

[54] ELECTRICAL HEATING UNITS
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[22] Filed: Nov. 2, 1971
[21] Appl. No.: 194,975

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[30] Foreign Application Priority Data
Nov. 3, 1970 Sweden 14847/70
[52] U.S. Cl. 219/362, 4/160, 126/344,
219/271, 219/365, 219/367, 219/530
[51] Int. Cl. H05b 1/00, A61h 33/06, F24h 7/02
[58] Field of Search 219/360, 362, 366-370,
219/378, 271-276, 530, 540, 365, 374-376;
4/160-164; 128/367; 122/40; 126/344

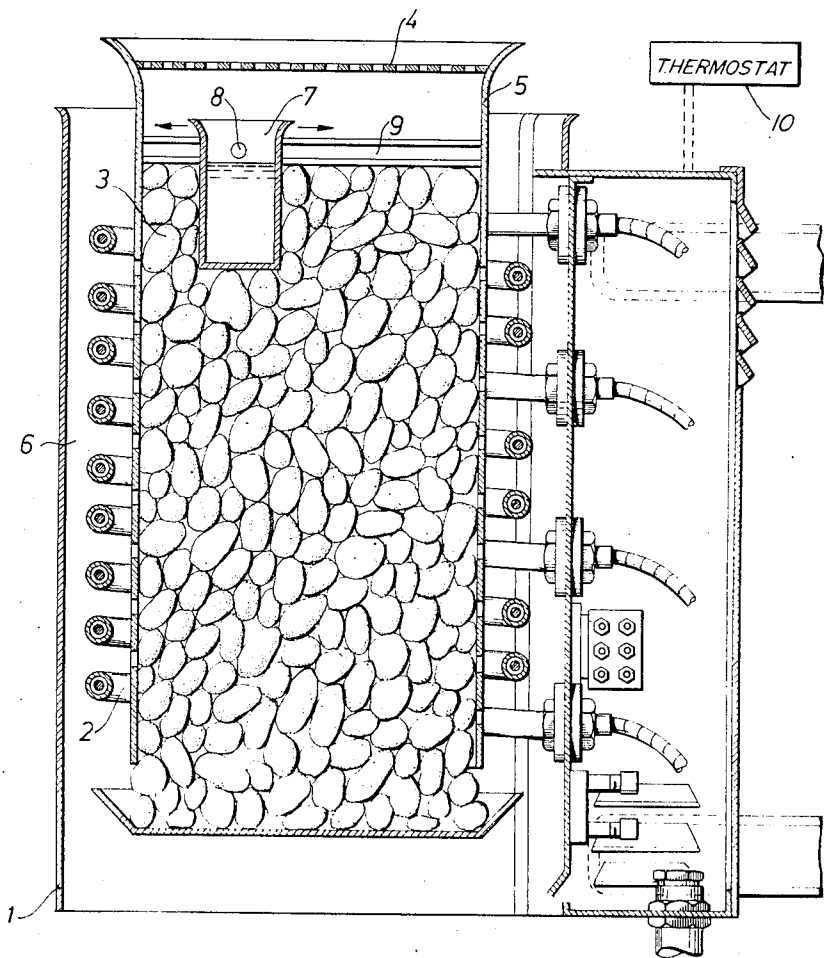
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[57] ABSTRACT

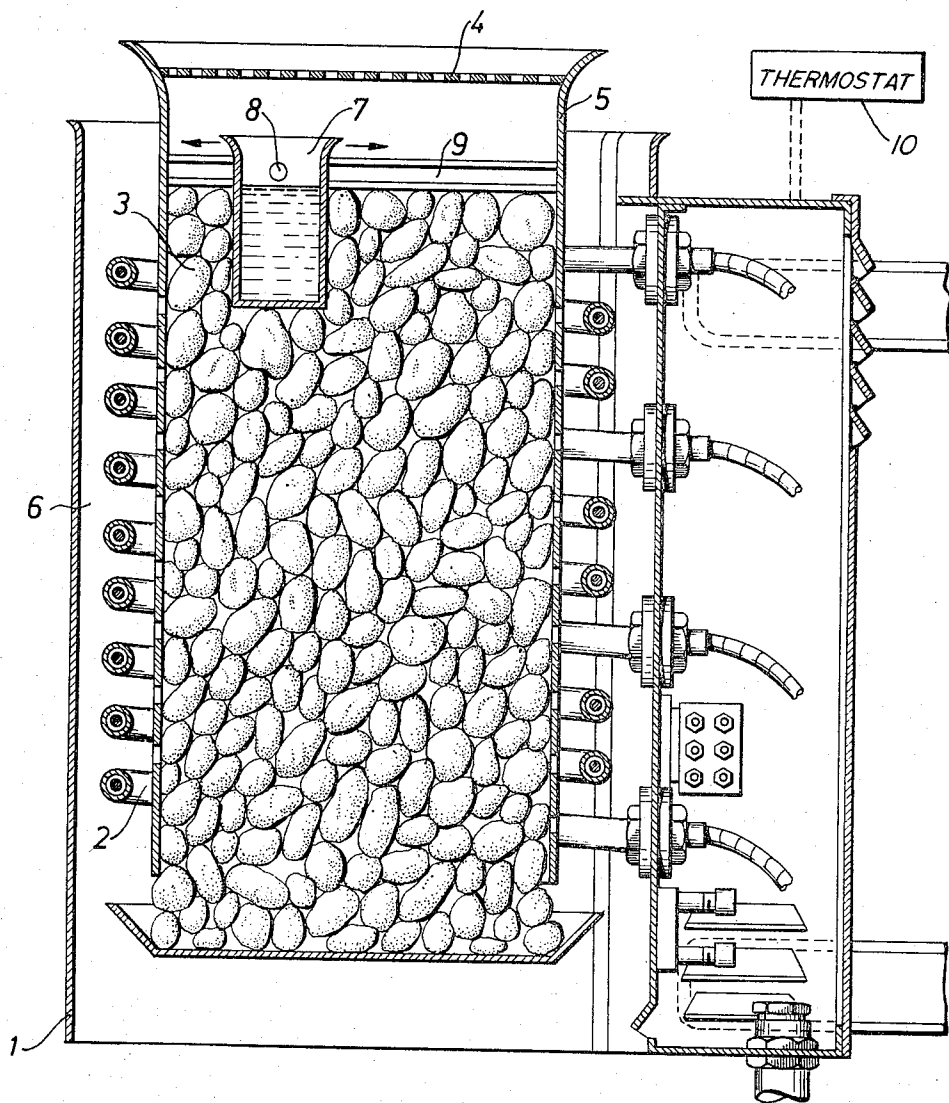
A steam bath unit is disclosed including a heat accumulator comprising a stone magazine located in a container, the walls of the container being surrounded by an electrical heating element. The temperature to which the stones are to be heated by the element is set by a thermostat. An open water container is partially submerged in the stone magazine. The water container is so mounted that its lateral location relative to the walls of the container may be varied. As the water in the container is heated essentially by heat received from the surrounding stones, the time at which the water boils is thereby controlled by the container's location in the stone magazine i.e., the time at which the surrounding stones are heated.

3 Claims, 1 Drawing Figure



PATENTED DEC 11 1973

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ELECTRICAL HEATING UNITS

The present invention relates to an arrangement in an electrically heated sauna bath unit having an electrical heat source and a heat accumulator, e.g. a collection of stones, and adapted to maintain a certain degree of humidity inside the sauna room while maintaining the temperature in the room at a predetermined set point value, preferably by means of a thermostat located in the room and controlling the heat source.

It has previously been suggested to modify a conventional dry sauna bath of the type obtained when using conventional electrically heated sauna units in a manner such that a certain basic humidity is continuously maintained in the bath while in use without eliminating the possibility of occasionally intensively increasing the humidity of the atmosphere by pouring water on the stones. A sauna bath of this type is to be preferred for a number of reasons.

In the majority of cases, however, the power which can be taken from the domestic supply line, however, is restricted for reasons of a purely practical and economic nature. When applying the aforescribed principle, the thus restricted power must be used to satisfy a number of different heat requirements. This problem is particularly manifest when preheating the bath or preparing the same prior to use, particularly as it is often desirable to keep the time taken to prepare the bath at a minimum, i.e., to render the bath ready for use as soon as possible.

During the preparatory period, the available electrical power must be used for increasing the temperature of the air, for increasing the humidity of the atmosphere by vaporizing water, and for at least starting the storing of heat in the heat accumulator of the unit, even though the heat absorbed by the accumulator need not at the beginning of a bathing period be sufficient to vaporize water if thrown on the stones.

The problem which the invention is primarily intended to resolve pertains to means for increasing the humidity of the air, a factor on which special requirements must be placed to ensure that the portion of the available power used for such a purpose during the preparatory period is not unreasonably great to the detriment of rapid increases in temperature in the bath. If the unit is provided with means for immediately vaporizing the water, a significant portion of the available power must be used to provide for the heat required to vaporize the water. Apart from the fact that less power would be available for heating the walls of the sauna bath room, the furnishings etc. and that the time taken to heat the bath would be extended, the condensation of water on still rather cold surfaces, especially external walls, would be liable to take place, thereby further impairing the process of heating the bath.

The object of the invention is to eliminate the aforementioned disadvantages by means of an arrangement which will not draw on the available power for vaporizing water until the temperature in the bath has reached approximately its set point value. In this connection, it is important that the arrangement comprises only extremely simple and inexpensive means for achieving this result, since the sauna bath unit itself is an extremely simple and inexpensive product which cannot be encumbered with the costs involved by conventional means for automatically controlling such temperature dependent humidifying processes. The present invention thus relates to an arrangement in an electrically

operated sauna bath unit provided with a thermostat controlled electric heat source for heating air circulating through the bath and for heating a collection of stones in a manner such that said stones are able to give off the required amount of heat when water is thrown thereon, and also provided with an open water container for vaporizing water so that the air contained within the bath can be humidified from the very beginning of the bathing period, this arrangement being mainly characterized in that the container is so constructed and so brought into heat conductive contact with the stones that the water present in the container is caused to boil under the influence of the heat from the stones at a point of time which is slightly earlier than the time at which the temperature of the bath reaches the temperature set on the thermostat.

The invention will now be described with reference to one embodiment thereof illustrated in the accompanying drawing, which illustrates a vertical section through a steam bath unit provided with an arrangement according to the invention.

The illustrated steam bath unit comprises a casing or jacket 1 which is provided with means for suspending the unit from a suitable attachment point and for connecting the unit to a source of electrical power and which encircles an electrical heat source 2 and a heat accumulator 3. In the illustrated embodiment, the heat source 2 comprises a number of electrical heating elements encapsulated in tubes and arranged in the form of a helix around the heat accumulator 3. The heat accumulator 3 consists of a collection of stones, i.e. so-called stone magazine, located in a container 5 which is open around the periphery at the bottom thereof and covered at the top with a perforated plate 4. The casing 1 is open at the top and bottom thereof. Located between the casing 1 and the container 5 is an annular slot 6 in which heating elements 2 are arranged and through which a flow of air passes as a result of the chimney effect produced when the heating elements are active. When wishing to sharply increase the humidity of the air, water can be poured over the perforated plate 4, which distributes the water to the stones heated by the heating elements.

With the illustrated embodiment of the invention, an upwardly open water container 7 is arranged in the container 5, partially submerged in the stone magazine at such a distance from the wall of the container 5 which is heated essentially by radiation from the heating elements 2 that the transport of heat to the water in the container is only sufficient to cause the water to boil when the temperature in the surrounding bath has substantially reached the set point value set on the thermostat 10. To enable adjustments to be made for locally varying conditions with respect to the prevailing conditions for heating the bath and to suit varying requirements with respect to the temperature of the bath, the water container 7 is arranged so that, at least with respect to its lateral position, it can be moved relative to the wall of the container 5. Movement of the water container 7 is made possible by the fact that the water container is suspended by means of two opposing pins 8 in two horizontal guide bars 9 (only one pin and one rail being shown in the drawing).

In the illustrated position of the container 7 beneath the perforated plate 4, the store of water in the container is automatically replenished when water is

poured on to the plate in order to increase abruptly the humidity of the atmosphere in the bath.

Although the container 7 has been shown submerged in the stone magazine 3, which affords the advantage of suitable heat inertia and stabilised accumulation of heat, the container may naturally be placed anywhere where the transfer of heat from the heating elements provides the desired delay with respect to the initiation of the water vaporizing process. Furthermore, the container may be provided with heat insulating means or may be made from a material having poor heat conductivity. A heat accumulating material may be used in respect of both the container and the insulating material, when used.

The invention is not restricted to the described and illustrated embodiment, but may be modified within the scope of the accompanying claims.

I claim:

1. An electrically operated sauna bath unit including a container for stone material to be heated, said container adapted to be filled to a predetermined level with stone material, an electric heat source surrounding the stone container for heating the air circulating through the bath unit and the stone material adapted to be contained in the stone container, thermostat means for controlling the heat source for controllably heating substantially all of the stone material to at least a predetermined temperature and a water container located

within said stone container and positioned such that a major portion of said water container is located below said predetermined fill level and adapted to be in heat conducting contact with the stone material when filled to said predetermined level whereby heat is transferred by the stone material to the water container causing the water in the water container to boil earlier than the time at which the temperature of the bath reaches the minimum temperature established by the thermostat.

2. A sauna bath as claimed in claim 1 including means for suspending said water container in said stone container in a position to be surrounded by the stone material when the stone container is filled to the predetermined level, said water container thereby being adapted to be shielded by the stone material from said heating elements so that the heat from said heating elements is transferred by the stone material to said water container, the water in the container thereby being brought to a boiling temperature slightly before said thermostat shuts off said heating elements.

3. A sauna bath as claimed in claim 2 wherein said stone container is at least partially open at its upper end, said water container being upwardly open and suspended beneath said stone container opening so that water thrown through the container opening upon said stone material also replenishes the water in said water container.

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