July 11, 1939. B. JASPERS 2,165,970

ELECTRIC HEATING SYSTEM OPERATING BY HEAT RADIATION

Filed June 28, 1935

Fig.1

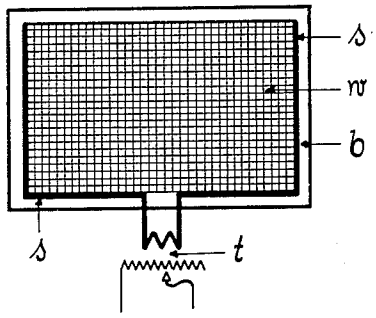


Fig.2

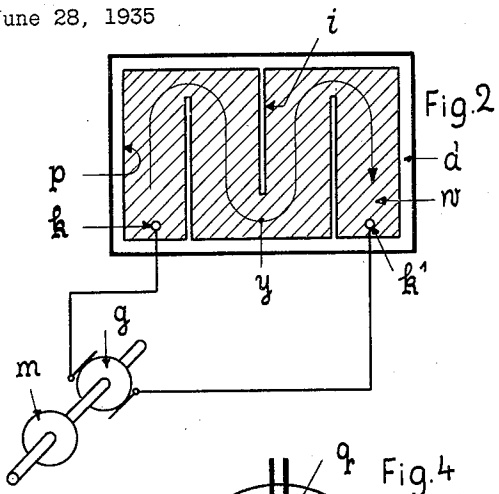


Fig.3

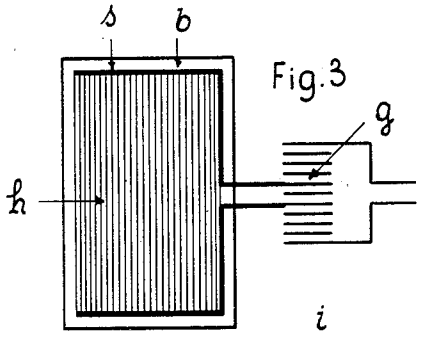


Fig.4

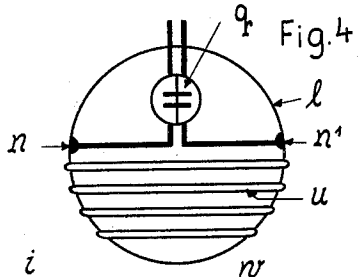
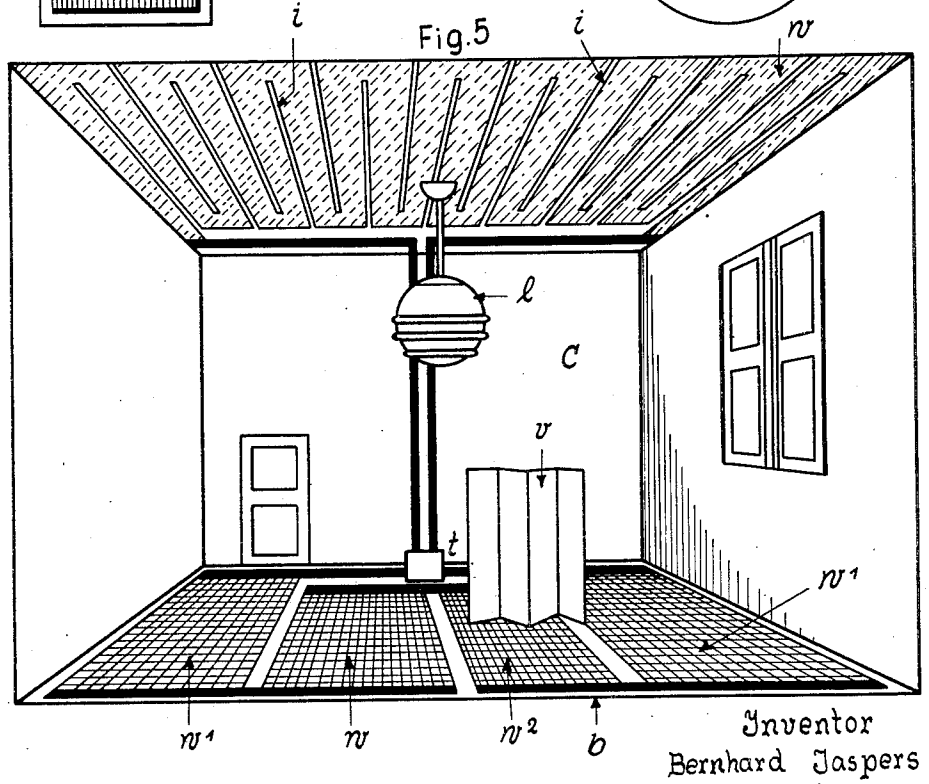


Fig.5



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ELECTRIC HEATING SYSTEM OPERATING BY HEAT RADIATION

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Application June 28, 1935, Serial No. 28,914
In Germany April 27, 1932

3 Claims. (Cl. 219—34)

This invention relates to an improved electric heating system suitable for dwellings, factories, hospitals and the like and in which the heat is transmitted by radiation through still air rather than by convection of circulation of air. Heating by convection is uneconomical and is associated with an objectionable raising of dust. The air in the room or space is further inclined to be dry and at windows and other points of the room objectionable draughts occur. According to this invention a very effective electric heating system is obtained which operates by heat radiation and is free of danger so that no fire or unhealthy effect can result from any short circuit in the heating elements or in the wiring thereof.

For the purpose of illustrating my invention I have shown certain embodiments in the accompanying drawing in which:

Figure 1 illustrates a floor heating unit employing a wire netting to which current from a transformer is supplied.

Figure 2 shows a ceiling heating element supplied from a converter.

Figure 3 shows a floor heater embodied in a carpet.

Figure 4 a room heater in the form of a metal globe, which also functions as a lighting element, and

Figure 5 is a perspective view of a room in which the various forms of heaters are shown in combination.

It is an important feature of this invention that there is a strict separation electrically of the heater elements from the supply circuit or source of electric current and moreover the conductors forming the heating elements have a low ohmic resistance and are supplied with a current of such low voltage that these conductors, forming the heating elements, are kept at a temperature only very slightly in excess of the desired room temperature. Hot "stuffiness" which is a characteristic of the usual convection heating systems, is completely avoided.

In the form of the invention according to Figure 1 the floor *b* of a room C (see Figure 5) is covered with an extensive heating sheet comprising a fine metal mesh *w*. This metal mesh *w* is connected on its two parallel sides with flat copper bars *s* which are in turn connected to the two terminals of the secondary of a transformer *t*.

The metal mesh or conductor may clearly be insulated or un-insulated from the floor. In accordance with Figure 2 a wood plate or board *d* is attached to the ceiling and on its face, forming a panel, directed towards the interior of the room the panel is sprayed with a metal spray forming a metallic conducting surface *w* (Figures 2 and 5). The strips *i* indicate interruptions in the metal coating *w*, so that the current flows from a generator *g* driven by a motor *m* by way of the terminals *k*, k^1, as indicated by the arrow *y*. The resistance of the path of the current may be altered by altering the number of the interruptions so as to increase or decrease the length of the said path.

In Figure 3 the floor *b* is covered by a carpet in which bars or wires *h* are interwoven. The ends of the wires are connected by flat bars *s* to a condenser *g*.

In Figure 4, a hollow metal globe is provided as the heat radiation. A rectifier *q* is arranged within the globe and the secondary of this rectifier is connected at two opposite points of the globe, as at *n* and n^1. For the purpose of using the globe as the illuminating lamp for the room, neon tubes *u* or the like may be mounted on the globe. The current source of these tubes is not shown in the drawing as it may be arranged in any well known manner.

The general arrangement of the room shown in Figure 5 shows several separate heating meshes w^1, w^2, w^3, w^4 with a conducting rail or bar indicated by a thick line so that the current from one terminal of a transformer *t* flows through the individual meshes w^1, w^2, w^3, w^4 to the other terminal. The ceiling heater *w* is also connected to this transformer *t*. In some cases the invention may be applied in the form of screens such as screen *v* which is constructed with panels and connected to the current source in accordance with this invention.

What I claim is:

1. An electric room-heating system, comprising heating sheets disposed on an inner bounding surface of the room to be heated and presenting a comparatively large heating surface, said sheets having a flat metal body consisting of a material of low ohmic resistance and being transversely extensive with respect to the direction of the current flow so as to constitute a multitude of juxtaposed and parallel current paths, and means for connecting each of said heating sheets with an energizing circuit, said means having a low-voltage output circuit insulated from said energizing circuit and connected with said metal body, said connecting means and said body being designed to maintain said sheet at a temperature slightly above the desired room temperature.

2. In an electric room heating system according to claim 1, said heating sheets being placed on the floor of the room to be heated and covering a substantial portion of said floor, and said metal body consisting of a wire mesh and having terminal bars extending along two opposite edges of said wire mesh and having a larger cross section than the wires of said mesh.

3. In an electric room heating system according to claim 1, said heating sheets comprising a flat panel and said metal body consisting of a thin metal coating deposited on said panel and having interruptions so as to lengthen the current paths formed by said coating.

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