Dec. 4, 1923. 1,476,116

H. A. THOMPSON

ELECTRICAL HEATING OR RESISTANCE UNIT

Filed Feb. 24, 1921

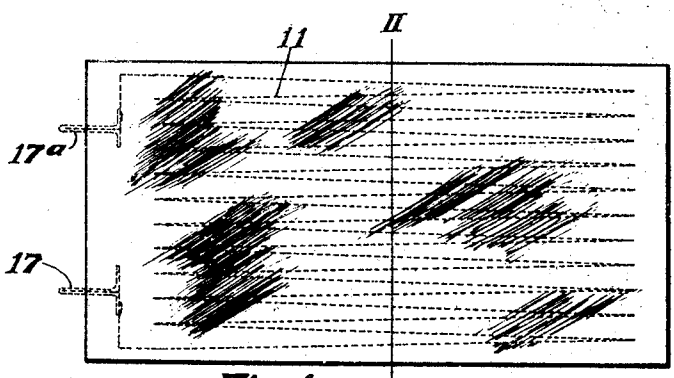


Fig. 1.



Fig. 2

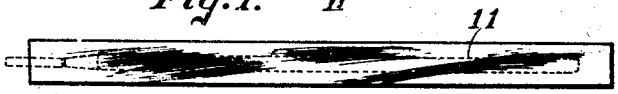


Fig. 3.

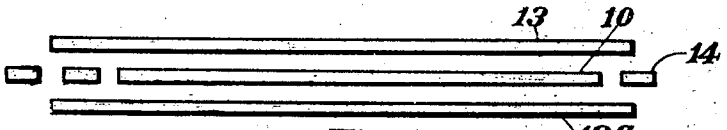


Fig. 4.

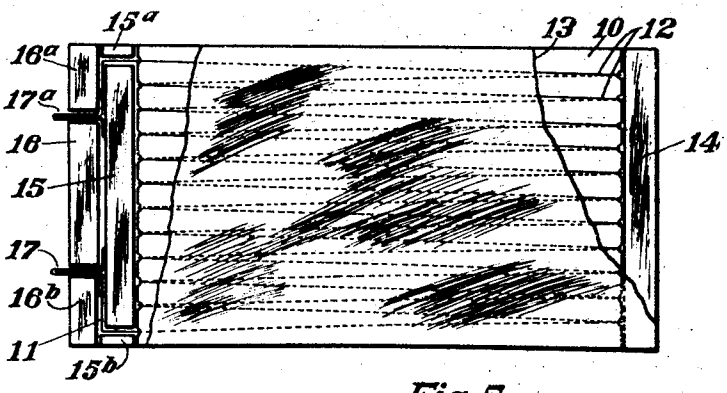


Fig. 5.

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UNITED STATES PATENT OFFICE.

HOWARD A. THOMPSON, OF PITTSBURGH, PENNSYLVANIA.

ELECTRICAL HEATING OR RESISTANCE UNIT.

Application filed February 24, 1921. Serial No. 447,411.

To all whom it may concern:

Be it known that I, HOWARD A. THOMPSON, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Heating or Resistance Units, of which the following is a specification.

My invention relates to electrical heating or resistance units.

I will describe one form of unit embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings, Fig. 1 is a plan view showing one form of electrical unit embodying my invention. Fig. 2 is a sectional view on the line II—II of Fig. 1. Fig. 3 is a side view of the unit shown in Fig. 1. Fig. 4 is a view showing in side elevation the glass members of the unit shown in Fig. 1 before applying the wire and assembling the members. Fig. 5 is a plan view of the unit showing the relative positions of the glass members before they are fused together, portions of the upper plate being broken away to expose the parts beneath it.

Similar reference characters refer to similar parts in each of the several views.

Referring to the drawings, the unit comprises an inner glass member 10, here shown as a flat plate, on which a coil of resistance wire 11 is wound. This plate is preferably provided with grooves 12 to receive the strands of wire and to hold them in place, although such grooves are not essential and may in some instances be omitted.

The inner plate 10 and wire 11 are provided with an envelope of glass which, for convenience, will usually be made up of a number of members which are fused together during the process of manufacturing the unit. As here shown, this envelope comprises two outer plates 13 and 13^a, each somewhat longer than the inner plate 10 but of the same width as this plate. Between these two outer plates is a strip 14 which lies adjacent one of the shorter edges of the inner plate 10 the length of this strip being equal to the width of the plates. At the other end of the unit the space between the outer plates is filled in by glass strips as follows. Next to the inner plate 10 is a strip comprising one long middle section 15 and two short outer sections 15^a and 15^b. Outside of this strip is a second strip comprising a middle section 16 and two outer sections 16^a and 16^b. The combined length of each of these strips is equal to the width of the plates.

To assemble the unit, the wire 11 is first wound on the inner plate 10, and the ends are brought out at the left hand end of this plate. The inner strip is then placed in position against the left hand end of plate 10 with the ends of the wire between sections 15, 15^a and 15, 15^b, respectively, whereupon the wires are bent around the outer ends of section 15 and brought towards the middle. Two metallic terminals 17 and 17^a are then welded to the wire ends, each terminal preferably being drilled to receive the wire. The outer end strip is then placed in position with terminal 17 between sections 16 and 16^b, and the other terminal 17^a between sections 16 and 16^a. The right hand end strip 14 is also placed in position against the edge of plate 10. The parts of the unit are then clamped together in these relative positions and the whole unit placed in an oven where it is heated to such temperature that the several glass members become welded together to form an integral mass in which the wire 11 is embedded.

All of the glass members of the unit are made of glass which is capable of withstanding quick changes of temperature through a wide range without breaking. One kind of glass having the necessary characteristics is known commercially as pyrex glass, but I do not desire to limit myself to this particular product.

The unit which I have herein shown and described is well adapted for use as the heating element of a toaster stove. Units which are designed for other purposes will, of course, be of various shapes, sizes and proportions, depending on the nature of the apparatus with which the unit is associated and on the necessary characteristics of the unit.

Although I have herein shown and described only one form of electrical unit embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. An electrical heating or resistance

unit comprising a coil of wire embedded in pyrex glass.

2. An electrical heating or resistance unit comprising a coil of wire embedded in glass which will withstand quick changes of temperature through a wide range.

3. An electrical heating or resistance unit comprising an inner glass plate, a coil of wire wound thereon, two outer glass plates located on opposite sides of the inner plate, and glass strips located adjacent the edges of the inner plate and between the two outer plates, the whole being fused together to form a mass of glass in which the wire is embedded.

4. An electrical heating or resistance unit comprising an inner glass member carrying a coil of wire and entirely embedded in glass.

5. An electrical heating or resistance unit comprising an inner glass member, a coil of wire wound thereon, and a surrounding envelope of glass members, the whole being fused together to form a mass of glass in which said wire is embedded.

6. The method of forming an electrical heating or resistance unit, which consists in winding a coil of wire on an inner glass member, surrounding the same with an envelope of outer glass members, and fusing the whole together.

7. The method of forming an electrical heating or resistance unit, which consists in winding a coil of wire on an inner glass member, and surrounding said parts with an envelope of glass.

8. An electrical heating or resistance unit comprising an inner glass plate carrying a coil of wire, two outer glass plates each of the same width as, but longer than, the inner plate, a strip of glass located between said outer plates and along one end of the inner plate, a second strip of glass located between said outer plates and along the other end of the inner plate, said second strip being in three sections between which the ends of said wire are brought out, a third strip of glass next to said second strip and between the outer plates said third strip being in three sections, and terminals for said wire located between the sections of said third strip.

9. An electrical heating device comprising a resistance wire embedded in pyrex glass.

In testimony whereof I affix my signature.

HOWARD A. THOMPSON.