April 7, 1931. A. JOHNSON 1,799,168

ELECTRIC HEATING UNIT

Filed Feb. 5, 1930

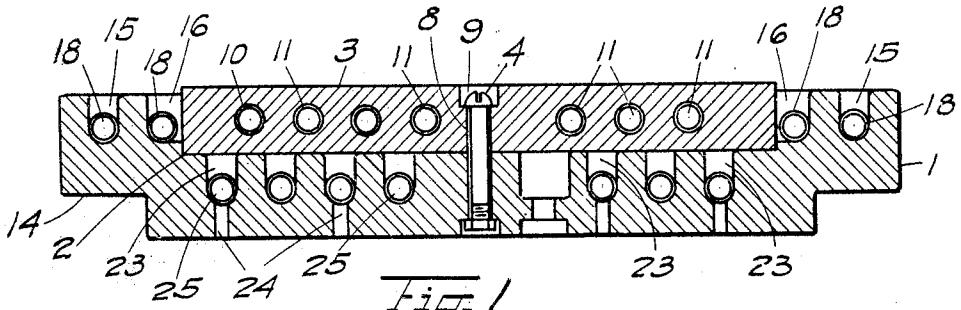


Fig. 1.

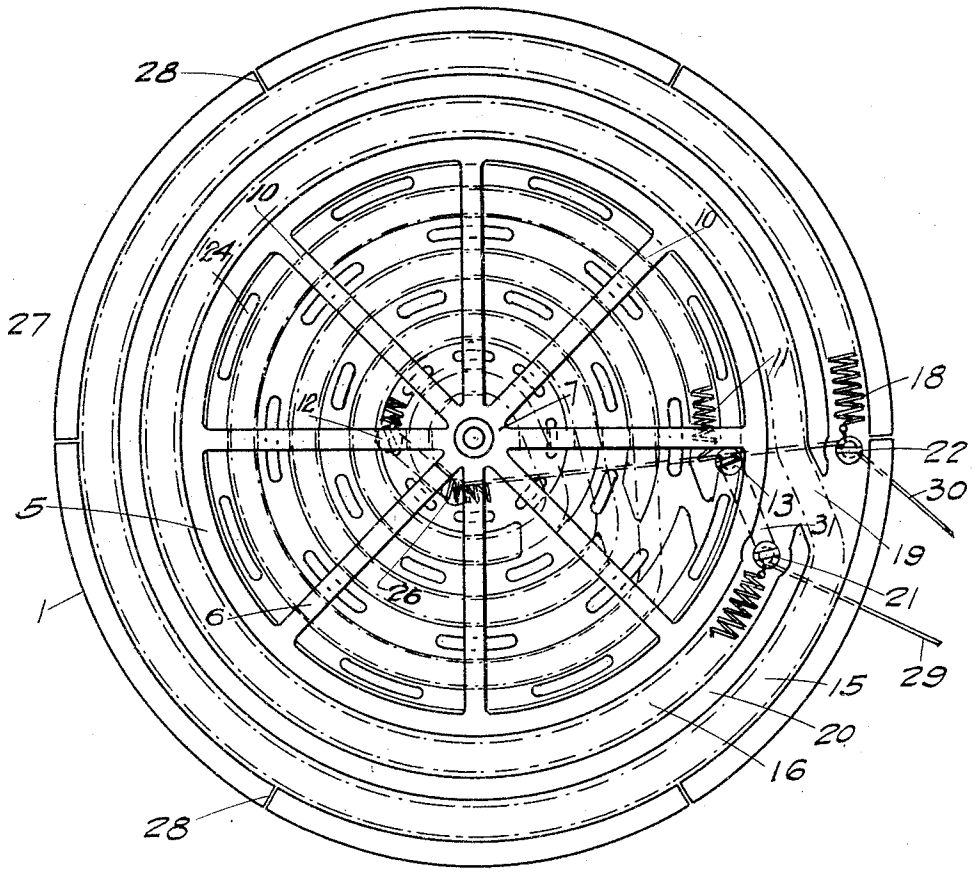


Fig. 2.

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ELECTRIC HEATING UNIT

Application filed February 5, 1930. Serial No. 426,004.

The invention is for an electric heating unit especially adapted to hot plates, ranges and similar appliances.

The object of the invention is to provide a unit of high heating capacity without causing undue deterioration of the heating coils.

Another object of the invention is to provide a device of the class described whereby an even distribution of direct heating is obtained, providing approximately the same heating capacity as a continuous layer of coiled element wire.

A further object of the invention is to provide a unit of high efficiency and long life, obtaining an increased heat radiation with a lower element wire temperature, thus prolonging the life of the thermo-electric element wire.

Further objects of the invention will become apparent as the description is set forth and from the annexed drawings and appended claims.

In the accompanying drawings:

Fig. 1 is a sectional elevation through the invention;

Fig. 2 is a plan view of the invention.

Similar reference characters are used to designate similar parts throughout the several views.

The invention consists primarily of a pair of nested insulating shells, having a continuous coil of resistance wire spirally disposed in each shell, the configurations of the coil in one shell being vertically disposed relative to the space between two adjacent configurations of the coil in the other shell.

The main shell 1 is provided with a recess 2 for reception of the shell 3, the shells 1 and 3 being held together by a bolt 4 and centrally disposed relative one to the other by cooperation with recess 2. The shell 1 consists of a rim 5 and radial spokes 6, the intersection of spokes 6 forming a hub 7. An aperture 8 countersunk at 9 receives bolt 4 and permits disposal of the bolt head below the operating surface of the shell. Apertures 10 in spokes 6 are provided to receive and retain a coil of resistance wire 11 and are so disposed in the various spokes 6 as to provide an approximately spiral path for said coil, the ends of said coil being conductively connected to terminals 12 and 13 disposed in the main shell 1.

The main shell 1 comprises a body portion provided with a shoulder 14 for seating on a cooperating support, a recess 2 of sufficient depth to permit the top surface of shell 3 to be only slightly above the top surface of shell 1. Grooves 15 and 16 are provided for retention of a resistor 18, the resistor describing a path about groove 1 and thence passing through a connecting groove 19 through the wall 20 between grooves 15 and 16, the periphery of shell 3 comprising the inner wall of groove 16. The resistor 18 is conductively connected at its opposite ends to terminals 21 and 22 passing through said shell. Disposed below shell 3, a series of concentric grooves 23 and provided with intersecting paths 24, retain an approximately spirally disposed resistor 25, the resistor continuing about one groove and thence through an intersecting path to the next groove, the opposite ends of the resistor being conductively connected to terminals 26 and 13 passing through the shell 1. Air vents 27 provide for an upward current of air when the device is heated, and thereby preventing overheating of the resistor. Expansion slots are provided about the periphery of shell 1 to obviate the tendency toward cracking of the shell due to uneven expansion and contraction of the periphery relative to the interior of the shell. Terminal wires 29 and 30 provide for connection to a source of power.

The current path through the unit is as follows. The three resistors 11, 25 and 18 are connected in parallel and are preferably of equal resistance. Current passes from terminal 22 through coil 18 to terminal 21, simultaneously from terminals 12 and 26 through coils 11 and 25 to terminal 13 and by the connector 31 to terminal 21, terminal 13 being common to both coils 11 and 25.

It will be noted that minor changes in arrangement and construction of respective parts may be resorted to without departing from the spirit or scope of the invention or sacrificing any of the advantages thereof.

I claim:—

1. In combination a pair of insulating shells comprising a main shell and a nested shell, the top of said nested shell protruding slightly above the top of the main shell, a plurality of slots in the periphery of said main shell, a heating element disposed in grooves in the outer top surface of said main shell, a heating element in the central portion of said main shell and disposed in grooves beneath said nested shell, a heating element in said nested shell, ventilating apertures in the central section of said main shell, said nested shell comprising a rim, and a plurality of spokes intersecting at a common center, apertures in said spokes adapted to retain said heating element in substantially spiral form, and means for connecting said heating elements to a source of electric power.

2. A three element heating unit comprising a pair of substantially circular insulating shells, the main shell being provided with vertical slots in the periphery thereof and a central recess for reception of and nesting of a second shell, concentric grooves between said recess and periphery for reception of a coiled heating element, concentric grooves with diagonal passages between said grooves at the base of said recess for reception of a second heating element, ventilating apertures registering with said grooves and passing through said shell, a nested shell comprising a plurality of intersecting spokes, a rim surrounding the extremities of said spokes, apertures in said spokes and vertically disposed relative to the walls between grooves in the main shell, said apertures retaining a third heating element in substantially spiral form, means for removably attaching said shells in fixed relation, and means for connecting said heating elements to a source of electrical energy.

In testimony whereof I have affixed my signature.

AXEL JOHNSON.