

Sept. 15, 1925.

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1,553,307

TERMINAL APPARATUS FOR ELECTRIC HEATERS AND THE LIKE

Filed April 2, 1923

Fig. 1.

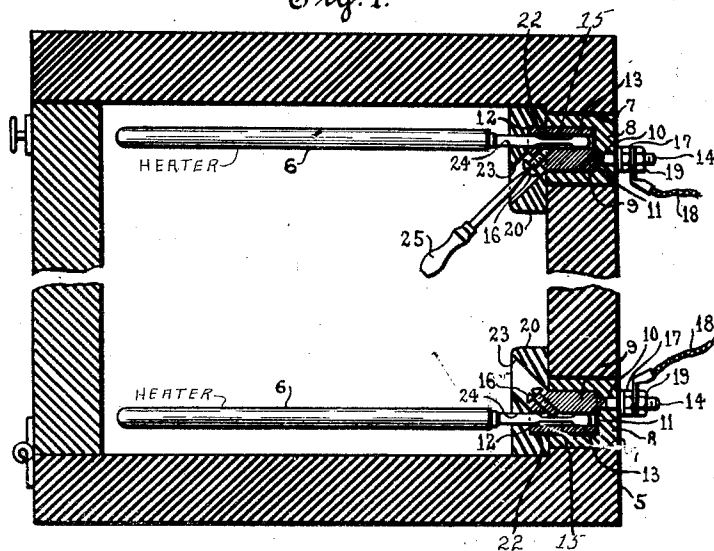


Fig. 2.

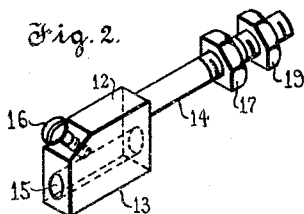


Fig. 4.

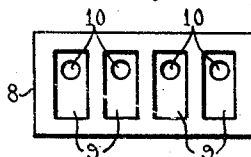
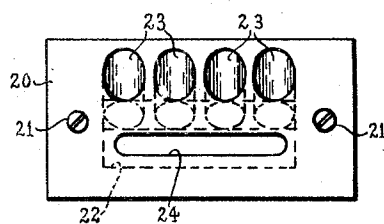


Fig. 3.



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HORACE L. DAWSON, OF EVANSTON, ILLINOIS, ASSIGNOR TO THE CUTLER-HAMMER MFG. CO., OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

TERMINAL APPARATUS FOR ELECTRIC HEATERS AND THE LIKE.

Application filed April 2, 1923. Serial No. 629,295.

To all whom it may concern:

Be it known that I, HORACE L. DAWSON, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented new and useful Improvements in Terminal Apparatus for Electric Heaters and the like, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to terminal apparatus for electric heaters and the like, and while not limited thereto is particularly applicable to heaters employed in electric ovens.

Such ovens and similar installations are ordinarily more or less permanently located and wired whereas in practice removal of the heating element for inspection, substitution or repair is frequently necessary, and the present invention has among its objects that of facilitating such removal and replacement without disturbing the main installation or wiring.

Another object is that of providing terminal apparatus adapted to act as a support for its associated heater or the like.

Another object is that of providing such terminal apparatus wherein provision is made for insulating the same and its associated conductive parts against accidental contact with extraneous bodies.

Another object is that of providing such terminal apparatus wherein provision is made for protecting the same from the heat developed by its associated heater or the like.

Other objects and advantages will herein-after appear.

In the accompanying drawing, wherein is illustrated a preferred embodiment of the invention—

Figure 1 is a vertical sectional view of an oven or heating chamber having my improved terminal devices applied thereto;

Fig. 2 is a detail view illustrating certain features of the device in perspective;

Fig. 3 is a detail view illustrating certain parts in front elevation; while

Fig. 4 is a similar view illustrating certain other elements or features of the device.

Referring to the drawing, the same illus-

trates an electric range or oven 5 to be heated by one or more electric heaters 6, the wall of said oven 5 having a suitable number of openings or recesses 7 shaped to receive and hold a corresponding number of insulating members 8. The insulating members 8 are suitably recessed at 9 and also have through passages 10 connecting said recesses 9 with the outside surface of the insulating members, such arrangement providing internal shoulders 11 and said recesses and passages being adapted to receive terminal conductive members 12 now to be described.

Said terminal conductive members 12 are illustrated in Fig. 1 in section and in Fig. 2 in perspective, the same being composed of suitable conductive material and each comprising a body portion 13 and a stud portion 14, preferably integral therewith. Said body portion 13 contains an elongated circular recess or bore 15 to receive a terminal of a suitable electric heater 6. A set screw 16 is screwed into a threaded passage in the body portion 13 at a suitable angle so as to be easily accessible from the inside of the oven, said set screw 16 being adapted to enter the circular recess 15 to securely and rigidly clamp said heater terminal to the member 12.

The afordescribed construction of said elements 12 peculiarly adapts the same to co-operate with heaters of the self-supporting type, wherein the supporting function is performed by the heater terminals, the latter being elongated and otherwise specially constructed to adapt the same to such use. Thus in particular the aforementioned elongated bore 15 of said elements 12 provides a correspondingly elongated bearing surface for the associated heater terminals to thereby assure adequate mechanical support of the entire heater while also providing terminal connections therefor.

In practice, after the insulating member 8 has been secured in the recess 7 in the wall of the electric oven or the like, the members 12 are inserted in said insulating members 8, the body portion 13 of the member 12 registering with the recess 9 and abutting the shoulder 11, while the stud portion 14 registers with the through passage 10. A nut 17 is screwed upon the stud portion 14, forcing the adjacent face of the

body portion 13 against the shoulder 11 and thereby clamping element 12 securely and rigidly in place. Leads 18 are connected to the stud portion 14 and secured by nuts 19.

5 A member 20 having both heat and electrical insulating properties is secured over the members 12 to the inside surface of the wall of the oven or the like by screws 21, recess 22 receiving the projecting portions of said members 12. Through passages 10 23 arranged at a suitable angle receive and afford access to the set screws 16 while an elongated through passage 24 registers with the circular recesses 15.

15 By the foregoing construction and arrangement, mounting and circuit connection of the heater as well as removal and replacement or substitution thereof may be readily and speedily effected from within 20 the oven or the like without disturbing the main installation or the external wiring thereof.

For such purpose a screw driver 25 may be inserted in passage 23 to retract the set 25 screw 16 and thereby release the binding action on the heater terminal, whereupon the heater may be withdrawn. When a heater unit is to be installed, the terminal is inserted through the passage 24 and into 30 the circular recess 15. Set screw 16 is then tightened, clamping the heater terminal securely and rigidly, the arrangement thus providing both for electrical connection and mechanical support of the heaters. It is ap- 35 parent that changing of the leads 18 may be easily effected without disturbing the terminal apparatus by simply removing nuts 19.

What I claim as new and desire to secure 40 by Letters Patent is:

1. In terminal apparatus for enclosed heaters and the like, the combination with a conductive element having a socket located within the enclosure of the heater to 45 receive a terminal portion of the heater, of associated means arranged for ready accessibility from within the enclosure for releasably securing said element and said heater in a relation of electrical con- 50 ductivity.

2. In terminal apparatus for enclosed heaters and the like, the combination with a conductive element arranged to penetrate a wall of the enclosure of the heater and 55 having a terminal located therewithout, said element having a socket located within the enclosure to receive a terminal portion of the heater, of associated means arranged for ready accessibility from within the en- 60 closure for releasably securing said terminal portion of the heater within said socket.

3. In combined supporting and terminal apparatus for oven heaters and the like, the combination with a conductive element ar- 65 ranged to penetrate a wall of the oven and

to be fixedly supported thereby, of means associated with said element to provide without the oven a circuit terminal and within the oven a socket to receive a terminal 70 portion of the heater for electrical connection and mechanical support of the latter and means arranged for ready accessibility from within the oven for releasably securing said terminal portion of the heater within 75 said socket.

4. In combined supporting and terminal apparatus for oven heaters and the like, the combination with an insulating support lo- 80 cated in a wall of the oven and provided with an internally shouldered through passage, of a conductive element carried by said support in a relation to penetrate the oven wall, said element having a shoulder 85 to abut the shoulder of said support, terminal means located without the oven for clamping said element to and within said support, said element having a socket to receive a terminal portion of the heater for electrical connection and mechanical sup- 90 port thereof and associated means arranged for ready accessibility from within the oven for clamping the heater to said element.

5. In combined supporting and terminal apparatus for oven heaters of the self-sup- 95 porting type, the combination with an insulating support provided with an internally shouldered through passage, of a conductive element carried by said support in a relation to penetrate the oven wall, said element hav- 100 ing a shoulder to abut the shoulder of said support, terminal means located without the oven for clamping said element to and with- in said support, said element having an axi- ally elongated socket to receive an elongated terminal portion of the heater for electrical 105 connection and mechanical support thereof, means associated with said socket for clamping said terminal portion of the heater therein and means for shielding the inter- 110 iorly located parts of said element from the heat of the oven.

6. In combined supporting and terminal apparatus for oven heaters of the self- 115 supporting type, the combination with an insulating support provided with an inter- nally shouldered through passage, of a con- ductive element carried by said support in a relation to penetrate the oven wall, said element having a shoulder to abut the shoul- 120 der of said support, terminal means located without the oven for clamping said element to and within said support, said element having an axially elongated socket to re- ceive an elongated terminal portion of the heater for electrical connection and me- 125 chanical support thereof, means associated with said socket for clamping said terminal portion of the heater therein and means for shielding the interiorly located parts of said element from the heat of the oven said lat- 130

ter means having an opening to provide ready accessibility to said clamping means from a location within the oven.

5 7. In combined supporting and terminal apparatus for oven heaters of the self-supporting type, the combination with an insulating support having a number of internally shouldered through passages corresponding to the number of heater terminals
10 to be associated therewith, of conductive elements carried by said support within the individual passages thereof and in a relation to penetrate the oven wall, terminal means
15 located without the oven for clamping said elements to said support, each of said elements being provided within the oven with a socket to receive a heater terminal and means readily accessible from within the oven for clamping said terminals within
20 said sockets.

8. In terminal apparatus for enclosed heaters and the like, the combination with a conductive element arranged to penetrate a wall of the enclosure of the heater and
25 having a terminal located therewithout, said element having a socket located within the enclosure to receive a terminal portion of the heater, of associated means for releasably securing said terminal portion of the
30 heater within said socket and a shield comprising heat insulating material arranged to protect said element from the heat of the oven.

9. In terminal apparatus for enclosed heaters and the like, the combination with a conductive element arranged to penetrate a wall of the enclosure of the heater and
35 having a terminal located therewithout, said element having a socket located within the

enclosure to receive a terminal portion of
40 the heater, of associated means for releasably securing said terminal portion of the heater within said socket and a shield comprising heat insulating material arranged to protect said element from the heat of the
45 oven, said shield having an opening and said securing means being so arranged with reference thereto as to afford ready accessibility to said securing means from within the oven.

50 10. In combined supporting and terminal apparatus for oven heaters of the self-supporting type, the combination with an insulating support having a number of internally shouldered through passages corresponding to the number of heater terminals
55 to be associated therewith, of conductive elements carried by said support within the individual passages thereof and in a relation to penetrate the oven wall, terminal
60 means located without the oven for clamping said elements to said support, each of said elements being provided within the oven with a socket to receive a heater terminal, individual clamping means for said
65 heater terminals and a shield comprising electrical and heat insulating material arranged to protect said conductive elements from the heat of the oven, said shield having openings to receive said heater terminals
70 and said clamping means, the latter being arranged with reference to said openings to afford ready accessibility to the clamping means from within the oven.

In witness whereof, I have hereunto subscribed my name. 75

HORACE L. DAWSON.