

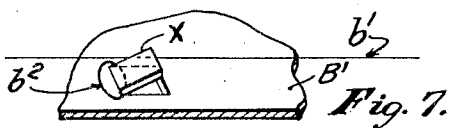
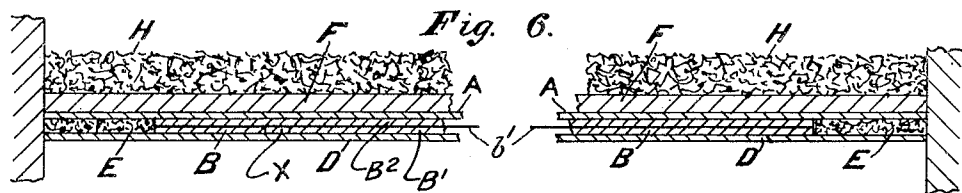
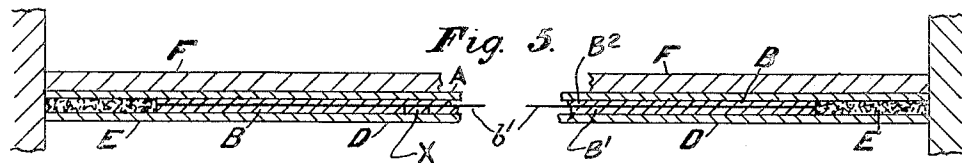
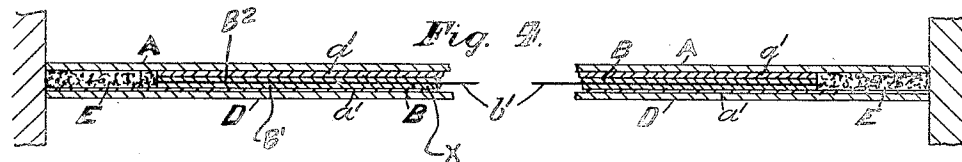
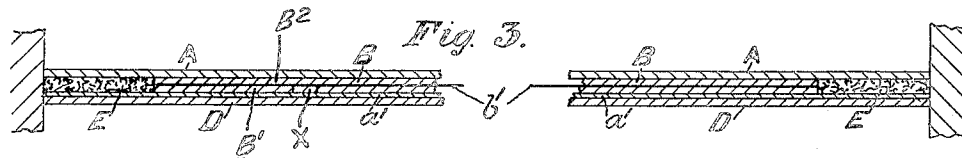
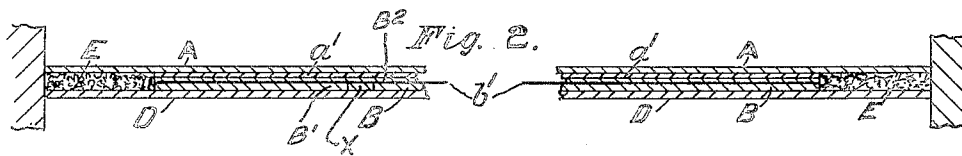
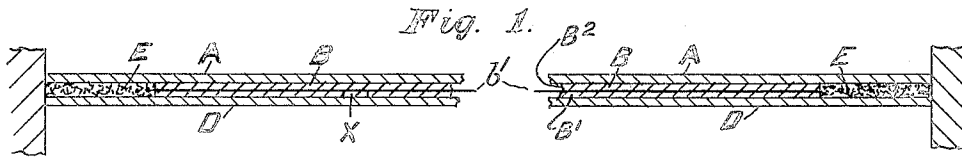
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J. L. MUSGRAVE

2,328,666

ELECTRIC HEAT-RADIATING MEANS FOR WALLS, CEILINGS, OR THE
LIKE RADIATING ELECTRICALLY GENERATED WARMTH

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ELECTRIC HEAT-RADIATING MEANS FOR
WALLS, CEILINGS, OR THE LIKE RA-
DIATING ELECTRICALLY GENERATED
WARMTHJoseph Leslie Musgrave, Aldwych, London, Eng-
landApplication March 26, 1941, Serial No. 385,328.
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3 Claims. (Cl. 219-19)

This invention relates to the method of constructing a ceiling, wall or the like from the surface of which an electrically generated heat radiates for warming a room or other part of a building or structure.

In this system of heating in which a large area, such as the ceiling of a room, is made to radiate low temperature heat rays, air is not the medium of heat transmission, the occupants of a room are warmed, not by air, but by direct absorption of the rays, and reasonable air movement for ventilation can be obtained without serious loss of heat.

Now according to this invention, in the construction of a ceiling, plaster boards or the equivalent are first secured to the structural part of the building to form a base for the fabric, preferably Dulrae fabric (hereinafter explained) constituting the panel or panels producing the electrically generated heat. This fabric is secured in one or more positions to the base to form the heating panel or panels, a filling being applied to the portions of the base where no fabric has been fixed to produce an even overall surface. A final layer of plaster boards is then applied to the whole surface of the ceiling to diffuse the heat over the entire surface, from which surface the warmth radiates into the room or structure. Afterwards this surface may be covered with lining paper before being decorated.

The invention is illustrated on the accompanying drawing.

Fig. 1 is a broken sectional elevation of a ceiling constructed according to this invention.

Fig. 2 is a similar view showing the heating panel secured to the base by an adhesive.

Fig. 3 shows the final layer of plaster boards secured to the heating panel by an adhesive.

Fig. 4 shows the heating panel secured to the base by an adhesive and the final layer of plaster boards secured to the heating panel by an adhesive.

Fig. 5 is a broken sectional elevation of a ceiling constructed according to this invention showing a thermal insulation, such as compressed cork slabs, interposed between the layer of plaster boards and the structural part of the building to which the plaster boards are secured.

Fig. 6 is a similar view showing a ceiling constructed according to this invention fixed to a concrete floor.

Fig. 7 is a perspective view showing a portion of one of the insulation sheets of a heating fabric panel and a means for securing a conductor wire thereto.

A represents the plaster boards forming the base to which the fabric B, constituting the heating panel or panels, is secured; D represents the final layer of plaster boards covering the whole surface of the ceiling and from which warmth radiates, and E represents the filling which is applied to the remaining portions of the base A so that the surface to which the plaster boards D are attached is even.

On the accompanying drawing I have shown the plaster boards A, forming the base, extending across the entire ceiling but it must be understood that these plaster boards need only be secured to the structural part or parts of the building where it is proposed to erect a heating panel, filling E of the same thickness being secured to the remainder of the ceiling to form an even surface for the reception of the final layer D of plaster boards.

The fabric B, which is attached to the base A, is preferably what is known as Dulrae fabric, made in rolls ready to cut into panels or sections. This fabric consists of a roll of flexible insulating material B' to which the conductor wires b' and bus bars are secured by winding as at b² round flaps x (see Fig. 7) formed to project from the roll B' and then passed between rollers, a further roll of insulating material B² being fed in so as to cover the wires b'. During the rolling operation the rolls of insulating material B', B² are coated with an adhesive substance so that when they pass from between the rollers they are stuck together.

The fabric panel B is fixed to the base A, by wire staples or equivalent or by an adhesive a', as shown by Fig. 2. The filling E, which may consist of the same material as the fabric without the conductor wires, is secured to the remaining portion of the base A to form an overall even surface. The final layer D of plaster boards is then secured to the whole surface of the ceiling by nails or screws, or by an adhesive a', as shown by Fig. 3. Or both the fabric B and the plaster boards D may be secured in position by an adhesive a', as shown by Fig. 4. This final layer D of plaster boards increases the thermal capacity of the installation by spreading the heat evenly over the ceiling.

In some cases a thermal insulating material, such as compressed cork F, or metallic foil, may be fixed to the structural part of the building, as shown by Fig. 5, to ensure that the heat generated by the fabric A in the ceiling becomes effective over the area for which it is intended.

At Fig. 6 I have shown my method of con-

structing a ceiling where the floor is made of concrete.

When the concrete floor is being constructed, before pouring in the concrete H, wooden bearers, to which clips have been attached, are placed on the shuttering, and between these bearers the thermal insulating material, such as cork slabs F, are placed. When the concrete is set and the shuttering removed the bearers will be held in position by the clips, and the cork slabs will have adhered to the concrete. The plaster boards A are first secured to this structure, then the fabric panel or panels B secured to the plaster boards A, the remaining spaces of the ceiling being levelled up afterwards with the surface of the fabric by the filling E, and then the final layer of plaster boards D, covering the whole surface of the ceiling, secured in position. Or the thermal insulating material, with or without the timber bearers may be applied after the shuttering is removed, by inserting fixing supports before the concrete is poured or after the concrete has set.

When applying the invention to the underside of a wooden joist floor, cork slabs or other thermal insulating materials are laid between the joists, to which joists the plaster boards A are secured, the cork slabs being held against the plaster boards by fillets. The fabric B is then secured to this base A and the spaces between the fabric covered with the filling E to form an even surface for the attachment of the final layer of plaster boards D. Or the thermal insulating material may be attached to the bottom of the joists.

What I claim as my invention and desire to secure by Letters Patent is:

1. A complete-in-itself electrically generated heat-radiating ceiling or other wall section structure for a room of a building or the like comprising a base-providing layer of plaster board secured to a structural part of the building, at least one heat-generating panel of minor area as compared with said base and secured to the outer surface of the latter; said heat-generating panel comprising an electrical conductor, adhesively secured together sheets of insulation material between which said conductor is disposed, projecting flaps formed in one of said insulation material sheets and about which said conductor is wound; insulating filling material applied to the remaining outer surface area of said base and having a thickness equal to the thickness of said electrical heat-generating panel whereby to produce an even over-all outer wall section surface, and a final layer of plaster board applied to the surface whereby to increase the thermal capacity of the installation and diffuse the panel-generated heat substantially evenly over the whole outer surface from which the heat radiates into the room.

2. The combination set forth in claim 1 and said heat generating panel being adhesively secured to at least one of said base and outer layers.

3. The combination set forth in claim 1, and said heat-generating panel being adhesively secured to each of said base and outer layers.

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