Jan. 25, 1944. W. C. GROENIGER 2,339,778

BUILDING CONSTRUCTION

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Fig. 1.

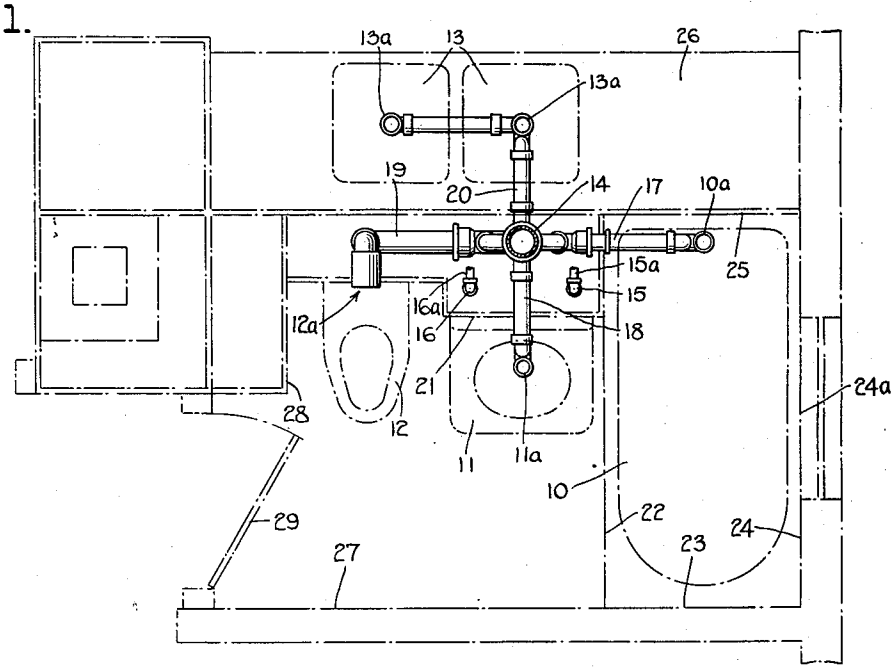
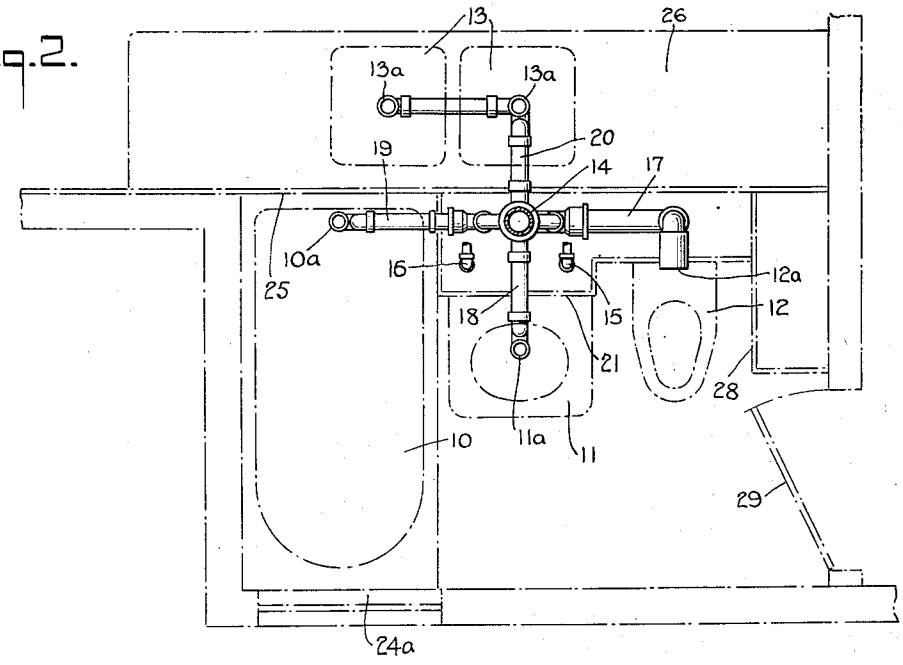


Fig. 2.



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Fig. 3.

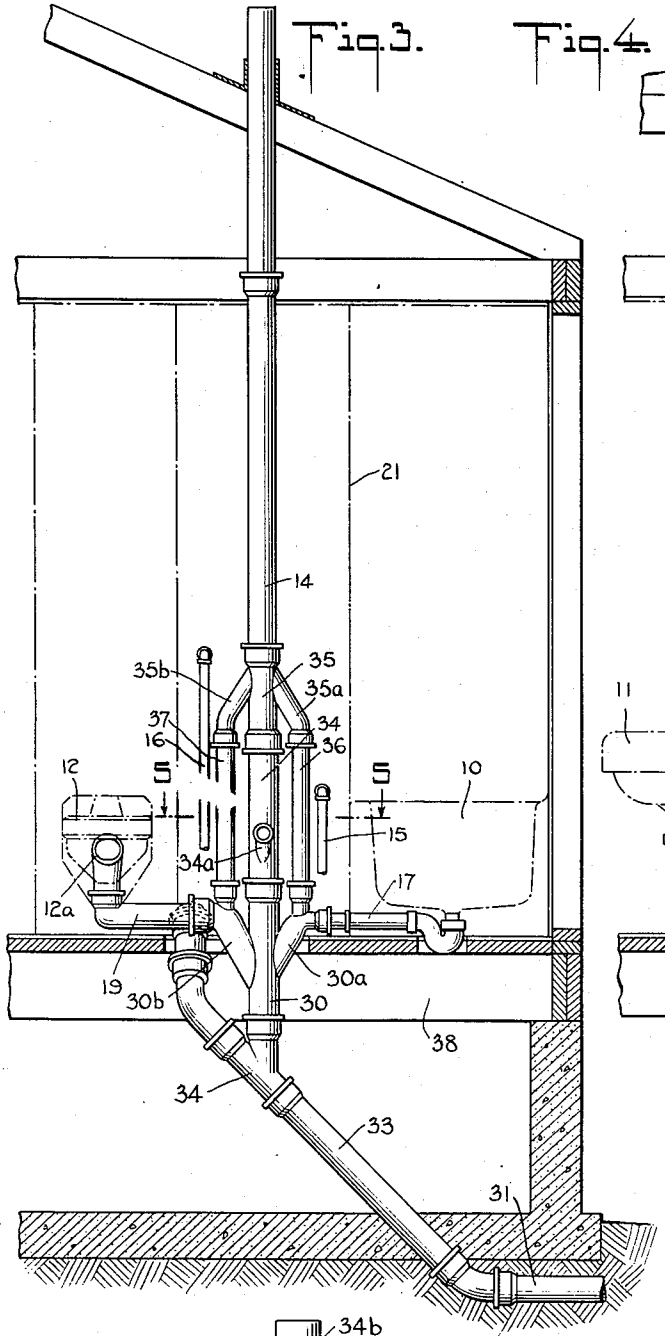


Fig. 4.

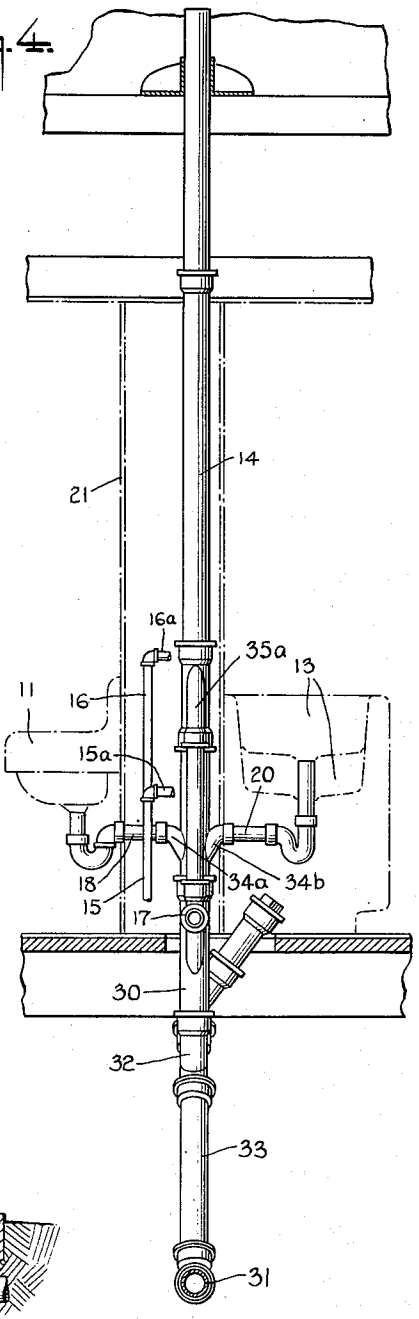
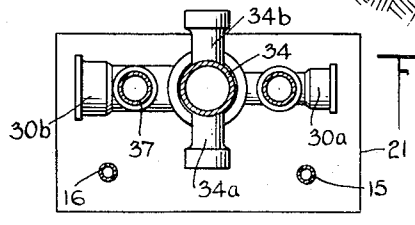


Fig. 5.



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Fig. 6.

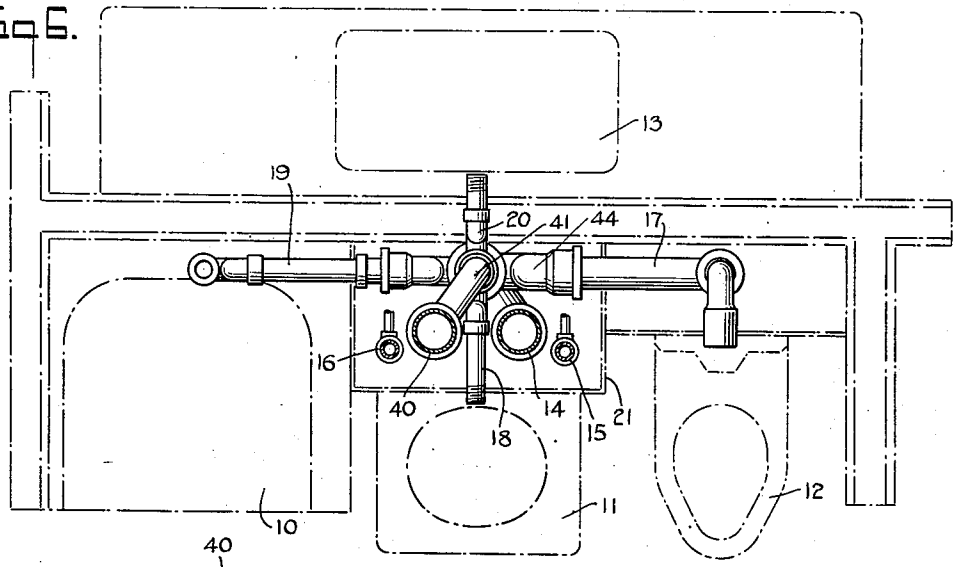


Fig. 7.

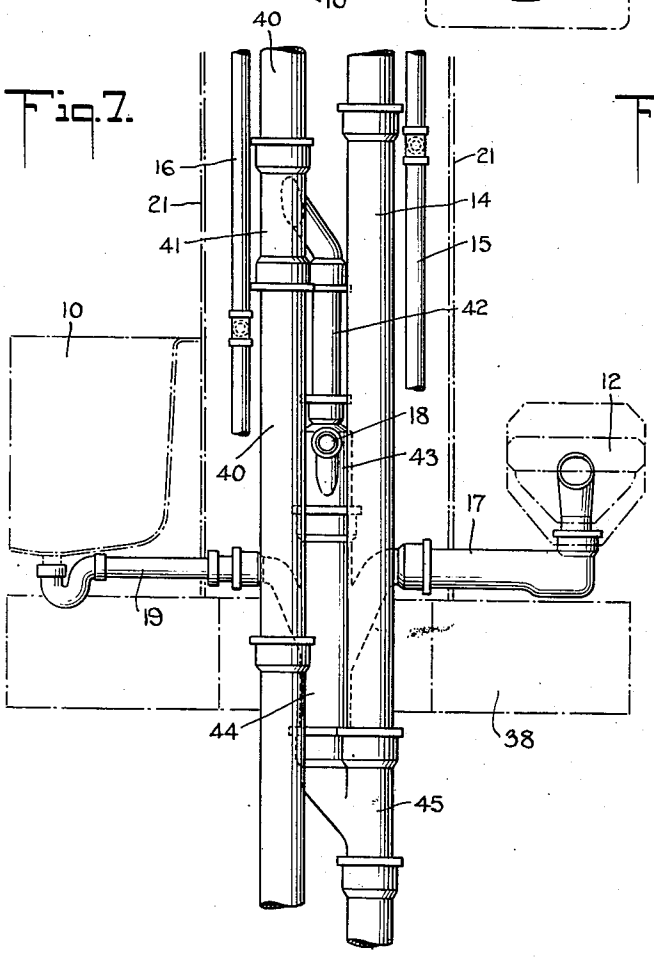
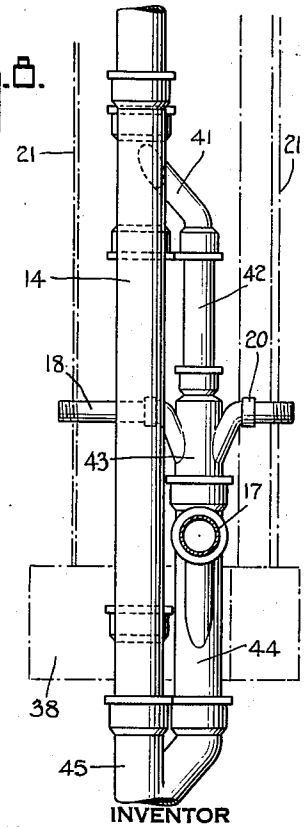


Fig. 8.



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Fig. 9.

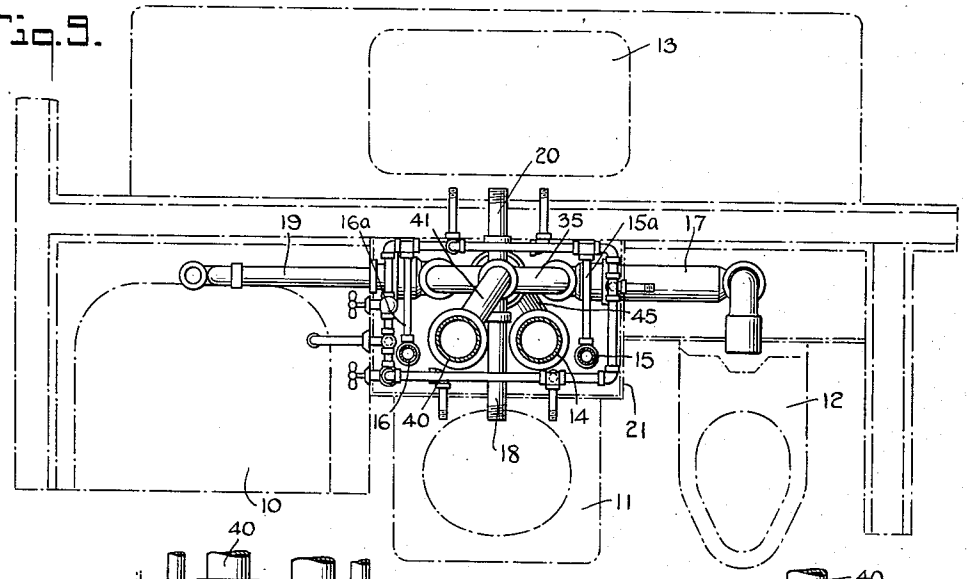


Fig. 10.

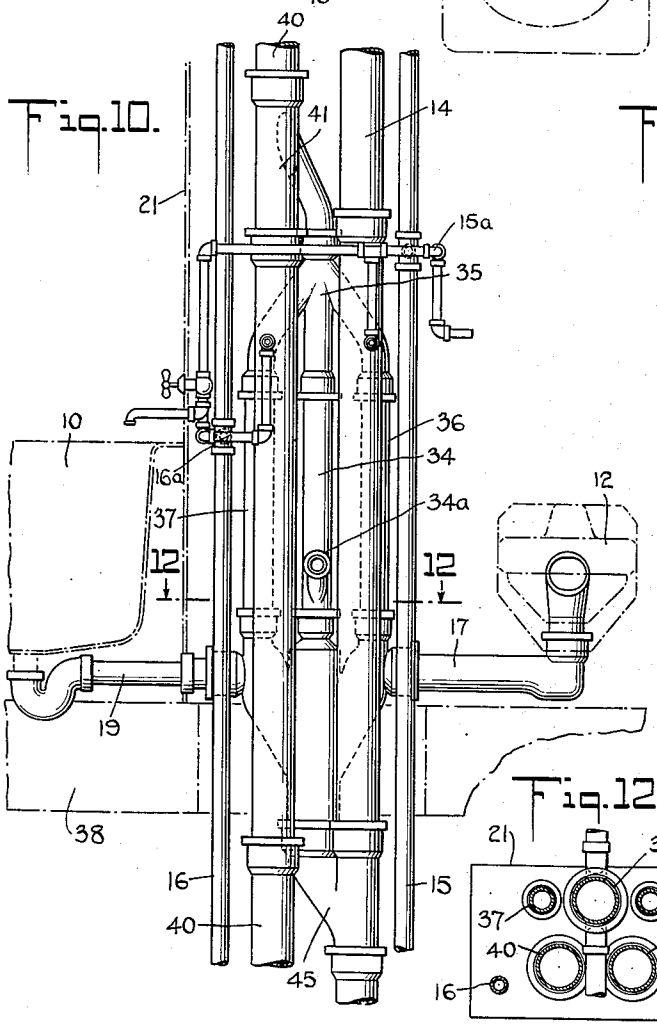


Fig. 11.

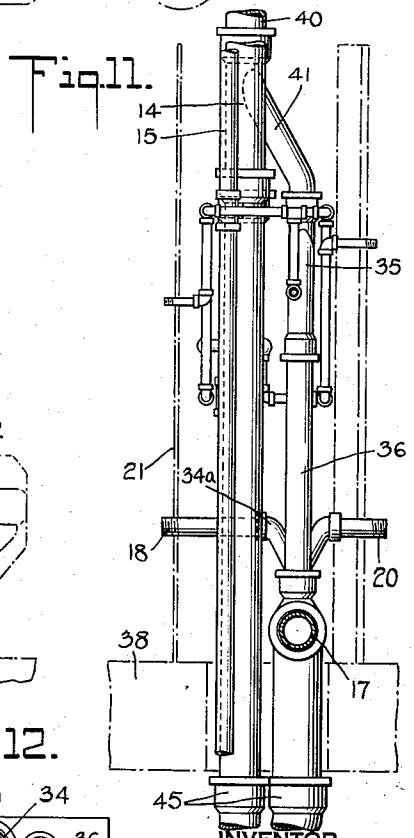


Fig. 12.

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UNITED STATES PATENT OFFICE

2,339,778

BUILDING CONSTRUCTION

William C. Groeniger, Columbus, Ohio, assignor to John B. Pierce Foundation, New York, N. Y., a corporation of New York

Application October 27, 1939, Serial No. 301,578

3 Claims. (Cl. 4—211)

The present invention is directed to an improved method of installing plumbing fixtures and correlated soil and vent piping.

A principal objective of the present invention is an improved method of building construction wherein a central pipe stack embodied within casing means disposed wholly internally of a bathroom or the like, affords optimum possibilities of arrangements of plumbing fixtures and improved facilities for the installation, repair, and servicing of the same.

The invention has as a further objective the disposition of a group of plumbing fixtures at optional locations relative to one another, on a common floor level, applicable to a single story building structure and to a multi-story building structure.

Pursuant to the invention, the group of desired plumbing fixtures are located on any common floor level optionally relative to one another, at relatively radial positions with respect to a common center, at which common center location the soil and vent piping, extending generally vertically, are installed. The discharge ports of the respective plumbing fixtures are interconnected with the soil and vent piping by therefrom radially extending waste branches. Preferably, the waste branches are individual for the respective plumbing fixtures and related to the vent piping to provide independent venting of the respective plumbing fixtures.

In the more preferred forms of the invention, the water supply lines, serving the respective plumbing fixtures, usually per the instrumentality of suitable individual control valves, are disposed to extend vertically and in close proximity to the stated soil and vent piping, with suitable branch piping extending from the water supply lines.

In the most preferred forms of the invention the soil and vent piping and the water supply lines are enclosed by a suitable casing, serving inter alia to conceal the same; the branch piping extending from the water lines projects through openings provided in the casing, to afford ready connection by suitable extra-casing piping with the valve-provided inlet ports of the respective plumbing fixtures.

By the invention, the plumbing fixtures on any common floor level may be separated individually or as sub-groups by partition or partitions forming permanent or transient part of the building structure. Whenever desired, the mutual positions of the individual plumbing fixtures may be interchanged by mere change of connection of the discharge ports with the waste branches involved and corresponding change of connection of the inlet ports with the branch piping of the water supply line or lines.

Further features and objects of the invention will be more fully understood from the following detail description and the accompanying drawings, in which

Fig. 1 is a diagrammatic plan view of one type of embodiment of the invention, applicable in a one-story and other building for the installation of a lavatory, a bath tub, a toilet bowl, a kitchen sink (and/or laundry tub) or equivalent on a common floor level.

Fig. 2 is a diagrammatic plan view of a variation of the type of the invention shown in Fig. 1, utilizing a like number of plumbing fixtures on a common floor level, but illustrating another arrangement of grouping of the plumbing fixtures.

Figs. 3 and 4 are vertical sectional views taken at right angles relative to one another, illustrating another type of the invention, as applied to a like number of plumbing fixtures on a common floor level, similarly as in Figs. 1 and 2. Fig. 5 is a detail sectional view on lines 5—5 of Fig. 3.

Figs. 6, 7 and 8 are respectively a diagrammatic plan view, and diagrammatic vertical elevational views taken in planes at right angles to one another, of a preferred type of embodiment of the invention, applicable to two-story and other multi-story building structures; this type follows in principle that of Figs. 1, 2 and 3: the plumbing fixtures illustrated are a lavatory, bath tub, toilet bowl and kitchen sink (and/or laundry tub).

Figs. 9, 10 and 11 are respectively a diagrammatic plan view and diagrammatic vertical elevations taken on planes at right angles to one another of a preferred type of embodiment of the invention, applicable to two-story and at intermediate floor levels of other multi-story building structures; the type here illustrated follows the principle of that of Figs. 3, 4 and 5; the plumbing fixtures shown correspond to those appearing as illustrations of optional relative positions of installation, shown in the previous figures.

Fig. 12 is a detail sectional elevation on line 12—12 of Fig. 10. This embodiment illustrates my method as applied to installations on multiple floor levels.

Referring to the type of embodiment illustrated in Figs. 1 and 2, 10 indicates a bath tub, 11 a lavatory, 12 a water closet, and 13 a kitchen sink and/or laundry tub. Such plumbing fixtures, or

other group of selected plumbing fixtures as desired or required, are located at radially related positions about a common center at which location the soil and vent stack piping 14 is disposed. Such soil and vent stack extends substantially vertically and on any given floor level extends from floor level to ceiling level. In Fig. 1, the selection of relative positions of the stated plumbing fixtures is that given above, reading in clockwise direction about ther centrally located piping 14. The mutually related positions of these fixtures pursuant to Fig. 2 are bath tub 10, kitchen sink and/or laundry tub 13, water closet 12 and lavatory 11. Other variations of relative radial locations of the plumbing fixtures may be selected as preferred or required.

The water supply lines are indicated at 15, 16, one of which may be cold water and the other hot water, as preferred. Such water supply lines 15, 16 are disposed in close proximtiy relative to the soil and vent piping 14. Branch supply piping are indicated at 15*a*, 16*a* which afford suitable connection, usually through the instrumentality of suitable control valves, with the inlet ports of the respective fixtures.

Branch waste piping suitably connected at their inward ends with the soil and vent piping 14 extend radially relative thereto and are suitably connected at their outward ends with the respective discharge ports of the selected plumbing fixtures. Thus in Fig. 1, the discharge port 10*a* of the bath tub 10 is shown connected with the branch waste pipe 17, the discharge port 11*a* of the lavatory 11 connected to the branch waste pipe 18, the discharge ports 12*a* of the water closet 12 with the branch piping 19 and the discharge port or ports 13*a* of the sink and/or laundry tub 13 with the branch waste piping 20. In the arrangement illustrated in Fig. 2, the discharge port 10*a* of the bath tub 10 is shown connected with the branch waste piping 19, the discharge ports 13*a* connected with the branch waste piping 20, the discharge port 12*a* of the water closet 12 with the branch waste piping 17, and the discharge port 11*a* of the lavatory 11 with the branch waste piping 18.

Preferably, such soil and vent piping 14 and the therewith connected branch waste piping in whole or in part are enclosed in a suitable casing such as illustrated at 21 by dot-and-dash outline, for the purposes of concealing the same, affording a common location of the stated parts in simplification of inspection, repair and possible replacement, etc.

Preferably, the water supply line or lines 15, 16, are also enclosed in such casing 21 for attainment of like or other advantages.

The waste branch piping 17, 18, 19, 20, etc., and the branch water supply pipes 15*a*, 16*a*, etc., may extend through suitable openings provided in the corresponding parts of the casing 21. The casing 21, as appears from a comparison of Fig. 1 with Fig. 2, may assume variant wall formation dependent upon the selection of the positions of the respective plumbing fixtures, the wall formation of the casing being preferably of individual panels extending from floor level to ceiling level to afford flexibility in erection. By such or equivalent arrangement of wall formation of the casing 21, interchangeability of the relative positions of the plumbing fixtures available in the original installation or subsequent thereto to effect substitution of fixture or desired variation of relative position, is readily afforded, and also the required change of connection of the discharge port or ports of the affected plumbing fixtures with the branch waste piping and corresponding change of connection of the water line or lines 15, 16, with the inlet port or ports of the affected plumbing fixtures.

The invention affords, further, optional partitioning in floor space, as may be desired with respect to the plumbing fixtures individually or sub-groups, as appears from Figs. 1 and 2. Thus, Fig. 1 illustrates the bath tub 10 partitioned individually in a space defined by the three partitions designated 22, 23, 24, and a fourth partition 25, which last named is indicated as a partition separating the bath tub 10, lavatory 11 and water closet 12 as a group from the space designated 26, which space 26 may desirably serve as a kitchen, butler's pantry or the like in the building structure. The partition 24 is indicated as including a door opening 24*a*.

Fig. 1 indicates also the lavatory 11 and water closet 12 partitioned within a common space afforded by the partition 22, and the partitions 27, 28, and a door 29. In the arrangement illustrated in Fig. 2, the stated or other suitable partitions 22, 23, 24, 25, 27, and 28 may assume optionally varied relative positions.

The soil and vent stack 14 and therewith coordinated radially extending branch waste piping 17, 18, 19, 20, illustrated in Figs. 1 and 2, are particularly applicable to a one-story building structure. The mechanical assembly of the component parts illustrated in variant forms in Figs. 1 and 2 are set forth and claimed in my copending application Serial No. 301,574, filed concurrently herewith.

Referring now to Figs. 3, 4 and 5, the type of embodiment of the invention is applicable also to a one-story or other building structure, the mechanical assembly of the component parts thereof being set forth and claimed in my copending application Serial No. 301,576, filed concurrently herewith.

Like parts indicated in the embodiment illustrated in Figs. 3, 4 and 5, as compared with the embodiment illustrated in Figs. 1 and 2, are designated by like reference numbers. The embodiment illustrated in Figs. 3, 4 and 5, is characterized by the provision of individual venting for the respective branch waste piping relative to the soil and vent stack 14.

As one manner of attaining individual venting, the embodiment illustrated in Figs. 3, 4 and 5 comprises a correlated piping assembly including piping individually connected with the respective branch waste pipes and communicating with the upper and lower zones of the soil and vent stack.

Specifically, the branch waste piping 17 has its discharge end connected to the branch channel 30*a* of the fitting 30, the main channel of which communicates lowerly with a building drain or building sewer 31, as through a Y-fitting 32 and interconnecting piping 33. The main channel of the fitting 30 communicates upwardly through the vertical vent piping 34 and upper fitting 35 with the upper zone of the soil and vent stack 14. Intermediate the ends of the branch channel 30*a* is shown provided a vertical vent piping 36 communicating at its upper end through the branch channel 35*a* with the upper zone of the soil and vent stack 14, thereby affording, with the stated instrumentalities individual venting for the branch waste piping 17, shown in Fig. 3 as serving for the discharge of the bath tub 10.

Similarly, the branch waste piping 19 is con-

nected at its discharge end with the branch channel 30*b* of the lower fitting 30, and the lower end of the vertical vent piping 37 connected with the branch channel 30*b* of the lower fitting 30 and its upper end through the branch channel 35*b* with the upper fitting 35 affords independent venting for the branch waste piping 19, shown in Fig. 3, as serving for the discharge of the water closet 12.

Further similarly, individual venting is provided for the branch waste piping 19, shown in Fig. 4 serving for the discharge of the lavatory 11, is afforded individual venting through the branch channel 34*a* of the vertical vent pipe 34, connected as above set forth in soil discharge and venting relationship with the main soil and vent stack piping 14. In a similar manner the branch waste piping 20, shown in Fig. 4 as serving for the discharge of the kitchen sink and/or laundry tub 13, is afforded independent venting by connection with the branch channel 34*b* of the vertical vent piping 34, connected and functioning as aforesaid.

The type of embodiment illustrated in Figs. 6, 7 and 8 follows the general principle of the type illustrated in Figs. 1 and 2, but applicable to floor levels intermediate lowermost and uppermost floors. The mechanical assembly and the component parts illustrated in Figs. 6, 7 and 8, are set forth and claimed in my copending application Serial No. 301,575, filed concurrently herewith, which matured into Patent No. 2,270,873, dated January 27, 1942.

The plumbing fixtures indicated in Figs. 6, 7 and 8 correspond to those illustrated in Figs. 1 and 2, it being understood that the order of orientation of the individual plumbing fixtures is optional, pursuant to the generic principle of the present invention.

In the specific arrangement shown in Figs. 6, 7 and 8, there is coordinated with the main soil and vent stack 14, an auxiliary, vertically extending, vent stack 40 connected similarly as aforesaid with a lower portion, with the main soil and vent stack 14, and likewise connected similarly as aforesaid at an upper portion, with an upper portion of the main soil and vent stack 14. Intermediate connection of the auxiliary vent stack 40 with the main stack is afforded through the fitting 41, communicating through a branch channel with the vertical pipe 42, in turn connected through an intermediate fitting 43 and a lowerly fitting 44 and thence through a lowermost fitting 41 with the part of the main soil and vent stack 14 disposed below the floor level, indicated at 38. In the instant type the branch waste piping 17 discharges and is vented through the lowerly fitting 44, which may, and preferably, extends through the flooring indicated at the floor level 38. Discharge and venting is also afforded the branch waste piping 19 similarly through the lowerly fitting 44. Discharge and venting for the branch waste piping 18 is afforded through the intermediate fitting 43, and likewise for the branch waste piping 20.

The type of embodiment illustrated in Figs. 9, 10, 11 and 12 follows the general principle of the type illustrated in Figs. 3, 4 and 5, but applicable to floor levels intermediate the lowermost and uppermost floors. The mechanical assembly and the component parts illustrated in Figs. 9, 10, 11 and 12, are set forth and claimed in my copending application Serial No. 301,577, filed concurrently herewith, which matured into Patent No. 2,248,075, dated July 8, 1941.

The plumbing fixtures indicated in Figs. 9, 10, 11 and 12, correspond to those illustrated in Figs. 3, 4 and 5, it being understood that the order of orientation of the individual plumbing fixtures is optional, pursuant to the generic principle of the present invention.

Pursuant to the type of embodiment illustrated in Figs. 9, 10, 11, and 12, individual venting is provided for the respective branch waste piping serving the individual selected plumbing fixtures, such as the indicated bath tub 10, lavatory 11, water closet 12, and kitchen sink and/or laundry tub 13.

Component parts of the embodiment shown in Figs. 9, 10, 11 and 12 corresponding to those comprised in the embodiment illustrated in Figs. 3, 4 and 5 are designated by like reference characters. The component parts comprised in the embodiment shown in Figs. 9, 10, 11 and 12 corresponding generally to the parts comprised in the embodiment illustrated in Figs. 6, 7 and 8, are designated by like reference characters. Thus, the branch waste piping 17 is provided with individual venting by intermediation of vertical vent pipe 36, the latter connected in assembly and functioning similarly as in Figs. 3 and 4; the branch waste piping 19 is afforded individual venting similarly by the intermediation of the vertical vent pipe 37, the branch waste piping 18 by the intermediation of the intermediate fitting 43 and vertical pipe 44 and upper fitting 35, and individual venting effected by the last named parts, as components of the general assembly, similarly for the branch waste piping 20.

Water closets of the type set forth and claimed in my U. S. Letters Patent Nos. 2,066,881 and 2,066,882, both granted on January 5, 1937, and in subsequently granted patents, are particularly applicable in connection with the instant invention, in that the discharge of the same through the selected branch waste piping is disposed above the floor level.

The present invention affords also the assembly as a unit of the casing and therein enclosed soil and vent piping, water distribution lines and the like, suitably supported in the casing. Such unitary assembly may be completed prior to installation for delivery on the job, thus affording all-year-round work for labor, facility of installation, certainty of proper assembly of individual parts, certainty of leak-proofness of joints, and other advantages.

As appears from the above, the invention affords the installation of a plumbing system, including selective positioning relative to one another of the desired individual plumbing fixtures, within a building structure, the main soil and vent piping and therewith associated water lines and the like being disposed spaced from the walls of the building structure. By the provision of the casing, all soil and vent stacks, and all water distribution piping and therewith connected parts, piping for the conveyance of gases, air conditioning, etc., are concealed from view, while at the same time optimum access is afforded to such enclosed parts. Such arrangement simplifies the insulation of such piping thermally and particularly for reduction of noises ensuing in the flow of supply water and aqueous discharges.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. In a building, the combination with casing means arranged wholly within the confines of a room, of a pipe stack organization supported centrally within said casing means and including a main waste stack for conducting waste to a sewer or the like, a plurality of branch waste pipes connected to said main waste stack, each of said branch waste pipes being adapted to serve a plumbing fixture on a floor of such building, said branch waste pipes being disposed wholly above the floor level of such building and arranged in cruciform pattern with respect to said main waste stack to accommodate plumbing fixtures disposed at all four sides of said casing, said branch waste pipes having inlet openings disposed at all four walls of said casing means, and plumbing fixtures having waste discharge means individually connected to said branch waste pipe openings and arranged about said casing as a nucleus according to a predetermined grouping.

2. In a building, the combination with casing means arranged wholly within the confines of a room and having one wall serving in common as a partition between adjacent rooms, of a pipe organization disposed centrally within said casing and including a main waste stack serving as means for conducting waste to a sewer or the like, a plurality of branch waste pipes arranged within said casing in cruciform pattern about said main waste stack, each branch waste pipe being adapted to serve a plumbing fixture on a floor of such building, said branch waste pipes being arranged wholly above the floor of the room and having inlet openings disposed at all four walls of said casing means, and plumbing fixtures having waste discharge means individually connected to said branch waste pipes and disposed at predetermined locations about said casing means, said plumbing fixtures including a fixture disposed in said adjacent room and mounted in contiguity with the casing wall serving as the common partition between said adjacent rooms.

3. In a building, the combination with casing means arranged wholly within the confines of a room and having one wall serving in common as a partition between adjacent rooms, of a pipe organization disposed substantially centrally within said casing and including a main waste stack serving as means for conducting waste to a sewer or the like and a plurality of branch waste pipes arranged within said casing in cruciform pattern about said main waste stack, each branch waste pipe being adapted to serve a plumbing fixture on a floor of such building, said branch waste pipes being arranged wholly above the floor of the room and having inlet openings disposed at all four walls of said casing means, plumbing fixtures having waste discharge means individually connected to said branch waste pipes and disposed at predetermined locations over a 360° angle about said casing means, said plumbing fixtures including a fixture disposed in said adjacent room and mounted in contiguity with the casing wall serving as the common partition between said adjacent rooms, and water service piping arranged wholly within said casing to supply said plumbing fixtures with the water requirements thereof.

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