

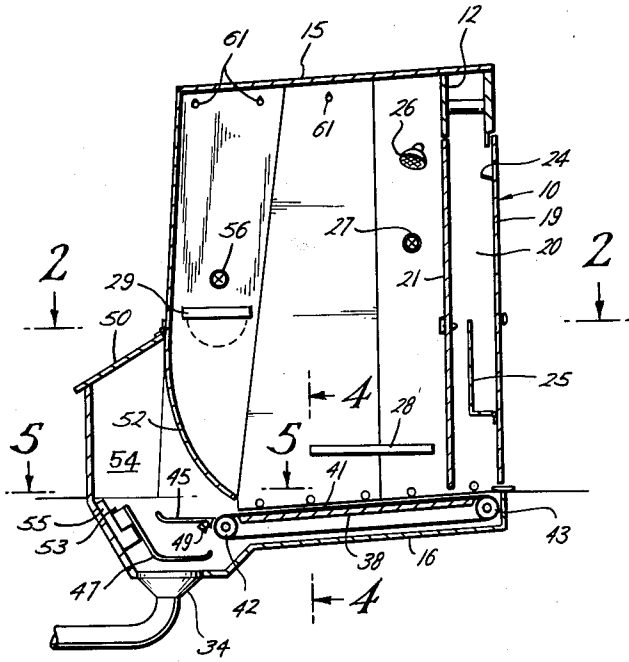
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SANITARY SHOWER STALL

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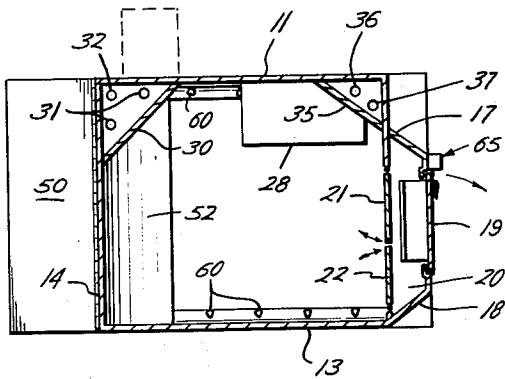
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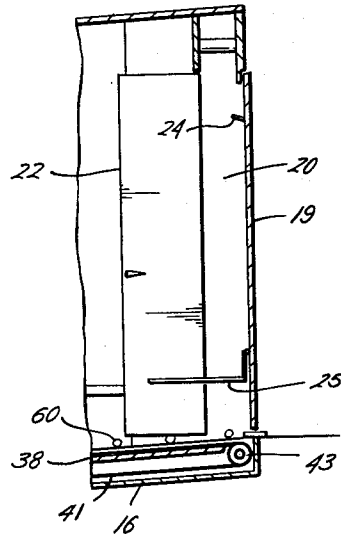


*Fig. 1*

*Fig. 2*



*Fig. 3*



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**SANITARY SHOWER STALL**

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This invention relates to shower stalls generally and, in particular, to shower stalls which are used by the general public and which must be maintained in a clean and sanitary condition at all times. It is especially adapted to stalls to which access is controlled by a coin-operated device, although not limited thereto.

This application is a continuation-in-part to my co-pending application, Serial No. 111,867, filed May 22, 1961, and entitled Shower-Queen, now abandoned.

Any bathroom equipment provided for the public is subject to the problem of cleanliness. In order words, a public shower, like a public toilet, will in a short time become cluttered with debris and perhaps even offal unless constant maintenance is provided, either by an attendant or by some other means. In addition to the debris, etc. which accumulates in these places, there is also the necessity of maintaining them in a sanitary condition so that they will not become the means by which communicable diseases are spread throughout the general public. This would be particularly true in the case of a shower stall where the fear of one of the most communicable diseases of all, athlete's foot, would make anyone reluctant to use a public shower stall without some assurance that the floor is in some way maintained in a sanitary and disinfected condition.

It is one of the objects of this invention to provide a shower stall which will provide a clean floor to each successive user of the shower.

It is also one of the objects of this invention to provide a shower stall which will automatically remove any debris or offal deposited in the shower stall during its use.

It is another object of this invention to provide a shower stall which has a movable floor which will carry away any foreign matter left on the floor by the previous occupant of the shower.

It is a further object of this invention to provide a shower stall which can be completely disinfected after each use.

It is an additional object and important feature of this invention to provide means whereby the removal of the debris and offal deposited by the user of the shower stall, as well as the disinfecting operations, are performed automatically after each use of the shower stall.

These and other features and objects of the invention will be apparent from a reading of the detailed description set out below.

Briefly, the invention comprises a shower stall having side walls, a top and a bottom wall. Located above the bottom wall is a movable floor which, in one preferred embodiment, comprises an endless belt. Means are provided for moving the movable floor after each use of the shower so that all the debris and offal which was deposited on the floor will be removed. Means are also provided to insure further cleansing of the shower stall by washing the movable floor and also to wash the entire interior of the shower stall.

The invention will now be described in detail in connection with the accompanying drawings in which:

FIG. 1 is a vertical cross section of the shower stall;

FIG. 2 is a horizontal cross section taken along line 2-2 of FIG. 1;

FIG. 3 is a partial vertical section showing the inner doors of the shower stall in an open position;

FIG. 4 is a partial sectional view taken along line 4-4 of FIG. 1 showing the arrangement of the platform, mov-

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ing belt and cleansing nozzles and also the motor which drives the belt;

FIG. 5 is a view taken along line 5-5 of FIG. 1 which illustrates the relationship of the grates employed to catch the debris removed from the shower stall by the belt and water; and

FIG. 6 is a diagrammatic illustration of the control system used to operate the automatic cleaning devices of the shower stall.

Referring to FIG. 1, the shower stall, indicated generally by the number 10, consists of the side walls 11, 12, 13 and 14, top wall 15 and bottom wall 16. Attached to the front wall 12 are the walls 17 and 18 which extend outward therefrom to support the door 19 and thereby provide the compartment 20. The door 19 is the outside door of the shower and it is through this door that one enters and leaves. The front wall 12 is also equipped with doors 21 and 22. These doors swing inward into the shower compartment to allow passage into the shower stall, after which they can be closed to close off the compartment 20 and keep this area dry when the shower is in use. These inner doors 21 and 22 can also be opened outward so that should the occupant for some reason need to get out of the shower fast, as, for example, if the cold water is accidentally cut off, he can do so without having to open the doors 21 and 22 inward.

This door arrangement serves to allow a user of the shower to enter through the door 19, undress, place his clothing, etc. in the compartment 20 and by closing the doors 21 and 22, keep them dry while he uses the shower. For his convenience, a hanger 24 and hinged luggage rack 25 are also provided. The luggage rack 25 folds downward so that a suitcase can be placed thereon while the occupant dresses or undresses, but which will fold up and out of the way of the doors 21 and 22 when the user is taking his shower. Within the shower stall itself is located the shower head 26 and control faucet 27 which control the shower, and a hinged bench 28.

A wash basin 29, with its associated faucet 56, can also be provided. As illustrated, the basin is mounted in the partition 30 which extends diagonally across from walls 11 and 14 to provide a mounting for the wash basin and also to provide passageway for the water lines 31, and cleansing line 32. On the adjacent corner, between walls 11 and 12, another partition 35 extends diagonally between the walls to provide a passageway for the hot and cold water lines 36 and 37 which lead to the shower head 26.

The basin 29 is mounted in the partition 30 like a drawer so that it can be pulled out when needed but is out of the way when not in use. Preferably, plastic liners are provided for the basin which are thrown away after each use so that each user of the shower will also have sanitary wash basin facilities. Instead of plastic liners, the drawer could be designed to hold the edges of a plastic member designed to act as the basin itself. This latter plastic member would, of course, need to be much stronger than the liner since it would have to support the weight of the water. The drawer could be arranged so that when the occupant of the shower is through with the basin, it can be tipped up to dump the water and a suitable opening (not shown) can be provided in the partition for disposing of the used plastic members.

A platform 38 extends across the bottom of the shower stall a short distance above the floor 16. This platform is supported by brackets 39 and 40 so that it will support the weight of the occupant. Encircling the platform is an endless belt 41 mounted on rollers 42 and 43 which are located at opposite ends of the platform 38. The roller 42 is connected to an electric motor 44 as illustrated in FIG. 4, whereas roller 43 is simply mounted in bearings (not shown) located in the side walls 11 and 13. The electric motor 44 is arranged so that it will

rotate the roller 42 in a direction which will cause the belt 41 to move toward the drain 34 which is located at the rear of the shower. Also, it should be noted that the platform 38 is inclined so that any water or liquids thereon will tend to run off in the direction of the drain 34. This is also true of the bottom wall 16 since it is desirable, of course, that all liquids falling to the bottom of the shower be directed toward the main drain 34.

Located adjacent the roller 42 is the grate 45 which is provided with fingers 46 which are spaced relatively far apart. Below the grate 45 is the grate 47 which has fingers 48 located relatively close together as compared to the fingers of grate 45. The relationship of these fingers can best be seen in FIG. 5. It is the purpose of these grates to screen the material which is removed from the shower floor by the endless belt 41 so that the drain will not be clogged by debris and offal which is too large to pass into the drain. For example, the grate 45 with its relatively wide spaced fingers 46 is designed to catch items such as bottles, cans, disposable sink liners, shaving and toothpaste tubes, etc. which may be deposited on the floor of the shower stall and which should not be allowed to enter the drain 34. Smaller items will pass through the grate 45 and be collected on the grate 47. Since it is quite likely that some of these smaller items will consist of organic material, a row of jets 49 are arranged along the bottom side of the grate 45 and directed toward the grate 47 so that during the cleaning operation, a stream of liquid can be directed toward the grate 47 to break up any organic material which may be caught by the grate and wash it down the drain. It is important that this smaller grate be washed clear of any organic matter if for no other reason than to prevent the shower stall from being filled with offensive odors.

Periodically, it will be necessary to clean these grates, so grate 47 is mounted for easy removal. As this grate is pulled up through the widely spaced fingers of the grate 45, it will, of course, pick up all the debris collected by grate 45 and simultaneously remove it with any of the small debris still remaining on grate 47. One method of removably mounting the grate 47 is illustrated in FIG. 1. There, the grate is provided with a pin 53 which enters a hole (not shown) provided therefor in the block 55 mounted on the back side of the wall 16. To allow easy access to the grates and the drain 34, they are located slightly to the rear of the back wall 14 and enclosed by the compartment 54. The compartment is equipped with a door 50 through which the grate can be removed. Other ways than manual may be provided for dumping the grates as often as desired and into any suitably located receptacle.

The lower portion 52 of the back wall 14 is curved as shown in FIG. 1. This allows freer access to the grates and also serves to protect the occupant of the shower by preventing him from stepping off the belt 41. Sufficient clearance is maintained between the lower end 52 and the belt to allow the passage of any large items which may be left in the shower.

Mounted along each side of walls 13 and 11 immediately above the belt 41 are a plurality of nozzles 60. These nozzles are arranged to direct their jets against the belt 41 during the cleaning operation which will be described below. Additional jets 61 are also provided along the top part of the shower stall which also function during the cleaning operation.

To insure that the shower stall is maintained in as clean a condition as possible, it is preferred that not only all of the debris and offal be carried off the floor of the shower stall by means of the moving belt 41 but also that a washing operation take place whereby the belt 41 is subjected to a high velocity stream of moving liquid to make sure that it is cleansed of any material which may tend to cling thereto and not fall off into the grates. It is also desirable that the interior of the stall be subjected to a similar washing action. Preferably, a liquid is used

which contains both a detergent and a disinfectant so that the shower will be disinfected as well as cleansed in the same operation. Other means could be provided to disinfect the shower, however, such as ultraviolet lamps.

FIG. 6 illustrates diagrammatically the controls necessary to automatically operate the shower stall. With this arrangement, the shower stall can be placed in bus stations, air terminals and also in out-of-way places such as public camping grounds in our national parks and along the highways, and no attendant will be needed. It is contemplated, of course, that when used by the general public, a certain amount of money will be paid for the use of the shower. In this respect, a coin-operated switch mechanism is provided on the outer door 19 so that in order to gain ingress to the shower stall, a certain amount of money must be deposited in the mechanism. Various types of coin-operated switches are available commercially and are well known in the art. Suffice it to say that the switch indicated generally by the number 65 is arranged so that once sufficient money is deposited, the door 19 can be opened. This switch is also arranged so that when the door 19 is closed behind the occupant, the switch 66 will be closed, thereby completing the circuit from the electrical current source through the switch 66 to the switch 67 which is a weight-sensitive switch located below the platform 38. The switch 67 is a normally closed switch arranged so that the weight of an occupant of the shower will maintain the switch open. This keeps the circuit to the timer 68 open while the shower is being used. The switch 67 is conveniently made an integral part of one of the brackets supporting the platform 38. It is, of course, provided with a spring which has just enough strength to overcome the weight of the platform and belt and hold the switch closed.

As soon as the occupant has completed his shower and has left the shower stall, removing his weight from the platform 38, the switch 67 will close, starting the timer 68 which in turn starts the detergent pump 69 and the motor 44. The motor 44 rotates the roller 42 which causes the belt 41 to travel along the top of the platform 38 toward the grates 45 and 47 carrying any foreign material left there by the previous user.

Simultaneously therewith, water (which need not contain a detergent) is being pumped through the nozzles 49, breaking up any organic material which is removed from the floor of the shower stall by the belt and deposited on the grate 47. Concomitantly, the pump 69 is forcing water containing detergent through nozzles 60 against the belt 41, washing it free of any material which may tend to stick thereon and also thoroughly cleansing the belt. During this same operation, detergent will be directed over the entire interior of the shower stall by means of the nozzles 61. It will be understood, of course, that as many nozzles 60 and 61 can be provided as may be necessary to completely cleanse the interior of the shower stall and the belt.

After a given period of time has passed, the timer will stop the cleansing operation. The timer is then reset for another cycle, through a suitable electrical connection 70 from the main switch 65, simultaneously with the deposit of coins in the main switch 65 preparatory to someone using the shower again.

The cleansing system is illustrated and described as being a separate system from the water system furnishing water to the basin and the shower. This would not have to be the case. Electrically operated valves could be used to control the flow of water to the nozzles and a chemical pump could be arranged to add the detergent and/or disinfectant in the amount needed.

Also, if experience indicates that the entire washing operation need not occur after each use, but that by simply moving the belt a short distance after each shower to provide a different portion of the belt for each user, the washing operation can be set to occur after each third or fourth use or whenever the belt would need to be

cleaned. The belt would have to be moved after each use and the number of the times the washing operation could be postponed would depend on the length of the belt and the amount exposed to each occupant.

From the foregoing, it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the apparatus and structure.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

The invention having been described, what is claimed is:

1. A shower stall having side walls, a floor, and a platform above the floor to support an occupant of the shower stall, said platform comprising support means having occupant supporting surfaces, only a part of which are in position to support an occupant at any one time and which are stationary while supporting the occupant and means movably mounting the support means to move the support means relative to the mounting means when the shower stall is unoccupied to place a different part of the support means in occupant supporting position.

2. In a shower stall having side walls, a floor, and support means located above the floor to support an occupant of the shower stall, said support means including an elongated member extending generally horizontally across the floor of the shower stall and having a surface upon only a part of which an occupant can stand while occupying the shower stall and which is stationary while the shower stall is occupied, said member being movably mounted and means for moving the member in a generally horizontal direction while the shower stall is unoccupied to carry away any debris deposited on the surface thereof by an occupant to thereby provide a debris free surface for the next occupant of the shower stall.

3. In a shower stall having side walls, a floor and a generally horizontal platform above the floor, said platform comprising at least one movable member having a surface upon which an occupant of the shower stall can stand, said member being stationary while the shower stall is occupied; means for movably supporting the member and means operable from outside the shower stall for moving said member on said support means when the shower stall is unoccupied to remove any debris deposited on the member by an occupant of the shower stall to provide a clean surface for the next occupant of the shower stall.

4. In a shower stall having side walls and a floor, the improvement in combination therewith of means located above the floor to support an occupant of the shower, said support means comprising an elongated, flexible member which is stationary while the shower stall is being occupied and which has a surface upon only a portion of which an occupant of the shower stall can stand at one time, said portion being generally horizontal; a rotatably mounted drive member located at one side of the shower stall, said rotatably mounted member having its axis extending transversely of the elongated member and being in engagement therewith to drive the same when rotated; and means for rotating said rotatably mounted member when said shower stall is unoccupied to move the elongated member and carry away any debris deposited thereon by an occupant of the shower.

5. In a shower stall having side walls and a floor, the improvement in combination therewith of support means located above the floor to support an occupant of the shower stall, said support means comprising a platform having a generally horizontal upper surface located above

the floor of the shower stall; an elongated belt of flexible material a portion of which extends across and is supported by the upper surface of the platform, the belt providing a stationary surface upon which an occupant of the shower can stand; and means for moving the belt while the shower stall is unoccupied to carry away from the platform any debris deposited on the belt by a previous occupant to thereby provide a clean surface upon which the next occupant can stand.

6. In a shower stall having side walls and a floor, the improvement in combination therewith of support means having a surface upon only a portion of which an occupant of the shower stall can stand at one time, said support means comprising a generally horizontal support member located above the floor of the shower stall; an endless belt of flexible material surrounding the support member with its upper side supported thereby to provide a generally horizontal movable surface upon a portion of which an occupant of the shower stall can stand, said belt being stationary when the shower stall is occupied; rotatably mounted members located at opposite sides of the support member, said members being located within the belt of flexible material and at least one member being in driving engagement therewith to move the belt over the support member when the driving member is rotated; and means for rotating the driving member when the shower stall is unoccupied.

7. The shower stall of claim 6 further provided with a plurality of nozzles for directing water against the belt for cleaning the surface of the belt while the shower stall is unoccupied.

8. The shower stall of claim 7 further provided with additional nozzles for directing water against the inside walls of the shower stall while the shower stall is unoccupied.

9. A shower stall comprising an enclosure having side walls and an inclined floor, a drain in the floor, said drain being located at the lowest part of the floor with the floor inclined toward the drain, means for supporting an occupant of the shower stall above the floor, said support means comprising a platform located above the floor and inclined toward the drain, an endless belt of flexible material encircling the platform with the upper portion of the belt supported by the platform to provide a stationary surface upon which an occupant of the shower stall can stand, cylindrical rollers rotatably mounted adjacent opposite sides of the platform and extending through the belt of flexible material, said rollers being located to move the portion of the belt supported by the platform toward the drain, and means for rotating one of the rollers when the shower is unoccupied to cause the belt to move relative to the platform.

10. The shower stall of claim 9 further provided with means for washing the occupant-support surface of the belt as the belt is being moved by the rollers.

11. The shower stall of claim 10 further provided with grate means adjacent the support means and above the drain to collect debris too large for the drain which falls off the end of the moving belt, said grate means comprising an upper grate and a lower grate, the fingers of the upper grate being spaced apart a greater distance than the fingers of the lower grate with the fingers of both grates arranged to allow the fingers of the lower grate to pass through the fingers of the upper grate.

12. The combination of claim 11 further provided with nozzles located to direct water against the lower grate while the belt is being cleaned.

#### References Cited in the file of this patent

#### UNITED STATES PATENTS

1,997,249	Dobbs	Apr. 9, 1935
1,999,817	Martin	Apr. 30, 1935
2,652,737	Longstreet	Sept. 22, 1953