July 1, 1969 R. H. JONES ET AL 3,452,369

COMPACT SAUNA UNIT

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Fig. 1.

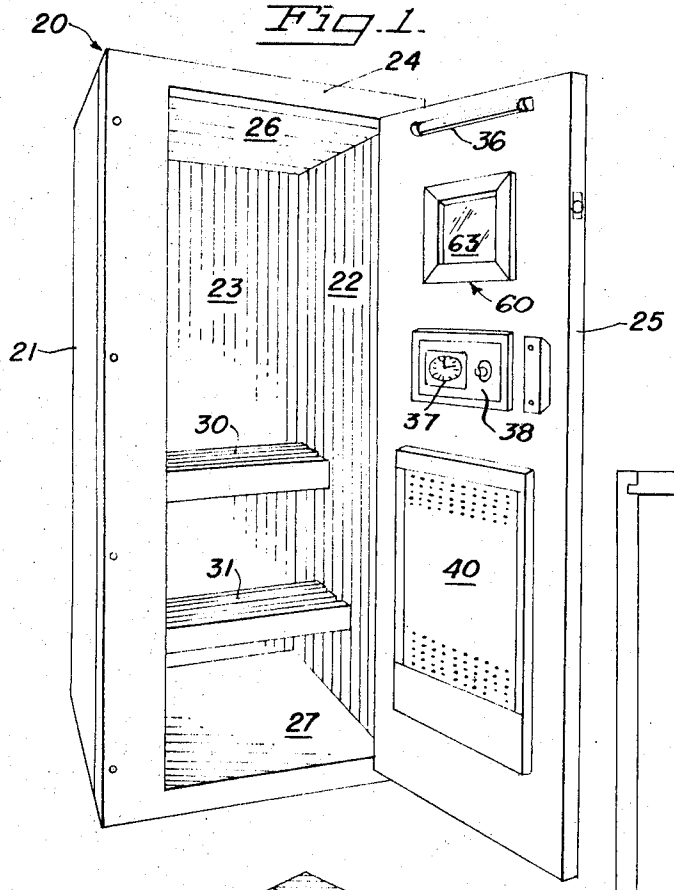


Fig. 2.

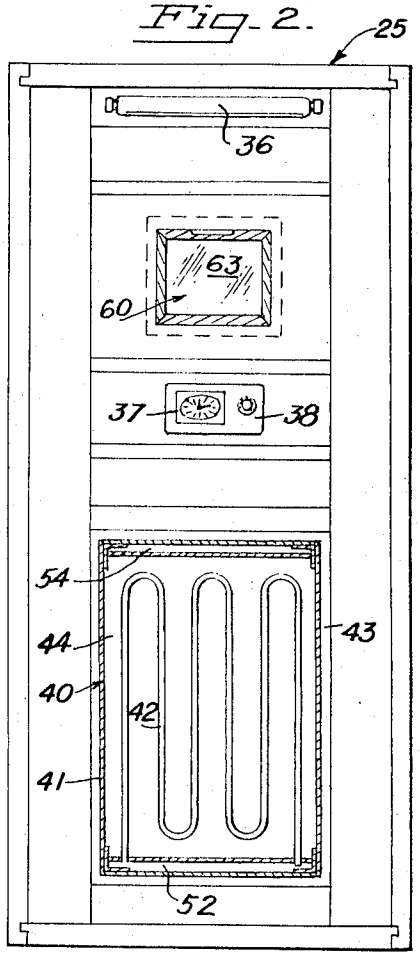
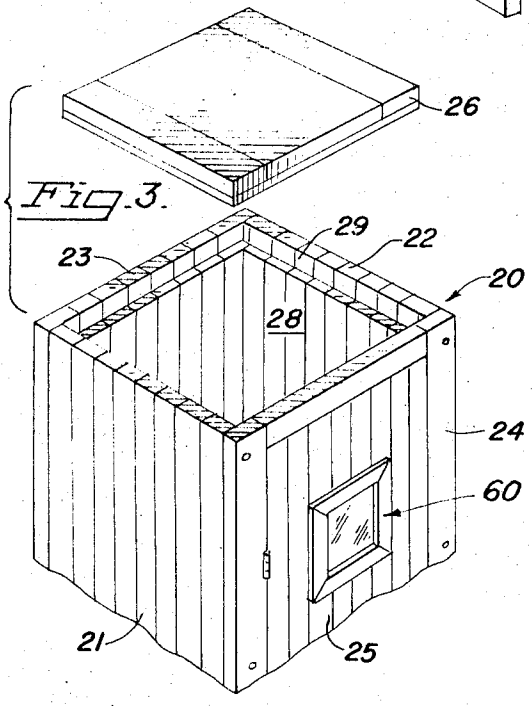


Fig. 3.



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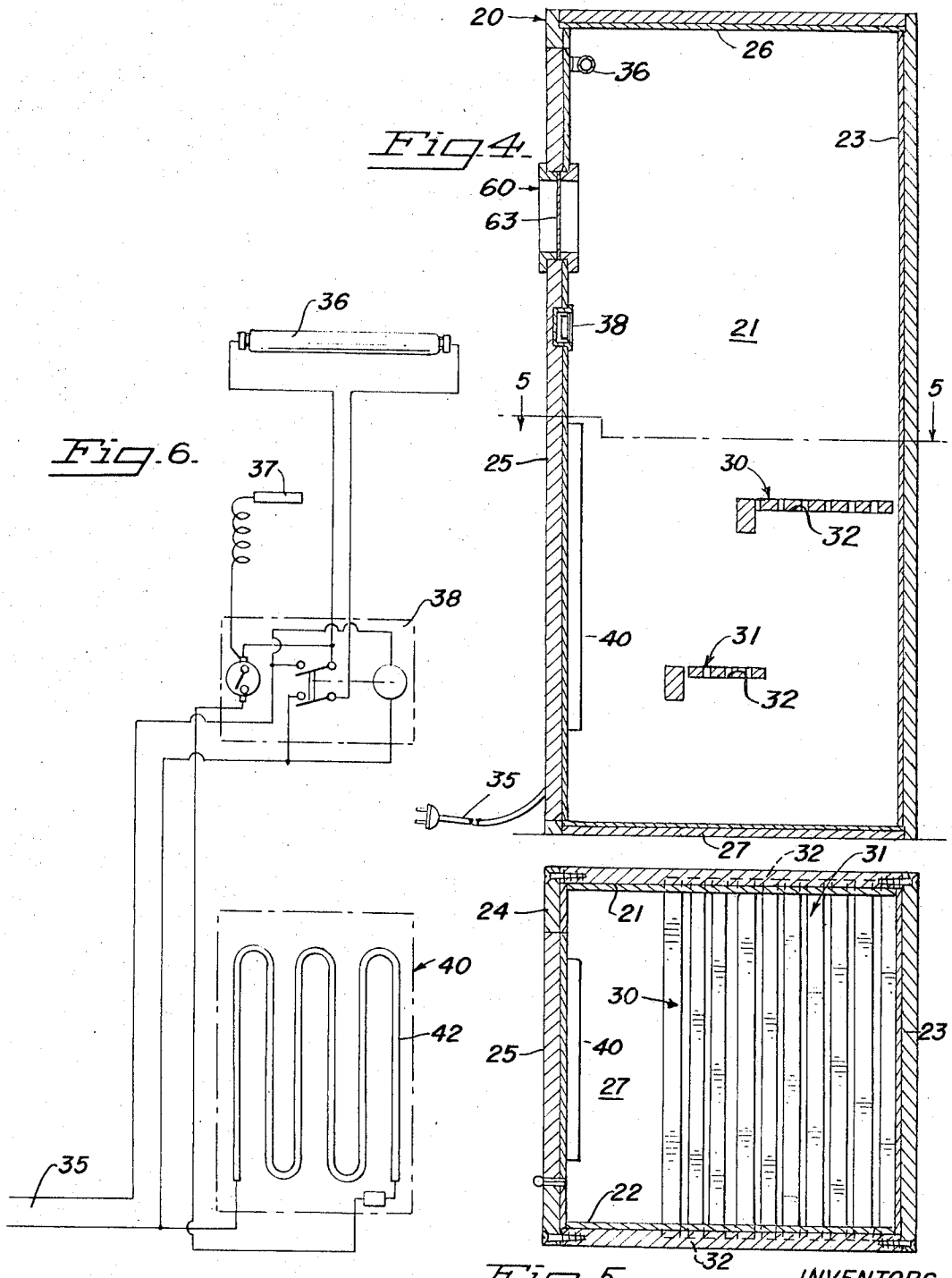

Fig. 4.

Fig. 6.

Fig. 5.

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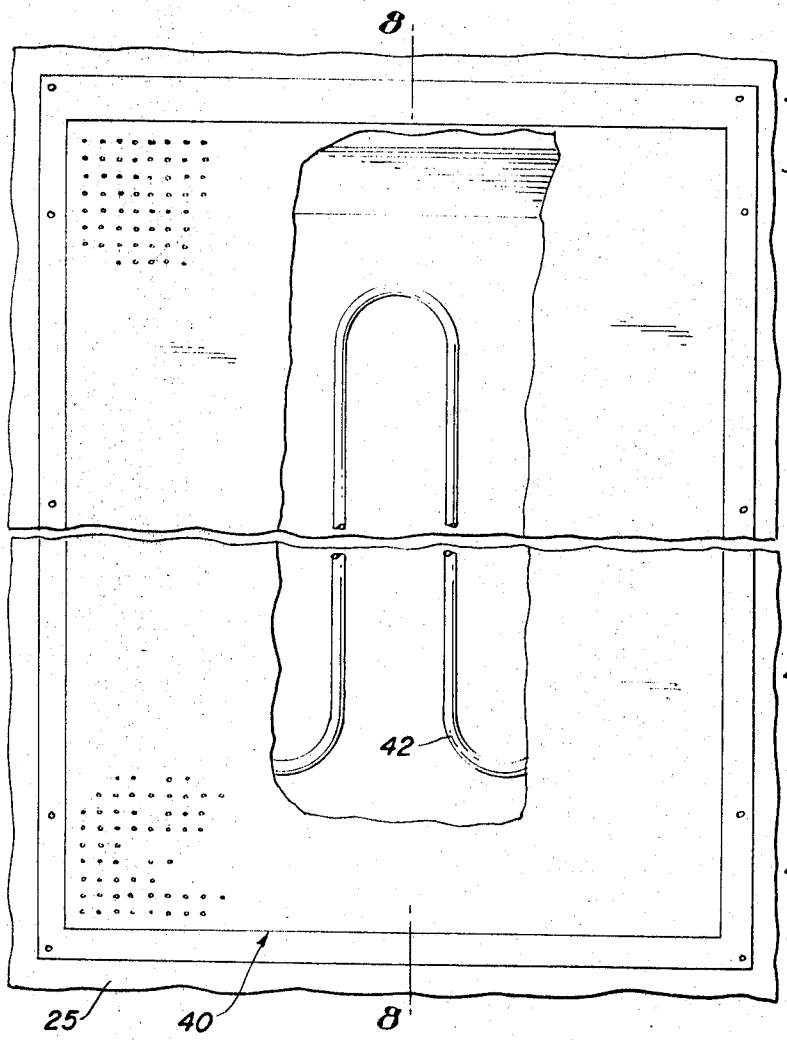

Fig. 7.

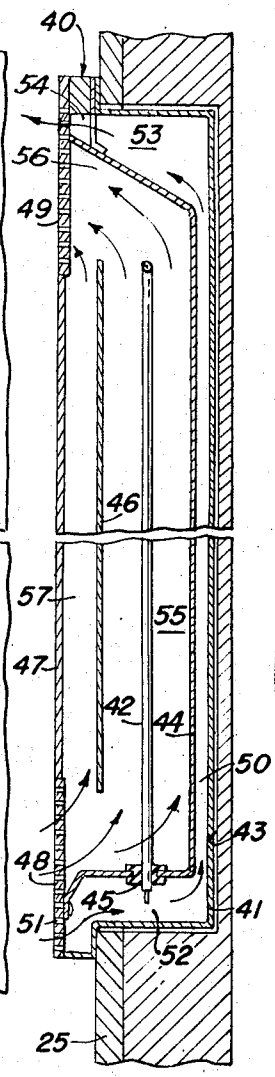

Fig. 8.

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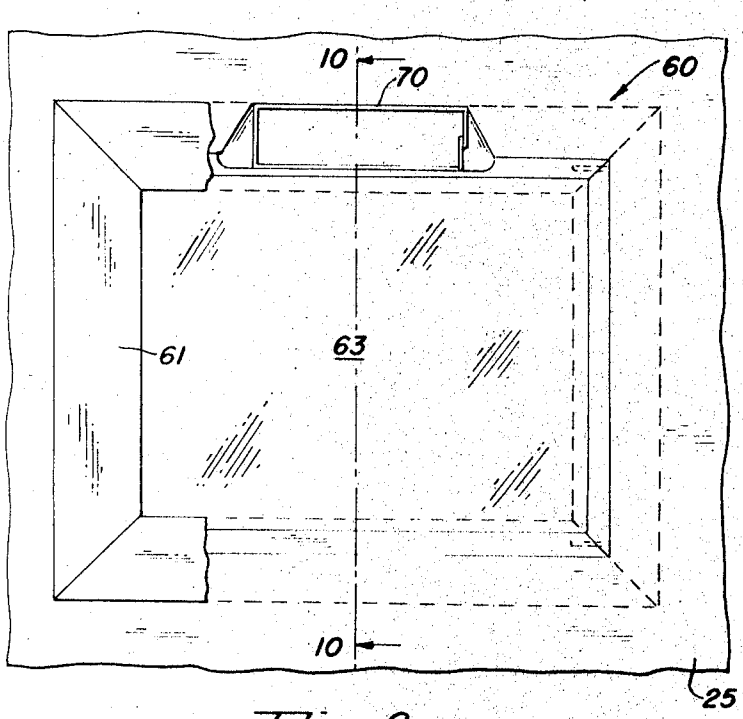

Fig. 9.

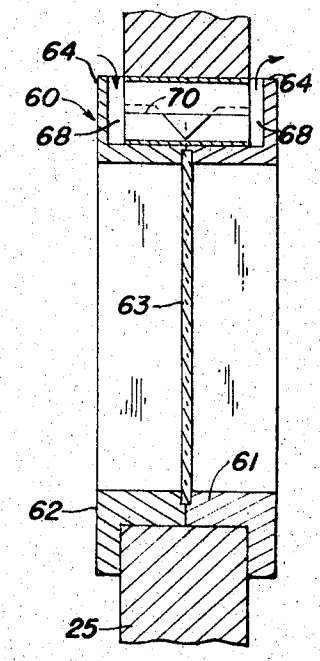

Fig. 10.

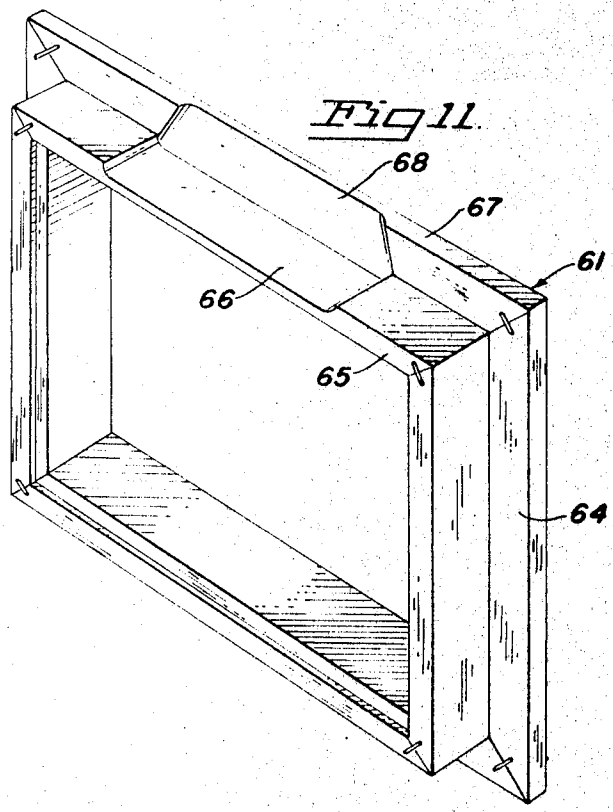

Fig. 11.

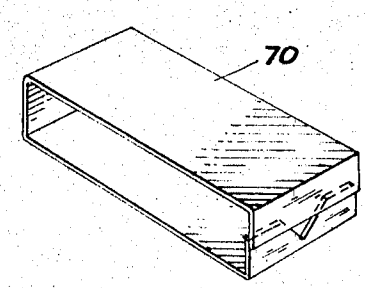

Fig. 12.

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COMPACT SAUNA UNIT

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8 Claims

ABSTRACT OF THE DISCLOSURE

A compact sauna unit, capable of use by one person alone. A heater unit contained in the door has a plurality of generally vertically extending ducts with air inlets at the lower end and air outlets at the upper end, all inside the door, some of which keep the door cool while electrical rod heating means in a central duct supplies heat. A window spaced above the heater unit has a labyrinthine exhaust condition along its upper edge. It is to be noted that the floor, ceiling, walls and door are assembled reasonably snugly while enabling a small amount of leakage of air from outside into the room at the joints between points and around the door to constitute the only air inlet means into the closed room.

This invention relates to a sauna unit. More particularly, it relates to a sauna room which is a self-constituted unit enabling a single person to take a sauna bath within a very small area. It also relates to a novel heater for a sauna room and to a novel air circulation system therefor.

A sauna is a well-known Finnish high temperature bath tending to produce a feeling of well-being and aiding a bather to relax. The humidity is kept low, so that there is little sensation of heat in spite of the high temperatures used, and there is none of the discomfort one experiences with steam baths. The bather prespires copiously, thereby cleansing his body through the skin pores. The sauna bath is usually taken in conjunction with one or more shower baths and may involve two or three exposures in the sauna room. A traditional Finnish sauna was a small detached building heated by a wood-stoked furnace piled high with stones to retain and radiate heat. The bath was usually a family matter, with several people taking the bath at once. Such units are unsuited to modern American apartments and homes where space is at a premium and where only a single person uses the sauna at one time. Many things are needed to be changed to adapt the sauna to urban American civilization; for example, a wood-stoked furnace is impractical and is better replaced by an electrical unit.

A basic problem to which this invention is directed is that of providing a sauna installation which may be sold as a unit to provide the complete sauna effect within a very small space and volume. It is difficult to adapt a sauna to confined spaces, because it is important for the temperature within the room to be accurately controllable and to be held evenly within the room. It is also difficult to provide proper heating and circulation without a rather large space separating the heaters from the bather.

The present invention overcomes these problems and provides a one-person sauna bath of high efficiency, good quality, and excellent results.

An important feature of the invention is the organization of the room to provide maximum efficiency both in use and in manufacture.

Another object of the invention is to provide a sauna bath unit having an effective, yet compact heating, venting and air circulating system capable of installation within the door of a small closet-like room. Also, quick and adequate heating and adequate venting and air circulating are mandatory but conflicting objectives, and the inventors achieve both these objectives within strict space and cost limitations.

Another object of the invention is to provide an air circulation system for a very small sauna bath unit, enabling the conservation of space without impairing the sauna results.

Another object of the invention is to provide for such a sauna bath unit a compact, efficient and safe electrical control system, also built into the sauna room door.

In the drawings:

FIG. 1 is a view in perspective of a sauna bath unit embodying the principles of the invention, the door being shown in its open position.

FIG. 2 is a view in elevation and partly in section of the door of the unit of FIG. 1, some portions being removed to show the structure of others.

FIG. 3 is a fragmentary and partially exploded view of the upper portion of the sauna room with the door fully closed.

FIG. 4 is a view in elevation and section of the sauna bath room, the section being taken from front to rear with the door closed.

FIG. 5 is a view in section taken along the line 5—5 in FIG. 4.

FIG. 6 is a diagram of the electrical circuit of the unit of FIGS. 1–5.

FIG. 7 is an enlarged view in elevation, partly broken open and partly broken in two, of the heating unit for the sauna room as installed in the door.

FIG. 8 is a view in section taken along the line 8—8 in FIG. 7.

FIG. 9 is an enlarged fragmentary view of a portion of the door, showing the window and area around the window, some portions being broken away.

FIG. 10 is a view in section taken along the line 10—10 in FIG. 9, the portions broken away in FIG. 9 being restored.

FIG. 11 is a view in the perspective of one half of the window frame.

FIG. 12 is a view in perspective of the venting conduit or tube installed at the top of the window for air circulation.

A sauna bath unit **20** is shown as a preferred embodiment of the invention. The unit **20** comprises two side walls **21** and **22**, a rear wall **23** and a front wall **24** in which is hinged a door **25**. There is also a ceiling **26** and a floor **27**. The four walls and the door and ceiling are preferably made from especially constructed panels, lined with redwood so as to provide good insulation qualities. The walls **21**, **22**, **23**, **24** and roof **26** may be hollow and filled with insulating material. The door **25** and front panel **24** may be made from a panel that is initially similar to the other walls, the doors, the door **25** being cut out from the panel and then hinged back together. The walls are abutted and screwed together as shown in FIG. 3; the inner walls **28** stop short of the height of the outer walls **29** of the room so that the ceiling panel **26** can be dropped into place, fitting snugly and resting on the upper end of the inner walls **28** essentially flush with the top of the outer walls **29**. The walls are then secured together to provide a relatively rigid structure. The floor **27** is similarly held in place by the four walls **21**, **22**, **23**, and **24**.

There are two benches **30** and **31**; an upper bench **30** on which the bather sits and a lower bench **31** on which he rests his feet. These benches **30** and **31** are fitted into recesses **32** (see FIGS. 4 and 5) in the side walls **21** and **22** and held by those walls.

All of the heating and other electrical facilities are carried by the door **25**, and this is an important feature

of the invention, because thereby a single panel carries all the needed components of the heating system, air circulation and venting system, electrical control and timing systems and the concealed heat limiting (safety) system. A power supply line **35** is adapted to fit into a standard 120-volt 15-amp. house line and to it are connected all the electrical circuit elements, as shown in FIG. 6, including a lamp **36** and thermostat **37**, a control panel **38**, and a heater **40**. Mounted in the door **25**, particularly recessed therein, the heating unit **40** comprises (see FIGS. 2 and 6–8) a rectangular sheet-metal housing **41** in which is a calrod type of element **42** disposed in a serpentine fashion having long vertical portions connected by curved portions at upper and lower extremities. If there were nothing more, the unit **40** would not be satisfactory for two reasons. In the first place, the element **42** would tend to overheat and would not be safe, becoming a fire hazard. In the second place, without some way of causing adequate circulation, the unit **40** would emit heat but there would be no efficient distribution of the heat within the small room **20**. The heating unit **40** and the door **25** cooperate in this invention with the remainder of the unit **20** to provide a circulation pattern.

As shown particularly in FIG. 8, the door **25** has a deep recess on its inner side to provide a receptacle **43** for the unit **40**. Within this receptacle **43** fits the metal outer housing **41**, somewhat spaced from the recess walls so that dead-air insulation is obtained between them. Within this housing **41** and spaced from it is another sheet-metal receptacle **44** which supports the heating element **42** by insulators **45**. A baffle **46** is placed opposite the heating element **42**, and a cover panel **47**, having lower and upper grills **48** and **49**, is spaced from the baffle **46**. Between the innermost housing **41** and the receptacle **44** is an air passage **50**, air entering through lower baffle openings **51** and a horizontal clearance **52** and going up the entire height of the wall by the passage **50** to a small upper chamber **53** and then issuing out by a passage **54** to the front of the unit. This provides a current of cooling air which keeps the door **25** from being overheated. The air brought in is cool and is never heated very much.

This structure is important, for without it, it would be difficult to put a sufficiently strong heating unit in the door **25**.

Another current of air enters through the lower grill **48** and is separated into two streams by the baffle **46**, one stream going into the space **55** behind the baffle **46** and past the heating element **40**. This air is heated quite hot and is relied upon for the main heat of the unit. It is circulated partly by its own operation and partly by the other currents of air by which it is surrounded. It goes out through the upper grille **49** from a small plenum chamber **56**.

The second stream of air entering the grille **48** ascends the space **57** between the baffle **46** and the outer panel **47**, keeping the outer panel **47** cool, and is exhausted through the grille **49** after entering the small plenum chamber **56**. This pattern keeps the user from being burned if he should touch the panel **47** and makes the unit safe.

In addition to the circulation pattern of the heater itself, an important factor in the overall circulation pattern is provided at the window assembly **60**. It is important to renew the air continually, and in order to do this some of the old air must be passed outside. This passage enables fresh air to enter around the perimeter of the door in the absence of special perimeter stripping and sealing, which is deliberately not done. It is not necessary to provide any separate or additional ventilation inlets.

The window assembly **60** comprises two frames **61** and **62** wtih a pane **63** of glass between them to afford visibility. The frames **61** and **62** both comprises a rectangular unit with a flange **64** therearound. A frame portion **65** has a horizontal recess **66**, and a frame portion **67** has a generally vertical recess **68**. A metal spacer **70** fits in the recess **66** to provide an air conduit. From the front or back, particularly since the window **60** is high, very few people can see the ventilation system, and this is a safety feature because it prevents people from circumventing it. Even if seen from above it is hardly discernible and does not encourage tampering. As shown in FIG. 10, most of the hot air goes up past the inner flange **64**, and only a portion of it passes back down through the recess **68** then across through the conduit **70** to the other recess **68** and up and out therethrough. This pattern has been found to enable proper sampling to give exactly the right amount of air circulation from inside to outside to maintain the device at its top efficiency thermostatically.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

We claim:

1. A compact sauna unit, including in combination,

a self-contained room having its own floor, ceiling, walls, and door, assembled reasonably snugly while enabling a small amount of leakage of air from outside into the room at the joints between parts and around the door, constituting the only air inlet means into the closed room,

seat means in said room for supporting a person in a seated position with his feet spaced well above the floor,

a heater unit contained in said door and comprising a housing defining a plurality of generally vertically extending duct means with air inlet means at the lower end thereof and air outlet means at the upper end thereof both said inlet and outlet means opening only into the interior of said room, said duct means providing an inner duct adjacent the inner surface of the door for keeping an inner surface of said housing cool, an outer duct adjacent the outer surface of the door for keeping that portion of the outer surface cool, and a central duct sandwiched between said inner and outer ducts and separated therefrom by thin metal walls, said heater unit having electrical rod heating means in said central duct, the heat therefrom serving to supply the sole source of heating for the sauna unit and also serving to provide heat to said inner and outer ducts through said thin metal walls for causing upward movement of cooling air therethrough, and

exhaust means through said door vertically above said heater unit, for exhausting a controlled amount of air from said room.

2. The sauna unit of claim **1** wherein said door has a window spaced above said heater unit, said exhaust means being provided along the upper edge of said window and comprising a horizontal conduit between a vertical inlet passage leading from an inlet above said horizontal conduit and a vertical outlet passage leading to an outlet above said horizontal conduit.

3. The sauna unit of claim **2** wherein said vertical inlet and outlet passages are located high, above eye level of tall persons when standing inside or outside said room, and are shielded from view by vertical fascias so as to be not readily observable except from above them.

4. The sauna unit of claim **1** wherein all the electrical controls for the unit are in the door.

5. A compact sauna unit for use by a single person and occupying a minimum space, including in combination,

a self-contained room having its own floor, ceiling, walls, and door, assembled reasonably snugly while enabling a small amount of leakage of air from out-

side into the room at the joints between parts and around the door,

bench means in said room supported by said walls and facing the door, for supporting one person in a seated position with his feet spaced well above the floor,

a heater unit contained in said door and comprising a housing defining a plurality of generally vertically extending duct means, air inlet means at the lower end thereof, and air outlet means at the upper end thereof, said duct means providing an inner duct adjacent the inner surface of the door for keeping an inner surface of said housing cool, an outer duct adjacent the outer surface of the door for keeping that portion of the outer surface cool, and a central duct sandwiched between said inner and outer ducts and separated therefrom by thin metal walls, said heater unit having electrical rod heating means in said cenrtal duct, the heat therefrom serving to supply the sole source of heating for the sauna unit and also serving to provide heat to said inner and outer ducts through said thin metal walls for causing upward movement of cooling air therethrough, and

a window spaced vertically above said heater unit, and

exhaust means for exhausting a controlled amount of air from said room, provided along the upper edge of said window and comprising a horizontal conduit between a vertical inlet passage leading from an inlet above said horizontal conduit and a vertical outlet passage leading to an outlet above said horizontal conduit.

6. The sauna unit of claim 5 wherein said vertical inlet and outlet passages are located high, above eye level of

tall persons when standing inside or outside said room, and are concealed from view by vertical fascias so as to be not readily observable except from above them.

7. The sauna unit of claim 5 having a foot-rest supported by said walls.

8. The sauna unit of claim 7 wherein said heater unit extends from slightly below said footrest to slightly above the level of said bench means.

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