

J. G. WALLMANN.
ELECTRIC HEATING UNIT.
APPLICATION FILED SEPT 25, 1920.

1,390,407.

Patented Sept. 13, 1921.

Fig. 1.

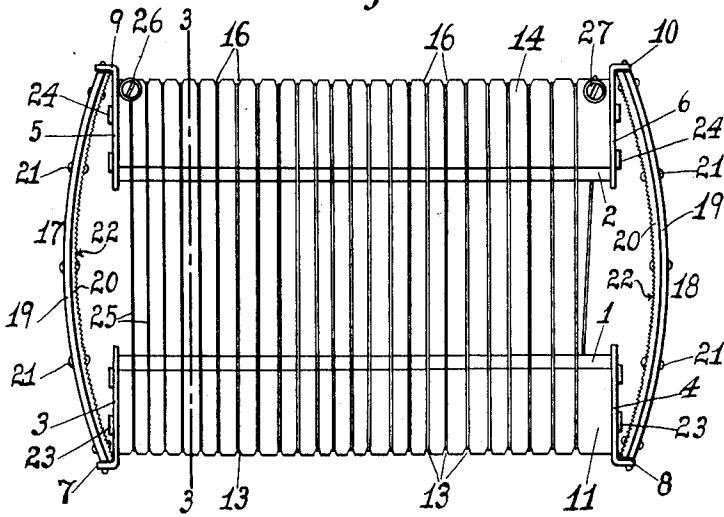


Fig. 2.

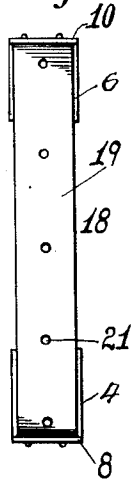
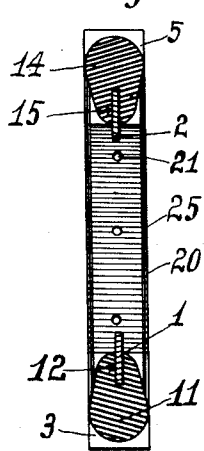


Fig. 3.



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ELECTRIC HEATING UNIT.

1,390,407.

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To all whom it may concern:

Be it known that I, JOHANN G. WALLMANN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Electric Heating Units, of which the following is a specification.

My invention is an electric heating unit, particularly useful in electric radiators.

Referring to the annexed drawing in which my invention is illustrated and which forms a part of this specification,

Figure 1 is a side view of my heating unit.

Fig. 2 is an end view of my heating unit.

Fig. 3 is a cross section of my heating unit taken on line 3—3 of Fig. 1.

In the drawing 1 and 2 indicate two narrow metal rails. End metal members 3 and 4 are secured to the ends of the rail 1 and extend laterally and outwardly from said rail. End metal members 5 and 6 are secured to the ends of the rail 2 and extend laterally and outwardly from said rail. Flanges 7 and 8 extend outwardly from the outer end of the members 3 and 4, at right angles thereto. Flanges 9 and 10 extend outwardly from the outer end of the members 5 and 6, at right angles thereto. A bar 11 of insulation is fitted over the outer edge of the rail 1 between the end members 3 and 4, the bar being provided with a longitudinal slot 12 in its inner edge in which fits the rail 1. The outer edge of the bar 11 is rounded and provided with a series of transverse grooves 13 spaced a short distance apart. A bar 14 of insulation is fitted over the outer edge of the rail 2 between the end members 5 and 6, the bar being provided with a longitudinal slot 15 in its inner edge in which fits the rail. The outer edge of the bar 14 is rounded and provided with a plurality of spaced transverse grooves 16. Arcuate thermal bars 17 and 18 each include an outer strip 19 and an inner strip 20 of different metals having different coefficients of expansion, the outer strip 19 being preferably iron and the inner strip 20 being preferably brass. The strips 19 and 20 are riveted together by rivets 21. The inner surface 22 of the inner strip 20 is corrugated. The ends of the bar 17 are riveted to the flanges 7 and 9 of the end members 3 and 5. The ends of the bar 18 are riveted to the flanges 8 and 10 of the end members 4 and 6. The end members 3 and 4 are secured to the ends of the bar 14 by a

rivet 23. The end members 5 and 6 are secured to the ends of the bar 11 by a rivet 24. A conducting wire 25 is wound around the insulating bars 11 and 14 in the grooves 13 and 16 and secured to binding screws 26 and 27 on the bar 14, to which screws the leads of an electric generator are connected.

The heat of the current passing through the wire 25 causes said wire to expand, which expansion is taken up by the expansion of the heated bars 17 and 18, which engage the flanges 7 and 9 and 8 and 10 and move the bars 11 and 14 away from each other until the wire 25 is taut, thus preventing contact of adjacent expanded strands of the wire and short circuiting of the unit. The corrugated inner surface of the strips 20 provide extensive heat radiating surface to enable the bars 17 and 18 to give off and to absorb their heat quickly so that the bars may contract correspondingly with the contraction of the wire 25.

Having described my invention, I claim:

1. In an electric heating unit, two bars of insulation spaced apart, a conducting wire wound around said bars, a thermal bar interposed between said bars, whereby said bars are forced apart and separated further upon the passage of a current through the wire.

2. In an electric heating unit, two bars of insulation spaced apart, a conducting wire wound around said bars, flanged end members secured to the ends of said bars, and an arcuate thermal bar interposed between the flanges of the end member at each end of said bar for holding said bars in spaced relation and for moving said bars apart when the wire is expanded by the passing of an electric current therethrough.

3. In an electric heating unit, two metal rails spaced apart, end metal members secured to the ends of said rails and extending outwardly laterally from said rails, flanges extending outwardly from the outer ends of said members, an arcuate thermal bar interposed between the flanges of the end members of each end of said rails, two insulating bars fitted over the outer end of said rails respectively, each bar having a longitudinal slot in its inner edge in which a rail fits, and a conducting wire wound around said insulating bars.

4. In an electric heating unit, two bars of insulation spaced apart, a conducting wire wound around said bars, flanged end mem-

bers secured to the ends of said bars, and an arcuate thermal bar interposed between the flanges of the end members at each end of said bar, for holding said bars in spaced relation and for moving said bars apart when the wire is expanded by the passing of an electric current therethrough, each thermal bar including two strips of metal of different coefficients of expansion secured together.

5. In an electric heating unit, two bars of insulation spaced apart, a conducting wire wound around said bars, flanged end members secured to the ends of said bars, and an arcuate thermal bar interposed between the flanges of the end members at each end of said bar, for holding said bars in spaced relation and for moving said bars apart when the wire is expanded by the passing of an electric current therethrough, the inner surface of said arcuate bars being corrugated.

In testimony whereof I affix by signature.

JOHANN G. WALLMANN.