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3,141,086

INFRARED HEATING AND ILLUMINATING FIXTURE

Filed Sept. 27, 1961

2 Sheets-Sheet 1

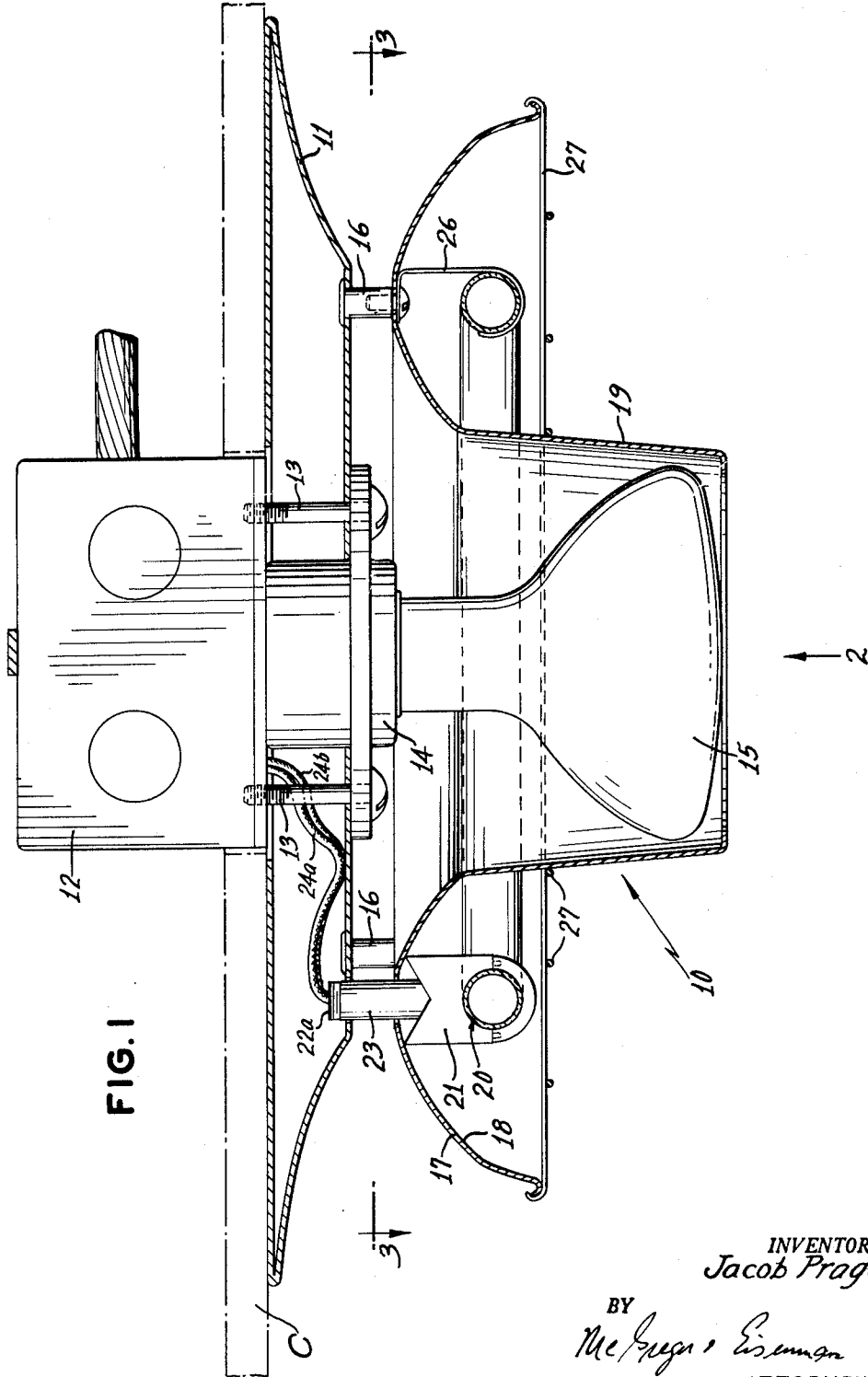


FIG. 1

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FIG. 2

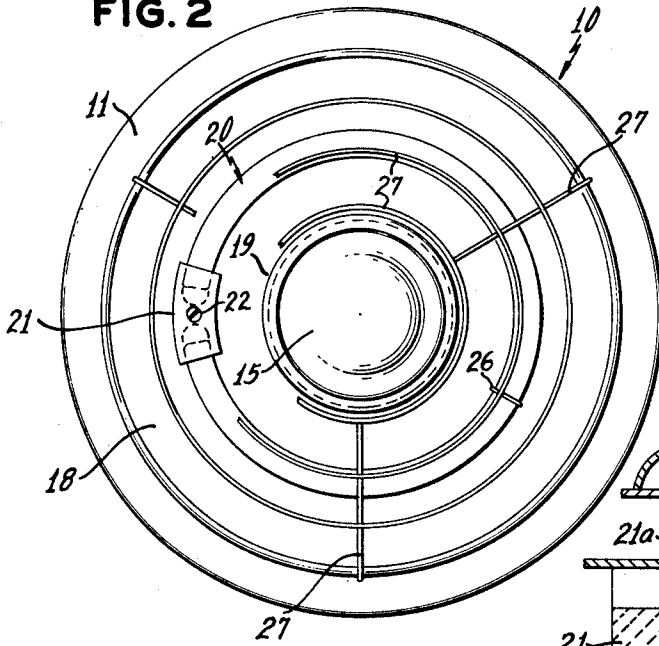


FIG. 4

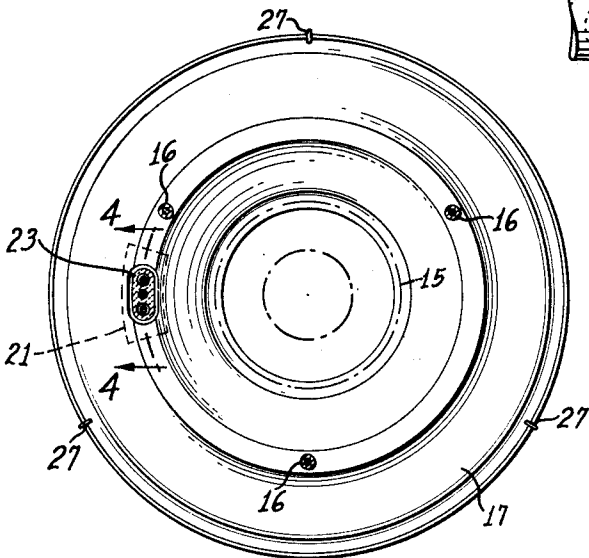
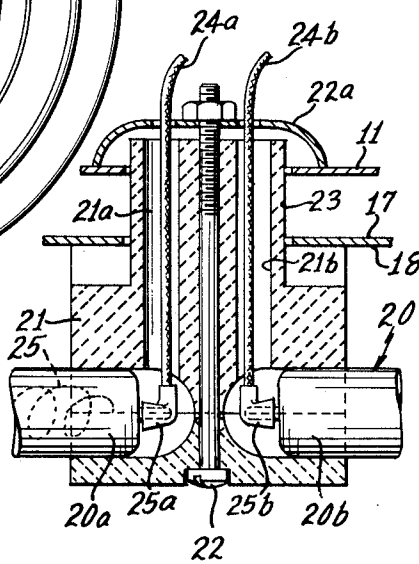


FIG. 3

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3,141,086  
**INFRARED HEATING AND ILLUMINATING  
 FIXTURE**

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 4 Claims. (Cl. 219-220)

This invention relates to heating and lighting fixtures and more particularly to a fixture carrying both infrared and visible light sources for simultaneous heating and illuminating.

Infrared energy heating sources have been developed to a point at which it is economically practical to use them either as supplemental or sole sources for heating spaces in which the ambient air temperatures can vary widely. Thus, such heaters can be used out of doors in overhanging marquees, for example, both for comfort of individuals and to melt snow and ice on paved surfaces beneath.

When infrared heating sources are utilized in fixtures to be attached to supporting structures, it is important that they include means to focus the random infrared radiation in the direction of intended use, thereby to augment the overall efficiency. Attendant the use of focusing or reflecting surfaces, however, is the generation of heat which must be dissipated in order to afford safety and to prevent deterioration of the wiring and other supporting parts. In certain installations, it is desired to provide an illuminating source in addition to the infrared source and, in most cases, the illuminating source further increases the undesired heating effects in the fixtures themselves.

Accordingly, it is one object of the present invention to provide an infrared heating and illuminating fixture in which waste heat is effectively dissipated, without raising the temperature of the support portions of the fixture beyond tolerable limits.

Another object of the invention is to provide an improved heating infrared fixture in which illumination from the infrared source is effectively directed and concentrated within pre-defined areas.

In accordance with the present invention, there is provided an annular infrared heating source, received within a contoured annular reflecting surface, which is capable of directing infrared energy from the source to afford radiation gradients which are effectively controlled over the area of influence of the unit. The central portion of the reflector comprises a cylinder extending in the direction of desired maximum radiation concentration to afford at once an air conduit for cooling air and a housing for receiving an illuminating source. The fixture is normally arranged to direct its light and heat energy in a downward direction, so that the cylindrical chamber for the light source defines a chimney through which air may flow upwardly about the base support of the fixture. The base support, which is adapted to be attached to a ceiling or overhanging surface, carries the reflecting and light housing by means of depending posts, to define air passages radially outwardly from the central chamber. The annular infrared source is supported within the reflecting wall by means of an insulating support element, which is coupled to a base support.

In operation, heating of the reflecting surfaces, as a result of the infrared energy, results in the passage of air through the central chimney portion and over the inner surface of the reflector. This flow of air is augmented by the heating effect within the chimney of the illuminating source, so that a continuous flow of air is established upwardly through the center of the fixture and radially outwardly over the reflecting surfaces.

The above and other features and objects of the invention will be apparent from the following specification, having reference to the accompanying drawing, in which:

FIGURE 1 is a view in vertical section through a lighting and heating fixture mounted on the underside of an overhanging surface;

FIGURE 2 is a plan view looking into the underside of the fixture;

FIGURE 3 is a view in horizontal section taken on the line 3-3 of FIGURE 1, looking in the direction of the arrows; and

FIGURE 4 is a fragmentary view in enlarged scale of a portion of the fixture taken on the line 4-4 of FIGURE 3.

Referring to the drawing, the invention is illustrated as embodied in a heating and lighting fixture identified generally by the numeral 10 and mounted on a ceiling surface so as to direct its heat and light energy in a downward direction. The fixture includes a circular supporting base 11, preferably formed of sheet metal and adapted to be affixed to an electrical fixture, such as an outlet box 12, by means of mounting screws 13. Mounted within the base 11 and extending downward therefrom is a socket 14 adapted to receive an incandescent bulb 15, which is preferably adapted for illumination, although a second infrared source or an ultra-violet source can be utilized.

Supported by the base 11, by means of a plurality of three depending ceramic studs 16, is a reflecting housing 17, which includes an annular reflecting surface 18, the inner edge of which extends downwardly for a substantial distance to define both a generally cylindrical or tubular chamber for enveloping the incandescent light source 15 and a surface to scatter infrared heat energy in relatively small quantities laterally of the unit. Nested within the reflecting surface 18, is an infrared source, in the form of an annular quartz tube 20, within which is disposed a helical, electrical resistance heater.

Referring to FIGURE 4, the infrared source 20 and, more particularly, the quartz tube, is shown with its opposed ends 20a and 20b secured within a ceramic carrier 21, which is secured by a mounting bolt 22 to the base portion 11 of the fixture. The ceramic support 21 includes an upwardly extending shaft portion 23, which bridges the space between the base 11 and the reflector 17. Suitable passages or conduits 21a and 21b are formed in the support to accommodate electrical conductors 24a and 24b which are connected by fittings 25a and 25b to terminals at opposite ends of the infrared source 20. A supplemental support 26 can be furnished for the quartz tube 20, if desired, at a point diametrically spaced from the ceramic carrier or support 21. If desired, the electrical socket 15 can be connected in parallel with the conductors 24a and 24b, so that both the light and heat sources are energized simultaneously, or, if desired, separate services can be used to operate the components independently. If desired, a decorative shielding screen or grid 27 can be attached to the underside of the reflecting surface 18.

The light source 15, within the cylindrical space 19, is also directed downwardly to illuminate an area which corresponds approximately to the heated area. In operation, when the sources 15 and 20 are energized, a flow of cooling air will be provided upwardly through the chimney or cylindrical part 19 and radially outwardly through the space between the support 11 and the reflector 17, thereby carrying heat away from the reflector, which would ordinarily tend to cause heating in the base. Thus, the illuminating source 15 serves as a pump to augment the flow of cooling air and the base of the unit is maintained at a relatively low temperature, notwith-

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standing the use of two heating sources in the fixture at points beneath the base.

While the invention has been described above, having reference to a preferred embodiment thereof, it will be understood it can take various other forms and arrangements without departing from the scope of the invention, which should not, therefore, be regarded as limited, except as defined by the following claims.

I claim:

1. A heating and lighting fixture comprising a base assembly adapted to be supported by an overhanging surface and including a laterally extending circular portion disposed generally parallel to the overhanging surface, an annular radiation reflecting member having a central opening defined by the inner edge thereof, means to support the reflecting member beneath the base assembly coaxially disposed with respect thereto and spaced downwardly therefrom to define lateral air passages therebetween, an annular infrared heating source mounted in the reflector member, a depending tubular member carried by the inner edge of the annular reflecting member in the central opening thereof, extending below the plane of the annular heating source, the outer surface of the tubular member constituting a reflecting surface for radiant energy to disperse the energy with lateral components and the inner surface constituting a chimney for the passage of cooling air upward to said lateral air passages, and a light source supported by the base and extending downward into the tubular member

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and spaced radially inwardly therefrom to afford vertical air passages within the chimney, said light source being disposed below the lateral air passages, whereby cooling air is pumped by the heat of the light source upward around the light source and radially outward over the top of the reflecting member.

2. A fixture as set forth in claim 1, including socket means for said light source secured to the base assembly to support an incandescent light source in said tubular member.

3. A fixture as set forth in claim 2, including supporting and energizing means for said annular infrared source carried by said base assembly, said reflecting member being formed with an opening to receive said supporting and energizing means.

4. A fixture as set forth in claim 2, said tubular member and reflecting member being integral and defining a continuous surface for reflecting radiant energy and for channeling cooling air.

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