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Bernardi

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[54] **PUBLIC REST ROOM CLEANING SYSTEM**

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[51] **Int. Cl.** **A47k 17/00**

[58] **Field of Search** ..... 4/1, 145, 146, 2–5, 4/173; 134/167 R, 168 R, 169 R; 137/625.47

[56] **References Cited**

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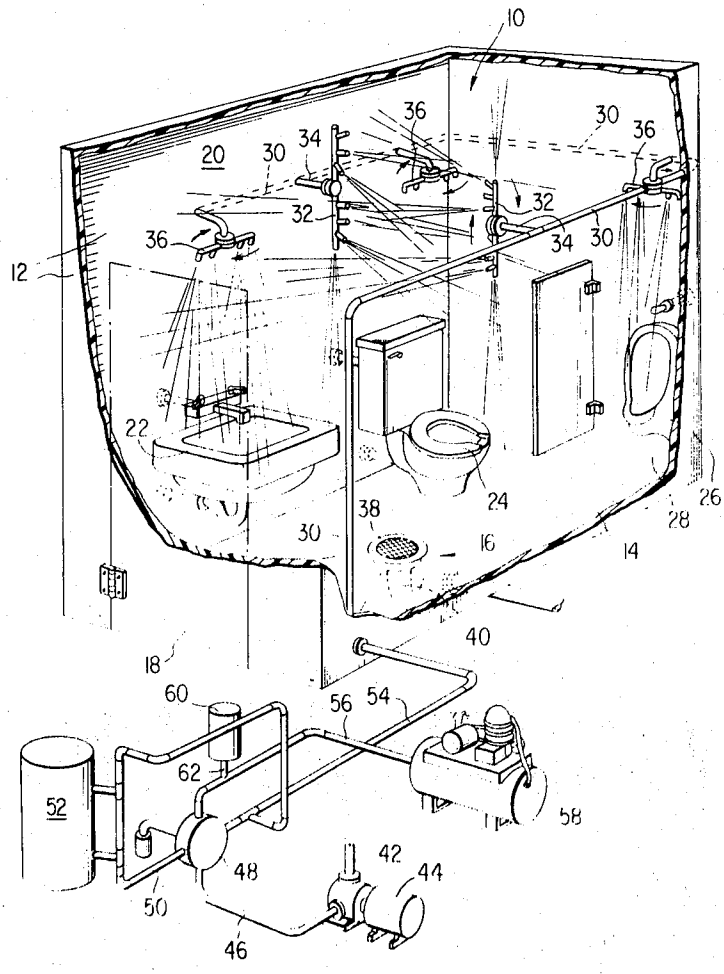
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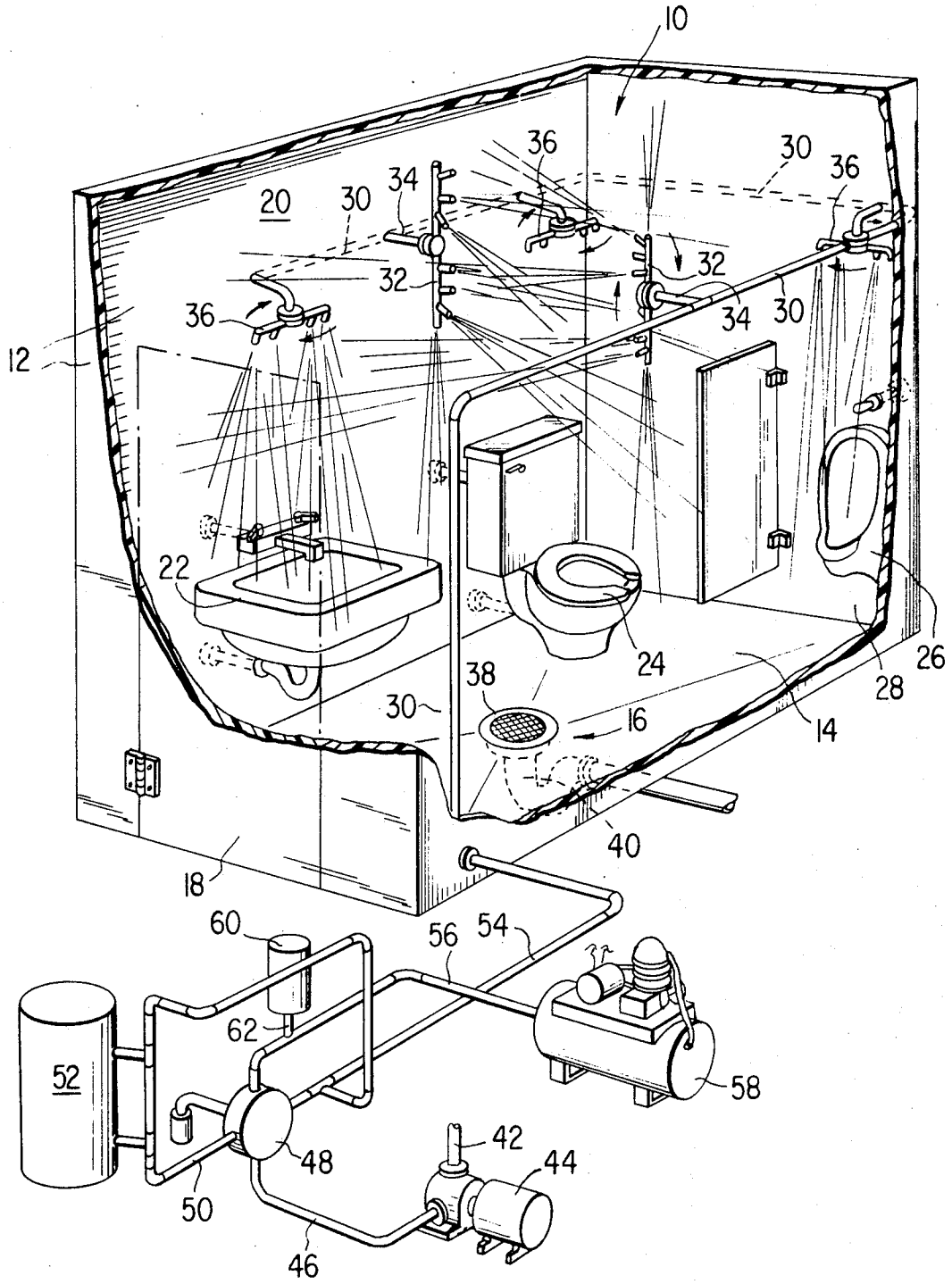
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[57] **ABSTRACT**

A public rest room is automatically washed, rinsed, sanitized and dried by nozzles strategically placed for directing appropriate fluids in sequential fashion over every area of the wall and floor surface of the room and into effective contact with the wash and toilet facilities in the room with the nozzles being supplied with wash, rinse, sanitizing and drying fluids from appropriate reservoirs and supplies through valved conduit means disposed along the walls of the room. The cleaning system may be installed in existing public rest rooms; in addition, the room may be a self-contained structure that may be placed adjacent an erected building or permanently installed in a building, such as a gasoline service station. The cleaning system contains the nozzle arrangement and attendant operating structure and components as a built-in adjunct to its operation and maintenance.

8 Claims, 1 Drawing Figure





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PUBLIC REST ROOM CLEANING SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally appertains to improvements in cleaning systems and especially relates to new and novel improvements in a system for automatically cleaning enclosed areas and articles contained therein, most particularly public rest rooms and the wash and toilet facilities disposed therein.

2. Description of the Prior Art

The presence of unsightly and unsanitary public rest rooms, especially in gasoline service stations, is so well known and the existence of which has become so general, as of late, that no considerable elaboration need by given to the problem to which no solution has become apparent. In the latter regard, the only solution is the ancient one of employing efficient manual labor on an inspection schedule to clean the rooms and the facilities therein. Unfortunately, present economic and sociological conditions all but negate the employment of competent and reliable workmen to maintain such public rooms in sanitary and attractive condition.

Attempts to eliminate the need for utilizing manual labor in effecting cleaning operations of such rooms by providing automatic cleaning systems have not been fruitful. One such cleaning system is disclosed in U.S. Pat. No. 3,381,312, wherein cleaning implements are stored in the ceiling of a bathroom above the toilet facilities and are automatically lowered relative to the facilities and then rendered operative to distribute washing and rinsing fluids to the facilities and then returned to their storage places while suction hoses function to remove any water accumulation on the floor around the facilities and a heater and fan operate to circulate drying air through the bathroom.

Such bathroom cleaning system may function fine in public buildings having large bathrooms housing a considerable number of toilet facilities and where it is only desired or necessary, due to ample manual labor, just to clean the toilet facilities in an automatic manner with manual labor being able to clean the remainder of the bathroom. Even so, such system for primarily cleaning the toilet facilities is only a partial answer to the problem. And such partial solution would be to no avail because the cost of installation and operation thereof, due to its complex nature, would be so high as to economically preclude its installation and use in public rest rooms in service stations, small restaurants and the like privately owned establishments dedicated to serving the public.

SUMMARY OF THE INVENTION

The present invention is summarized in that a cleaning system for cleaning the interior of a room enclosure equipped with toilet facilities without the employment of manual labor includes a pipe network arranged over portions of the inner wall structure of the enclosure, nozzle units carried by the pipe network within the interior of the enclosure, to unit fluids onto all parts of the enclosure, and input means connected to the pipe network for sequentially conveying cleaning fluids to the pipe network for emission therefrom by the nozzle units.

The purpose of the present invention is to ensure that public rest rooms or any bathroom facility, for that matter, are maintained in clean, sanitary and aesthetically appealing condition without necessitating the expenditure of manual labor to accomplish this directly.

Accordingly, an object of the present invention is to construct an automatically functioning, dependable, reliable and economically practical and efficient system for washing, rinsing, sanitizing and drying the entire and overall inner surface of a rest room and with particular emphasis on the wash and toilet facilities therein.

The present invention has a further object in that a self-contained room structure may be permanently installed as a functioning unit in a building and which is equipped with built-in plumbing fixtures, such as wash bowl, toilet and urinal, and which has a built-in integer of an automatically operating spray nozzle and piping arrangement for directing in a strategic and sequential manner over the wall and floor surfaces and into and over the plumbing fixtures effective sprays of wash, rinse, sanitizing and drying fluids from appropriate supply sources provided as operating adjuncts to the maintenance and consequent proper operation of the rest room unit.

BRIEF DESCRIPTION OF THE DRAWING

The accompanying drawing contains a perspective view, partly broken away and shown in section, of a room structure that exemplarily typifies a self-contained rest room in accordance with the teachings of the present invention, especially with regard to the automatic cleaning system which is shown structurally in perspective and also shown mainly diagrammatically.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the accompanying drawing, the numeral **10** generally designates a room enclosure which is a self-contained structure constructed and adapted to be permanently installed in a building so as to function therein as a public rest room or, at least, as a bathroom, for example if installed in a dwelling not given to serving the public.

The room enclosure **10** is molded or formed from fiber glass which has an inner hardgel surface. The enclosure is composed of walls **12,** a ceiling and a floor **14,** with the latter being pitched toward a drain area **16.** One or more of the walls is provided with an ingress and egress door **18.** The room enclosure is provided with built-in plumbing fixtures that are operatively oriented along one side wall **20** and include a wash bowl **22** and a commode **24.** Also, a urinal **26** is preferably positioned along another side wall **28.** Of course, such provision and placement of the facilities is merely exemplary and the room enclosure is shown in its simplest form devoid of any partition walls and any customary furnishings.

Built into the walls of the room enclosure, as by being molded therein in the instance of plastic piping or by being integrally associated with the exterior surface of the walls thereof, is a series of pipes **30.** The pipes are laid out in a series pattern along the side walls and in adjacency to the ceiling with the pipes being adapted to convey commonly various fluids into the interior of the room enclosure. The particular design placement of the pipes is not of importance and some of the pipes can pass over the ceiling, if desired. It is important that a network of piping be established to ensure a mini-

mum amount of pipe with a maximum amount of coverage in the distribution of fluids into the interior of the room enclosure.

In the latter regard, a number of rotating nozzle units **32** are provided with the nozzle units being rotatably attached to offset pipe ends **34** on the pipes **30** and being of a nature so that fluid emitted from the nozzle imparts a rotational force to the nozzle heads attached to the pipe ends **34.** The nozzle units are placed in a minimum strategic arrangement so that fluid sprays therefrom impinge on the entire inner wall and floor surface of the room enclosure **10.** Thus, certain of the nozzle units, as partly shown, will be on opposite walls and will have their jets directed so as to spray up and down all over the opposing wall. The ceiling and floor will also be effectively sprayed.

Certain nozzle units **36** will overlie the wash bowl, toilet and urinal, as shown, so that such facilities will have fluid sprays directed positively thereon and therein, ensuring positive direct treatment being given to such plumbing facilities.

The floor drain area **16** is formed with a drain outlet **38** that is in communication with a stand pipe **40** whereby fluids from the nozzles are carried off from the drain area after effectively flowing down the walls and over the floor.

Preferably, the nozzle units will sequentially emit a washing fluid, a rinsing fluid, a sanitizing fluid and then a drying fluid. Such sequence can be of an automatic timed nature or can be the result of manual operation of suitable controls for operating equipment which constitutes maintenance adjuncts in association with the room enclosure **10.**

In this respect, water from a main water supply is carried by a main water supply pipe **42** to a motor driven pump **44,** which in some instances where the water supply pressure is high enough may be eliminated. Usually though the pump will be required to develop and maintain the necessary water pressure. The output line **46** of the pump communicates with a four-way valve **48** which can be manually operated or can be automatically controlled by a motor driven timer mechanism in consort with the operation of the pump.

In one position of the valve **48,** the water output from the pump or, at least, from the supply pipe **42** in the absence of the pump, passes through a line **50** which carries a detergent reservoir **52** with the water, as it passes through the line **50,** becoming admixed with detergent so that wash fluid is carried to the main input line **54** downstream from the valve and in direct communication with the piping **30.**

In another position of the valve **48,** clear water passes through the valve from the pump or directly from the water supply line **42** to the main input line **54** which operation constitutes the rinse cycle.

In another position of the valve **48,** wherein the pump is out of operation or the line **46** is closed off, the input line **54** is in communication with the output line **56** of an air compressor **58.** In such position, air is carried to the nozzle units **32** and **36.** When the air line **56** is in operation, the passing air picks up a metered quantity of sanitizing fluid from the reservoir **60** connected by a metering and closeoff valve **62** to the air line **56.** The reservoir **60** can be closed off so that only air is conveyed to the nozzle units **32** and **36.**

While the air compressor is shown in communication with the valve and piping arrangement as the source of drying air currents, such can be replaced by a motor driven blower in communication with the room enclosure directly or through the piping and nozzle units. Also, if necessary, the air, in either instance, can be heated. However, this most probably would not be necessary because of the good drainage conditions.

While the room enclosure is shown and described as a self-sufficient expressly formed and fabricated unit, it can be appreciated that the cleaning system, as shown and described, can be installed for excellent operation in existing rest rooms, especially since the majority of such rooms have tiled walls and floor drains, with the latter being the only real important factor. And even then, if the room has adequate drainage through a door or the like, the absence of a floor drain will not be detrimental to the operation of the system.

Inasmuch as the present invention is subject to many variations, modifications and changes in detail, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In an automatic system for cleaning a room enclosure, having ceiling and floor members joined by wall means, and bathroom facilities contained therein, the combination comprising,

a pipe network adapted to be secured to the room enclosure,

said pipe network having an inlet and a plurality of fixed outlets,

a plurality of rotatable nozzles, one for each outlet, fixed to said outlets in said spaced relation to each other,

said plurality of rotatable nozzles including first and second nozzle groups being rotatable on first and second axes, respectively, said first and second axes being generally perpendicular to each other, whereby fluid from said rotatable nozzles is sprayed against all surfaces of the ceiling and floor members and the wall means, as well as the bathroom facilities,

a drain area adapted to be fixed in the floor member and having a drain outlet therein,

fluid input means connected to said inlet, and

a multiposition valve in said fluid input means having a first position for conveying a washing fluid to said inlet, a second position for conveying a rinsing fluid to said inlet, and a third position for conveying a drying fluid to said inlet whereby all surfaces of the ceiling and floor members and the wall means as well as the bathroom facilities are washed, rinsed and dried by fluids from the rotatable nozzles.

2. The invention as recited in claim **1** wherein said fluid input means includes a sanitizing fluid control valve adapted for operation during a selective portion of operation when said multiposition valve is in its third position whereby a sanitizing fluid is conveyed to the said surfaces.

3. The invention as recited in claim **1** wherein the washing fluid is a mixture of water and detergent, the rinsing fluid is water, and the drying fluid is air.

4. The invention as recited in claim **1** wherein said first and second axes are perpendicular to each other.

5. The invention as recited in claim **1** wherein one of said first and second axes is normal to said wall means.

6. The invention of claim **1** wherein said room enclosure is a self-contained unit.

7. The invention of claim **6** wherein said pipe network is intimately formed in association with the enclosure unit.

8. The invention of claim **6** wherein said unit is fabricated from fiber glass.

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