly at the same tub there will be usually no change in the set spread of the prongs 26 and 27 and no change in the set length of the bracket; for which reason I prefer to have the set screws 30 and 31 respectively controlling the setting of the sleeve 28 and of the length of the bracket, less readily operated than the more frequently operated screws 25 controlling the clamping of the bracket to the body of the unit.

The body of the shower unit as shown in Figure 1 comprises a head 32, carrying inside and outside pipes 33 and 34, thermostat element 35, waste valve 36 and outlet L 37.

The head 32, axially bored and counterbored, presents the washer 28' and upwardly directed threaded counterbore for connection to the nipple 39 threaded into fitting 21. Downwardly it gives threaded support to the inside and outside pipes 33 and 34.

The outside pipe 34 extends downwardly some distance beyond the lower end of the inside pipe 33. The thermostat element 35 lies a little below and across the end of the inside pipe. The water valve 36 is operatively connected to the thermostat element 35. The valve 36 closes against a valve seat 38. The washer at 28' may be used to throttle by substituting here a washer having an opening just large enough to pass the desired volume of water. This means of throttling may be used in addition to or instead of the valve 22.

The valve 36, valve seat 38 and thermostat element may be supported in any suitable way. As shown they are held rigidly at their upper end upon an inverted U stand 39 having strap arms 40, 41 extending upwardly from and rigidly connected with a collar 42 by which the valve seat is carried. The flange 43 of the collar is held between the lower end 44 of the outer pipe and the upper end of the elbow by a coupling 45. In Figure 3 the U is given support from trunnions 46 threaded into the outer pipe at 47.

The water from the inner pipe is delivered into the outer pipe immediately adjacent the thermostat. In the structure of Figures 1 and 2 the outer pipe is used as additional mixing space and the shower heads are connected directly with it, but in Figure 3 the heads are connected with the inner pipe and the outer pipe is maintained at a very much lower temperature than would otherwise be the case, suiting this outer pipe to use by the bather as a hand hold for steadying purposes.

In Figure 2 discharge of the water takes place directly from the lower end of the inner pipe into the outer pipe just above the thermostat. All of the water follows this path, and discharges through the holes 48, flowing back up the outer pipe to the shower outlets. The water spreads out into the outer pipe, falls down along the coned guide 49 and passes along its edges and through the openings 50 into the space 51 about the thermostat.

In the form shown in Figure 3, when the valve at the bottom is closed a part only of the flow discharges from the lower end of the inner pipe at 52 and is directed toward the thermostat.

The thermostats and their valve connections with the valves are readily standardized for any desired temperature of thermostatic valve operation. However, in view of the possible desire to adjust for different temperatures, I have shown an adjustment between the thermostat and the valve.

The adjustment is shown by means of sleeve 53 which is threaded upon stud 54 connected with the thermostat and in turn threads into the valve.

If the valve be held stationary and a different number of threads be used upon the inner and outer surfaces of a sleeve a differential action may be secured, by which very fine and exact adjustments are possible. On the other hand, the valve may be adjusted upon the sleeve or the sleeve upon the stud for a coarse adjustment. A lock nut 55 is shown upon the stud.

Whatever the construction in this particular, the mixed hot and cold water supply is delivered from the inner pipe into the annular space between it and the outer pipe and is tapped from it to the individual shower heads 56, 57, 58 through individual valves 59, 60, 61.

In Figure 6 a straight discharge mouth 37' is shown taking the place of the waste discharge outlet 37 in order that more conveniently the shower unit may be rested in the bottom within a well 62 connecting with any discharge outlet 63 to the sewer such as can conveniently be placed, for example, in the floor or in any other wall of a shower stall. A washer 64 may be used between the well and the collar 45, if the structure generally of Figure 2 be followed, or between the lower end of the unit—whatever shape—and the well in order to prevent regurgitation of discharged water on the feet of the user and at the same time to steady the shower unit at the lower end.

Structures having coaxial pipes as described, supported at the top and side over a tub and supported at the top and bottom in a shower stall have been used quite successfully.

It will be evident that my spray nozzle unit has advantages entirely independent of whether it be vertical or horizontal or at an angle in use,

and independently of the manner in which the inlet end of the unit is supported or the opposite end is supported or stayed. The passage of the inlet water through the inner pipe and, subject to a thermostatic discharge in case of excessive heat, through the outer pipe, or directly from the inner pipe provide safety features not otherwise obtainable. In either case the free discharge of hot water protects against overheating of the outer pipe, and where the water does not directly engage the outer pipe provides a hand hold definitely maintained at low temperature.

It will be evident that the purpose is primarily to produce a spray and that I am interested therefore in the production of the spray rather than in the question of whether the openings through which the water is sprayed technically are classified as spray heads or merely as spray openings; my function being carried out in the form of Figures 1 and 2 for example, with any type of openings independently of whether there be separate projecting spray heads or not. This thought has been carried out in Figure 2*a* in which a very much cheaper construction is shown than that in Figure 2. A much thinner outer pipe is shown in 9', having a number of separate openings at 56'. The pipe connects with the plug 32' also in a different way, it is merely shrunk upon the plug permissibly being tinned and sweated into contact. The term shower is intended to cover this form also and the shower head in this case is valved because of the valves controlling the inflow of the water into the unit.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to those skilled in the art, to obtain part or all of the benefits of my invention without copying the structure shown, and I, therefore, claim all such in so far as they fall within the reasonable spirit and scope of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A spray nozzle unit comprising an inlet inner pipe, an enclosing outer pipe with which an outlet lower end of the inlet pipe communicates, a thermostat and an emergency discharge to waste, both located in the outer pipe below the outlet end of the inner pipe and at a point adjacent to the point at which the two pipes communicate and allowing quick outlet of water supplied by the inlet pipe, and a shower nozzle connected with one of the pipes above the discharge to waste.

2. A shower unit comprising an inlet pipe open near its lower end, a thermostatically controlled emergency discharge valve to waste located below the lower end of the inlet pipe, an outer pipe with which the inner pipe communicates and a spray nozzle connecting with the outer pipe.

3. A shower unit, comprising an inlet pipe having an outlet lower end, a thermostatically controlled discharge valve to waste at the lower end of the outer pipe and adjacent the lower end of the pipe, an outer pipe enclosing the inner pipe, and a spray nozzle connecting with one of the pipes above the lower end of the inlet pipe and located outside of the outer pipe.

4. A spray nozzle unit, comprising an inner supporting pipe discharging from its lower end adapted to connect with a mixed hot and cold water supply, a thermostatically controlled emergency outlet discharge valve to waste adjacent to the lower end of the inner pipe, means for supporting the unit adjacent the outlet to waste, an outer pipe surrounding the inner pipe, supported at one end from it, and a spray nozzle receiving water supply from one of the pipes and located above the emergency discharge valve.

5. In a spray nozzle unit, a pair of communicating concentric pipes, the inner adapted to receive water inlet at one end and to discharge from the other end, a spray nozzle connected with one of the pipes and a thermostatically controlled discharge valve to waste responding to the temperature in the inner pipe and located below the spray nozzle, the flow for the spray nozzle and discharge valve to waste dividing at the outlet of the inner pipe and following different paths therefrom.

6. In a shower unit a downwardly directed tub water inlet, a water inlet above the tub, and a spray nozzle unit adapted for connection with the inlet above the tub, and comprising a pipe, a plurality of spray nozzles connected at different distances along the length of the pipe, a thermostatically operated valve at the lower end of the pipe, adapted to discharge excessively hot water and a clamp connection with the unit engaging the downwardly directed inlet.

7. A generally vertical shower unit adapted to be attached to a shower connection at the top and comprising an outer pipe closed at the top, an inner pipe connected with the shower connection, a thermostatic valve in the lower part of the outer pipe and adapted to be affected by the temperature of the water from the inner pipe, a plurality of shower heads connected to spray the water from one of the pipes at different levels along the height of the outer pipe and a waste valve controlled by the thermostat and adapted to discharge water through the waste when the temperature of the water supply is excessively high.

8. In a shower unit for use with a bath tub, an outer pipe closed at the upper end, an inner pipe connected to the water supply, within the outer pipe and communicating with it at its lower end, a plurality of shower heads connected with one of the pipes, and a thermostatic valve at the lower end of the outer pipe adapted to discharge water with excessive temperature of the water supply.

9. A spray nozzle standard for use in a tub and comprising inner and outer pipes, adapted for connection of the inner pipe with an inlet water supply at the top, the outer pipe being there closed upon the inner pipe, a thermostatically operated waste valve at the lower end of the outer pipe, a thermostat therefor, the inner and outer pipes connecting at the bottom of the inner pipe, and spray heads connecting from the outer pipe.

10. In a shower unit for use with a bath tub and with an outside water-supply fitting above the tub, an inlet inside pipe connected to receive water from the fitting and an outlet outside pipe, connected one with the other at their lower ends, with the outside pipe extending downwardly beyond the inside pipe, a valved spray head from the side of the outside pipe, a vertically adjustable bracket from the outside pipe for laterally supporting the unit toward the lower end thereof, a waste valve at the lower end of the outside pipe and thermostatic safety control mechanism inside the outside pipe between the valve and lower end of the inside pipe for opening the valve if the temperature of water passing the inside pipe becomes abnormally high.

11. A unit for spray nozzle use comprising an outer pipe closed at the upper end, an inner pipe

therein adapted for connection with water supply at the upper end, spray nozzle heads connected with the inner pipe, walls forming a thermostat compartment closed from the outer pipe and into which the inner pipe discharges at its lower end, a thermostat therein and a discharge valve to waste controlled by the thermostat.

12. A tub having an inlet, a spray nozzle standard adapted for use in the tub, comprising an outer pipe closed at the upper end, an inner pipe therein connecting at the upper end with a water supply and thereby holding the upper ends of both pipes, an outlet thermostatic valve adapted to discharge excessively warm water, spray nozzles connecting with the inner pipe and a clamp connected to the outer pipe and having removable connection with the inlet to the tub.

13. A generally vertical shower unit for use with a bath tub and with a lower water-supply fitting of the tub and a top support-and-inlet member, a pipe below the inlet, a plurality of vertically spaced valved spray heads from the side of the pipe, an outlet valve to waste at the bottom of the pipe, thermostatic mechanism above the valve controlling the operation thereof and a vertically adjustable laterally extending bracket engaging the pipe at its inner end and adapted at its outer end to rigidly connect to the lower water-supply fitting.

14. A generally vertical shower unit for use with a bathtub, with a lower water supply fitting of the tub and a top support and inlet, a pipe connected with the inlet, a plurality of vertically spaced valved spray heads from the side of the pipe, an outlet valve at the bottom to waste, thermostatic mechanism above the valve controlling the operation thereof, a vertically adjustable bracket, extending laterally from the pipe, and a pair of upwardly presented relatively adjustable prongs at the outer end of the bracket adapted rigidly to connect to the water-supply fitting with one of the prongs hooking into the open end of the fitting.

ROBERT HETHERINGTON.