May 24, 1932. D. F. ZOOK 1,859,859

IN-A-DOOR BATHROOM

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Fig. 1.

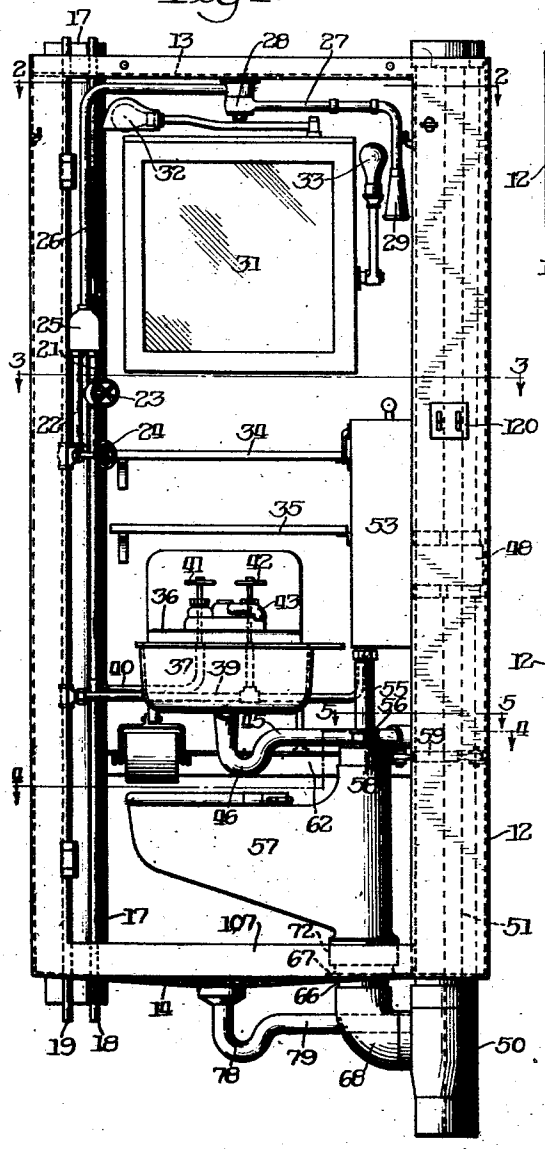


Fig. 3.

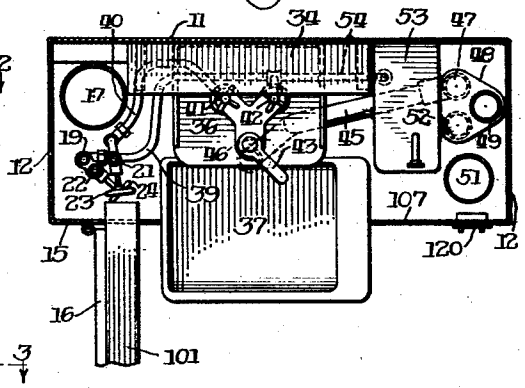
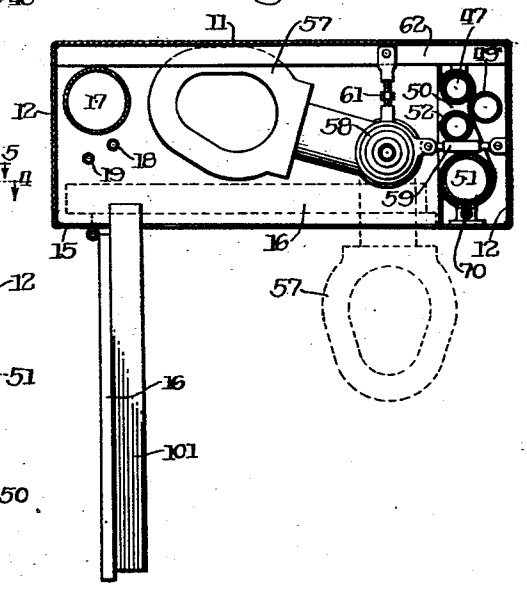


Fig. 4.



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Fig. 9.

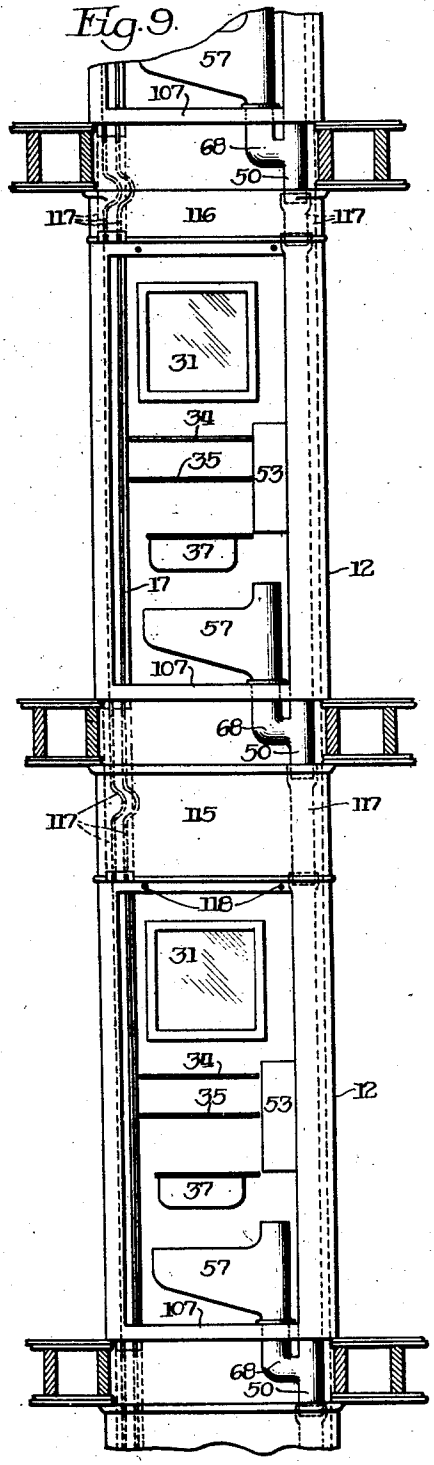


Fig. 2.

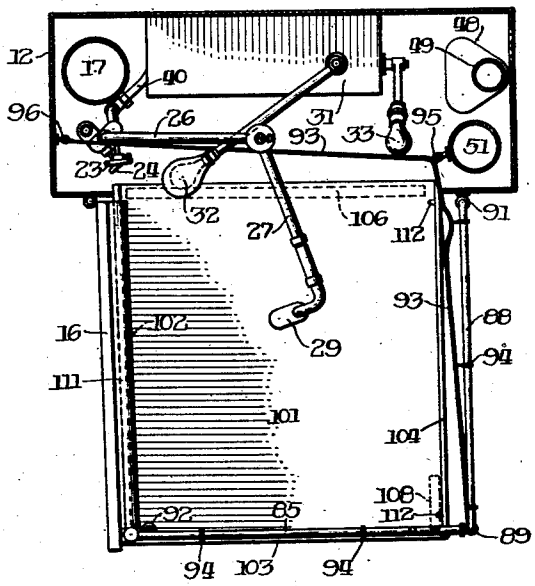
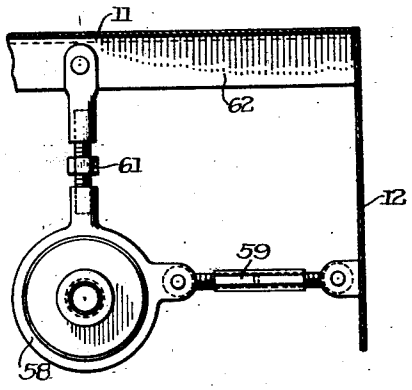


Fig. 5.



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IN-A-DOOR BATHROOM

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Fig. 6

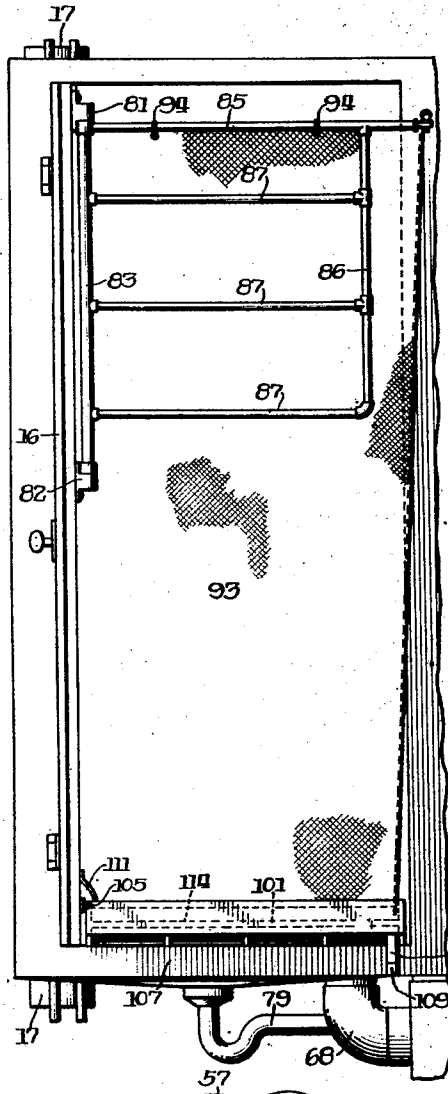


Fig. 7

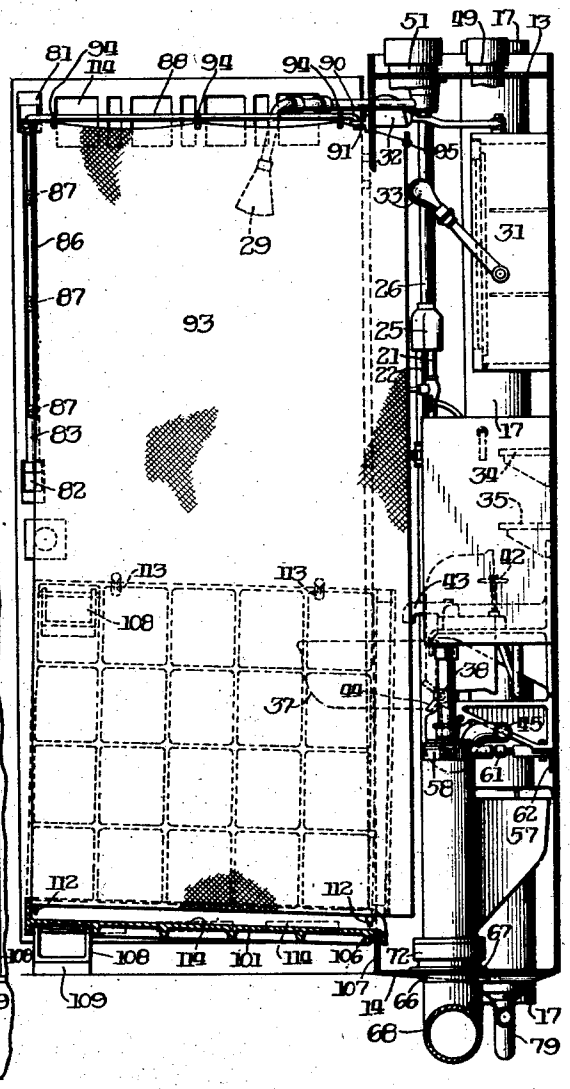
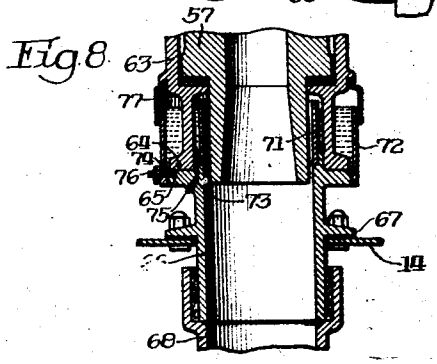


Fig. 8



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IN-A-DOOR BATHROOM

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Fig. 10 Fig. 11 Fig. 12

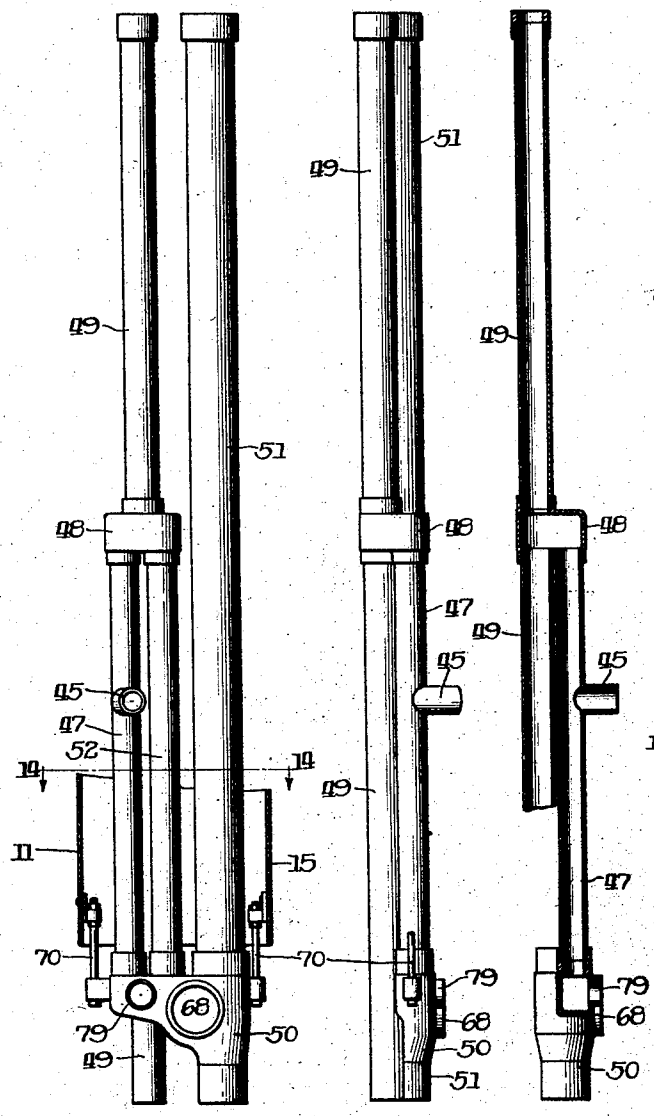


Fig. 13

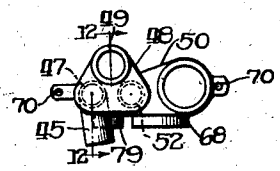
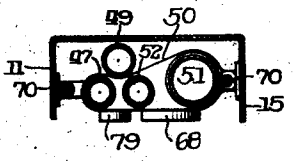


Fig. 14



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Patented May 24, 1932

1,859,859

UNITED STATES PATENT OFFICE

DAVID F. ZOOK, OF EVANSTON, ILLINOIS

IN-A-DOOR BATHROOM

Application filed June 30, 1930. Serial No. 464,843.

My invention relates to compact bath-rooms or cabinets and their toilet facilities, particularly for employment in connection with rooms occupied by one person and appropriate for installation in hotels, rooming-houses, residences, hospitals, clubs, steamships, etc., especially where space is at a premium.

The principal aim or salient object is to provide a new and useful bath-room structure or unit of this character which will occupy but small space, which may be manufactured in units, which has built-in, self-contained plumbing, and which can be used with satisfaction and convenience.

To enable those skilled in this art to fully understand the invention, both from structural and functional standpoints, in the accompanying drawings, forming a part of this specification and to which reference should be had in connection with the following detailed description, I have illustrated a present, preferred embodiment of the invention, and, for simplicity, like reference numerals have been used throughout the views to designate the same parts.

In these drawings:—

Figure 1 is a front elevation of the cabinet containing the bath-room fixtures, with the door omitted;

Figure 2 is a horizontal section taken on line 2—2 of Figure 1, the parts being viewed in the direction indicated by the arrows;

Figure 3 is a similar, horizontal section taken on line 3—3 of Figure 1, the parts being viewed in the direction designated by the arrows;

Figure 4 is a horizontal section on the broken line 4—4 of Figure 1, with the door in open position, the toilet seat or closet being shown swung within the cabinet in full lines, and in operative position extended outwardly through the doorway in dotted lines;

Figure 5 is an enlarged, fragmentary, horizontal section on line 5—5 of Figure 1, showing the upper, adjustable support or bearing for the closet;

Figure 6 is a front elevation of the structure with the door open and with the platform and curtain in operative positions for shower-bath purposes;

Figure 7 is a vertical cross-section with the door open and the shower-bath structure in operative position, the hinged platform on the door being indicated in dotted lines in its folded-up relation.

Figure 8 is a vertical, central section through the lower closet bearing, depicting its connection with the soil-pipe;

Figure 9 is a more or less diagrammatic view indicating how the cabinets or compartments may be made in standard sections or units, installed in tiers, the self-contained plumbing connected between floors, and employed in association with the walls of rooms of different heights;

Figure 10 is a fragmentary cross-section through the cabinet showing in side elevation, the drain and vent unit, as viewed from the direction in which the discharge pipes enter the unit;

Figure 11 is a rear elevation of such drain and vent unit viewed at right angles to that of Figure 10;

Figure 12 is a vertical, sectional view on the broken line 12—12 of Figure 13 with the soil-pipe omitted, the parts being viewed as indicated by the arrows;

Figure 13 is a plan view of the complete drain and vent unit; and

Figure 14 is a horizontal section on line 14—14 of Figure 10.

By reference to these drawings, it will be perceived that the improved and novel structure includes a cabinet or compartment preferably made of sheet-metal, having a back wall 11, opposite end-walls 12, 12, a top 13, a floor or drainage sump 14, and a front wall 15 having a doorway equipped with an outwardly-opening, hinged door 16.

Extended vertically through such cabinet or compartment, which, if desired, may be built into the wall of the room with which it is associated, are five main service pipes.

On one side there is an air duct or ventilation-pipe 17 and neighboring hot and cold water mains 18 and 19, respectively.

On the opposite side of the compartment

a main soil-pipe 51 and a main vent-pipe 49 are placed.

All five of these "service pipes" extend through the top and bottom of the cabinet for connection at one or both ends with the corresponding service pipes of similar cabinet sections.

These five service pipes or mains serve all the fixtures within the cabinet, taking care of all their requirements in operation, and, in addition, the cabinet may, of course, be wired for the electric fixtures, such as lights.

Pipe 17 is a ventilating air-pipe apertured or perforated at desired places, and it may be connected to a fan or blower in any approved ventilating system.

Pipe 18 is the hot-water main and serves the wash basin or lavatory and the shower-spray.

The cold-water main 19 supplies the wash-basin, the shower-spray and the flush-tank or valve.

Soil-pipe 51 receives the discharge from the wash-basin, closet, and bottom sump.

Pipe 49 is the main vent and co-operates with the three traps 46, 78 and that of the closet.

Such five mains 17, 18, 19, 51 and 49 make it unnecessary to run piping in the walls or partitions of the buildings, but such cabinets can be built without self-contained plumbing, and, in that case, the fixtures would be connected to external piping positioned in the walls in the usual way.

By means of pipes 21 and 22 equipped with control-valves 23 and 24, respectively, hot and cold water in desired ratio is fed from the main pipes 18 and 19 to a mixing chamber or connection 25 from which the water is carried through a pipe 26 to a shower-bath pipe 27 pivotally mounted at 28 on the underside of the top 13 for horizontal swinging action, such pipe being fitted at its end with an adjustable spray-nozzle 29, the construction being such that the pipe and its delivery nozzle may be swung into inoperative position, as shown in Figure 1, within the cabinet, or may be swung outwardly through the doorway into operative position, as indicated in Figure 7.

The back wall of the compartment carries a medicine cabinet 31 at proper height and supplied with a mirror, as is usual, in its door.

For especial convenience during shaving, adjustable electric lights are provided, such as a horizontally-swinging electric-lamp 32 and a companion, vertically-swinging electric lamp 33, but a less costly design would be to mount both lamps on fixed brackets.

The electric switches are shown at 120 on the front wall of the cabinet.

Below the medicine cabinet, the back wall is supplied with two shelves 34 and 35 for the serviceable accommodation of toilet articles or the like.

Below the shelves, I provide a lavatory fixture comprising a back 36 fixedly mounted on the rear wall of the cabinet and to which the wash-basin proper 37 is hinged at 38.

When tilted upwardly, the basin 37 surrounds the front part of the stand 36, but toilet articles upon this fixed member 36 are not disturbed by the swinging up or down of the basin itself.

Hot and cold water-pipes 40 and 39 connect the main water-pipes 18 and 19 with valves 41 and 42 associated with a common, swinging faucet 43 through which the controlled, mixed water of desired temperature may be delivered into the basin when the latter is in its lowered or operative position, such basin having a drain 44 which, when opened, delivers the contents of the bowl into a discharge-pipe 45 supplied with a trap 46 and connected to a pipe 47 of the plumbing unit.

Whether basin 37 is tilted up or lowered, the drainage or drip will be into the funnel located at the top of the trap 46.

As is clearly indicated in the drawings, pipe 45 delivers its contents into the pipe 47 which, through the connection 48, is directly joined to the vent pipe 49, the contents of pipe 47 flowing down into the box or connection 50 directly connected with the soil-pipe 51.

The hinged basin 37 is maintained in correct lowered position in any approved fashion, and, as shown here, the front edge of the standard 36 projects downwardly inside of the basin and engages the rear, upper edge of the same, or, if preferred, stops or lugs may be used to accomplish the same result.

A flush-tank 53, provided in the location indicated in the drawings, is connected to the cold water pipe 19 by an extension 54 to pipe 39, the delivery pipe 55 of the tank being connected through a stuffing box 56 to the top portion of a toilet seat or closet 57.

In place of the flush-tank 53 here shown, a flush-valve could be substituted, such valve requiring less space, and, in some cases, might be preferred, but either of the indicated means can be readily installed.

The upper part of closet 57 is pivotally mounted in a ring bearing 58 adjustably held in correct position by a pair of turnbuckle members 59 and 61, one joined to the adjacent end wall 12 of the cabinet and the other connected to an angle bar 62 welded or otherwise mounted on the front of the back wall 11 of the compartment, and on which the brackets for the wash-basin may be bolted.

The closet swings horizontally about a vertical axis, which is concentric with the upper, water supply pipe 55 and the lower, discharge pipe 66.

The bottom part of the closet is mounted

in and carried by a bearing-ring 63, the lower, annular, flat surface 64 of which rests upon a bearing surface 65 of a metal base member or pipe section 66 having a flange 67 bolted to the sump or floor of the cabinet, the lower end of the member 66 fitting into an elbow 68 directly connected with the box 50, and, therefore, delivering into the soil-pipe 51.

Member 66 has a pair of spaced, concentric, upstanding sleeves 71 and 72 encasing the lower part of the bearing-ring 63 and affording an annular chamber between them filled with oil, which liquid may be drained off, if required, through drilled passages 73 and 74 fitted with removable screw-threaded plugs 75 and 76, a guard-ring 77 being provided to cover or close the top part of the specified oil chamber to keep dirt or water from getting into the oil.

From what precedes, it will be clear that the bearing surface runs in oil which forms a gas-tight seal.

Packing is provided between ring 63 and the closet outlet 57, which discharges its contents below the oil seal and bearing into member 66, which is larger in diameter than the exit of closet 57.

The specified construction permits the closet to be swung horizontally into the cabinet, as shown in full lines in Figure 4, or to be swung outwardly through the open doorway into the room for use, as depicted in dotted lines in the same figure.

The closet bowl, of course, contains the usual trap which is not affected by the position of the closet, and the latter can be flushed while it is in any position.

The floor is protected, for if the trap becomes clogged and the bowl runs over it can overflow inside of the cabinet, where additional drainage already exists.

As is clearly illustrated in Figure 1, the floor 14 slopes toward an opening connected through a trap 78 and pipe 79 to the interior of the box 50, whereby any water on the floor of the compartment will be drained off to the soil-pipe.

The drain and vent plumbing unit installed in the cabinet is illustrated in detail in Figures 10 to 14, inclusive, and the closet 57, basin 37, and bottom sump 14 all drain into and are vented in such assembly.

Box 50 lies below the floor 14 of the cabinet and may be considered as a large, side extension of the soil-pipe 51.

Pipe 47 extends upwardly from box 50 a substantial distance above the floor, for example, three feet, to enter the connection 48, and approximately half way of its length it receives the outlet of pipe 45 from the lavatory, whereby pipe 47 drains and vents the lavatory.

A vent pipe 52 also parallels pipe 47 and enters connection 48, as is clearly shown in Figure 10, such pipe 52 venting the box 50, into which the closet empties through the pipe 68 and the sump delivers into box 50 through pipe 79.

Pipe 47 amounts to an additional vent for the member 50.

Both pipes 47 and 52 terminate in the fitting 48 to which the main vent pipe 49 is attached both above and below, as is fully depicted in Figure 12.

Special means for joining the member of this unit or assembly may be used to reduce the dimensions of joints and to allow such plumbing unit to be installed in a small place.

Most of such unit would be assembled outside of the cabinet and installed as one fixture on supports 70, 70.

Door 16 on its inner side has a pair of vertically aligned bearings 81 and 82, which pivotally support an upright 83 of a frame composed additionally of an upper curtain rod 85, another upright 86 and a plurality of towel-rack bars 87, 87, this rectangular frame constituting a combined towel-rack and curtain support.

A rod 88 is hinged at 89 to the free end of bar 85 and its other end is turned down at 90 so that it may engage in an eye 91 fastened to the front wall of the cabinet or to a corresponding eye 92 on the bar 85.

A water-proof curtain 93 is hung on rods or bars 85 and 88 by hooks 94, in the usual manner, and another portion of the curtain is hung in a loop or eye 95 mounted on the upper portion of the soil-pipe 51, the free end of the curtain being taken across the cabinet and held by a hook engaging an eye 96 on the inner face of the end-wall 12.

When the curtain enclosure is to be collapsed, the hooks are released from the eyes 95 and 96 and that portion of the curtain is folded back and hung by hooks on the bar 88, whereupon the latter, with the double-thickness of curtain carried thereon, is released from the eye 91 and swung over to engage eye 92, whereupon the associated members 85, 88 and the triple-thickness of curtain, are swung back against the inner side of the door.

To provide a suitable platform on which the person taking a shower-bath may stand and to supply proper means for drainage of the showered water into the bottom of the cabinet from which it will pass off to the soil-pipe, a platform 101 with upstanding flanges 102, 103, and 104 around its three edges is hinged at 105 to the inside of the door near its lower end, and the hinges are slightly tilted so that when the platform is swung down into operative position it will slope downwardly toward the compartment for effective drainage purposes, as presented in Figure 7, the inner edge of the platform being channeled at 106 to fit over the curb 107 of the cabinet front wall.

This channel 106 contains a rubber or similar strip of material to equalize the strain in supporting the inner edge of the platform.

To support the fourth corner of the platform, the latter at that location is fitted with a hinged foot 108 provided with a cushion-base 109 adapted to rest on the room floor or carpet.

From the foregoing, it will be clear that this platform is supported along one edge by the hinges on the door and along another edge by resting on the curb 107, and that it is sustained at the free corner by the foot 108.

In order to prevent the shower water from leaking between the door and the platform, the former is provided with a drip shield or guard 111 overlying the hinges and thus covering and protecting the gap or space referred to.

To assure that the curtain will be held in proper position, the flanges of the platform may have any appropriate number of hooks 112 to engage eyelets along the lower edge of the curtain, thus retaining the curtain's lower portion positively inside of the platform flanges.

When the platform is not in use, it is swung up against the door, as shown in dotted lines in Figure 7, and is held in that position by a pair of turn-buttons or catches 113, 113, and, when the platform is thus in elevated relation, the foot 108 automatically swings down against it and rests within the space limits of the platform itself.

To afford ventilation, the door 16 is provided with openings 114 at its top and bottom, and the pipe 17 assures additional ventilation, as previously described.

Figure 9 illustrates how the in-a-door bath cabinets may be used in rooms of different heights, the space above the cabinet to the ceiling being provided with a closure 115 or 116 of different heights to conform to the spaces referred to, in which are accommodated the connections between the five, main service pipes.

That is to say, the protruding ends of such pipes at the top of any cabinet are united with the lower ends of the corresponding pipes of the cabinet next above by approved pipe connections 117 concealed behind the removable covers 115 and 116 so that ready access may be had thereto, if occasion requires.

These covers or extension tops 115, 116 are bolted to the cabinet top at 118, 118 and are quickly and easily demounted.

From the description and illustration, it will be clear that when the various elements are swung into the compartment and into their inoperative positions, the door may be closed in the usual way.

When such door is opened, the medicine cabinet, its mirror and associated lights, as well as the shelves beneath, are readily available for their ordinary purposes.

To use the wash basin or lavatory, this of course, must be tilted down, in which position it is in proper relation to the faucet for the reception of water therefrom, and the used water in the basin may be drained by opening its delivery aperture so that the water discharged may flow off through the associated drain-pipe and the soil-pipe.

To take a shower bath, the door is opened, the buttons 113 are turned to free the platform 101, and this is swung down into the operative position indicated in Figure 7, thereby holding the door in its proper, open position, the supporting foot 108 automatically swinging downwardly to support that part of the platform to which it is attached.

The frame 83, 85, 86, 87 is swung out at right angles to the door, the rod 88 is detached from the eye 92 and applied to the eye 91, thereby completely enclosing the shower-platform with the door on one side and the curtain on two sides, the remaining free length of the curtain being hooked at 95 and 96, thus protecting the cabinet interior and its contents from the shower-spray.

The lower portion of the curtain may be attached to the several hooks 112, as before described, for the purpose indicated.

The pipe 27 and its adjustable nozzle 29 are swung out into the operative position shown in Figure 7, and the person can take a shower bath at the proper temperature by regulation of the valves 23 and 24, which project through a slot in the curtain 93.

If desired, the light 32 can be swung over the curtain, as it does not interfere with the operation of pipe 27.

The bath having been completed, the various parts of the appliance are folded back into their original positions and then the door of the cabinet may be closed.

For use of the closet 57, the door is opened, the toilet seat or closet swung out into usable position, and the curtain may be enclosed around the seat, affording privacy, as in the case of the shower bath, but, of course, it is not necessary to lower the hinged platform under these circumstances.

Thus it will be apparent that a very compact construction has been provided, affording all of the usual toilet and bath facilities, and that some of these are used while extended out through the doorway into the room, but the user may be concealed by reason of the presence of the appropriate curtain.

Those acquainted with this art will readily understand that these in-a-door bath-rooms or compartments may be manufactured as complete units and shipped as such to the point of use, where they may be readily and

economically coupled up with the proper piping, and that these cabinets may be used for a series of rooms one above another and operatively joined together in an extremely economical manner by merely uniting the five service pipes between floors with appropriate connections.

These cabinets may be manufactured as "rights" and "lefts"; that is, the door opening to the right or left, and if the door were hinged to the right-hand casing, then all piping and contained fixtures would be reversed from the positions herein depicted.

Such cabinets could be of value in the modernizing of old structures, providing great conveniences, at the expense of little space.

If structures are remodeled and partitions re-located, these cabinets may be shifted to a new place in the building, the built-in plumbing, of course, accompanying them.

New soil-pipe in the basement and vents in the roof practically complete the task of relocating such cabinets.

Those skilled in this are will appreciate that the invention, as defined by the appended claims, is not limited and restricted to the precise and exact details of construction illustrated and described, and that these may be modified within comparatively wide limits without departure from the substance and essence of the invention and without the loss or sacrifice of any of its material benefits or advantages.

I claim:

1. The combination of a cabinet having a doorway, a door therefor, a platform hinged to the inner side of said door and adapted to be swung down into operative position or to be swung up against the door into inoperative position, and a shower-bath nozzle and piping designed for use by an occupant on said platform when the later is down in its operative position.

2. The combination of a cabinet having a doorway, a hinged door therefor, a drain pipe for the floor of said cabinet, a platform hinged to the inner side of said door and adapted in the open position of the door to be swung down into operative position or to be swung up against the door into inoperative position, a shower-bath nozzle pivotally mounted in said cabinet and adapted to be swung out through said doorway for use by a bather on said lowered platform or to be swung back into said cabinet, and piping and valve control means for said nozzle, said platform in its lowered position sloping toward and discharging its water into said cabinet to flow out through said drain pipe.

3. The combination of a cabinet having a doorway, a hinged door therefor, a drain pipe for the floor of said cabinet, a platform hinged to the inner side of said door and adapted to be swung down into operative position or to be swung up against the door into inoperative position, said platform in its lowered position sloping toward and discharging its water into said cabinet to flow out through said drain pipe, a shower-bath nozzle and piping designed for use by an occupant on said platform when the latter is down in operative position, a curtain support hinged to the inner side of said door, a curtain rod hinged to the free end of said support, means on said cabinet to engage the free end of said rod, and a curtain carried by said support and rod, whereby the bather on said platform is concealed by said door and curtain and said curtain-supporting rod may be folded back against the door when not required.

4. The combination of a cabinet having a doorway, a hinged door therefor, a drain pipe for the floor of said cabinet, a platform hinged to the inner side of said door and adapted in the open position of the latter to be swung down into operative position or to be swung up against the door into inoperative position, a shower-bath nozzle pivotally mounted in said cabinet and adapted to be swung out through said doorway for use by a bather on said lowered platform or to be swung back into said cabinet, piping and valve control means for said nozzle in said cabinet, a towel-rack hinged to the inner side of said door, a curtain-rod hinged to the free end of said towel-rack, means on said cabinet to engage the free end of said rod, and a curtain carried by said towel-rack and rod, whereby the bather on the platform is concealed by the door and curtain, and the towel-rack, rod and curtain may be folded back against the door when not required.

5. The combination of a cabinet having a doorway, a hinged door therefor, a drain-pipe for the floor of said cabinet, a platform hinged to the inner side of said door and adapted in the open position of the door to be swung down into operative position or to be swung up against the door into inoperative position, a shower-bath nozzle pivotally mounted in said cabinet and adapted to be swung out through said doorway for use by a bather on said lowered platform or to be swung back into said cabinet, piping and valve control means for said nozzle in said cabinet, and a drip-shield on said door covering the joint between the hinged edge of said platform and door, said cabinet having a front curbing below said doorway, said platform having an upstanding flange around all edges except that adjacent to the cabinet in the lowered position of the platform, said platform in its lowered operative position extending over said front curbing, said platform in its lowered position sloping toward and discharging its water over said front

curbing into said cabinet to flow out through said drain-pipe.

6. A self-contained unitary toilet structure including, in combination, a cabinet having a doorway, a hinged door for said doorway, a platform hinged to the inner side of said door and adapted to be swung down into operative position or to be swung up against the door into inoperative position, toilet appliances in said cabinet, a rod hinged to the inner side of said door, a rod hinged to the free end of said rod, means on the cabinet to support the free end of said second rod, and a curtain adapted to be hung on said rods, whereby the user of any of said toilet appliances may be enclosed by said door and curtain.

7. The combination of a cabinet having a doorway, a door for said doorway, a platform hinged to the inner side of said door and adapted to be swung down into operative position or to be rocked up against the door into inoperative position, toilet appliances in said cabinet, a combined towel-rack and curtain-rod vertically pivoted to the inner side of said door, and a curtain supported on said curtain-rod, said curtain-rod permitting said curtain always to hang flat vertically, thus allowing the curtain to drip, dry out and be adequately ventilated.

In witness whereof I have hereunto set my hand.

DAVID F. ZOOK.