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RADIANT SPACE HEATER

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Fig. 1.

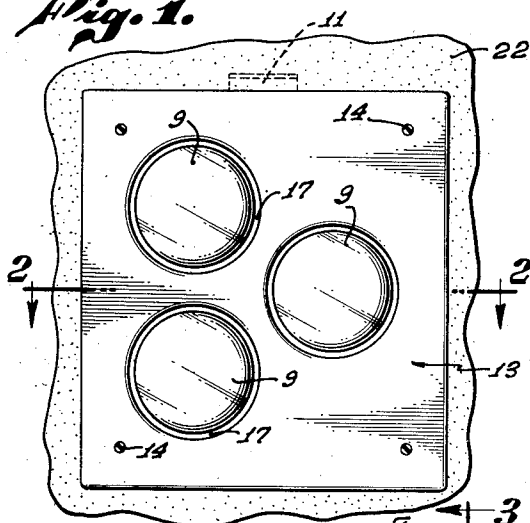


Fig. 4.

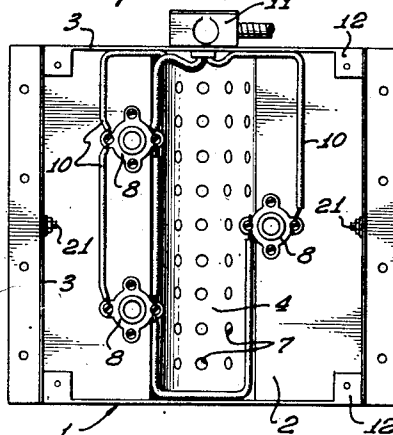


Fig. 2.

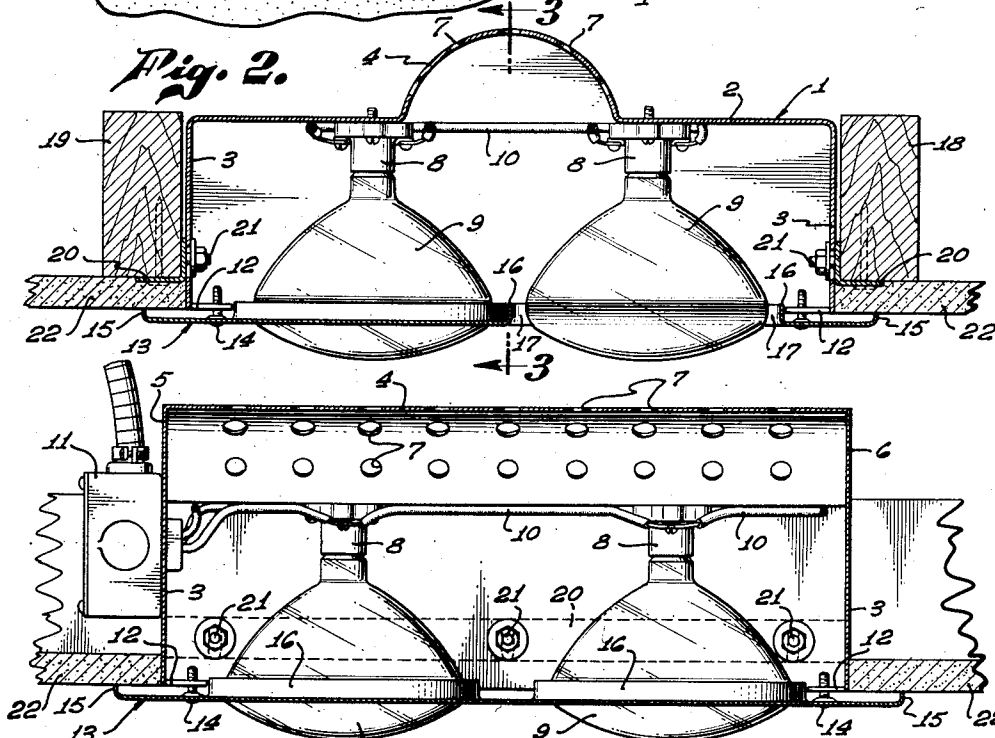


Fig. 3.

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RADIANT SPACE HEATER

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2 Claims. (Cl. 219—35)

The present invention relates to a space heater of the type which utilizes infra-red heating elements. Specifically, the invention contemplates placement in or suspension from a ceiling, with the infra-red elements so arranged and controlled, that different infra-red elements may be energized as desired.

As is known, infra-red heating elements will heat a surface at great distances without heating the surrounding air through which the rays pass. Such a heating element is deemed to be superior, in that the heat is felt instantly, is odorless, and does not cause wall streaks or smudge so common to wall-type heaters.

Preferably, the heater of the present invention is mounted in or suspended from a ceiling so as to eliminate the possibility of a person contacting the heating elements. Furthermore, by being mounted in or adjacent the ceiling, fire hazard is eliminated.

Objects of the invention contemplate a space heater of the infra-red type, preferably mounted in a ceiling, wherein any desired heat is under control of the individual; wherein there is no danger of shock to the individual; which heater is economical in cost of operation; affords fast drying qualities; has therapeutic value, and which is so constructed and arranged as to provide for ventilation therethrough.

A further object of the invention is the provision of a space heater of inexpensive construction, easily installed in new as well as old homes or other dwelling places, and generally superior to space heaters now known to the inventors.

Other objects and advantages of the space heater will become apparent to those familiar with this art from inspection of the drawings and a reading of the description thereof.

With the above mentioned and other objects in view, the invention consists in the novel and useful provision, formation, construction, association, and relative arrangement of parts, members and features, all as shown in a certain embodiment in the accompanying drawing, described generally, and more particularly pointed out in the claims.

In the drawing:

Figure 1 is a bottom plan view of the space heater,

Figure 2 is a fragmentary sectional view on the line 2—2 of Figure 1, and on an enlarged scale,

Figure 3 is a fragmentary sectional view on the line 3—3 of Figure 2, and,

Figure 4 is an interior plan view of the casing, and elements therein, of the space heater, the cover panel being removed.

Referring now with particularity to the drawing, the invention includes a casing 1 having a top wall 2, and enclosing side walls 3. The side wall is preferably integral with the top wall. The top wall 2 is provided with an intermediate, integral transverse, concavo-convex portion 4, and the side wall 3 of the casing is extended upwardly, as shown at 5 and 6, to close ends of the concavo-convex portion. The concavo-convex portion 4 is formed

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with a series of openings 7, termed vent openings. It is apparent, of course, that the portion 4 may constitute a member separate from the top 2, and secured to the top in any appropriate manner.

Within the casing 1 and secured to the top 2 are one or more sockets 8 positioned adjacent the longitudinal edges of portion 4, as shown in Figure 4. In the present instance, the sockets are arranged in staggered relationship on either side of the edges bounding the portion 4, although it is evident that other arrangements might be resorted to, in accordance with use of the invention. The sockets 8 are of standard construction, in that they are provided with internal screw-threads, which threads are adapted to receive the screw-threaded bases of infra-red bulbs 9. Suitable electrical leads 10 connect with the sockets 8 and a junction box 11. Preferably, the electrical connections are asbestos covered. The infra-red bulbs are not detailed, as they are common in the industry and available on the market.

The sides 3 are provided with corner tabs 12 which are perforated, and whereby a cover panel, designated generally as 13, may be secured to the casing by passing screws 14 through openings of said panel and into the perforations of the tabs 12, as shown in Figure 3. Preferably, the cover panel has greater dimension than the casing, so as to overlap the sides 3, the outer edges of the panel being bent upwardly, as shown at 15. Furthermore, said panel is provided with inturned, annular flanges 16, which bound openings through which portions of the infra-red bulbs 9 project, the diameter of the annular flanges being such as to provide annular spaces 17 between said flanges and the bulbs 9.

As stated in the objects of the invention, the present device is adapted to be mounted in a ceiling. Referring to Figures 2 and 3, the casing is secured between a pair of ceiling joists 18 and 19 by providing mounting brackets 20 for opposite parallel sides of the casing, the said brackets being of angle form and having one leg of each bracket secured to a side wall 3 by means of bolts 21. The other leg of each mounting bracket is secured to the bottom of a joist, as illustrated. This may be accomplished by passing a nail through said leg and into a joist. The arrangement is such, however, that the bottom edge of the side wall 3 is substantially flush with the outer surface of plaster, wall board, or other ceiling covering 22. It will be observed that the cover plate, and particularly the up-turned edge 15 thereof, engages the ceiling covering in an adjustable manner, adjustment being provided by the screws 14. Furthermore, the portion 4 of the casing extends above the joists and into the space above the ceiling. If there is an attic in the dwelling, then the portion 4 is received within the attic and has communication with the air therein. If there is not an attic, then the portion 4 extends into the area included between the ceiling and the floor.

The operation, uses and advantages of the infra-red space heater just described, are as follows:

After the casing 1 has been positioned in the ceiling and secured by the brackets 20 to the joists 18 and 19, the infra-red bulbs may be inserted into the sockets and the cover panel secured to the tabs 12. The wiring from the outlet box 11 leads to a source of current supply and to a suitable switch which may permit all of the infra-red bulbs 9 to be energized at the same time, or, as shown by the drawing, specifically Figure 4, the switch may sequentially energize the bulbs, as desired. Preferably 250-watt bulbs are utilized, although it is evident that a bulb of any wattage desired may be employed in the device. The bulb is of the type which has a convex end surface, and which end surface projects through the opening surrounded by the annular flange 16. As previously

stated, infra-red rays pass through the atmosphere without heating the atmosphere, but do heat any object against which the rays impinge, and radiation from said object will then heat the surrounding air. There is a distinct advantage in heat of this character, in that the heat may be applied directly to a person situated beneath the infra-red bulbs either for therapeutic purposes, to dry the hair, provide clean heat, and the like. Furthermore, when the infra-red heat strikes the floor, side walls and the like, the temperature is not raised to any dangerous point which would be likely to reach an igniting point, and the positioning of the space heater in the ceiling eliminates the likelihood of any electrical shock to the person.

The ventilating properties of the heater are important, in that the ventilating openings 7 in the concavo-convex portion 4 of the casing, allows for an escape of odors or vapors within the room without in any manner effecting the heating qualities of the heater. Furthermore, circulation is readily provided by allowing air to pass upwardly through the annular space 17 surrounding each bulb and through the vent openings 7.

In actual operation, and in installations made of the present heater, it has been found that when the heater is in operation, the air within a room is maintained remarkably clean, free from vapor condensation and from odors.

We claim:

1. A radiant space heater for placement in an opening of a ceiling or wall of a building, including a casing provided with a top wall and an enclosing side wall, the said casing being inverted within the said ceiling opening to afford access within the casing, said top wall externally provided with a transverse projecting portion of concavo-convex form provided with vent openings, a cover panel adapted to overlie the side wall of the casing and the ceiling adjacent said opening therein, a transverse flanged opening in said cover panel, an infra-red bulb

within said casing and projecting in part through the transverse flanged opening of the cover panel, the said flanged opening being of such diameter as to afford air circulation therethrough around the periphery of the infra-red bulb and through the vent openings in the top wall of the casing, and support means within the casing for the said infra-red bulb.

2. A radiant space heater for placement in an opening of a ceiling or wall of a building, including a casing provided with a top wall and an enclosing side wall adapted to be inverted within said opening in the ceiling with the margin of said side wall substantially adjacent the outer surface of said ceiling, there being means for securing the casing within said ceiling, said casing being provided with a concavo-convex portion extending medially and transversely of the top wall, the said concavo-convex portion formed with vent openings, electric sockets arranged in staggered relationship within said casing and adjacent the concavo-convex portion, infra-red bulbs secured in said sockets, a cover panel secured to the said casing and overlying the marginal edge of the side wall and a portion of the ceiling adjacent the opening therein, said cover panel formed with openings through which a portion of each infra-red bulb extends, the said openings having greater diameters than the largest diameters of the infra-red bulbs to permit air circulation through the said openings and the said vent openings in the casing top wall.

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