Sept. 2, 1924. 1,506,744

L. J. GREENAWALT

FLOATING CONTACT TERMINAL

Filed June 30, 1921

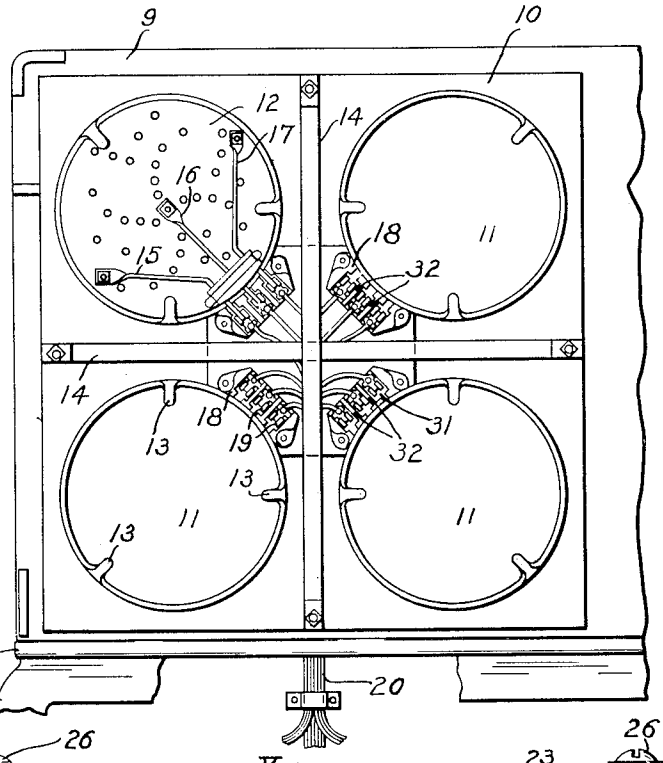


Fig. 1.

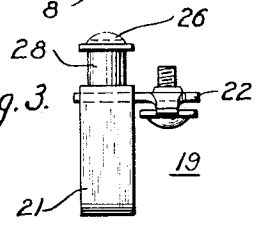


Fig. 3.

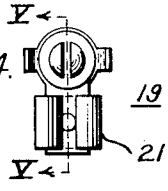


Fig. 4.

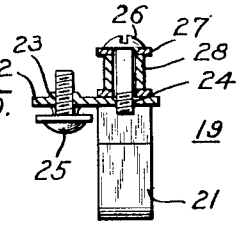


Fig. 5.

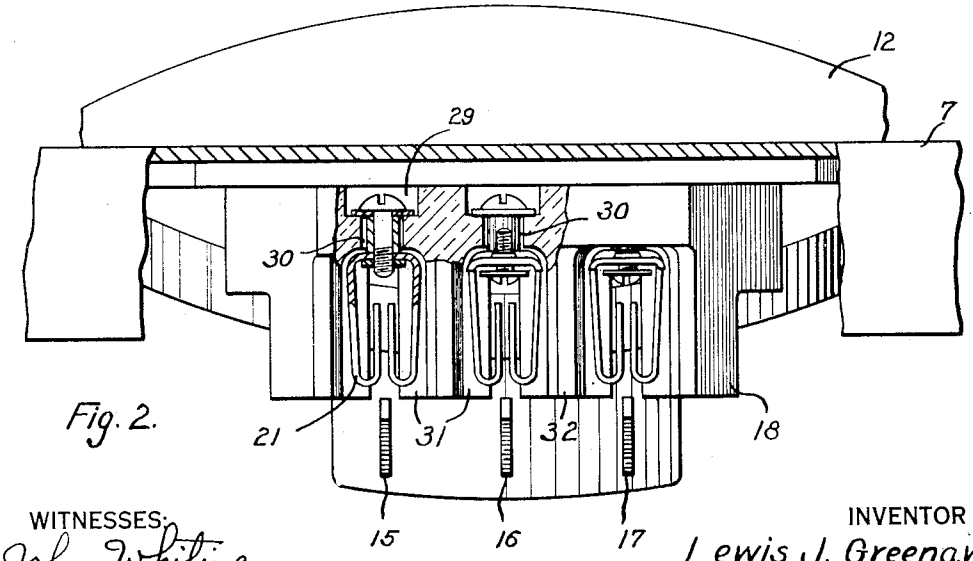


Fig. 2.

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Patented Sept. 2, 1924. 1,506,744

UNITED STATES PATENT OFFICE.

LEWIS J. GREENAWALT, OF MANSFIELD, OHIO, ASSIGNOR TO WESTINGHOUSE ELECTRIC PRODUCTS COMPANY, A CORPORATION OF MICHIGAN.

FLOATING CONTACT TERMINAL.

Application filed June 30, 1921. Serial No. 481,533.

To all whom it may concern:

Be it known that I, LEWIS J. GREENAWALT, a citizen of the United States, and a resident of Mansfield, in the county of Richland and State of Ohio, have invented a new and useful Improvement in Floating Contact Terminals, of which the following is a specification.

My invention relates to electric heating devices and particularly to quickly removable heating elements, and it has for its object to provide a floating contact terminal to be operatively engaged by the terminal bars of a removable heating element.

In Patent #1,376,415, issued on May 3, 1921, to F. F. Forshee, a quickly removable element applied to an electric stove is disclosed. The heating element is provided with a plurality of terminal bars extending beyond its periphery. A plurality of clip contact terminals is secured to the under surface of the stove top to be operatively engaged by the extending terminal bars when the heating element is tilted into its operative position in the opening in the stove top.

The terminal bars attached to the heating element may not be parallel to each other or they may be slightly twisted or they may be not spaced apart the proper distance, whereby engagement between the bent or displaced terminal bar and its cooperating stationary clip terminal may be so defective as to cause an excessive generation of heat.

It is the object of my invention to overcome the difficulties just mentioned by mounting a floating contact terminal on a refractory insulating member with which the stove top is provided.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a bottom plan view of a stove top equipped with the devices embodying my invention;

Fig. 2 is a view, partly in side elevation and partly in section, of a stove top and a heating element in a tilted position relatively thereto;

Fig. 3 is a view, in side elevation, of a contact-terminal structure embodying my invention;

Fig. 4 is a top plan view of the device shown in Fig. 3, and

Fig. 5 is a sectional view taken on the line V—V of Fig. 4.

An electric stove 6 comprises a stationary horizontal frame 7 and suitable supporting members 8, only one of which is illustrated in the drawings, together with a back panel 9. A metal-plate stove top 10 is provided with a plurality of openings 11, in which suitable heating elements 12 may be located. A plurality of supporting members 13 project inwardly from the periphery of each opening 11, upon which the heating elements 12 are adapted to rest. A plurality of straps 14 are located at substantially right angles to each other on the under surface of the plate 10, their outer ends being bolted to the plate to constitute a stiffening means therefor, this construction being substantially that disclosed in the hereinbefore mentioned patent.

The heating elements 12 are severally provided with a plurality of flat terminal bars 15, 16 and 17, the general construction of which is described, in detail, in an application Serial No. 480,276, filed June 25, 1921, by F. F. Forshee, and assigned to Westinghouse Electric Products Company.

A plurality of terminal-supporting blocks 18 are symmetrically disposed around the transverse axis of the stove top adjacent to the openings 11. Each of the blocks 18 is provided with a plurality of contact terminals 19 that are secured thereto as will hereinafter be set forth more in detail. A plurality of conductors 20, are provided, the ends of which are connected to the respective contact terminals 19 to permit of energizing the heating elements 12 when they have been placed in their operative positions in the openings 11, with the terminal bars operatively engaging the contact terminals 19.

Each of the contact terminals 19 comprises a resilient clip contact member 21, of substantially double-U shape. A bar 22 is provided with two screw threaded openings 23 and 24, a screw 25 being located in the opening 23 to secure one end of one of the conductors 20 to the member 22. A screw 26 is located in the opening 24 and is provided with a washer 27 and a sleeve 28. The base portion of the member 21 is provided with an opening 29 through which the screw 26 projects when the members 21 and 22 are located in their proper operative positions, the cooperation of the bolt 26 and the bar 22 serving to firmly clamp the base of the member 21 between the latter and the sleeve 28, thus providing a relatively

large area of contact between the two members.

The length of the sleeve 28 is slightly greater than the thickness of the portion of the block 18, upon which the assembled members 19 are mounted, as shown in Fig. 2. Suitable recesses 29 are provided in coaxial and communicating relation to the holes 30 within which the sleeves 28 are located. Recesses 31 are provided in the outer surface of the block 18 to receive the clip contacts 21, walls 32 being provided therebetween. As the length of the sleeve 28 is slightly greater than the thickness of the wall immediately surrounding the hole 30, the terminal structure 19 is loosely mounted on the block 18 to permit a limited amount of movement relatively thereto. If, for instance, any one of the bars 15, 16 and 17 is slightly displaced, the cooperating contact member 19 may adapt itself to the actual position of the outer end of such bar. If any one of the terminal bars is twisted, the cooperating member 19 may also adjust itself thereto, thus insuring engagement between the terminal bars and the co-operating contact terminals over their entire cooperating surfaces.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof, and I desire that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

I claim as my invention:

1. In an electric heating device, the combination with a support, and an insulating member mounted on said support, of a combined connector and contact terminal loosely mounted on said insulating member.

2. In an electric heating device, the combination with a support, and an insulating member mounted on said support, of a contact terminal, a connector and means for rigidly attaching said connector to said contact terminal and for maintaining them loosely on said insulating member.

3. In an electric heating device, the combination with a support, an insulating member mounted on said support, and a quickly removable heating element located on said support and having a plurality of terminals, of a plurality of contact terminals loosely mounted on said insulating member to engage said heating-element terminals.

4. In an electric heating device, the combination with a support, an insulating member mounted on said support, and a quickly removable heating element having a terminal, of a combined connector and contact terminal loosely mounted on said insulating member for operatively engaging said terminal.

5. In an electric heating device, the combination with a support, an insulating member mounted on said support, a quickly removable heating element located on said support, and a plurality of terminal bars mounted on said heating element, of a plurality of combined connectors and contact terminals located on said insulating member to be engaged by said terminal bars and so mounted on said insulating member as to adapt themselves to irregularities in position of said terminal bars.

6. In an electric heating device, the combination with a support, and an insulating member mounted on said support, of a combined connector and contact terminal loosely mounted on said insulating member, said insulating member having inherent means for limiting the movement of said connector and contact terminal relatively thereto.

In testimony whereof, I have hereunto subscribed my name this 27th day of June, 1921.

LEWIS J. GREENAWALT.