Jan. 27, 1942. W. C. GROENIGER 2,270,873

MULTIPLE DISCHARGE AND VENTING ASSEMBLY

Filed Oct. 27, 1939 2 Sheets-Sheet 1

Fig. 1.

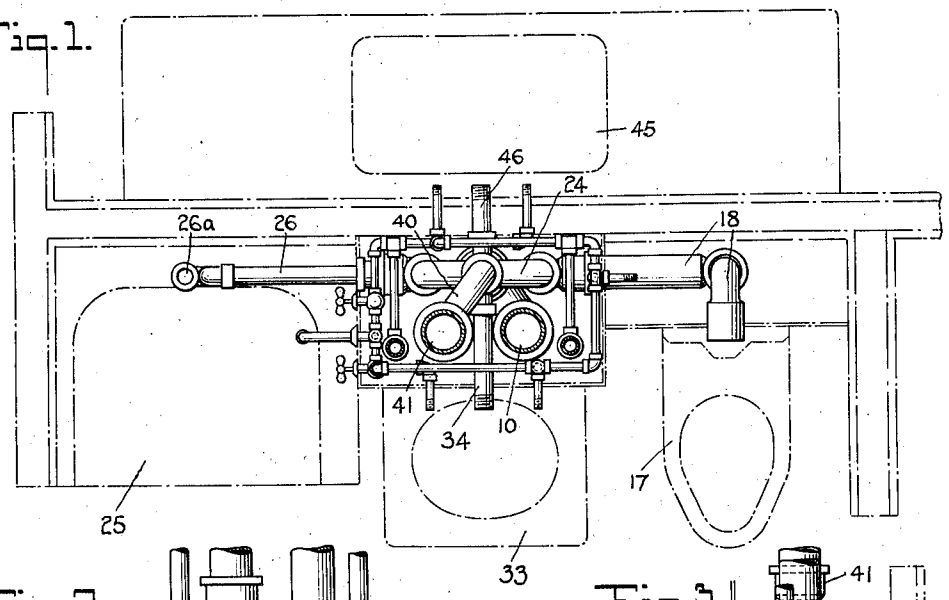


Fig. 2.

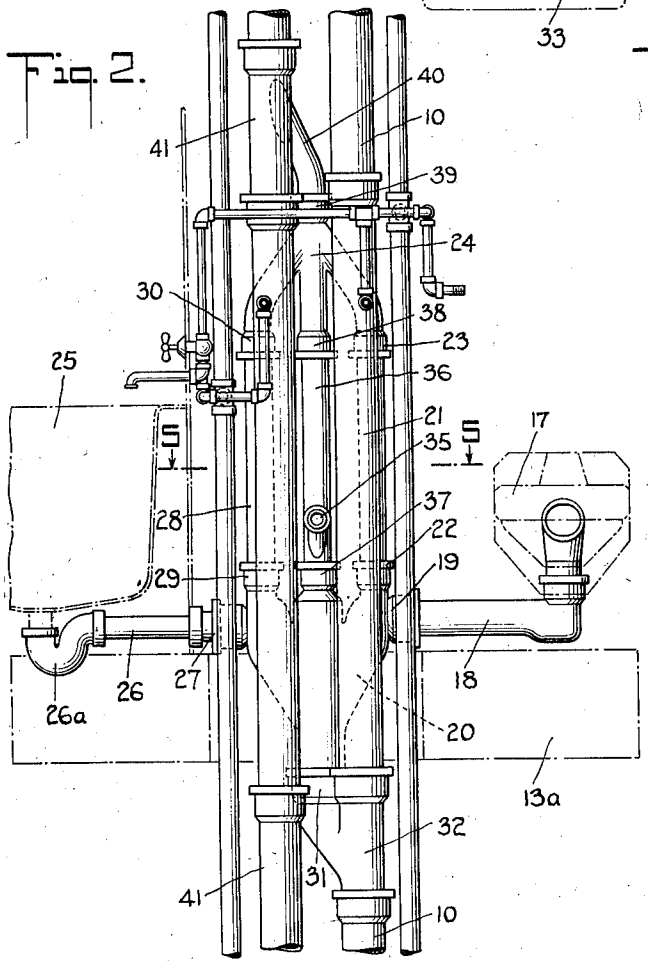
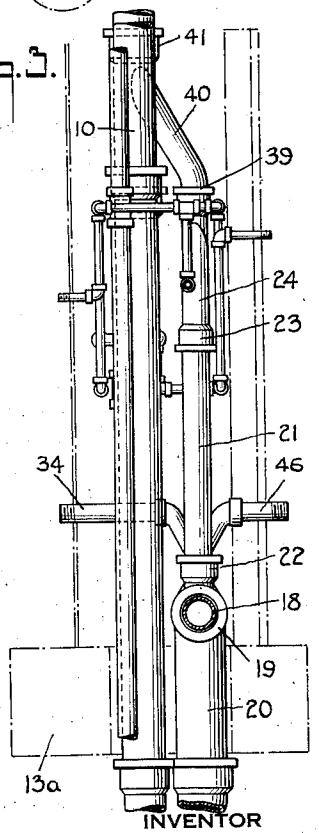


Fig. 3.



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Filed Oct. 27, 1939 2 Sheets-Sheet 2

Fig. 4.

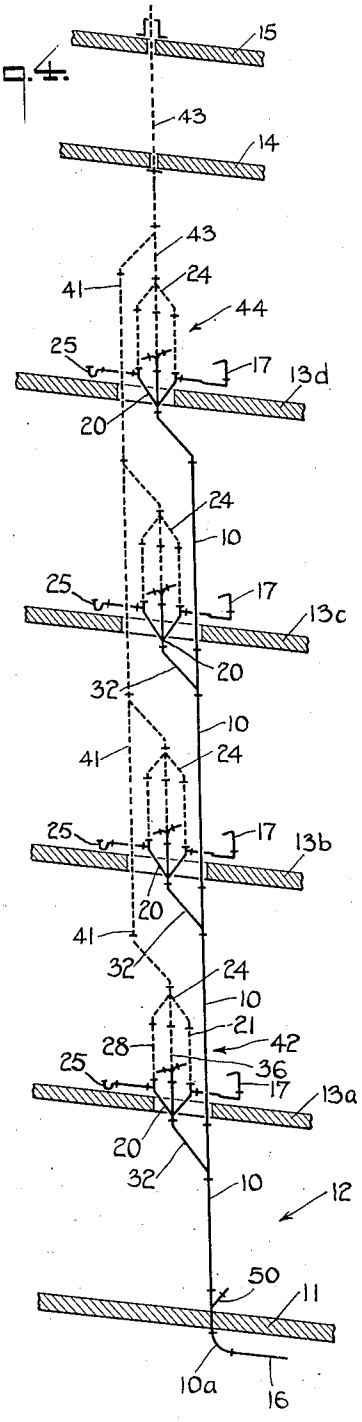


Fig. 5.

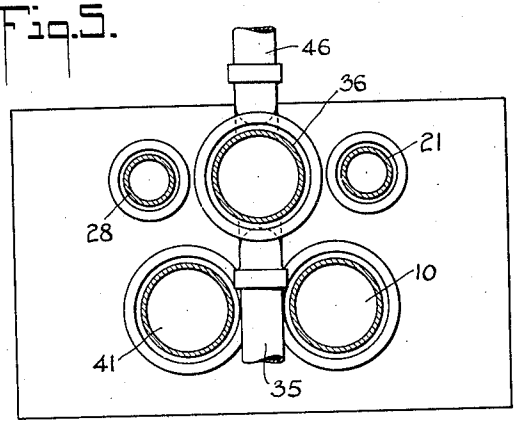


Fig. 6.

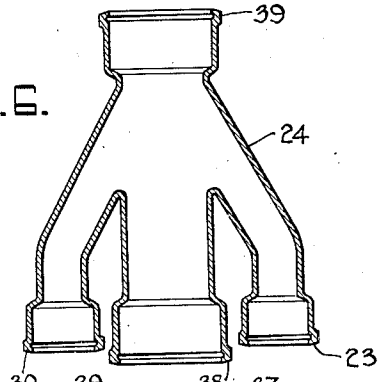
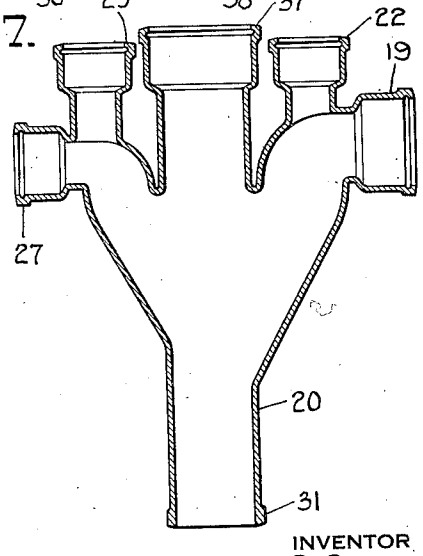


Fig. 7.



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UNITED STATES PATENT OFFICE

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MULTIPLE DISCHARGE AND VENTING ASSEMBLY

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Application October 27, 1939, Serial No. 301,575

3 Claims. (Cl. 4—211)

My invention relates to improved multiple discharge and venting assemblies.

My present invention is complementary to my invention set forth in my copending application Serial No. 301,574, filed concurrently herewith, entitled Discharge and venting assemblies for plumbing fixtures.

My present invention contemplates the employment of the improved discharge and venting assemblies set forth and claimed in my aforesaid copending application for multiple floors of a single building or like structure and therewith coordinated stack piping, whereby greatly enhanced flow of discharge from the fixtures singly and plurally from the various floors singly and plurally is attained, combined with complete venting, in addition to the objectives attained by my said improved discharge and venting assembly, notably horizontal waste branches individually connecting the associated fixtures with the main stack discharge, individual venting for the respective horizontal waste branches under all circumstances of use, etc.

Preferred embodiments of my invention, applicable for servicing plumbing fixtures on two or more floors of a given building locate the piping running from floor to floor in close physical adjacency, thereby affording the advantage, when desired, of locating such piping in a well extending from floor to floor in the building.

My invention affords the choice of the number of plumbing fixtures at each floor level and the locating of the plumbing fixtures as desired with respect to one another, at any floor level, oriented about the stack and vent piping as a center.

Where a well is employed to house the stack and vent piping, such well preferably houses also the piping of the water distribution lines leading to the respective fixtures, thus simplifying the connections of the respective fixtures with the water supply piping.

By my invention, the discharge branches are rendered of short length, and also of minimum diameter, water line connections leading to the respective fixtures are greatly simplified, all piping, fittings, etc., are located at the respective floor levels above the floor slab, thus affording optimum inspection, repair, substitution or interchange of relative position of plumbing fixtures, and maintenance.

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 horizontal sectional view of a preferred embodiment of my invention, the several fixtures served by the respective waste and venting pipings and discharge stack being indicated in dot and dash lines, the illustrated type of my invention being applicable for installation at intermediate floors of multi-story buildings.

Fig. 2 is a side elevation of the embodiment illustrated in Fig. 1.

Fig. 3 is a side elevation of the embodiment shown in Fig. 1, taken on a plane at right angles to that of Fig. 2.

Fig. 4 is a diagrammatic view illustrating an approved embodiment of my invention applicable to a multi-story building, indicating variant installations at uppermost, lowermost and intermediate floors.

Fig. 5 is a horizontal detail sectional view of an assembly of stack and vent piping arranged corresponding to line 5—5 of Fig. 2, but relating to a lowermost floor of a multi-story installation.

Figs. 6 and 7 are vertical central sectional views of fittings respectively disposed upwardly and lowerly in stack and associated venting piping at the respective floors of installations illustrated in the foregoing figures.

Referring to Figs. 1, 2 and 3 of the drawings, the embodiment illustrated therein is applicable to building structures having multiple floors or other floor levels and provided with plural fixtures on the respective floors.

Pursuant to the embodiment illustrated in Figs. 1, 2 and 3, the stack 10 may serve as a main waste stack which, as is indicated diagrammatically in Fig. 4, may extend through the flooring 11 of the sub-floor or basement 12 of the building, through the respective floors 13*a*, 13*b*, 13*c*, 13*d*, etc. Provision is made for the continuation of the main stack 10 through the upper stack passages, referred to more fully hereinafter, which latter ultimately pass through the ceiling 14 of the indicated uppermost floor and thence through the roof 15, to the outer atmosphere. The lower discharge opening of the stack 10, indicated at 10*a*, communicates through the soil piping 16 with a building drain or building sewer.

Associated with such main stack 10 I provide waste piping individual for the respective fixtures and vent piping individually for the respective waste piping, the same being suitably correlated with suitable channel means providing for the flow of waste ultimately into the main stack 10 and individual venting thereof with respect to the main stack 10, through the intermediation of sub-stack passageways.

Figs. 1 and 2 illustrate a toilet bowl 17, the waste piping of which is indicated at 18, which latter discharges into the inlet opening 19 of the lower fitting 20. The venting for the waste piping 18 is afforded by the pipe 21 which extends from the bell 22 of the lower fitting 20 to the bell 23 of the upper fitting 24. A bath tub is indicated, see Figs. 1 and 2, at 25, the waste piping 26 of which discharges into the spigot 27 of the lower fitting 20. The waste piping 26 is shown provided with a trap 26*a*. Individual venting for the waste piping 26 is afforded by the piping 28 which interconnects the bell 29 of the lower fitting 20 with the bell 30 of the upper fitting 24.

The discharge spigot 31 of the lower fitting 20 is shown discharging into fitting 32 and thence into the main stack 10.

Fig. 1 also illustrates the application of my invention for servicing a lavatory indicated at 33, the waste piping of which, indicated at 34, see Figs. 2 and 3, provided with a suitable trap (not shown), discharges into the discharge opening 35 of the fitting 36 entering into the lower fitting 20 through its central bell opening 37. Such waste piping 34 is individually vented by the fitting 36 communicating with the lower, central bell opening 38 of the upper fitting 24.

The upper fitting 24 communicates at its upper bell opening 39 through the branch vent 40 with the main vent stack 41, which, see Fig. 4, advantageously extends from the waste and vent sub-assembly indicated at 42, on the first floor, of the therein indicated building, through the ceiling of such floor, thence through the floor-ceiling levels of the upper floors to communicate with a soil vent stack 43, thence through the ceiling 14 of the uppermost floor and roofing 15, to the outer atmosphere. Such soil vent stack 43 and the main vent stack 41 join with the main stack 10 through the waste and vent sub-assembly 44, disposed at the uppermost floor of the building indicated in Fig. 4.

There may be also associated with the stated fixtures, a kitchen sink or laundry tub or the like, indicated at 45, see also Fig. 3, which suitably discharges through waste branch 46 into the lower stack fitting 20, similarly as above, and afforded individual venting through the vent pipe 36.

The indicated fixtures, i. e. toilet bowl 17, bath tub 25 and lavatory 33, kitchen sink and/or laundry tub 45, etc., of any floor level may be disposed singly or plurally within a single room or in plural rooms or spaces, as preferred, indicated generally in Fig. 1, such fixtures at any given floor level being disposed in any number at any position relative to one another about the main stack and venting assembly of such floor as the center.

The waste and vent sub-assembly 42 may be of duplicate arrangement on the respective floors; the waste and vent sub-assembly 44 at the indicated uppermost floor may also be a duplicate of the sub-assembly 42. Preferably, the waste and vent sub-assemblies 42, 44, have the construction and relationship of parts set forth and claimed in my aforesaid copending application Serial No. 301,574, filed October 27, 1939, entitled Discharge and venting assembly for plumbing fixtures.

Duplication of such waste and venting sub-assemblies greatly simplifies the number of separate parts in stock and in assembling on location, thus definitely reducing the cost of material and the labor of installation. Such duplication affords in particular duplication at the respective floor levels of the lower fitting 20, see Fig. 7, and also of the upper fitting 24, see Fig. 6.

Fig. 5 represents in cross-section a typical grouping of the main stack piping 10, main vent stack 41, fitting 36 of a discharge and venting sub-assembly on a floor and therewith associated vent pipes 21 and 28. It is understood that the relative diameters of the stated piping are subject to variation predicated upon preference and predetermined in range of size selection in accord with the requirements in practical installations.

The functional relationship of the above referred to parts in any given installation will be largely understood from the foregoing description and accompanying drawings. Supplementary, it is stated, for a four floor level building, as indicated in Fig. 4, the main stack 10 directly receives the discharges from the plumbing fixtures on the uppermost, i. e., fourth floor level through the lower fitting 20 of the discharge and venting sub-assembly 44 of such floor. At each of the lower floor levels, the stack 10 receives all discharges per the instrumentality of the lower fitting 20 of the discharge and venting sub-assembly at such floor level and a therewith connected fitting 32.

As to the phase of venting, with respect to the uppermost, i. e., fourth floor level discharge and venting sub-assembly 44, such function is afforded through the soil-vent stack 43, which extends through the roof to the free outer atmosphere, combined with the main vent stack 41, which latter is afforded venting communication with the main stack 10 at any of the third, second or first floor levels, singly and plurally, the upper reach of the main stack 10 communicating with the soil vent stack 43 through the central pipe 36 of the uppermost, i. e., fourth floor level discharge and venting assembly 44.

At 50, see Fig. 4, is indicated any suitable clean-out inspection and test fitting or other connection, affording access to the lowermost reach of the main stack 10, proximate its connection with suitable soil piping 16, leading to a building drain or building sewer.

Water closets of the type set forth and claimed in my U. S. Letters Patents No. 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 a casing, wherein are 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 pro-

vision of the casing, all soil and vent stacks and all water distribution piping and therewith connected parts 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 plumbing system, the combination with a main waste stack and a main vent stack arranged in parallelism therewith, said main waste stack and main vent stack extending vertically through a plurality of floors of a building, of a sub-assembly of waste and vent piping disposed at each of said floors and interconnected to said main waste and vent stacks, said sub-assemblies each including a waste connection fitting having branch openings adapted to receive flows of waste matter from a plurality of plumbing fixtures on the respective floors, the waste discharge from each plumbing fixture entering said waste connection fitting for merger at a level below the level of entry and discharge into said main waste stack at a still lower level, and a vent connection fitting embodying vent piping for individually venting the plumbing fixtures connected to said waste connection fitting and connecting with said main vent stack at a level greatly above the levels at which the waste piping from the individual plumbing fixtures enters said waste connection fitting.

2. In a plumbing system, the combination with a main waste stack and a main vent stack arranged in parallelism therewith, said main waste stack and main vent stack extending vertically through a plurality of floors of a building, of a sub-assembly of waste and vent piping disposed at each of said floors and interconnected to said main waste and vent stacks, said sub-assemblies each being adapted to receive flows of waste matter from a plurality of plumbing fixtures on the respective floors, the waste discharge from each plumbing fixture individually entering the waste piping of the associated sub-assembly wholly above the floor for merger in the direction of ultimate flow at a level below the level of entry and discharge into said main waste stack at a lower level, and vent piping in sub-assembly individually venting the plumbing fixtures connected thereto and connecting with said main vent stack at levels greatly above the levels at which any waste piping from the individual plumbing fixtures enters said sub-assembly.

3. In combination with a plurality of plumbing fixtures, a waste and vent piping organization including a central vertical stack member combining the functions of waste discharge and venting and having inlet waste branch members communicating with said central stack at opposite sides thereof and proximate a lower end, a lower pipe fitting having a central vertical passage communicating at one end with said central vertical stack member and at its other end with pipe means discharging into a sewer or the like, said lower fitting having angularly downwardly extending inlet branch members communicating with said central vertical passage at diametrically opposite sides thereof and adapted to receive waste from horizontally extending waste pipe branches of certain of said plumbing fixtures and merge said waste flows at a level beneath the level of said branches, the branch members of said lower fitting having vertically extending openings communicating with said branch members at levels wholly above said horizontal waste pipe branches, an upper pipe fitting having a central vertical passage connecting at one end with the end of said central vertical stack member and at its other end with a vertically extending vent stack, said upper fitting having inlet branch members communicating with said central passage, and vent pipe means individually connecting the inlet branch members of said upper pipe fitting with the vertically extending openings of the branch members of the lower fitting to afford connection with said vent stack above the level of the inlet waste branch members of said central stack for individually venting the horizontal waste pipe branches of said plumbing fixtures.

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