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APARTMENT OR HOUSE WITH CENTRALIZED HEATING
SYSTEM AND SAUNA ROOM
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FIG. 1

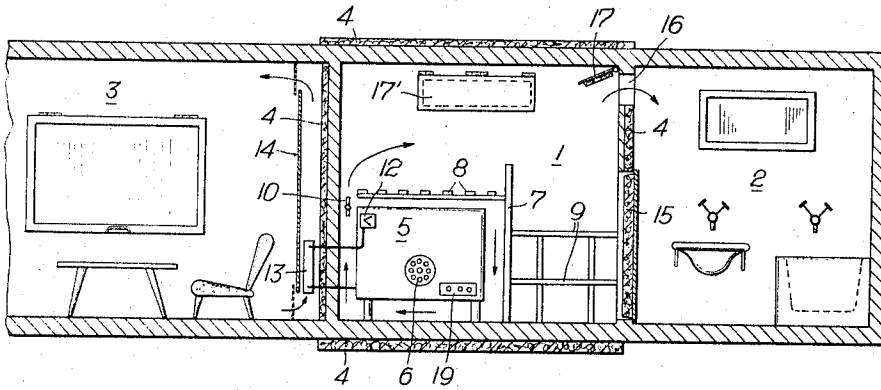


FIG. 2

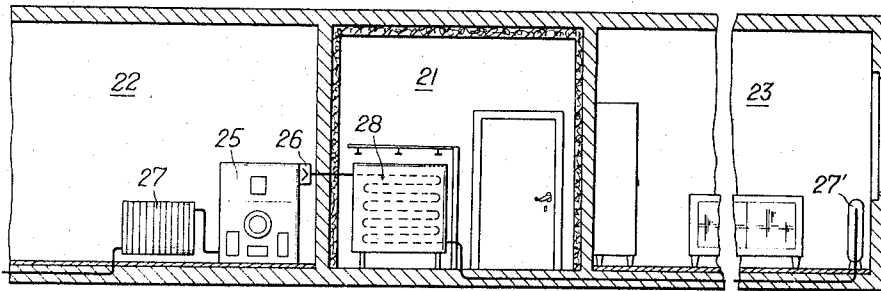
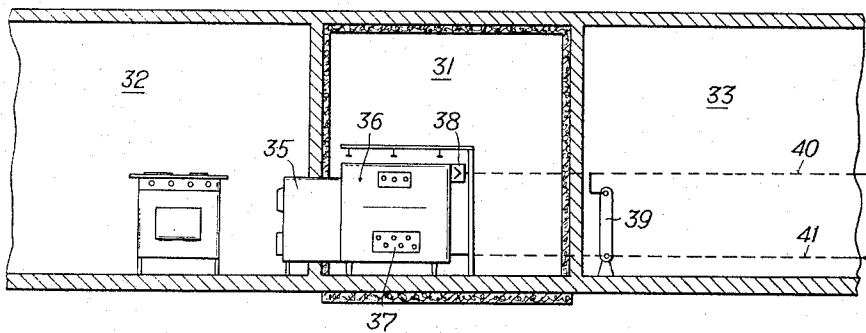


FIG. 3



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APARTMENT OR HOUSE WITH CENTRALIZED HEATING SYSTEM AND SAUNA ROOM

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ABSTRACT OF THE DISCLOSURE

A heating system for an apartment or house including a plurality of adjoining rooms comprising a central heating unit means, one of the plurality of adjoining rooms being heat-insulated from the other of the plurality of adjoining rooms and constituting a sauna room and serving for heat accumulation. The central heating unit means includes a hot-water boiler which primarily heats the sauna room. The hot-water boiler serves secondarily for feeding radiators in the adjoining rooms. Further heating of the adjoining rooms is accomplished by heat removed from the sauna room by convection currents.

The present invention relates to an apartment or a house having a centralized heating system and a hot-air bathroom (sauna).

In the past the operation of a sauna required, in addition to the usual residential heating, a substantial additional heating effort. Thus, a small electrically heated sauna installation has an hourly consumption of about 7 to 10 kilowatts, which is not always and everywhere available. Furthermore, a sauna installation requires a heating-up period of up to several hours until a useful temperature has been obtained.

It is one object of the present invention to provide an apartment or a house having a centralized heating system and a sauna installation, wherein the latter can be maintained permanently throughout the winter, while the centralized heating system is in operation, practically without additional expenses, that means, without any, hardly noticeable, additional heating requirement.

It is another object of the present invention to provide an arrangement, wherein the air space of the sauna and its walls serve as an insulation for the heat stored or accumulated in the sauna room. By this arrangement it is possible that only the small heat losses, due to heat escape upwardly and downwardly, which is lost during the occasional renewal of the air content into the open, must be compensated for by an increased heat supply, while the heat passing through the walls benefits the adjoining living quarters.

It is yet another object of the present invention to provide an apartment or house with centralized heating system and hot-air bathroom, wherein it is aimed to keep the power requirement low in such cases, where electric current only is used for heating the apartment with a sauna. If, for example, a hot-water boiler or tank, serving for the primary heating of the sauna, is installed in the sauna bathroom without insulation for the direct heating of the air, which hot-water boiler serves for the secondary feeding of radiators, convectors, etc. in the living quarters of the apartment, the hot water boiler should have an electric heating unit, the power requirement of which corresponds substantially approximately to the sum of the power requirement of the remaining electricity consuming implements provided in the full electrically equipped residence (such as an electric range, a hot water heater for the different hot water outlets, a washing machine, etc.). By an alternate connection of the hot water boiler, on the one hand, and of the other current consumers, on the other hand, respectively, for instance, by a current switch, night circuit and the like, it is to be brought about

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that the total electrical supply value of the house is kept relatively low, in spite of the availability of a sauna always ready for operation.

It is still a further object of the present invention to provide an apartment or house with centralized heating system and hot-air bathroom, wherein simultaneously with the sauna heating, a hot water production is obtained, so that continuously also hot water is available in the kitchen and the bathroom.

It is yet another object of the present invention to provide an apartment or house with centralized heating system and hot-air bathroom, wherein same results are obtained by way of fuel heating alone or by a combined electrical and fuel heating.

It is suitable for such apartment arrangement according to the present invention, though not required by all means, to arrange centrally the sauna room within the apartment and, preferably, to make accessible the sauna room from a room which has preferential heating (e.g., the bathroom).

With a view to satisfy all possible requirements, it may be found advisable to provide an additional heating means for the apartment serving as sole heating source, besides a heat source serving primarily for the operation of the sauna and secondarily, for the apartment, whereby the additional heating means can also form a part of the regular heat source.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a vertical schematic section of a portion of an apartment including a sauna arrangement according to the present invention;

FIG. 2 is a vertical schematic section of another embodiment of the present invention; and

FIG. 3 is a vertical schematic section of still another embodiment of the present invention.

Referring now to the drawings and in particular to FIG. 1, a hot-air bathroom (sauna) 1 is disposed in the center between a bathroom 2 and a living room 3. The walls, as well as the ceiling and the floor of the room 1 are equipped with particularly effective heat reducing layers 4, for example, foamed plastics, asbestos, cork, etc., in order to insulate the sauna particularly well in a heat-technical manner against the adjoining rooms, as well as upwardly and downwardly. An electric hot-water boiler or tank 5 is disposed in the sauna 1, an electric heating device 6 of the tank 5 being shown schematically.

The boiler 5 has walls with a low or no heat insulation, so that the surrounding or ambient air is heated up by convection and assumes nearly the temperature of the hot water, e.g., 70° C. For this reason, the boiler 5 is protected against direct contact, for example, by a lath wall 7, railing or the like. At the upper side of the boiler, a resting grid 8 is provided in spaced relationship thereto, as is usual in sauna rooms, which grid 8 can be stepped on by means of at least two stepwise arranged benches 9.

For the control of the convection effect of the boiler wall, a flap 10 is arranged, which permits a weaker or stronger convection air stream at the back side of the boiler by opening and closing, respectively, the flap 10. The hot water of the boiler 5 is fed by means of a circulation pump 12 to convector radiators 13 in the different rooms of the living quarters; a circulating pump 12 may be used to increase hot-water circulation. As a matter of example, a single radiator 13 has been shown in the living room 3 behind a separating baffle or wall 14. The latter makes for uniform heat distribution in the room, without untoward and unpleasant radiating effects.

There is also the possibility to direct the hot air from the sauna 1 into an adjoining room, e.g., the bathroom 2, from which the sauna 1 can be entered from the bathroom 2 by way of a door 15, which is likewise equipped with a heat insulation. The hot air is connected for this purpose with the bathroom 2 by means of a wall opening 16 provided close to the ceiling, which opening 16 is capable of being closed by means of a flap 17 equipped with heat insulation, in case a heating of the bathroom 2 is not desired, for instance, in summer. Additional openings capable of being closed by means of a flap 17' may lead into other rooms to be heated, for example, the kitchen or the hallway, etc. The flaps 17 and 17' may be controlled by hand or automatically by thermostats and/or by hydrostats and other suitable equipment.

In lieu of or additionally to the flaps, appropriately controlled fans or ventilators may be provided (not shown).

The hot-water tank 5 is equipped with a device 19 for supplying hot water, which device 19 comprises, for instance, a coiled conduit immersed in the hot water of the boiler or tank 5, and from which coiled conduit hot water can be taken by means of faucets provided in the bathroom, kitchen, etc.

The operation of such a sauna is almost without additional costs during the cold period of the year when the apartment is to be heated, because the air space of the sauna and its insulated walls do not represent anything but the usual heat insulation of boiler vessels. The negligible heat losses accounted for at the floor and at the ceiling of room 1 when the flaps 17 and 17' are closed, do not represent more than a few thousandths of the overall energy requirement. The heat which penetrates the adjoining living quarters through the walls benefits the heating of these quarters and thus does not amount to any losses.

If, on the other hand, the rooms adjoining the sauna room 1 are being heated by directly feeding the sauna air through the opened flaps 17 or 17', a higher energy consumption will, of course, ensue, which, however, benefits the direct heating of the adjoining rooms and does not constitute an energy loss either. Also, the heat loss occurring upon opening the door 15 when entering the sauna room 1, only benefits the heating of the bathroom 2 and is thus no loss. Merely an occasional replacement of the sauna air from outside can be considered an energy loss.

During the summer, the sauna room 1 can be ventilated into the open, during the winter, however, it can be ventilated into the living quarters. The ventilation into the open can be performed by means of an exhaust duct (not shown), whereby it is possible to recover a part of the energy by arranging a heat exchanger between the escaping hot air and the entering fresh or cold air.

According to the invention, the maximum electric power consumption of the installation should not exceed, or preferably should be of about the same value as that of the remaining electrical consuming devices in the apartment or home (for example, range, appliances, washing machine, etc.). Conventional means may be provided (not illustrated) for alternately connecting and feeding the usual electric consuming devices and the hot-water boiler 5 of the sauna installation. In some areas where preferential or lower rates are applied by the utility companies for current drawn during the late evening or night hours, appropriate switching or night-demand means may limit the current consumption to certain hours or parts of the day or night. In this manner, the electrical total hourly consumption of the home remains relatively low despite the provision of a continually operable sauna installation.

Referring now again to the drawings and in particular to FIG. 2, another embodiment of the sauna installation is disclosed, wherein the room 21 is the sauna room, while the room 22 constitutes an adjoining room of the apartment, for instance, a hallway, and the room 23 is another adjacent room, for example, a bedroom. A conventional hot-water central-heating boiler 25 for gas, liquid or solid

fuel is installed in the hallway 22, which boiler 25 heats all rooms of the apartment or house by means of radiators 27 and 27' to which the hot water is fed in a single-line system by means of a circulation pump 26. The hot water flows from the circulation pump 26 at first into a hot-water tank 28 disposed in the sauna room 21, which tank 28 performs the necessary strong heating of the air in the sauna room primarily.

Insulation similar to that described in FIG. 1 is provided so that the actual heat loss in the sauna is minimal, due to the particularly well formed insulation, and causes merely a drop of the water temperature of only 1 to 2 degrees, since here again the air space of the sauna and the heat insulation of the walls prevent almost entirely a loss of heat energy. Only that energy has to be replaced which is needed to make up for the occasional opening of the door, any possible heat losses at the floor and ceiling of the room and the occasional replacement of the air in the sauna room. It will be understood that the elements 4, 6-9, as well as 15-17, etc., described in connection with the first embodiment, are also applicable and have partly been shown in the embodiment of FIG. 2.

Referring now again to the drawings and in particular to FIG. 3, the sauna room 31, an adjacent kitchen 32 and an adjacent living room 33 are disclosed. A central heating vessel 35 for gas, liquid or solid fuel serves the centralized heating of the apartment or house, which vessel 35 is operated from the kitchen 32, and also an electrical heating unit 37, which heating units, according to the requirements, heat individually or jointly a hot-water boiler or tank 36 installed in the sauna room 31 and having no heat insulation as, for instance, having metal walls. As illustrated, the boiler 35 passes through the connecting wall and is partly located in the kitchen. The electric heating unit 37 is, for instance, sufficiently dimensioned for the average heat requirement of the apartment, so that the fuel heating has to be resorted to only in case of extremely low outside temperatures or as a standby.

The operation of the hot-water tank 36 is the same as has been explained for the similar tank 5 of FIG. 1. The hot water in the tank 36 is fed by means of a circulation pump 38 to the radiators 39 disposed in the various rooms and selectively thermostatically controlled through a feed conduit 40 and is returned to the tank 36 by means of a return conduit 41.

The fuel combined heating unit has besides the aforementioned advantage of an almost expense-free operation of the sauna during the winter when the apartment is heated still the advantage that the sauna room 31 can be operated also in summer by the electrical heating unit 37, without the necessity to heat the other rooms of the apartment in an unwanted and unpleasant manner, since the heat cannot penetrate the other rooms due to the insulation of the walls of the sauna room.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. A heating system for an apartment or house including a plurality of adjoining rooms, comprising a central heating unit means, one of said plurality of adjoining rooms being heat-insulated from the other of said plurality of adjoining rooms and constituting a sauna room and serving for heat accumulation, said central heating unit means for primarily heating said sauna room, and means for heating at least two of said other of said plurality of adjoining rooms by heat removed from said sauna room.
2. A heating system for an apartment or house including a plurality of adjoining rooms, comprising a central heating unit means,

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one of said plurality of adjoining rooms being heat-insulated from the other of said plurality of adjoining rooms and constituting a sauna room,
 said central heating unit means for primarily heating said sauna room, and conduits connecting said sauna room with at least two of said other of said plurality of adjoining rooms for heating said at least two of said other of said plurality of adjoining rooms by hot-air removed from said sauna room, and
 said conduits including flap means for controlling the hot-air flow through said conduits. 10

3. A heating system for an apartment or house including a plurality of adjoining rooms, comprising a central heating unit means,
 one of said plurality of adjoining rooms being heat-insulated from the other of said plurality of adjoining rooms and constituting a sauna room,
 said central heating unit means comprising a hot-water boiler without heat insulation located in said sauna room, 20
 said hot-water boiler producing hot water and operating as a heat accumulator and being adapted to dispense heat by convection to the surrounding air of said sauna room,
 a radiator in at least one of said other of said plurality of adjoining rooms, 25
 said hot-water boiler further adapted to feed said radiator in said at least one of said other of said plurality of adjoining rooms, and
 air conduits connecting said sauna room with at least two other of said other of said plurality of adjoining rooms for heating the latter rooms by hot air removed from said sauna room. 30

4. The heating system, as set forth in claim 3, further comprising 35
 flap means operatively connected with said hot-water boiler for controlling the release of the convection heat of said hot-water boiler.

5. A heating system for an apartment or house including a plurality of adjoining rooms, comprising 40
 a central heating unit means,
 one of said plurality of adjoining rooms being heat-insulated from the other of said plurality of adjoining rooms and constituting a sauna room,
 said central heating unit means primarily for heating said sauna room comprising means for producing hot-air in said sauna room, 45
 air conduits connecting said sauna room with at least two of said other of said plurality of adjoining rooms

for heating said at least two of said other of said plurality of adjoining rooms by hot-air removed from said sauna room, and
 said air conduits including flap means for controlling the hot-air flow through said air conduits.

6. A heating system for an apartment or house including a plurality of adjoining rooms, comprising
 a central heating unit means,
 one of said plurality of adjoining rooms being heat-insulated from the other of said plurality of adjoining rooms and constituting a sauna room,
 said central heating unit means comprising a hot-water boiler without insulation and heated by electric energy and located in said sauna room,
 said hot-water boiler producing hot water and operating as a heat accumulator and being adapted to dispense heat by convection to the surrounding air of said sauna room,
 a radiator in at least one of said other of said plurality of adjoining rooms,
 hot-water conduit connecting said hot-water boiler with said radiator for feeding said radiator with hot water, air conduits connecting said sauna room with at least two other of said other of said plurality of adjoining rooms for heating the latter at least two rooms by hot air removed from said sauna room, a plurality of electrical implements disposed in said plurality of adjoining rooms, and
 said hot-water boiler having an electric current feed of a value corresponding to the approximate sum of the total current required for the other of said plurality of electrical implements disposed in said plurality of adjoining rooms.

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