

May 15, 1951

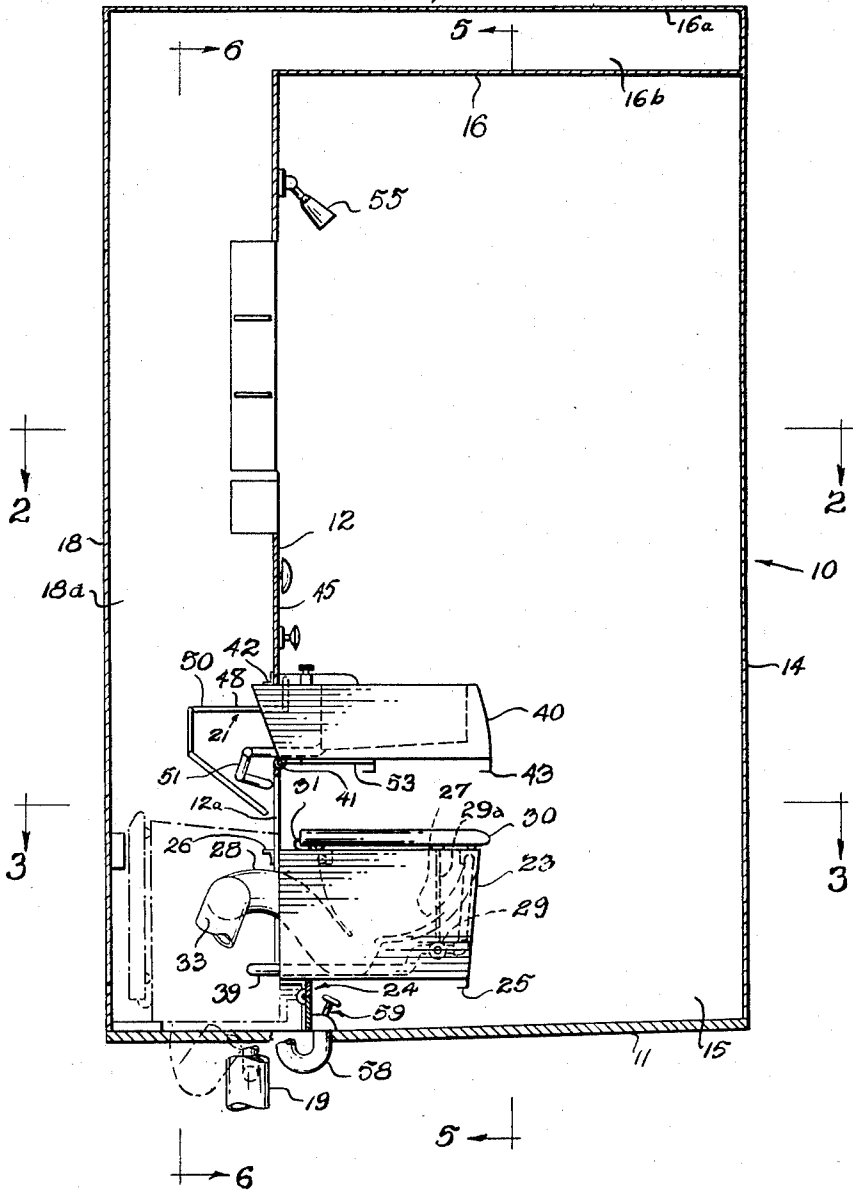
D. H. FERGUSSON  
PREFABRICATED BATHROOM UNIT

2,552,546

Filed Sept. 14, 1946

6 Sheets-Sheet 1

*Fig. 1.*



INVENTOR.  
*David H. Fergusson*  
BY  
*William Cleland*  
Attorney

May 15, 1951

D. H. FERGUSON

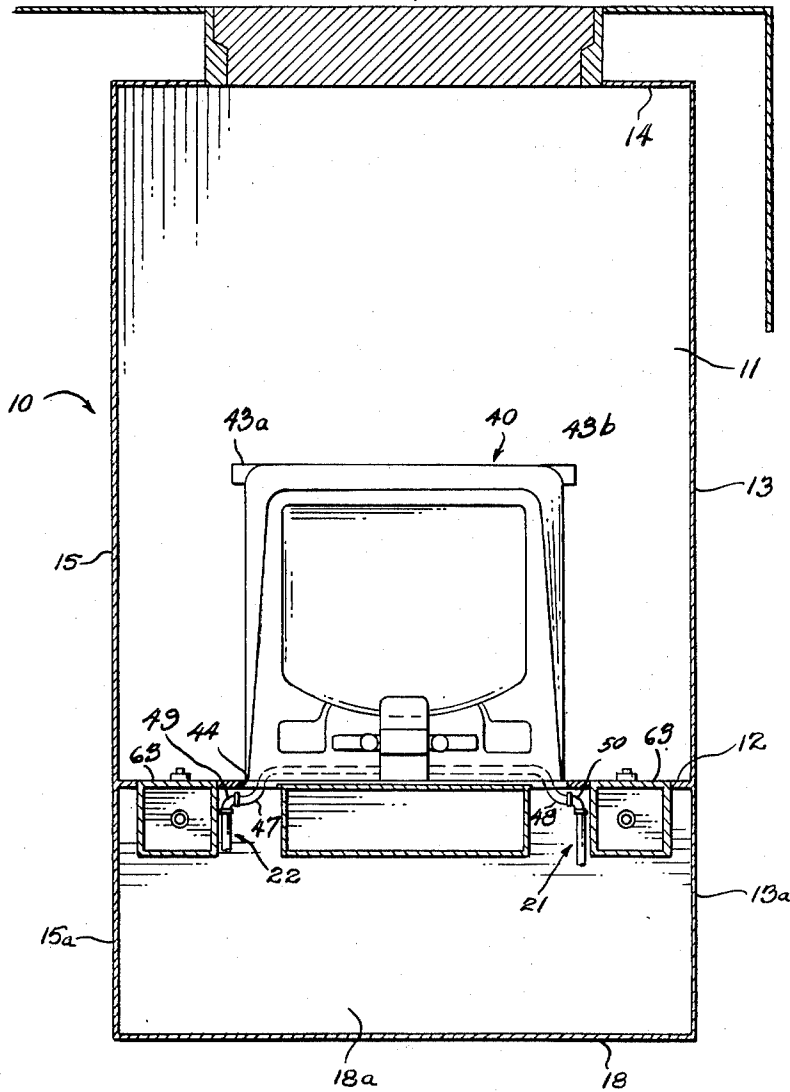
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PREFABRICATED BATHROOM UNIT

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6 Sheets-Sheet 2

Fig. 2.



INVENTOR.  
David H. Ferguson  
BY  
William Cleland  
Attorney

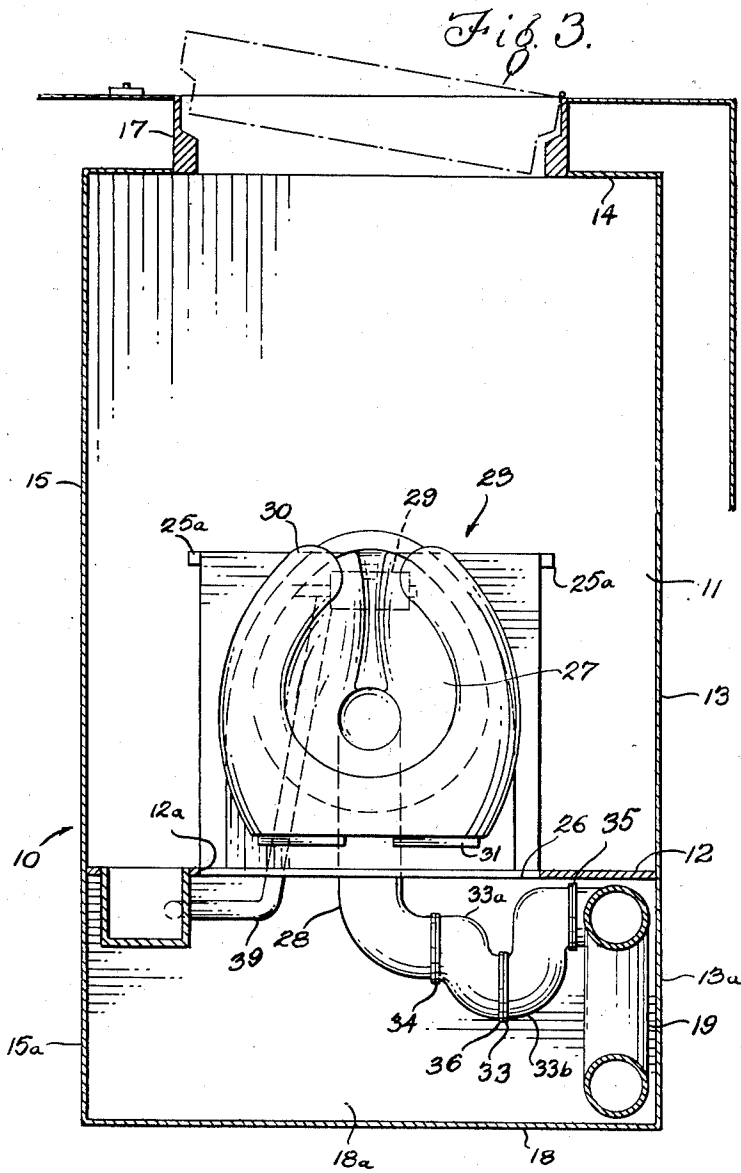
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INVENTOR.  
*David H. Fergusson*  
BY  
*William Cleland*  
Attorney

May 15, 1951

D. H. FERGUSON

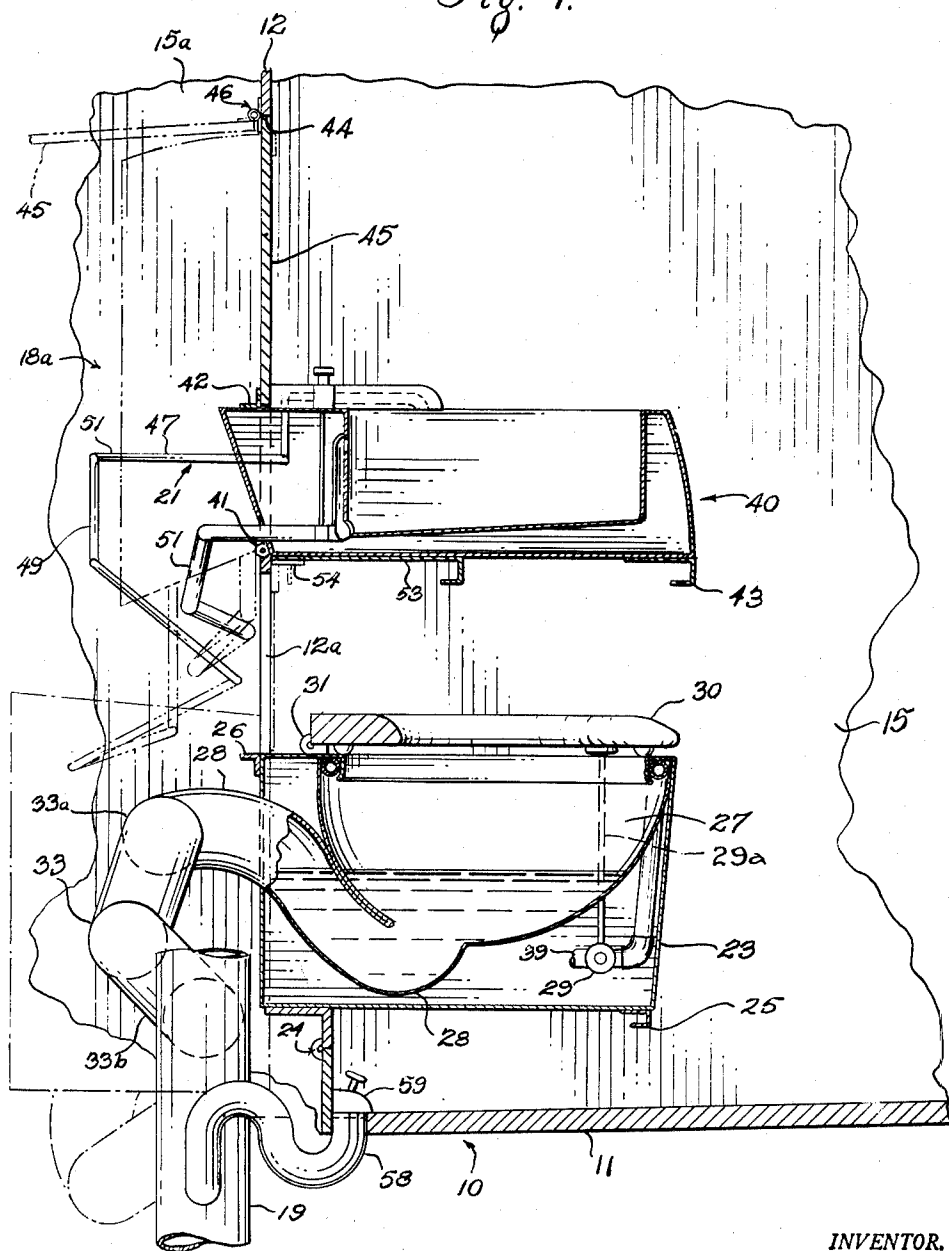
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PREFABRICATED BATHROOM UNIT

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6 Sheets—Sheet 4

Fig. 4.



INVENTOR.  
David H. Ferguson  
BY  
William Bland  
Attorney

May 15, 1951

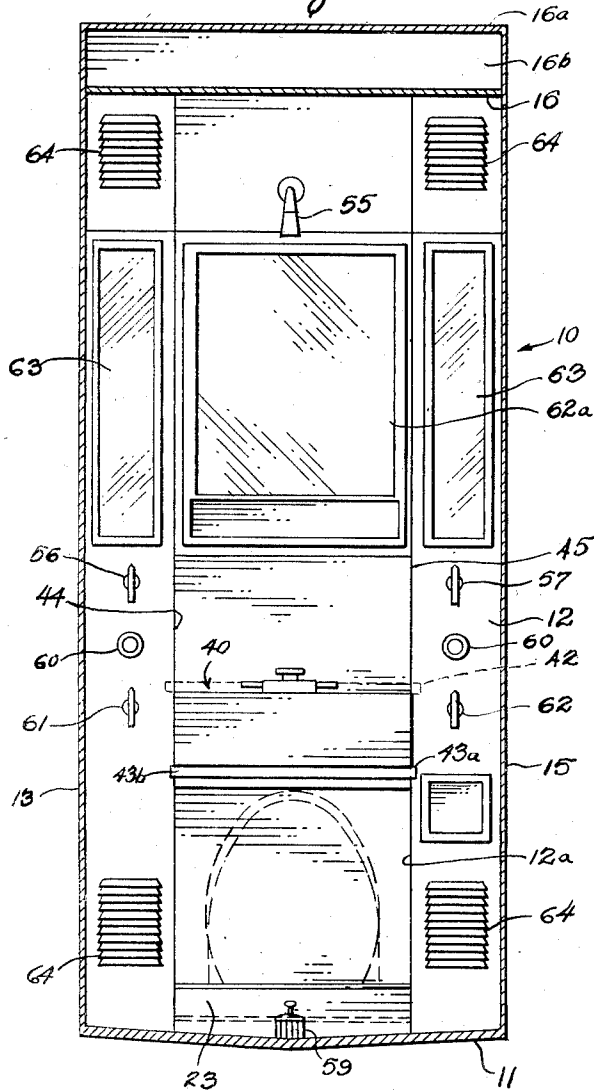
D. H. FERGUSSON  
PREFABRICATED BATHROOM UNIT

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Fig. 5.



INVENTOR.  
David H. Fergusson  
BY  
William Cleland  
Attorney

May 15, 1951

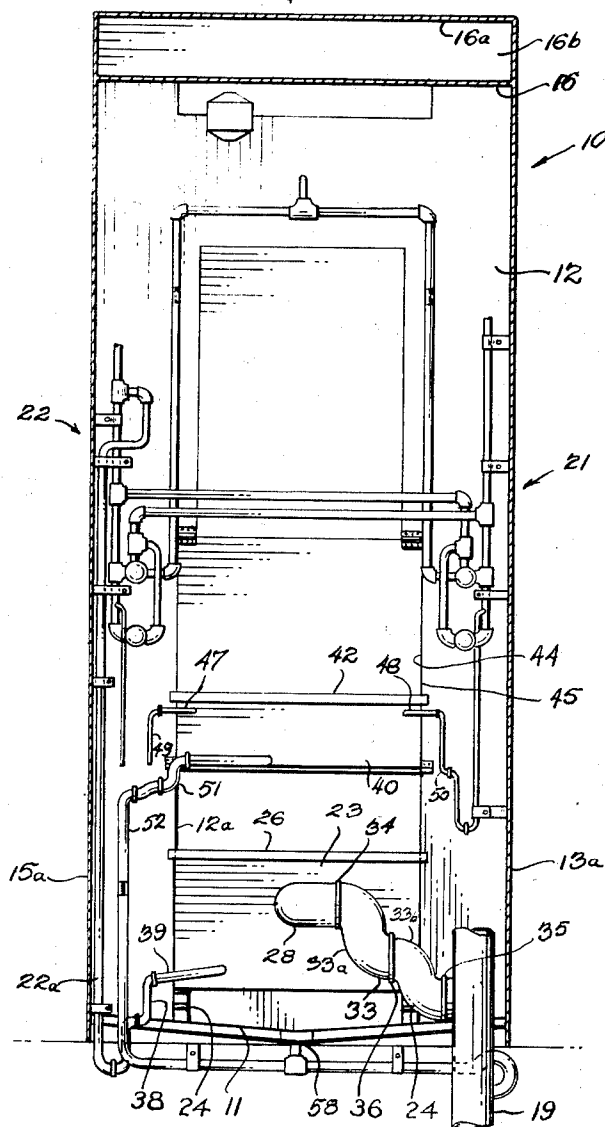
D. H. FERGUSSON  
PREFABRICATED BATHROOM UNIT

2,552,546

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6 Sheets-Sheet 6

Fig. 6.



INVENTOR.  
David H. Fergusson  
BY  
William C. Cland  
Attorney

# UNITED STATES PATENT OFFICE

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## PREFABRICATED BATHROOM UNIT

David Henry Fergusson, Baton Rouge, La.

Application September 14, 1946, Serial No. 697,116

6 Claims. (Cl. 4-3)

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This invention relates to a prefabricated bathroom unit.

One object of the invention is to provide a prefabricated bathroom unit for installation in a building or like structure, wherein all of the requisite bathroom fixtures including lavatory, water-closet and bathing facilities, are adapted to be contained in a single chamber of relatively small size approximating at least the space normally required to accommodate any one of such fixtures.

Another object of the invention is to provide an improved bathroom unit of the character described, including improved means for connecting lavatory and water-closet units to water supply and drainage facilities, and improved mounting means whereby the lavatory and water-closet units are retractible to positions for exclusive use of one or the other, or whereby both units may be retracted to provide free space in the chamber for other purposes.

These and other objects of the invention will be manifest from the following brief description and the accompanying drawings.

Of the accompanying drawings:

Figure 1 is a vertical cross-section of a bathroom unit embodying the features of the invention.

Figure 2 is a horizontal cross-section, on an enlarged scale, taken substantially on the line 2-2 of Figure 1, and illustrating the lavatory facilities.

Figure 3 is a view similar to Figure 2, taken substantially on the line 3-3 of Figure 1, illustrating the water-closet facilities.

Figure 4 is a further enlarged fragmentary cross-section, taken substantially on the line 4-4 of Figure 2.

Figure 5 is a vertical cross-section, on a reduced scale, taken on the line 5-5 of Figure 1.

Figure 6 is a vertical cross-section, on the same scale, taken substantially on the line 6-6 of Figure 1.

Referring to the drawings in general, the numeral 10 designates the complete prefabricated bathroom unit adapted to be installed in an existing building or other structure. This unit may include a substantially rectangular base 11 from which extends upwardly four wall panels 12, 13, 14 and 15, the panel 12, as shown, constituting a fixture panel and the four vertical panels defining a single relatively small chamber. A top or ceiling panel 16 also may be provided, and a door frame 17 is provided in the vertical panel 14 or in vertical panels 13 or 15, according to

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the requirements of a particular installation. The side panels 13 and 15 may be extended at 13a and 15a to form with a panel 18, parallel to panel 12, a concealed compartment 18a for the usual plumbing piping for hot and cold water supply, as indicated at 21 and 22, and for drainage piping connecting to a main drain pipe 19 (see Figure 6). A panel 16a in spaced parallel relation to top panel 16 provides a compartment 16b communicating with the compartment 18a, for a purpose to be described later. All of the panels are of metal or other suitable material, and the unit 10 may be of suitable segmental construction in which the segments are joined either at the factory or in situ.

The fixture panel 12 has a rectangular opening 12a provided therein, adjacent the bottom of the chamber, and mounted in association with the same is a water-closet unit 23 adapted to be shifted between an inwardly extended position for use, as shown in full lines in Figures 1, 3 and 4, and a retracted position within the piping space when not in use, as shown in Figures 1 and 4. To this end, the unit 23 is suitably pivoted at 24, adjacent its bottom outer edge, to be swingable from said extended position outwardly through opening 12a to said retracted position, in which the bottom of the unit is generally flush with the inner surface of the fixture panel 12 and in water-sealed relation over the opening. A channel strip 25 on the bottom of unit 23, adjacent the inner edge thereof, not only serves as hand grip, but lateral extensions 25a, 25a of this strip are engageable with inner face portions of panel 12 at the sides of opening 12a, to limit outward swinging of the unit beyond its retracted position. Similarly, a suitable stop strip 26 at the top outer edge of unit 23 is engageable with the inner face portions of panel 12, to limit downward swinging of the unit in the extended position thereof.

The water-closet unit 23 may be of any desired construction and material, including the usual bowl 27 and associated passages at the top thereof for supplying flushing water. From the bottom of the bowl, in said extended position of the unit, there extends outwardly and upwardly a gooseneck 28 providing an S-shaped passage adapted to retain a predetermined volume of flushing water before overflowing to the drain piping 19. In the retracted position of the unit the flushing water will flow into the drain piping.

Incorporated in the water-closet unit may be a flush valve 29, of known type, including a spring-

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pressed operating rod 29a extending therefrom to be yieldingly depressed when the pressure of body weight is applied to the usual pivoted seat 30 on top of the unit. That is, when sufficient pressure load is applied to the seat the valve is set to be operated to flush the bowl for a brief period when the load is thereafter removed from the seat. Suitable spring hinge means 31 may be provided for yieldingly urging the seat toward the unit 23, without applying a degree of pressure sufficient to operate valve 29 in the relative position of the seat shown in Figures 1 and 4, this spring means, however, being adapted to retain the seat in position to move with the unit in all positions of the same.

As best illustrated in Figures 1, 3 and 4, a flexible connector 33 is provided between gooseneck conduit 28 and main drain pipe 19, to permit free swinging movement of the water-closet unit 23 on its pivot 24. For this purpose, the connector 33 may be in the form of a toggle including arms 33a and 33b and having one swivel connection 34 to the gooseneck conduit to be relatively shiftable therewith, a similar relatively fixed swivel connection 35 to the drain pipe, substantially below connection 34, and an intermediate free swivel connection 36, the arrangement being such that upon swinging unit 23 on pivot 24 the swivel point at 34 will describe an arc about said pivot 24, and the swivel point 35 being relatively fixed the two toggle arms 33a and 33b swiveled at 36 will follow correspondingly. The swivel connections 34, 35 and 36 may be of a leak-proof type, including ball-bearings (not shown) for free pivotal movement, such connections being readily available on the market.

For supplying the flushing water to the water-closet unit 23 a toggle connector 38, similar to the previously described toggle connector 33, may be connected between cold water supply pipe 22a and a pipe extension 39 from valve 29 in said unit.

Arranged in spaced superposed relation above the unit 23, may be a lavatory unit 40 of suitable construction and material corresponding to unit 23. The unit 40 is pivoted at its bottom outermost edge, at a point substantially in a plane of the inner face of fixture panel 12, as indicated at 41. A suitable stop member 42 provided on the top of the unit 40 is engageable with inner face portions of panel 12 to retain the unit in horizontal position for use. On the underside of unit 40, adjacent the innermost edge thereof, may be provided a channel strip 43 for use as a hand grip, the same having extensions 43a and 43b at opposite sides of the unit adapted to engage inner surface portions of the panel 12 to limit upward swinging movement of the unit on its hinge 41 beyond the retracted position thereof, as indicated in chain-dotted lines in Figure 4. The unit 40, in this retracted position is received through an opening 44 in the panel 12, which is either in spaced relation to opening 22 or an extension of the same. In the extended position of unit 40, best shown in Figure 4, a closure 45, hinged adjacent the top of the opening 44 as indicated at 46, is adapted to be engaged by portions of the unit, as it is swung toward said retracted position, to urge the closure inwardly as shown in chain-dotted lines in Figure 4. The bottom of the unit 40 is shaped and arranged to take the place of the closure member 45 for closing the opening 44 in the retracted position. Cold and hot water is supplied by piping 22 and 21, respectively, to pipe extensions 47 and 48 incorporated in the lavatory unit, through toggle joint

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connectors 49 and 50 arranged in a manner similar to the previously described toggle connectors of the water-closet unit 23. Another similar toggle connector 51 connects the drain of the unit 40 with a fixed drain pipe 52 which extends to the main drain pipe 19. As before these toggle pipe connectors permit free swinging movement of the lavatory unit 40 between the extended and retracted positions thereof.

A plate 53 is slidably mounted between guide members 54 on the underside of the lavatory unit 40, to be slidable downwardly when the unit is in retracted position, to close the opening in the panel 12 between units 40 and 23. Conversely, when it is desired to move the unit 40 back to extended position, the plate 53 is first pulled upwardly in the guides 54.

Arranged adjacent the top of the fixture panel 12 may be an angularly adjustable shower head 55, which is suitably connected to cold and hot water pipes 22 and 21, the flow of water being controlled by valves 56 and 57. This shower head is used while the lavatory and water-closet units 40 and 23 are in the above-described retracted positions, and the water from the shower may be drained through a pipe connection 58 at a low point in the bottom panel 11 to the main drain pipe 19. A drain valve 59 is mounted in cooperation with pipe connection 58, to be operable to retain water up to or below the level of the door opening, for bathing or other purposes, if desired. Auxiliary spray nozzles 60, 60 may be provided at a lower level, more nearly adjacent the level of the lavatory, this spray being controlled by hand valves 61 and 62 in the fixture panel.

At requisite level above the lavatory unit 40 there may be incorporated in the fixture panel 12 a combined medicine cabinet and mirror 62a, as well as water-tight lighting fixtures 63, 63 at opposite sides of the same.

Suitable power-operated air conditioning or ventilating means may be provided in unit 10, utilizing the compartments 16b and 18a, and for this purpose louvers 64, 64 may be provided in the fixture panel 12.

In the use or operation of the bathroom unit after installation, the lavatory unit 40 may be normally retained in extended position for use, with or without the water-closet unit 23 also extended (see Figure 4). The latter unit is quickly made ready for use by swinging lavatory unit 40 upwardly on its pivot 41, to the retracted position thereof shown in chain-dotted lines in Figure 4. When it is desired to use the chamber as a shower room the units 40 and 23 are both maintained in retracted positions thereof, to provide maximum clear floor and wall space, in which case either of the shower heads 55 or 60, or both, may be used, as controlled through the hand valves 56, 57, 60 and 62.

The single chamber bathroom unit 10 described above, because of its relatively small compact construction, is adapted to be completely factory prefabricated, ready for installation in buildings, pullman cars, automobile trailers, etc. The floor space necessary for the installation need only be slightly greater than is usually required for a shower compartment, which is somewhat less than is required for the usual bathtub fixture.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A prefabricated bathroom unit for installation in an existing building or other structure,



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comprising a base and vertical wall panels defining a single chamber, said chamber having a door opening therein the bottom of which is above the bottom of the chamber a substantial distance, upper and lower openings in the wall paneling of said chamber arranged at vertically spaced levels from the bottom of the chamber, water supply and drainage piping arranged behind said wall paneling, a lavatory unit, means for pivotally mounting said lavatory in association with said upper opening to be selectively shiftable between an inwardly extended position of use and a retracted position outwardly through the upper opening, a water-closet unit pivotally mounted in association with said lower opening to be selectively shiftable between an inwardly extended position for use and retracted position through said lower opening when not in use, and flexible conduit means connecting between said water supply and drainage piping and said lavatory and water-closet to permit said selective shifting thereof, said upper and lower openings being disposed relatively of each other in said wall paneling whereby said lavatory and said water-closet units will be in superposed relation when both are in extended positions, said flexible conduit means each including a pipe rigidly connected to said movable lavatory unit or the water-closet unit as the case may be and movable therewith between said extended and retracted positions, a relatively fixed pipe, and a pair of intermediate pipes pivotally connected to said fixed and movable pipes in the manner of a toggle, said pair of intermediate toggle pipes being free to open and fold with respect to each other and to swing with respect to the fixed pivot of the respective movable unit to permit free pivotal movement of the latter.

2. A prefabricated bathroom unit for installation in an existing building or other structure, comprising a base and vertical wall panels defining a chamber, said chamber having a door opening therein the bottom of which is above the bottom of the chamber a substantial distance, one of the wall panels constituting a fixture panel, a lavatory unit, means for pivotally mounting said lavatory in association selectively shiftable between an inwardly extended position of use and a retracted position outwardly through the upper opening, a water-closet unit, means for pivotally mounting said water-closet in association with said lower opening to be selectively shiftable between an inwardly extended position for use and retracted position through said lower opening when not in use, and flexible conduit means connecting between said water supply and drainage piping and said lavatory and water-closet to permit said selective shifting thereof, said flexible conduit means each including a pipe rigidly connected to said movable lavatory unit or the water-closet unit as the case may be and movable therewith between said extended and retracted positions, a relatively fixed pipe, and a pair of intermediate pipes pivotally connected to said fixed and movable pipes in the manner of a toggle, said pair of intermediate toggle pipes being free to open and fold with respect to each other and to swing with respect to the fixed pivot of the respective movable unit to permit free pivotal movement of the latter.

3. A prefabricated bathroom unit for installation in an existing building or other structure, comprising a base and vertical wall panels defining a single chamber, said chamber having a door opening therein the bottom of which is

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above the bottom of the chamber a substantial distance, one of the wall panels constituting a fixture panel having vertically spaced upper and lower openings therein, water supply and drainage piping arranged behind said fixture panel, a lavatory unit, means for pivotally mounting said lavatory in association with said upper opening to be selectively shiftable between an inwardly extended position of use and a retracted position outwardly through the upper opening, a water-closet unit pivotally mounted in association with said lower opening to be selectively shiftable between an inwardly extended position for use and retracted position through said lower opening when not in use, and flexible conduit means connecting between said water supply and drainage piping and said lavatory and water-closet units to permit said selective shifting thereof, said flexible conduit means each including a pipe rigidly connected to said movable lavatory unit or the water-closet unit as the case may be and movable therewith between said extended and retracted positions, a relatively fixed pipe, and a pair of intermediate pipes pivotally connected to said fixed and movable pipes in the manner of a toggle, said pair of intermediate toggle pipes being free to open and fold with respect to each other and to swing with respect to the fixed pivot of the respective movable unit to permit free pivotal movement of the latter.

4. A prefabricated bathroom unit for installation in an existing building or other structure, comprising a base and vertical wall panels defining a single chamber, said chamber having a door opening therein the bottom of which is above the bottom of the chamber a substantial distance, one of the wall panels constituting a fixture panel having vertically spaced upper and lower openings therein, water supply and drainage piping arranged behind said fixture panel, a lavatory unit, means for pivotally mounting said lavatory unit in association with said upper opening to be selectively shiftable between an inwardly extended position of use and a retracted position outwardly through the upper opening, a water-closet pivotally mounted in association with said lower opening to be selectively shiftable between an inwardly extended position for use and retracted position through said lower opening when not in use, flexible conduit means connecting between said water supply and drainage piping and said lavatory and water-closet units to permit said selective shifting thereof, said flexible conduit means each including a pipe rigidly connected to said movable lavatory unit or the water-closet unit as the case may be and movable therewith between said extended and retracted positions, a relatively fixed pipe, and a pair of intermediate pipes pivotally connected to said fixed and movable pipes in the manner of a toggle, said pair of intermediate toggle pipes being free to open and fold with respect to each other and to swing with respect to the fixed pivot of the respective movable unit to permit free pivotal movement of the latter, a shower fixture mounted on one of said vertical wall panels and connected to said water supply piping, a drain in said base connected to said drainage piping, a spring-pressed valve operable for flushing said water-closet bowl, and means operable by shifting said water-closet unit to said retracted position for preventing operation of said valve for flushing purposes.

5. A bathroom unit comprising a vertical panel having an opening therein, a water closet includ-

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ing a bowl opening at the top and a hinged seat in cooperation with said top opening, said water-closet being pivotally mounted in association with said opening in the vertical panel to be selectively shiftable between an inwardly extended position for use and a restricted position outwardly, flushing means for flushing said water-closet bowl with water and including a valve having a yieldingly depressible valve setting member, and resilient means normally urging said seat towards yielding contact with said member without depressing the same sufficiently to operate said valve, said valve being set for a bowl flushing cycle by added pressure temporarily applied to said seat to release and depress said member.

6. A bathroom unit comprising a vertical panel having an opening therein, a water-closet including a bowl opening at the top and a hinged seat in cooperation with said top opening, said water-closet being pivotally mounted in association with said opening in the vertical panel to be selectively shiftable between an inwardly extended position for use and a restricted position outwardly, flushing means for flushing said water-closet bowl with water and including a valve having a yieldingly depressible valve set-

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ting member, and resilient means normally urging said seat towards yielding contact with said member without depressing the same sufficiently to operate said valve, said valve being set for a bowl flushing cycle by added pressure temporarily applied to said seat to release and depress said member, said water-closet having a goose neck passage adapted in said extended or retracted position to contain a predetermined quantity of water before overflowing and flexible drainage piping connecting said goose neck passage for receiving said overflow.

DAVID HENRY FERGUSON.

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