

W. S. HADAWAY, JR.  
ELECTRIC HEATER FOR BOMBON KETTLES.  
APPLICATION FILED SEPT. 26, 1913.

1,208,142.

Patented Dec. 12, 1916.  
2 SHEETS—SHEET 1.

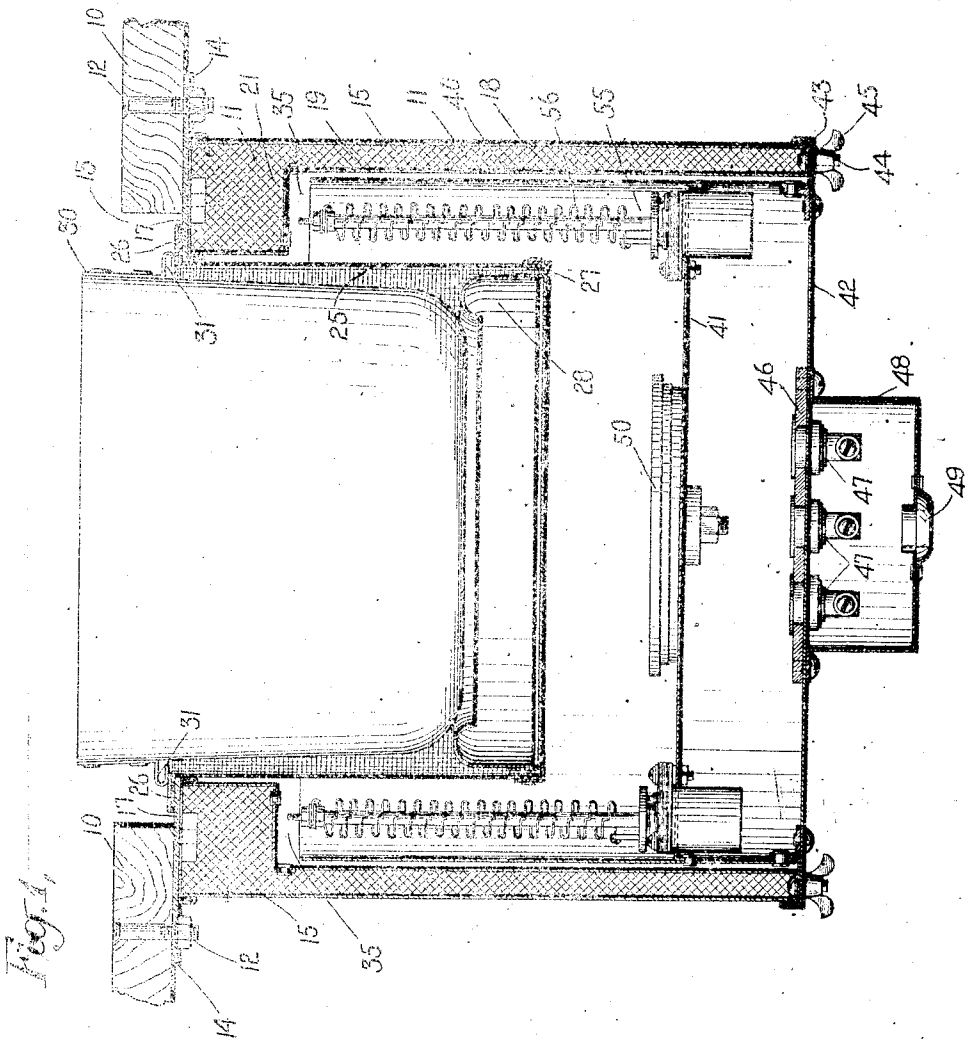


Fig. 1.

WITNESSES

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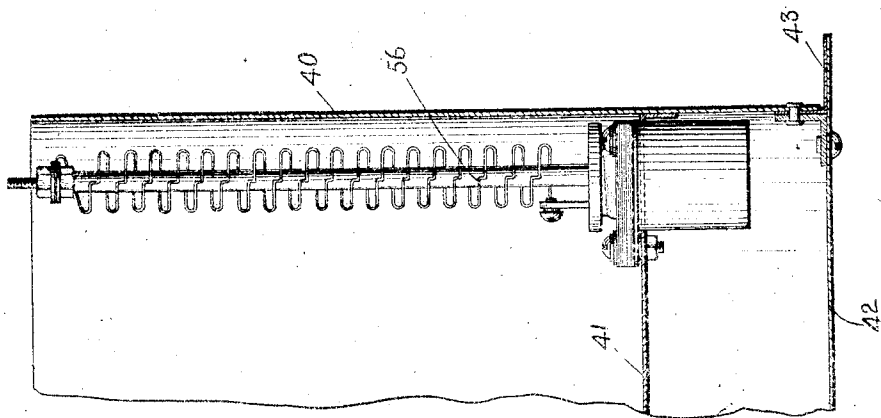


Fig. 2.

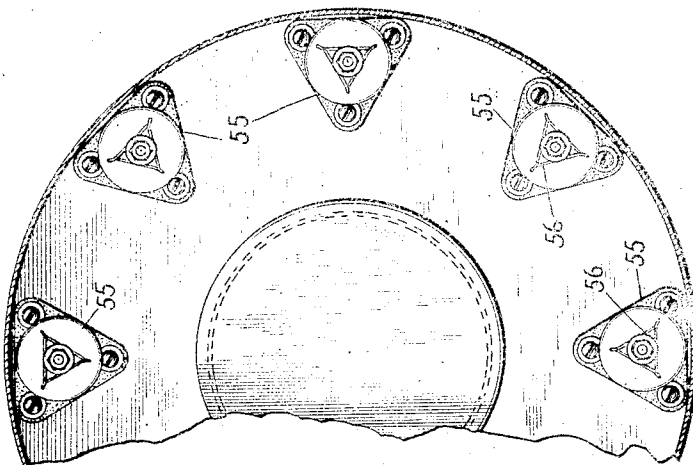


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC HEATER FOR BONBON-KETTLES.

1,208,142.

Specification of Letters Patent.

Patented Dec. 12, 1916.

Application filed September 26, 1913. Serial No. 791,933.

*To all whom it may concern:*

Be it known that I, WILLIAM S. HADAWAY, Jr., a citizen of the United States of America, and a resident of New Rochelle, county of Westchester, and State of New York, have invented certain new and useful Improvements in Electric Heaters for Bonbon-Kettles, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to electric heating apparatus and has special reference to such as is adapted for supplying heat to bonbon kettles or other cooking vessels.

One object of my invention is to provide a relatively simple and particularly effective device of the character above indicated that shall comprise a plurality of heaters of different types.

Another object is to provide heaters of such types as shall be adapted to cooperate to perform the work of heating sugar and like substances in a reliable and an otherwise improved manner.

Other objects and advantages of my invention will be hereinafter set forth.

Referring to the drawings: Figure 1 is a sectional elevation of an electrically heated bonbon kettle arranged and constructed in accordance with my invention. A portion of the removable heater is shown in sectional elevation in Fig. 2 and in plan view in Fig. 3.

Like characters of reference designate corresponding parts in all the figures.

A table or bench is indicated in section at 10, a hollow cylindrical heat insulating jacket 11 being secured to the table by bolts 12. There is a circular hole 13 in the table 10 and the insulating jacket 11 comprises an annular disk 14 which is arranged substantially concentric with the hole 13 in the table and extends beyond the outer cylindrical surface 15 of the jacket to form a flange. The hole in the annular disk 14 is smaller than the hole 13 in the table and consequently the disk provides a ledge or shoulder 17.

In addition to the disk 14 the jacket consists of a cylindrical outer shell 18 and a cylindrical inner shell 19 which is annularly inset at 21 to increase the thickness of the jacket at the top. The shells are preferably formed of sheet metal and the jacket

is packed with some suitable insulating material such as mineral wool.

A cylindrical shield 25 preferably formed of open mesh screening is supported within the jacket by means of a flange 26 which rests upon the ledge 17. The shield is further provided at its lower end with an inwardly extending flange 27 on which is supported an annular member 28 having its upper end curved inwardly as shown in Fig. 1 of the drawings.

A bonbon kettle 30 or other cooking vessel is supported by a flange 31 on the ledge 17, the flange resting on the flange 26 of the shield and the body of the kettle being largely below the surface of the bench or table 10.

Below the overhanging portion of the insulating jacket is an annular space 35 and below the shield 25 is a cylindrical space in which heaters are disposed.

The structure of the heater apart from the kettle and the insulating jacket is shown in Figs. 2 and 3 and comprises a cylindrical shell 40 which acts as a reflector having a transverse intermediate disk 41 secured to it near its lower end and a bottom disk 42 which is secured to the shell and extends beyond its lower end to form a flange 43. The size of the cylindrical shell 40 is such that it fits loosely into the insulating jacket while the flange 43 engages the lower end of the jacket, the heater being held in place by screws 44 which extend downwardly from the jacket through suitable holes in the flange and wing nuts 45. The center of the base plate 42 is reinforced by a plate 46 to which terminal members 47 are secured, a cap or shield 48 having an inlet bushing 49 being secured to the plate 46 and constituting a protecting covering for the terminals.

A disk stove heater unit 50 is mounted on the transverse disk 41 near its center and is arranged in the cylindrical space below the kettle to supply heat thereto. In the annular space 35, between the jacket and the shield are disposed a plurality of radiant heater units 55. Each of these units comprises a heating resistance conductor 56 which is adapted to operate at a very high temperature for a comparatively short time and which is particularly designed with a view to producing an intense heat immediately when energy is supplied to it. On the other hand the disk stove unit 50 is ar-

5 ranged and is particularly adapted to produce heat at a relatively low temperature while operating continuously for a long period of time. The heater unit 55 is fully described and set forth in my copending application. Serial Number 791,931 filed of even date herewith, and therefore a detailed description of the same is unnecessary.

10 In the manufacture of candy and the treating of sugar, it is particularly desirable to provide, when the sugar is first introduced into the kettle, a very high temperature for a comparatively short time until the temperature of the mass of sugar is brought to the melting point and the sugar is melted. 15 It is then desirable to hold the temperature of the mass in the kettle substantially constant without danger of overheating and without danger of injury to the heater. In order to accomplish these results in a particularly effective manner, I have combined, in a single heating device, a set of heater units which by reason of their structure and design, are particularly well adapted for 25 producing a high temperature immediately upon the application of electric energy to them. In other words, heater units which have practically no heat capacity or inertia, together with a heater which has heat capacity which is adapted to operate for a long period producing the correct amount of heat for holding the mass at a constant temperature.

30 The interior surface of the shell 40 is preferably highly polished so that a large proportion of the high temperature heat produced in the radiant units 56 is reflected upon the kettle 30 and consequently has the maximum effect in heating the same. Since the shield 25 is formed of a relatively open mesh screen, it does not materially interfere with the radiation above referred to.

35 As I have more fully pointed out in the aforesaid application Serial Number 791,931, filed of even date herewith, the proportion of heat transferred by radiation relative to the proportion transferred by convection, depends upon the intensity of the heat and upon the character of the reflector utilized. 40 I have designed the radiant heaters 56 particularly in view of this principle in order that the generated heat may be largely transferred by radiation. The heater 50 on the other hand is intended to hold the temperature of the kettle constant and it may therefore depend largely upon convection for transferring heat to the kettle. For this reason it is placed under the kettle so that the heat will rise and will be applied evenly to the kettle surface.

45 While as I have above indicated, the specific structure of the heater units forms no part of my present invention, on the other hand, the character of the heaters 56 as distinguished from the heater 50, goes to the

foundation of my invention, and while I believe the structural arrangement of the heater is novel and important, I believe that I am entitled to claim broadly the combination in a heater of two or more heater units of unlike character which are arranged to cooperate in the manner indicated above.

70 While I have chosen to illustrate my invention by setting forth and describing a bonbon kettle and an electric heater therefor, my invention is not restricted to any particular cooking vessel or to any particular class of service and I intend that only such limitations be imposed as are indicated in the appended claims.

80 A heating device constructed in accordance with my invention may be very successfully utilized for heating glue which acts very much like sugar and requires a high initial temperature in order to melt it in a short time.

What I claim is:

1. In an electric heater, the combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed, of a heater comprising a base plate removably secured to the bottom of the jacket, an intermediate plate spaced from the base and a plurality of radiant heater units secured to the intermediate plate near the inside walls of the jacket and a flat convection heater secured to the intermediate plate near its center.

2. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the bottom of the jacket, an intermediate plate spaced from the base and a plurality of radiant heater units secured to the intermediate plate near the inside walls of the jacket and a flat convection heater secured to the intermediate plate near its center.

3. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the bottom of the jacket, a hollow cylindrical reflector secured to the base and extending upwardly into the jacket, a transverse intermediate plate spaced from the base secured to the reflector and a plurality of electric heater units removably secured to the intermediate plate and extending upwardly adjacent to the walls of the reflector.

4. The combination with a relatively stationary hollow cylindrical insulating jacket

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vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the base and extending upwardly into the jacket, a transverse intermediate plate spaced from the base secured to the reflector and a plurality of radiant electric heater units uniformly distributed within the reflector and adjacent to the walls thereof and a convection heater secured to the intermediate plate near its center.

3. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the bottom of the jacket, a hollow cylindrical reflector secured to the base and extending upwardly into the jacket, a transverse intermediate plate spaced from the base secured to the reflector and a plurality of radiant electric heater units removably secured to the intermediate plate and extending upwardly therefrom adjacent to the walls of the reflector, and a convection heater secured to the intermediate plate near its center.

6. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the bottom of the jacket, a hollow cylindrical reflector secured to the base and extending upwardly into the jacket, a transverse intermediate plate spaced from the base secured to the reflector, and a plurality of radiant electric heater units removably secured to the intermediate plate and extending upwardly therefrom adjacent to the walls of the reflector and a convection heater secured to the intermediate plate near its center.

7. In an electric heater, the combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed, of a heater comprising a base plate removably secured to the bottom of the jacket, an

intermediate plate spaced from the base, and a plurality of radiant heater units secured to the intermediate plate near the inside walls of the jacket.

8. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having an inner plate at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, of a heater comprising a base plate removably secured to the bottom of the jacket, an intermediate plate spaced from the base, and a plurality of radiant heater units secured to the intermediate plate near the inside walls of the jacket.

9. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having a flange at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket, and forming a shoulder to substantially close the jacket at the top, of a heater comprising a base plate removably secured to the bottom of the jacket, and a plurality of radiant heaters extending around the cooking vessel within the jacket and below the aforesaid shoulder.

10. The combination with a relatively stationary hollow cylindrical insulating jacket vertically disposed and having a flange at the top forming a ledge on which a cooking vessel is adapted to be supported with the body of the vessel extending into the jacket and forming a shoulder to substantially close the jacket at the top, of a heater comprising a base plate removably secured to the bottom of the jacket, and intermediate plates spaced from the base, and a plurality of radiant heaters secured to the intermediate plate near the inside wall of the jacket and extending upwardly adjacent to the cooking vessel below the aforesaid shoulder of the jacket, and a flat convection heater secured to the intermediate point near its center below the bottom of the cooking vessel.

In testimony whereof I have hereunto set my hand this 24th day of September, 1913, in the presence of two subscribing witnesses.

WILLIAM S. HADAWAY, JR.

Witnesses:

G. R. QUIMBY,  
F. B. GRAVES.