

# United States Patent

[11] 3,598,960

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 [21] Appl. No. **838,888**  
 [22] Filed **July 3, 1969**  
 [45] Patented **Aug. 10, 1971**

3,119,918 1/1964 Simon ..... 219/345  
**FOREIGN PATENTS**  
 635,233 4/1950 Great Britain ..... 219/345

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[54] **RADIANT CEILING HEATING UNIT**  
**2 Claims, 6 Drawing Figs.**

[52] U.S. Cl. .... **219/345,**  
**219/213**  
 [51] Int. Cl. .... **H05b 1/00,**  
**F24h 9/02**  
 [50] Field of Search ..... **219/345,**  
**213**

[56] **References Cited**  
**UNITED STATES PATENTS**  
 3,095,491 6/1963 Deacon ..... 219/345

**ABSTRACT:** The present radiant ceiling heating unit consists of two heating panels to a unit with the panels of each unit electrically connected by nonheating jumper leads which permits the panels of a unit to be mounted on a ceiling lengthwise between a pair of the ceiling joists or installed side-by-side each on an opposite side of one of such ceiling joists and includes a clip for each pair of nonheating leads at an end of a panel to prevent the leads from being pulled from the panel end.

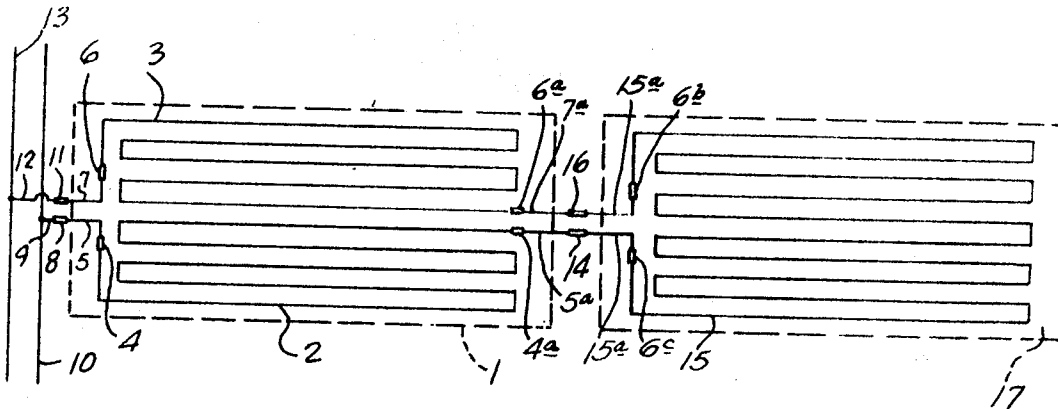


**FIG. 1.**

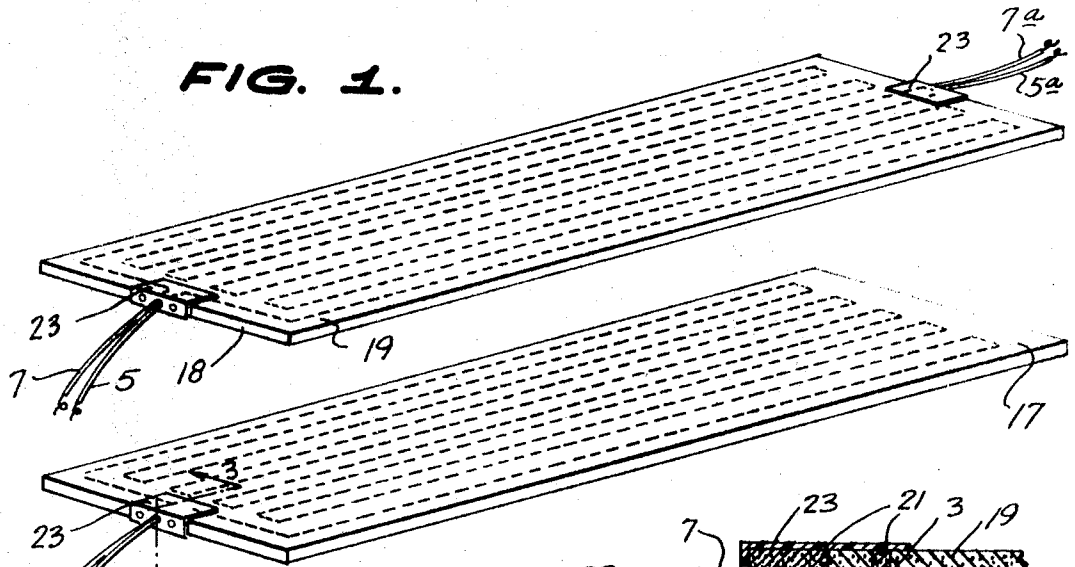


**FIG. 2.**

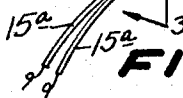


**FIG. 3.**

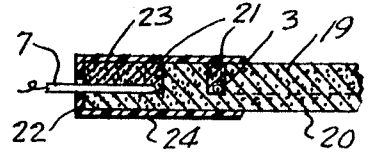


**FIG. 4.**

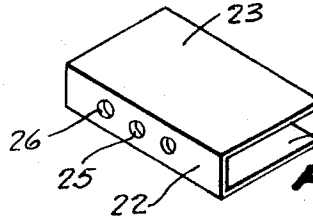


**FIG. 5.**

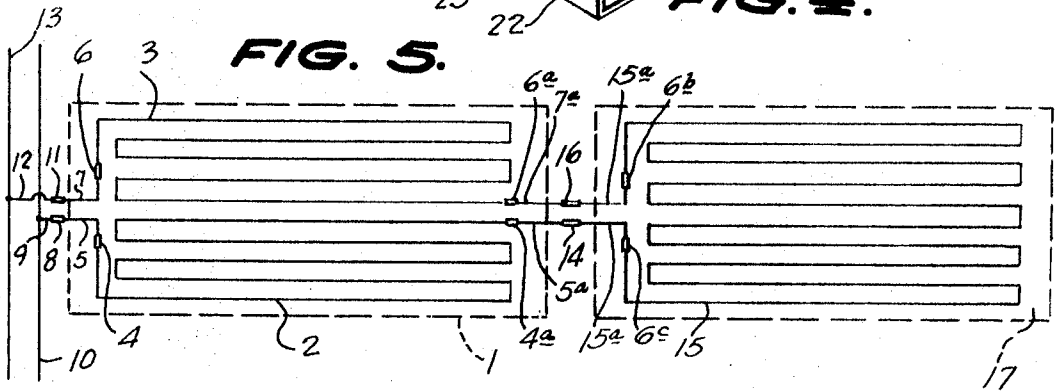
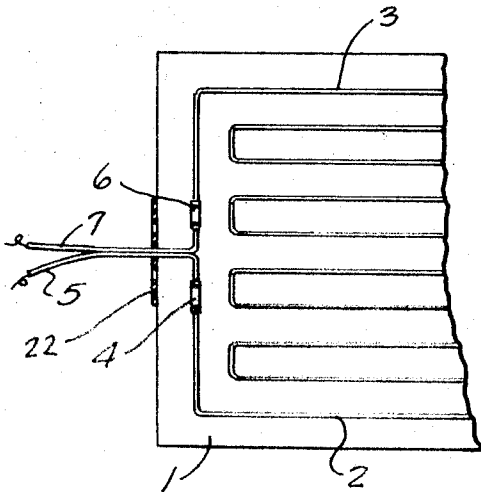


**FIG. 6.**



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## RADIANT CEILING HEATING UNIT

## DESCRIPTION

The present invention relates to electrical heating devices and is more particularly directed to an electrical radiant heating panel unit.

The principal object of the invention is to provide an electrical radiant heating panel unit having a pair of heating panels electrically connected by nonheating leads and which unit can be mounted on a ceiling between each pair of the joists thereof or with the panels on opposite sides of each of the joists.

A further and important object of the invention is to provide a clip for being quickly and easily mounted on an end of a heating panel having nonheating leads extending therefrom and which clip has the leads extending therethrough for preventing the leads from being pulled from the heating panel.

Further objects of the invention will be in part obvious and in part pointed out in the following description of the accompanying drawing in which:

FIG. 1 is a top perspective view of the lead-in panel of an electrical heating unit according to the present invention;

FIG. 2 is a top perspective view of the second panel of said unit;

FIG. 3 is an enlarged detail sectional view taken on line 3-3 of FIG. 2;

FIG. 4 is an enlarged perspective view of a clip-forming part of the present invention;

FIG. 5 is a wiring diagram of the present radiant heating panel unit; and

FIG. 6 is an enlarged cross-sectional view of the left-hand end of the panel of FIG. 1.

Referring now more particularly to the accompanying drawing in which like and corresponding parts are designated by similar reference characters, numeral 1 designates a gypsum board having an electrical heating cable 2 preembedded in said board and extending in a sinuous path throughout one-half of said board. A similar electrical heating cable 3 is also preembedded in said board and also extends in a sinuous path throughout the other one-half of said board. Cable 2 has an end extending into a tubular connector 4 in which is a bare end of an insulated nonheating lead wire 5 with the connector crimped joining said cable and lead. Similarly, connector 6 joins an end of cable 3 with the bare end of a nonheating insulated lead wire 7. Leads 5 and 7 are connected through a junction box represented by connectors 8 and 11 to a source of electrical current through a building electrical circuit as represented by wires 9 and 12 and 10 and 13 of FIG. 5.

The opposite ends of the heating cables 2 and 3 are connected by connectors 4a and 6a, respectively, to nonheating leads 5a and 7a, respectively which in turn are connected by connectors 14 and 16 to nonheating leads 15a of panel 17.

Panel 17 is a gypsum board which has a single electrical heating cable 15 preembedded therein and which cable 15 extends in a sinuous path throughout said panel 17. Connectors 6b and 6c connect the two ends of cable 15 with said nonheating leads 15a as shown in FIG. 5.

Nonheating leads 5a, 7a, and 15a thus provide a non-heating jumper between and outside of panels 1 and 17.

Panels 1 and 17 are both of a rectangular configuration and can be of the same or different lengths. Panel 1, for example, has a straight end 18, flat top 19 and flat bottom 20 with covered grooves 21 in which extend cables 2 and 3 and leads 5

and 7.

A clip having a U-shaped configuration with base 22 and legs 23 and 24 has said legs spaced apart to slidably receive top 19 and bottom 20 of panel 1 therebetween with end 18 against base 22 and nonheating leads 5 and 7 extending through opening 25 in said clip base. Said clip base 22 also has openings 26 for screws (not shown) to attach the clip to said panel.

As the other end of panel 1 is the same as that end 18 of said panel just described, a clip is also slid on that end with nonheating leads 5a and 7a extending therethrough. Likewise, the ends of panel 17 are the same as those of panel 1 and a clip is also slid onto panel 17 with nonheating leads 15a extending therethrough.

Panels 1 and 17, for example, can be ½-inch-thick gypsum board, from 4 to 6 feet in length and of a 13-inch width for fitting in the area between 16-inch oncenter joists spacings or wider for fitting between 24-inch oncenter joists.

The heating cables 2, 3, and 15 may, for example, be a nichrome resistance wire having a resistance sufficient to produce 2.55 watts per foot of wire and the wattage for an entire panel 1 or 17 can be determined by the amount of wire placed in recesses 21.

In the use of the present heating unit panels 1 and 17 can be installed lengthwise of one another on a ceiling in the joist runs between each pair of joists for the ceiling and nonheating leads 5 and 7 for each unit connected to a junction box and thereby to an electrical circuit.

Also panel 1 can be placed in the joist run of one pair of joists, jumper 5a, 7a, and 15 extended over one of the joists and panel 17 placed in the joist run between the next pair of joists, so that panels 1 and 17 are side by side in the joist runs.

With current passing through cables 2, 3, and 15 the space in the area below the ceiling will be heated with a radiant heat.

Each of clips 22-26 is of an electrical insulating material such as rubber, preferably a stiff rubber, or a plastic with legs 23 and 24 sufficiently resilient to slideably receive panel 1 or 17 therebetween.

I claim:

1. An electrical radiant heating panel unit comprising a pair of flat electrically insulating panels of good thermal conductivity, a pair of electrical resistance heating cables positioned entirely within one of said panels with one of said cables extending throughout one-half of said one of said panels and the other cable extending throughout the other one-half of said one of said panels, a third electrical resistance heating cable positioned entirely within the other of said panels and extending throughout said other of said panels, a pair of nonheating lead wires extending from an end of said one of said panels and each connected to an end of one of said pair of heating cables and a second pair of nonheating lead wires extending from the other end of said one of said panels and an end of the other of said panels and each connected to a second end of said pair of heating cables and an end of said third heating cable.

2. An electrical radiant heating panel unit as claimed in claim 1 including a plurality of U-shaped insulating clips each having an opening, a pair of said clips each have one of said ends of said one of said panels inserted in said clip with the nonheating lead wires from that panel end extending through the clip opening, and a further one of said clips has said end of the other of said panels inserted therein and the nonheating lead wires from said other panel extending through the opening in said further clip.