

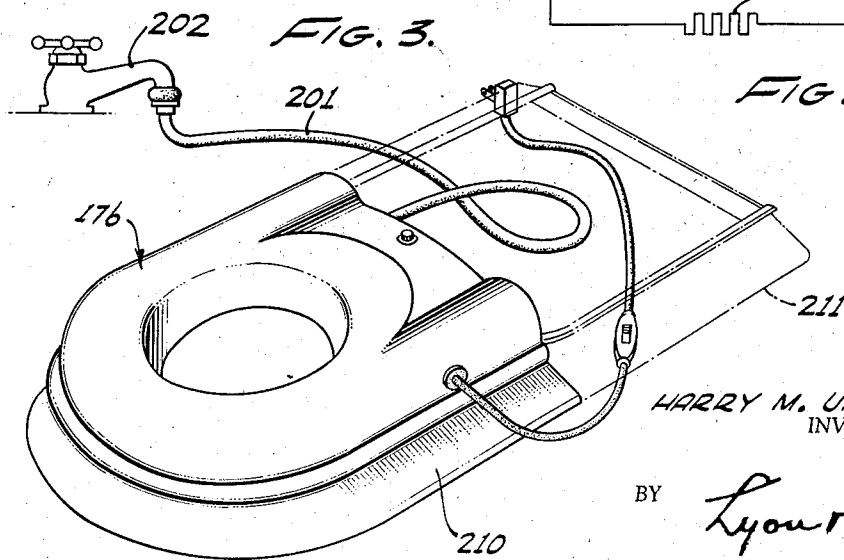
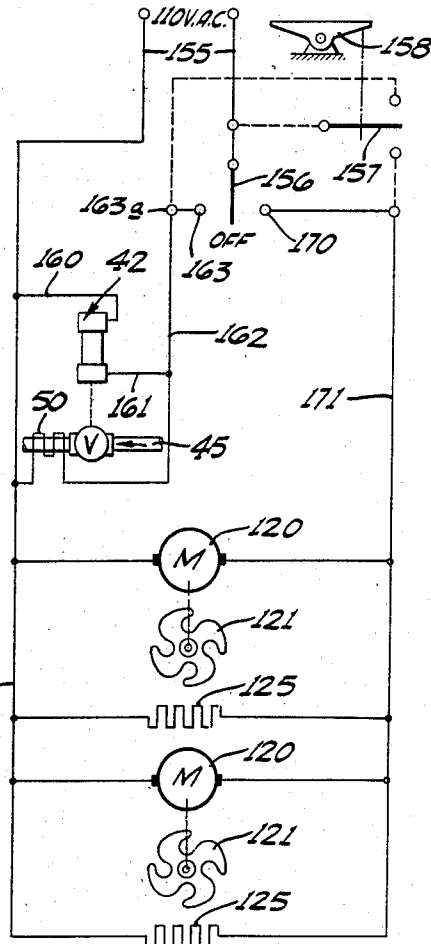
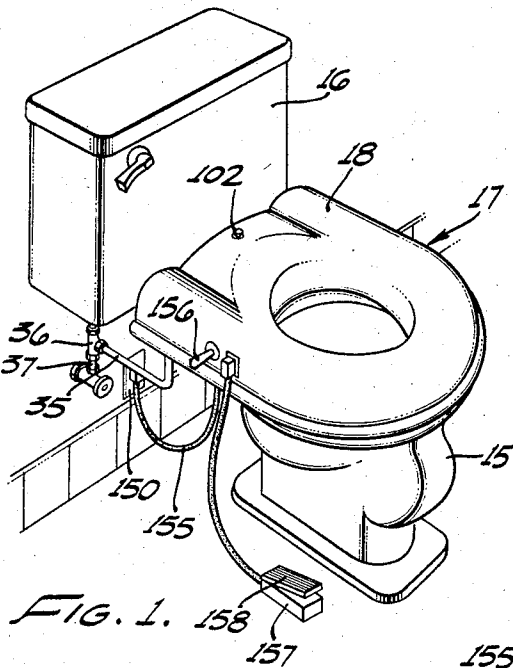
March 3, 1959

H. M. UMANN
SANITARY FIXTURE

2,875,450

Filed Aug. 17, 1956

3 Sheets-Sheet 1



HARRY M. UMANN
INVENTOR.

BY

Lyon & Lyon
ATTORNEYS

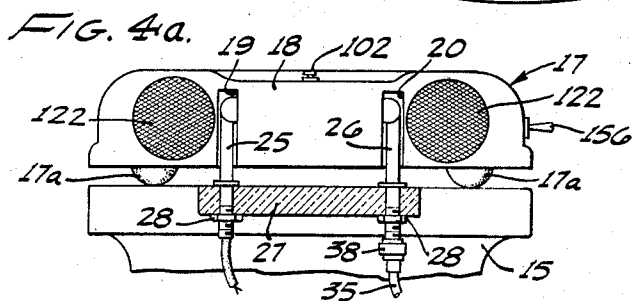
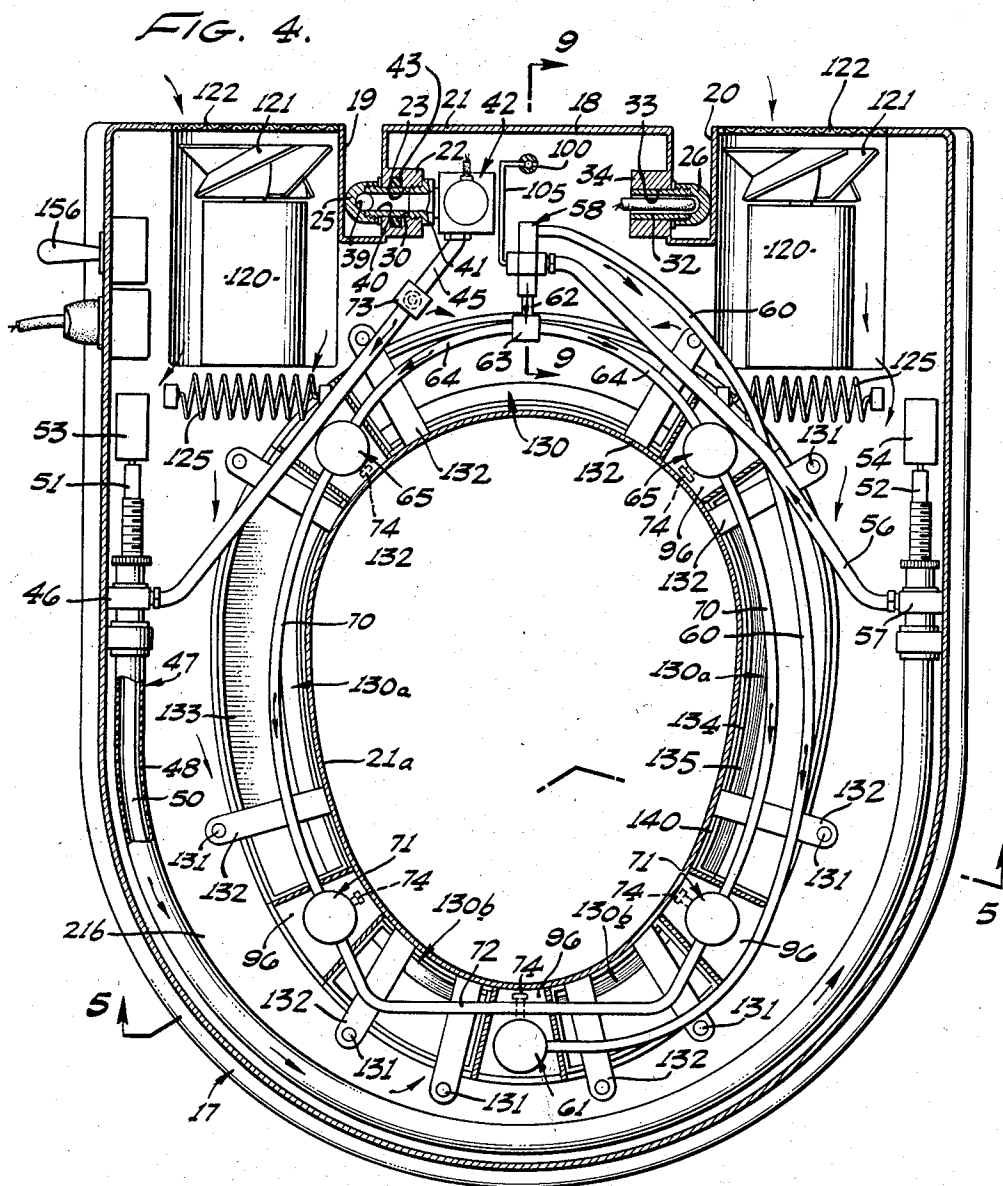
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3 Sheets-Sheet 2



HARRY M. UMANN
INVENTOR.

BY

Lyon & Lyon
ATTORNEYS

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3 Sheets-Sheet 3

FIG. 5.

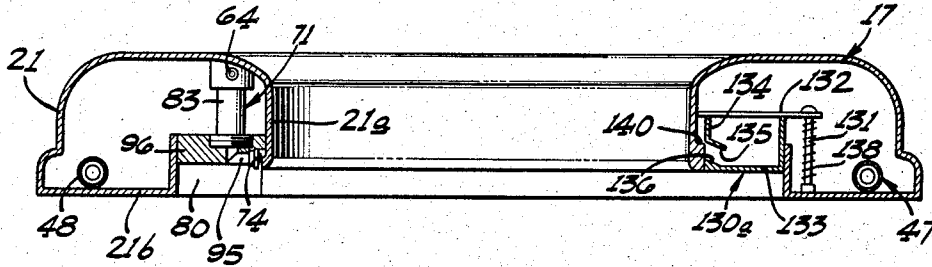


FIG. 6.

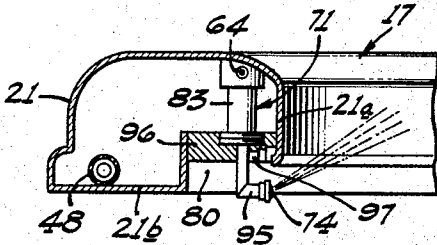


FIG. 6a.

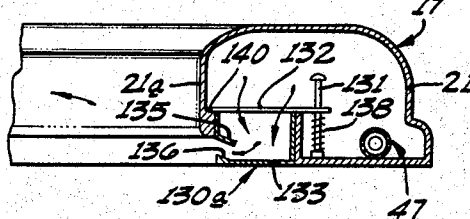


FIG. 7.

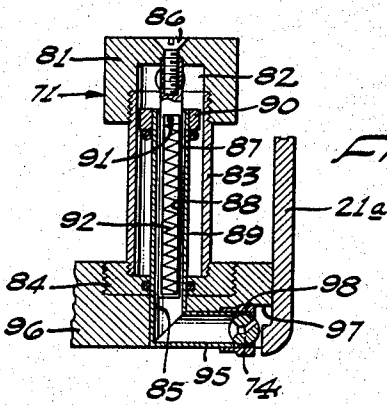


FIG. 8.

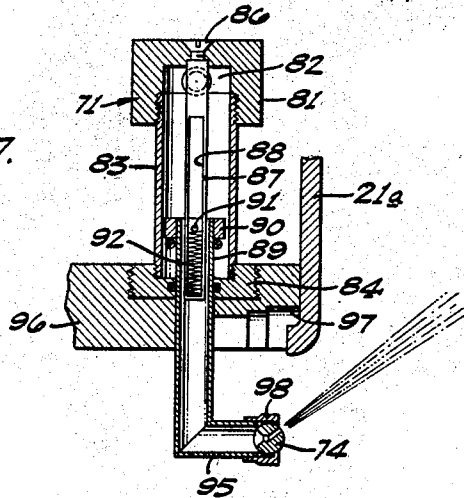
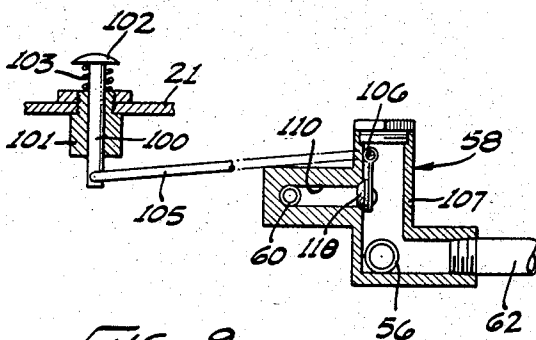


FIG. 9.



HARRY M. UMANN
INVENTOR.

BY

Lyon & Lyon
ATTORNEYS

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2,875,450

SANITARY FIXTURE

Harry M. Umann, Los Angeles, Calif.

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14 Claims. (Cl. 4-7)

This invention relates to improvements in sanitary fixtures and has particular reference to a personal hygiene device used in combination with toilet bowls for the automatic cleaning and drying of the anus and other exposed parts of the body while the user is in the usual sitting position on the toilet bowl.

One of the principal objects of this invention is to provide a novel and improved device for automatically applying water heated to body temperature for cleansing purposes, and for automatically applying forced drafts of warm air to the cleansed parts of the body to dry the same.

Another object of this invention is to provide a device of the character described above which is designed to prevent leakage of water and waste products from the toilet bowl proper.

Another object of this invention is to provide a personal hygiene device included as a permanent and integral part of a toilet bowl seat, the device being so constructed as to be applied to conventional toilet bowls without substantial modification thereof.

Another object of this invention is to provide a personal hygiene device included as a permanent and integral part of a toilet bowl seat, wherein the toilet bowl seat is hollow, substantially the entire inside volume thereof functioning as a plenum chamber for heating and delivering warm air to the air outlets which are an integral part of the seat itself.

Another object of this invention is to provide a personal hygiene device embodied in a toilet bowl seat, the seat containing water and air outlets designed to be movable from recessed positions within the seat when not in use to downwardly extended positions for operation thereof, thus providing a device of maximum sanitation and cleanliness when in the inoperative position and of maximum effectiveness and freedom of leakage when in the operative position.

Another object of this invention is to provide a personal hygiene device embodied in a toilet bowl seat, the seat containing novel and efficient means for heating the water delivered therefrom.

Another object of this invention is to provide a sanitary fixture of the type described embodied in a bed pan unit.

Another object of this invention is to provide a personal hygiene device of the type referred to which is highly effective in operation yet simple in construction and adapted to be manufactured economically on a quantity basis.

Other objects and advantages of this invention, it is believed, will be readily apparent from the following detailed description of preferred embodiments thereof when read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a perspective view of a toilet bowl and seat embodying the invention.

Figure 2 is a wiring diagram illustrating the electrical connections incorporated in the device of this invention.

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Figure 3 is a perspective view of a modified form of the invention.

Figure 4 is a horizontal sectional elevation of the device of Figure 1.

Figure 4a is a rear elevation of the device, on a reduced scale.

Figure 5 is a sectional view taken substantially on the line 5-5 of Figure 4.

Figure 6 is a fragmentary sectional view similar to Figure 5 but illustrating a water nozzle in the operative, extended position.

Figure 6a is a fragmentary sectional view similar to Figure 5 but illustrating a warm air outlet in the operative, extended position.

Figure 7 is a fragmentary vertical sectional view, on an enlarged scale, of one of the water delivery mechanisms with the water nozzle in the inoperative, retracted position.

Figure 8 is a fragmentary vertical sectional view similar to Figure 7, but illustrating the water nozzle in the operative, extended position.

Figure 9 is a sectional view taken substantially on the line 9-9 of Figure 4.

Referring now to the drawings, the personal hygiene device of this invention is illustrated as applied to a conventional toilet including a bowl 15 and water tank 16. The principal parts of the washing and drying device of this invention are integrally associated with an otherwise conventionally-shaped toilet seat 17 having the usual pair of rubber stop elements 17a, but having a rear housing portion 18. A pair of recesses 19 and 20 are provided in the rear end face of the housing portion. The seat also differs from the conventional type in that it is hollow, being formed of a relatively thin but rigid wall 21.

Means are provided for pivoting or hinging the toilet seat 17 to the toilet bowl 15, and, as shown in the drawings, these means may include a pair of hollow support elements 25 and 26 extending through the rear flange element 27 of the toilet bowl and secured thereto by means of nut members 28 (see Figure 4a). A trunnion member 30 having a cylindrical bearing surface is secured to the support element 25. A boss 22 having a central bore 23 is provided in the recess 19, the boss being journaled on the bearing surface of the trunnion member. Another trunnion member 32 is secured to the support element 26 and has a bearing surface in the bore 33 of a boss 34 provided in the recess 20. It will thus be understood that the toilet seat is free to be swung from the position shown in the drawings to a vertical position, in the same manner as conventional toilet seats. Inasmuch as the seat 17 is somewhat thicker than conventional seats, the bores 23 and 33 are positioned in the upper portion of the seat so as to permit adequate clearance for swinging the seat to the vertical position when desired.

A water inlet line 35 extends from a T fitting 36 in the standard water supply pipe 37 which leads to the water storage tank 16, the other end of the line 35 being connected to the lower end of the support element 25 by means of a suitable connection fitting 38. The water inlet line 35 thus communicates with the bore 39 of the support element which in turn communicates, through the central bore 40 of the trunnion member 30, with a fitting 41 carried on the boss 22. A rubber O ring 43 is provided in an annular groove in the boss 22 and seals against the bearing surface of the trunnion member 30 to prevent water leakage.

The fitting 41 is secured to a solenoid valve generally indicated 42 which, as shown in Figure 4, is mounted within the toilet seat. A water conduit 45 leads from the

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outlet of the solenoid valve to the inlet 46 of a water heater assembly 47. As shown best in Figure 4, the assembly 47 includes an elongated tubular jacket 48 of plastic material positioned interiorly of the toilet seat 17 and curving about the forward half of the seat adjacent the wall thereof. Positioned within the jacket is an immersion heating element 50, the terminals 51 and 52 thereof being operably connected to the electrical system at terminal boxes 53 and 54. A water conduit 56 leads from the outlet 57 of the water heater assembly to a three-way valve 58.

Connected to one outlet of the valve 58 is a water conduit 60 leading through the interior of one side of the seat to the front thereof where it is connected to a douche spray assembly or water delivery mechanism 61. Connected to the other outlet of the valve 58 is a nipple 62 which is, in turn, connected to a T-connection 63. A pair of water conduits 64 is provided, one attached to each side of the T-connection, the other ends thereof each being connected to one of a pair of identical water delivery mechanisms 65, one on each side of the central opening of the seat, and toward the rear thereof. These mechanisms are constructed the same as the mechanism 61. A water conduit 70 leads from the other sides of each of the mechanisms 65, the other ends of the conduits being connected to a second pair of water delivery mechanisms 71 spaced toward the front of the seat opening. The water circuit is completed by a conduit 72 extending between the two mechanisms 71.

Means are provided for controlling the water temperature. As shown in Figure 4, these means may include a needle valve 73 positioned in the conduit 45. The valve stem (not shown) extends through the toilet seat wall on the underside thereof and is preferably provided with a screw-driver slot (not shown) for adjustment thereof.

Since the water delivery mechanisms 61, 65 and 71 are identical in construction, only one will be described in detail. Thus, each mechanism includes a water spray nozzle 74, means being provided for retracting the nozzles into and for extending them out of the interior of the toilet seat, as will be described hereinafter.

The water delivery mechanisms each include a head portion 81 secured to the underside of the top seat wall 21. The head portion is provided with a central recess 82 and secured to the head portion in communication with the recess is a tube or cylinder 83. The lower end of the tube is secured to a foot member 84 having a central opening 85 therein. Secured to the head portion 81 by means of a screw element 86 is a tube 87 provided with a longitudinal slot 88. The tube 87 extends through the tube 83 and the central opening 85. Surrounding the tube 87 and vertically reciprocable with respect thereto is a tubular member 89. A stop member 90 is carried at the top of the member 89 and a pin 91 extends therethrough and through the slot 88, a spring 92 being interposed between the pin 91 and the bottom of the tube 87. The spring normally maintains the mechanism in the retracted position of Figure 7. A nipple member 95 is attached to the lower end of the tubular member 89, the nozzle 74 being carried in the end of the nipple member and retained therein by means of the retainer member 98. The bottom portion 21b of the seat wall is recessed as at 80 in the vicinity of each of the water delivery mechanisms. The top of the recess comprises a wall portion 96 into which the foot member 84 is threaded. The wall portion 96 is provided with a recess 97 in which the nozzle 74 and nipple member are received when the nozzle is in the retracted position of Figures 5 and 7. The side portions 21a of the wall 21 adjacent each of the water delivery mechanisms terminates short of the bottom of the seat, the lower lip being inwardly curved for sanitary reasons, as shown.

Means are provided for actuating the valve 58. As

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shown best in Figure 9, these means may include a plunger 100 which is vertically movable in the central bore of a support member 101 secured to the upper seat wall 21 adjacent the rear thereof. The plunger is provided with a finger button 102, and a spring 103 normally urges the plunger in an upward direction. Pivoted to the lower end of the plunger is a U-shaped lever 105, the other end of which is rigidly connected to a pin 106 carried in the valve body 107. A valve member 118 is carried by the pin and normally closes a passage 110 which communicates with the conduit 60.

Mounted within the housing portion 18 is a pair of electric motors 120. Each of the motors drives an air blower 121 carried on the respective motor shafts. Screened air inlet openings 122 are provided for each of the blower units. Mounted directly in the path of the air blown by each of the blower units is a heating element 125. As shown best in Figure 4, substantially the entire inside volume of the hollow toilet seat functions as a plenum chamber for the warm air, which is blown in the direction of the arrows.

Means are provided for delivering the warm air from the interior of the seat to the central opening therein. As shown in the drawings, these means include a plurality of retractable air outlet assemblies including a rear outlet assembly 130, a pair of side assemblies 130a and a pair of front assemblies 130b. Each of the assemblies includes a pair of vertical pin members 131 secured to the top side of the bottom wall portion of the seat, each of the pin members extending through an aperture in a horizontal bracket member 132. Secured to each pair of bracket members is a partition member 133 of sheet material, generally L-shaped in section as shown in Figure 5, and curved to conform in plan generally to the shape of the toilet seat central opening as shown in Figure 4. Also depending from each pair of bracket members is a second partition member 134, similarly curved in plan but defining an obtuse angle in section by virtue of an inwardly and downwardly inclined portion 135. This portion is parallel to an upwardly and outwardly inclined portion 136 on the partition member 133. These parallel portions direct the warm air upwardly and inwardly toward the center of the toilet seat central opening, as shown by the arrows of Figure 6a. Spring members 138 on the pins 131 normally urge the bracket members and their associated partition members into the retracted position of Figure 5. The inner vertical portions of the wall 21a adjacent the air outlet assemblies is provided with shoulder portions 140 which function as stops to prevent downward movement of the assemblies beyond the position shown in Figure 6a.

Electrical energy is supplied to the apparatus in the toilet seat from a wall outlet 150 by means of wires 155 which lead therefrom through the hollow support element 26. Manual switch means are provided for controlling the flow of water and air and, as shown in the drawings, these means may include the double-throw hand switch 156 which is mounted on the toilet seat to the rear thereof within easy access to the user. An optional foot-controlled switch 157 operated by a foot pedal 158 is also provided.

Referring now to the wiring diagram of Figure 2, it will be seen that the solenoid valve 42 is connected to one of the wires 155 by means of a wire 160, and by means of a wire 161 to a wire 162 leading from the switch contact 163. The wire 162 leads to the heating element 50, the other end of which is connected to the wire 155. The other switch contact 170 is connected to a wire 171. The motors 120 and air heating elements 125 are connected across the wires 155 and 171. The wiring and contacts for the switch 157 are shown in broken lines.

In use of the device thus far described, the occupier of the seat first actuates either the switch 156 or 157 to close the circuit including the wires 155 and 162. The

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valve 42 is thus opened and the heating element 50 energized so that water is delivered to the mechanisms 71 and 74, the water having been heated to body temperature. Prior to this, the nozzles 74 are in the retracted position shown in Figures 5 and 7. Upon delivery of water under pressure to the recess 82, it fills the tube 83 and passes through the slot 88 into the tube 89 and the nipple 95. Due to the constriction in the nozzle, the water pressure overcomes the force of the spring 92, and the nozzle and related parts are extended to the operating position of Figures 6 and 8. It will be understood that this takes place simultaneously in all of the nozzles, with the exception of the nozzle of the mechanism 61. The water from the nozzles is forced upwardly and toward the center of the seat opening to provide a concentrated area of wash water so that the entire area of the body exposed therein is completely washed, the wash water then falling into the bowl.

Female users may utilize the mechanism 61 for douche purposes merely by depressing the button 102, thus opening the part 110 and feeding water through the conduit 60 simultaneously with the water being fed to the other mechanisms 65 and 71. The valve 58 could be arranged to shut off the mechanisms 65 and 71 while the mechanism 61 is operating, if desired.

After the washing period, the user merely operates the desired switch in the other direction, thus first shutting off the water circuit, whereupon the nozzles move upwardly to the retracted positions. Secondly, the motor and heater 125 circuits are closed, starting the motors and their heaters so that air is drawn into the seat and warmed to the desired temperature. The increased air pressure acting over the area of the partition members 133 and 135 overcomes the force of the springs 138 and forces the air outlet assemblies to the extended, operable positions of Figure 6a. The warm air is thus blown out in the direction of the arrows and the exposed areas of the body are completely and satisfactorily dried.

The utilization of a hollow toilet seat as a plenum chamber for the delivery of warm air is believed to be an important feature of the invention from the standpoint of efficiency in operation. Utilizing this structure, fractional horsepower motors may be incorporated as the sole power means for the blowers to obtain quite satisfactory air volumes. The retractable water and air delivery devices are also particularly important in that they result in a structure which is highly sanitary in use and which is easy to maintain in such a condition. The position of the nozzles with respect to the toilet seat opening as shown is also of great importance in avoiding any disagreeable splashing of the wash water. It will be further noted that both the water and air delivery mechanisms do not extend below the plane of the seat bottom even in the extended positions thereof. Hence the seat is adapted to be used without modification with all sizes of toilet bowls.

Still another important feature of the invention resides in the structure of the water heater assembly. The heating element is adapted to be energized with the low voltage current (110-115 volts) supplied to normal residential circuits, and provides an unlimited supply of warm water to the nozzles. Since the water is heated as it passes through the assembly, the efficiency of the heater is of paramount importance. In this connection, it has been found that the plastic jacket is of particular value since it functions as a good insulator. The control of temperature through use of the needle valve is a great improvement over the use of thermostats or other heat control devices, from the standpoint of economics and ease of control.

A modified form of the invention is illustrated in Figure 3. Here the device is shown as applied to a bed pan or portable commode for use by invalids. The seat 17b is substantially identical to the seat 17. Here, however,

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a flexible water delivery tube 201 leads from the water supply 202 to the seat. Moreover, the seat 17b is provided with a skirt portion 210, and the pan 211 itself is slideably received under the seat, as indicated by the phantom lines of Figure 3.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details set forth, but my invention is of the full scope of the appended claims.

I claim:

1. In a device of the character described, a toilet seat of the type having a central opening and an upper portion adapted to be contacted by portions of the body of a user of said device, a housing formed integral with said seat, a motor blower unit mounted in said housing, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, and a nozzle mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening.

2. A device as set forth in claim 1, wherein said seat is hollow and forms a plenum chamber for the delivery of air to said outlet elements.

3. A device as set forth in claim 1, including means operably connected to said seat for retracting said water nozzle into the interior of said seat.

4. A device as set forth in claim 1, including means operably connected to said seat for retracting said air outlet element into the interior of said seat.

5. A device as set forth in claim 1, including means operably connected to said seat for retracting said water nozzle and air outlet element into the interior of said seat.

6. A device as set forth in claim 1 wherein the seat is defined by an exterior wall, and including means operably connected to said seat for retracting said water nozzle into the interior of said seat, and means operably connected to said nozzle for extending said nozzle to an operative position exterior of said wall, said latter means being operable by water pressure in the water conduit.

7. A device as set forth in claim 1 wherein the seat is defined by an exterior wall, and including means operably connected to said seat for retracting said air outlet element into the interior of said seat, and means operably connected to said air outlet element for extending said air outlet element to an operative position exterior of said wall, said latter means being operable by water pressure in the air conduit.

8. In a device of the character described, a toilet seat of the type having a central opening and an upper portion adapted to be contacted by portions of the body of a user of said device, a housing formed integral with said seat, a motor blower unit mounted in said housing, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, means in said seat for heating air in said conduit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, and a nozzle mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening.

9. In a device of the character described, a toilet seat of the type having a central opening and an upper portion adapted to be contacted by portions of the body of a user of said device, a housing formed integral with said seat, a motor blower unit mounted in said housing, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and

leading from said motor blower unit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, a nozzle mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening, and means in said seat for heating said water.

10. In a device of the character described, a toilet seat of the type having a central opening and an upper portion adapted to be contacted by portions of the body of a user of said device, a housing formed integral with said seat, a motor blower unit mounted in said housing, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, means in said seat for heating air in said conduit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, a nozzle mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening, and means in said seat for heating said water.

11. A device as set forth in claim 10, wherein said seat is hollow and forms a plenum chamber for the delivery of air to said outlet elements.

12. In a sanitary fixture, a toilet seat of the type having a central opening, an upper portion adapted to be contacted by portions of the body of a user of said fixture, and hinge means at the rear of said seat for operably connecting said seat to a toilet bowl, a housing formed integral with said seat, a motor blower unit mounted in said housing at the rear of said seat, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, and a nozzle mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening.

13. In a device of the character described, a toilet seat of the type having a central opening and an upper portion adapted to be contacted by portions of the body of

a user of said device, a housing formed integral with said seat, a motor blower unit mounted in said housing, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, a plurality of nozzles mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening, one of said nozzles being positioned at the front of said seat in position for use as a douche, and means for controlling the flow of water through said front-positioned nozzle independently of the other of said nozzles.

14. In a sanitary fixture, a toilet seat of the type having a central opening, an upper portion adapted to be contacted by portions of the body of a user of said fixture, and hinge means at the rear of said seat for operably connecting said seat to a toilet bowl, a housing formed integral with said seat, a motor blower unit mounted in said housing at the rear of said seat, means in said seat for supplying outside air to said motor blower unit, an air conduit formed interiorly of said seat and leading from said motor blower unit, an air outlet element in said seat and communicating with said conduit for delivery of air therefrom into the area of said seat opening, a water conduit formed interiorly of said seat, means operably connected to said water conduit for delivering water to said water conduit, a plurality of nozzles mounted in said seat in communication with said water conduit for spraying water into the area of said seat opening, one of said nozzles being positioned at the front of said seat in position for use as a douche, and means for controlling the flow of water through said front-positioned nozzle independently of the other of said nozzles.

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