March 28, 1961 W. E. MURPHY 2,977,455

SANITARY BODY DRYER

Filed Dec. 4, 1959 2 Sheets-Sheet 1

Fig. 1.

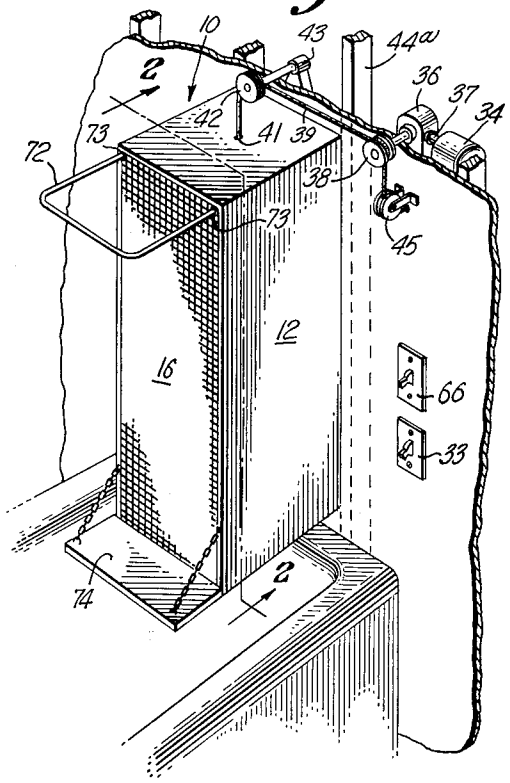


Fig. 2.

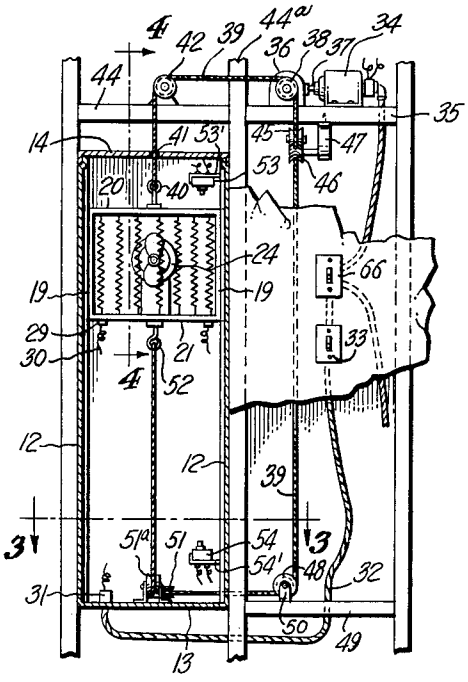
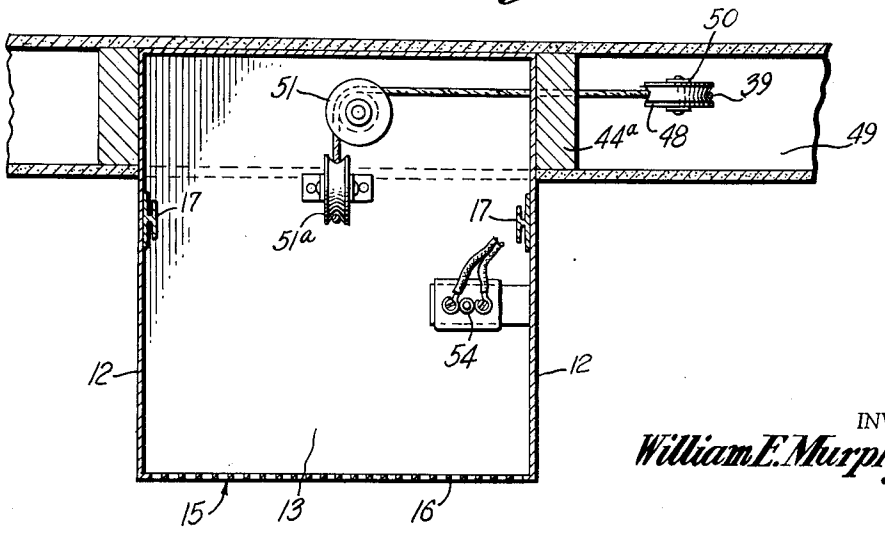


Fig. 3.



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Fig. 4.

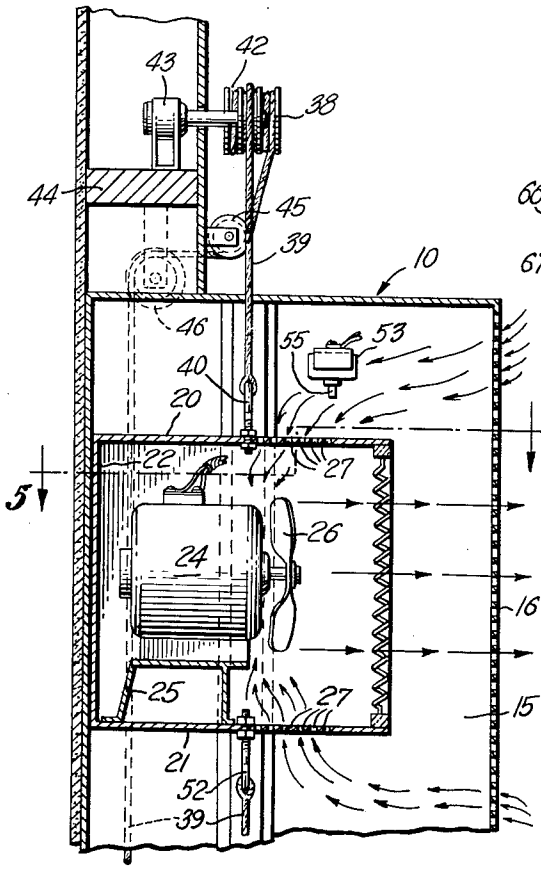


Fig. 6.

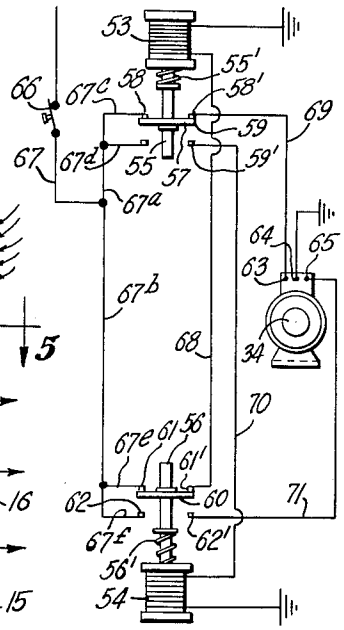
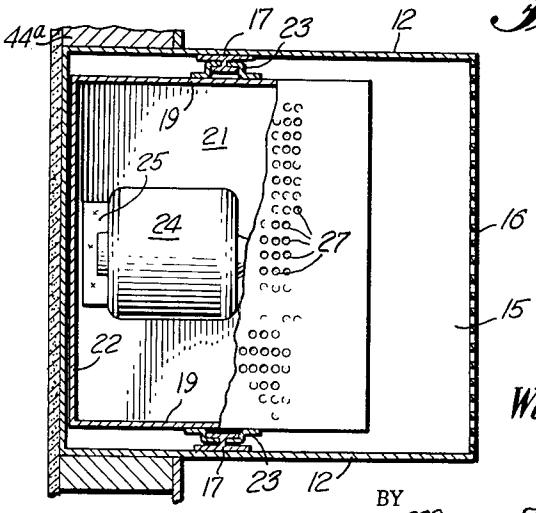


Fig. 5.



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2,977,455

SANITARY BODY DRYER

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7 Claims. (Cl. 219—39)

This invention relates to electrical drying devices and more particularly to a sanitary drying device for installation in a bathroom for use in drying off after a shower or bath, and thereby eliminate the use of towels.

Electrically heated drying devices for drying the hands or the hands and face by means of a blast of heated air are well known. However, such devices would be unsuitable for drying the whole body, since the nozzle of these known devices must be directed sequentially to various parts of the body and it would be very unsatisfactory for drying the back.

Consequentially, it is an object of the present invention to provide a body drying device which operates automatically to dry the entire body, once it has been started, and all that the user need do is stand in front of it and turn his body to present his front, back and sides to the dryer sequentially.

Another object of the present invention is to provide a body dryer which may also be useful for other drying or heating jobs.

Other objects and advantages of the present invention will become apparent to those skilled in the art, from the following description when read in conjunction with the accompanying drawing, wherein:

Figure 1 is a perspective view of the sanitary dryer of the present invention;

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a partial vertical sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a transverse sectional view taken on the line 5—5 of Figure 4;

Figure 6 is a wiring diagram of the circuit for operating the reversing motor for traversing movement of the heater cage.

The sanitary dryer of the present invention will be described with respect to such a dryer built into the wall when the building is being constructed, and located at the end of the bathtub with portions of the vertical traversing mechanism mounted on the studding of the wall. However, it will be realized that self-contained units may be provided and attached to completed walls by means of simple brackets.

Adverting now to the drawings, and more particularly to Figures 1 and 2, there is shown at 10 a sanitary body dryer mounted in a cabinet, which is generally rectilinear in shape and substantially as wide as a person's body. The cabinet 10 extends upwardly from the rim of the bathtub to a height of six feet from the bottom of the bathtub, or substantially to the height of the top of the head of the tallest persons using the device. The cabinet 10 is made of sheet metal such as steel, aluminum or the like, having a coating of paint or enamel, such as baked-on enamel. The sides 12, bottom 13 and top 14 provide a box-like enclosure having an open front 15 covered by a guard 16, which is made in the form of a grill, as shown in Figure 1.

A pair of vertical T-shaped tracks 17 are mounted within the cabinet 10 on the opposite walls 12, and a heater cage 18 having side walls 19, top 20, bottom 21 and back wall 22 is mounted for vertical movement on the tracks 17 by means of a pair of C-shaped track followers 23 mounted on the outer side of the heater cage walls 19. A motor 24 is mounted within the heater cage 18 by means of a bracket 25 attached to the bottom 21, and a fan blade 26 is mounted on the shaft of the motor to blow air out of the cage 18. The top 20 and bottom 21 are perforated as at 27, to provide air intakes into the cage 18.

A heating coil 28 is mounted in front of the fan 26 to heat the air being moved out of the cage by the fan. The fan motor 24 and heating coil 28 are connected in parallel to an electrical outlet 29 mounted on the bottom 21 of the cage 18. A retractible cable 30, having a steel coiled spring incorporated therein may be conveniently used to connect the outlet 29 with a similar outlet 31 on the bottom 13 of the cabinet 10. Wire cable 32 completes the circuitry to an operating switch 33, which is connected with the house wiring (not shown).

To provide the heater cage 18 with a vertical traversing movement, an electrical reversing motor 34 is mounted on the member 35 in the building wall adjacent the cabinet 10. A reduction gear box 36 has its input shaft connected to the shaft 37 of the motor, and a drum 38 is mounted on its output shaft. A rope 39 is attached to the top of the heater cage 18 by means of an eye bolt 40, as best seen in Figures 2 and 3. The rope 39 passes upward through an aperture 41 in the top 14 of the cabinet 10 and over a pulley 42, mounted in a bracket 43 attached to the crosspiece 44 in the building wall, thence through an aperture in the stud 44*a* and twice around the drum 38 and under a pulley 45, mounted on the wall of the room and through an aperture 45*a* in the room wall, over a pulley 46 mounted in a bracket 47 attached to the underside of the crosspiece 35, thence down to a pulley 48 mounted on the crosspiece 49 by means of a bracket 50 and through apertures in the studding 44*a* and cabinet wall 12 to a pair of pulleys 51, 51*a* mounted on the bottom 13 of the cabinet 10, and then fastened to the eyebolt 52 mounted dependingly from the bottom 21 of the heater cage 18. Upon operation of the motor 34 in one direction the heater cage 18 will travel on its vertical tracks 17 in one direction, and upon reversal of the motor the heater cage 18 will travel in the opposite direction.

The reversing of the motor 24 may be accomplished by the use of electrical and mechanical components, such as for example, the means used for illustrating the invention in which spring-biased solenoid coils are employed as limit switches.

Adverting now to Figure 2, and more particularly to the wiring diagram shown in Figure 6, there are shown upper and lower solenoids 53 and 54, respectively, having outwardly spring-biased armatures 55, 56, respectively. The armature 55 is provided with a switch blade element 57, which operates to close a circuit through the switch points 58, 58′ when the armature is in its innermost position and to close another circuit between the switch points 59, 59′ when it is spring-biased to its outermost position. In like manner, the armature 56 has a switch blade element 60 which closes the points 61, 61′ and 62, 62′, respectively, when in its innermost and outermost positions, respectively. The solenoids 53 and 54 are mounted on brackets 53′ and 54′, respectively, in the path of movement of the cage 18, so that the top 20 of the cage 18 contacts the armature 55 and the bottom 21 of the cage contacts the armature 56 so that when

the cage 18 reaches the upper or lower extremity of its travel, the respective solenoid armature 55 or 56 is pressed inward against the bias of its spring 55' or 56'.

The motor 24 is a reversible type motor having the terminals 63, 64 and 65. Terminal 63, being the input for driving the motor to raise the cage 18 and terminal 65 being the input terminal for driving the motor to lower the cage 18. The terminal 64 is the common ground.

From a source of house current the switch 56 controls the current to the traversing motor through the circuit wire 67 which has the branch wires 67*a*, 67*b*, the wire 67*a* having the wires 67*c* and 67*d* connected to the switch points 58 and 59, respectively, and the wire 67*b* having the wires 67*e* and 67*f* connected to the switch points 61 and 62, respectively.

With the cage 18 in the position shown in Figure 2 and the switch 66 turned on, current will flow through the wire 67*b*, 67*e* across the switch points 61, 61', the switch blade 60 making this contact due to the bias of the spring of solenoid 54, through wire 68 to solenoid 53 and thence to ground, causing solenoid 53 to retract the armature 55 and complete the circuit across the switch points 58, 58' and switch blade 57. Current would, therefore, flow through the wire 67, 67*a*, 67*c*, switch point 58, switch blade 57, switch point 58' and wire 69 to terminal 63 of motor 24 and lower the heater cage 18. When the cage 18 reaches the lower limit of its travel it contacts the armature 56, breaking the connection across the switch points 61, 61' to de-energize the solenoid 53 and cause the armature 55 to be spring-biased outwardly to make the contact across the switch points 59, 59' and energize the solenoid 54 by current flowing through the wires 67, 67*d*, switch point 59, blade 57, point 59', wire 70, and solenoid 54 to ground. At the same time, the current to motor terminal 63 is broken across the switch points 58, 58'. When the solenoid 54 is energized, the armature 56 is retracted, making a contact across the switch points 62, 62'. The current then flows through the wires 67, 67*b*, 67*f*, point 62, blade 60, point 62' and wire 71 to the motor terminal 65, to cause cage 18 to be raised. When the cage 18 contacts the armature 55 at the end of its upward flight, it de-energizes solenoid 54 by breaking the contact at points 59, 59'. De-energizing solenoid 54 makes a contact across points 61, 61' which energizes solenoid 53 to reverse motor 24 by making a contact across the points 58, 58'.

Thus the cage 18 will continue to make up and down traversing flights automatically, as long as the switch 66 is turned on.

A hanger 72 mounted for sliding movement in tube brackets 73 provides a means on which to hang clothes to be dried. The hanger 72 may also be used as a support for a plastic cover to prevent water entering the cabinet 10 when the shower (not shown) is being used.

The dryer may also be used for removing the chill from a bathroom on winter mornings, prior to taking a bath or shower. In this case, only the switch 33 would be turned on.

For convenience in illustrating the invention, high voltage solenoids and a reversing motor with dual windings have been shown. A step-down transformer and low voltage solenoids, as well as another type of reversing motor might be used as well.

A platform 74 is provided as a foot rest, to enable the user to dry his feet.

In use, the user who has completed his bath or shower turns on the switches 33 and 66 and slowly rotates his body in front of the heater until his body is dry with the exception of his feet. He then rests first one foot and then the other on the platform 73 until each of his feet are dry, turning them first in one direction and then the other.

While there has been disclosed in the foregoing description a practical embodiment of the sanitary body dryer in accordance with the present invention, it will be understood by those skilled in the art that variations in the implementation of the concept of the invention are within the purview and scope of the invention.

What is claimed is:

1. A sanitary body dryer for installation in a bathroom comprising, a cabinet having an openwork front, a heater cage having an open front mounted therein for vertical traversing movement, an electrical fan mounted in said cage to blow air out of said open front of said cage, an electrical heating coil mounted across said open front of said cage, means including an electrical reversing motor to drive said cage in up and down flights in said cabinet and control means to reverse the direction of travel of said cage at the end of each of said flights.

2. A sanitary body dryer for installation in a bathroom comprising, a vertically elongated cabinet having an openwork front, vertically disposed track means mounted in said cabinet, a heater cage having an open front aligned with said openwork front of said cabinet, track followers mounted on said cage to engage said tracks in said cabinet for movement of said cage thereon, an electrical fan mounted in said cage to move air outward through the open front of said cage and said openwork front of said cabinet, an electrical heating coil mounted in the path of said air being moved out of said cage, means for driving said cage in up and down flights in said cabinet, and control means to reverse the direction of travel of said cage at the end of each of said flights.

3. A sanitary body dryer for installation in a bathroom comprising, a vertically elongated cabinet having an openwork front, vertically disposed track means mounted in said cabinet, a heater cage having an open front aligned with said openwork front of said cabinet, track followers mounted on said cage to engage said tracks in said cabinet for movement of said cage thereon, an electrical fan mounted in said cage to move air outward through the open front of said cage and said openwork front of said cabinet, an electrical heating coil mounted in the path of said air being moved out of said cage, an electrical reversing motor mounted adjacent said cabinet, a drum mounted on the shaft of said motor, bracket means extending from the top and bottom of said cage, a belt having its respective ends attached to said cage, said belt being looped around said drum, pulley means to guide said belt from said top and bottom of said cage to said drum so that when said drum is revolved in one direction said cage will move upwardly in said cabinet and when the drum is revolved in the other direction said cage will move downwardly in said cabinet, and control means to reverse the direction of travel of said cage at the end of each of said flights.

4. A sanitary body dryer for installation in a bathroom comprising, a vertically elongated cabinet having an openwork front, vertically disposed track means mounted in said cabinet, a heater cage having an open front aligned with said openwork front of said cabinet, track followers mounted on said cage to engage said tracks in said cabinet for movement of said cage thereon, an electrical fan mounted in said cage to move air outward through the open front of said cage and said openwork front of said cabinet, an electrical heating coil mounted in the path of said air being moved out of said cage, means including an electrical reversing motor to drive said cage in up and down flights in said cabinet, an upper limit switch mounted in the path of movement of said cage at the upper limit switch mounted in the path of movement of said cage at the lower limit of its movement, said limit switches being solenoids, having their armature engageable by said cage, each of said solenoids having switch blades mounted on its armature, two pairs of make and break contacts coupled with each of said solenoids, said make and break contacts being engageable by said switch blades, a circuit including a first

pair of said contacts in said upper solenoid to energize the coil in said lower solenoid when said armature of said upper solenoid is outwardly biased by said spring thereof, a circuit including the second pair of said contacts in said upper solenoid to energize said reversing motor in one direction when said armature of said upper solenoid is retracted by energization of its coil, a circuit including a first pair of said contacts in said lower solenoid to energize the coil in said upper solenoid when said armature of said lower coil is outwardly biased by said spring thereof, a circuit including the second pair of said contacts in said lower solenoid to energize said reversing motor in the other direction when said armature of said lower solenoid is retracted by energization of its coil, and said solenoids being actuated to reverse the direction of revolution of said motor by the movement of said switch blade of each solenoid away from said first pair of contacts of each solenoid upon impact of said cage with the armature of each of said solenoids.

5. A sanitary body dryer for installation in a bathroom comprising, a vertically elongated cabinet having an openwork front, vertically disposed track means mounted in said cabinet, a heater cage having an open front aligned with said openwork front of said cabinet, track followers mounted on said cage to engage said tracks in said cabinet for movement of said cage thereon, an electrical fan mounted in said cage to move air outward through the open front of said cage and said openwork front of said cabinet, an electrical heating coil mounted in the path of said air being moved out of said cage, an electrical reversing motor mounted adjacent said cabinet, a drum mounted on the shaft of said motor, bracket means extending from the top and bottom of said cage, a belt having its respective ends attached to said cage, said belt being looped around said drum, pulley means to guide said belt from said top and bottom of said cage to said drum so that when said drum is revolved in one direction said cage will move upwardly in said cabinet and when the drum is revolved in the other direction said cage will move downwardly in said cabinet, an upper limit switch mounted in the path of movement of said cage at the upper limit of its movement, a lower limit switch mounted in the path of movement of said cage at the lower limit of its movement, said limit switches being solenoids, having their armature engageable by said cage, each of said solenoids having switch blades mounted on its armature, two pairs of make and break contacts coupled with each of said solenoids, said make and break contacts being engageable by said switch blades, a circuit including a first pair of said contacts in said upper solenoid to energize the coil in said lower solenoid when said armature of said upper solenoid is outwardly biased by said spring thereof, a circuit including the second pair of said contacts in said upper solenoid to energize said reversing motor in one direction when said armature of said upper solenoid is retracted by energization of its coil, a circuit including a first pair of said contacts in said lower solenoid to energize the coil in said upper solenoid when said armature of said lower coil is outwardly biased by said spring thereof, a circuit including the second pair of said contacts in said lower solenoid to energize said reversing motor in the other direction when said armature of said lower solenoid is retracted by energization of its coil, and said solenoids being actuated to reverse the direction of revolution of said motor by the movement of said switch blade of each solenoid away from said first pair of contacts of each solenoid upon impact of said cage with the armature of each of said solenoids.

6. In a sanitary body dryer as claimed in claim 1, a pair of tubular brackets mounted adjacent the top of said cabinet at either side of said openwork front, and a substantially U-shaped support having each leg thereof slidably mounted in one of said tubular brackets, whereby said support may be used for holding articles suspended in front of said openwork front.

7. In a sanitary body dryer as claimed in claim 1, a foot rest mounted adjacent the bottom of said cabinet, and said foot rest extending across the bottom of said openwork front and extending outwardly therefrom.

No references cited.