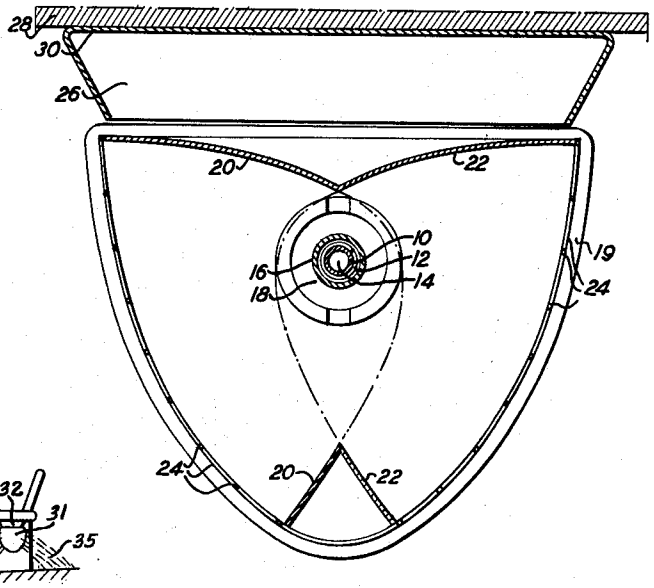
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BENCH MOUNTED HEAT RADIATOR

Filed Oct. 27, 1961



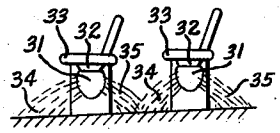


Fig-3

Fig-1

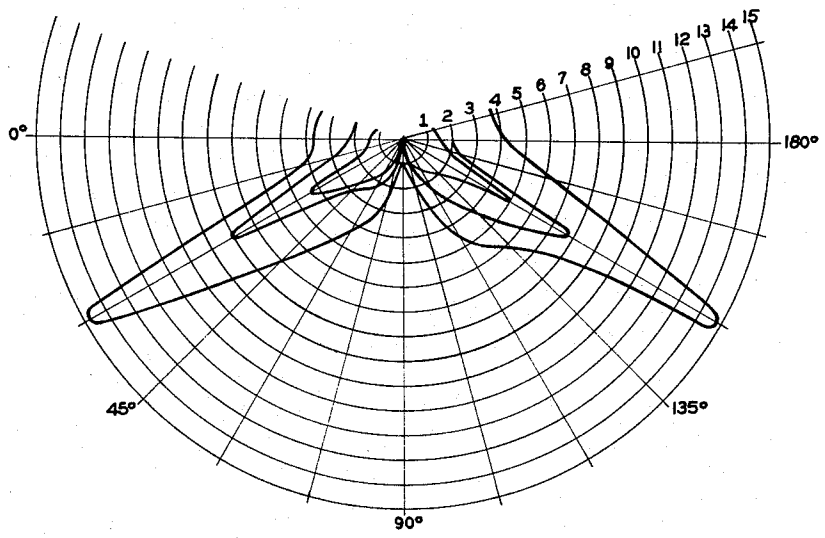


Fig-2

INVENTORS

HEINRICH MOHN
GEORG HORSTMANN

BY Burgess Dinklage & Sprung
ATTORNEYS

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BENCH MOUNTED HEAT RADIATOR

Heinrich Mohn, Haus vor der Heilig, Hailer, Kreis Gelnhausen, and Georg Horstmann, Halle, Westphalia, Germany, assignors to Heraeus Quarzschmelze G.m.b.H., Hanau am Main, and Metall-Walz und Plattierwerke Hindrichs-Auffermann A.G., Wuppertal, Oberbarmen, Germany, both firms of Germany

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1 Claim. (Cl. 219—217)

This invention relates to heat radiators and more particularly to that type of radiator from which the heat is to be directed to a localized area as for instance the space in front of and behind seating benches for churches, meeting halls and the like where it is impractical to heat the complete volume of the hall.

In such locations as are mentioned above in cold weather, the feet of persons seated on the benches become uncomfortably cold. In many instances it is impractical to heat the entire volume of the hall inasmuch as the construction of the building is not suitable. In many instances where heaters are installed under the seats there is little or no effort to direct the heat where it will be comfortable to the seat occupant. This is particularly true in drafty railroad carriages. The result is a great waste of heat without benefit.

It is accordingly an object of this invention to provide a heat radiator for use under seats and benches which will direct comfort heating properly for the comfort of the occupants of the seat and in economical manner.

Other objects and advantages of the invention will be in part obvious and in part pointed out hereinafter.

Referring to the drawing in which is disclosed a preferred embodiment of the invention:

FIG. 1 is a vertical cross section of the improved heat radiator, and

FIG. 2 is a diagram indicating the heat distribution produced by the radiator, and

FIG. 3 is a side elevation view depicting benches according to the invention arranged in rows.

Referring to the drawing, heat is produced by a heating element which comprises a tube **10** upon which is wound a suitable resistance wire element **12** having a return central wire **14** within tube **10**. The heating element is enclosed within a tube **16** in this instance of quartz. At either end tube **16** and the enclosed heating element are supported on a suitable fixture **18**, mounted on an end wall **19**, at the end of the seat or bench (not shown).

Tube **16** will preferably be substantially the length of the bench and the heat generated is arranged to be distributed or directed generally toward that portion of the floor both in front of and behind the bench for the purpose of warming the heels of the person sitting on the bench and the toes of the person sitting on the bench behind. For this purpose a novel arrangement of reflectors is provided shown at **20** and **22**. Reflectors **20** and **22** are parabolic and extend lengthwise of tube **16** which is placed at the focus of reflectors **20** and **22** so that the heat from the single heating element is reflected by both reflectors.

In order to direct the heat downwardly, the axes of the parabolas of which reflectors **20** and **22** form a part, are directed outwardly and downward diverging with respect to each other to direct the heat in direction correspondingly. FIG. 2 indicates the pattern of heat density in which it will be seen that the heat is focused along the axes of parabolic reflectors **20** and **22** in a direction both forwardly and rearwardly and at an angle of approximately 30° below the horizontal at the maximum intensity of heat.

In order to protect the seat occupants from burns and the heating elements from damage, suitable grids **24** are provided at the front edge of reflectors **20** and **22** joining the upper part of each such reflector with its lower part. To protect the seat from undue heating, the radiator is provided with a hollow chamber **26** mounted above reflectors **20** and **22** and suitably attached to the bench bottom **28** at the chamber wall **30**. Chamber **26** acts as an insulation against undue heating of the seat.

The quartz tube **16** provides a sealed enclosure for the heating element which is very desirable as protection against humidity in halls of the general character referred to.

It will be seen that by the use of the heater above described which will extend preferably the length of each bench to which it is attached, the heat radiated in directions indicated by the heavy line of FIG. 2 provides a maximum of comforting heat to not only the occupants of the bench or seat but to their neighbors behind who receive the heat through the floor to the front of their feet and legs. Thus, the single heating element does double duty and its use is therefore economical. Furthermore, on account of the insulating chamber **26** forming the upper part of the radiator, the discomfort of high temperature on the bench is avoided.

An assembly of benches according to the invention arranged in rows is depicted in FIG. 3. The heaters **31**, which are spaced from the underside of the benches **33** by the heat insulating chambers **32** which provide a heat insulating space, are disposed as is described above, with the axes of the reflectors diverging at an angle such that heat from each heater is concentrated in an area in front of its bench corresponding to the area occupied by the feet of persons sitting on the bench, as is indicated by the lines **34**, and is also concentrated in the area behind the bench occupied by feet of persons sitting on the bench behind in the next adjacent row, as is indicated by the lines **35**.

Thus, by the above construction are accomplished among others the objects hereinbefore referred to.

We claim:

A bench for use as one of a plurality of benches ararnged in rows, said bench having a seat in an elevated position, a heater secured to the underside of the seat, means defining a heat insulating space positioned between the underside of the seat and the heater, said heater comprising a pair of elongated reflectors each of which is parabolic in cross-section, said reflectors intersecting each other so that the reflectors have a common focal line, the portion of each reflector inwardly of lines of intersection being cut away and the reflectors being fixedly joined together along lines of intersection, said focal line being disposed substantially parallel to the seat, a heating element mounted along said focal line, the axes of the reflectors being directed outwardly and downwardly and diverging with respect to each other and being disposed at an angle to concentrate heat reflected by the reflectors in front of and behind the bench in areas corresponding, respectively, to the area occupied by the feet of persons sitting on the bench, and the area of feet of persons sitting on a bench disposed to the rear in the next adjacent row.

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