March 19, 1929. F. F. FORSHEE 1,705,727

WAFFLE IRON

Filed May 11, 1927

Fig. 1.

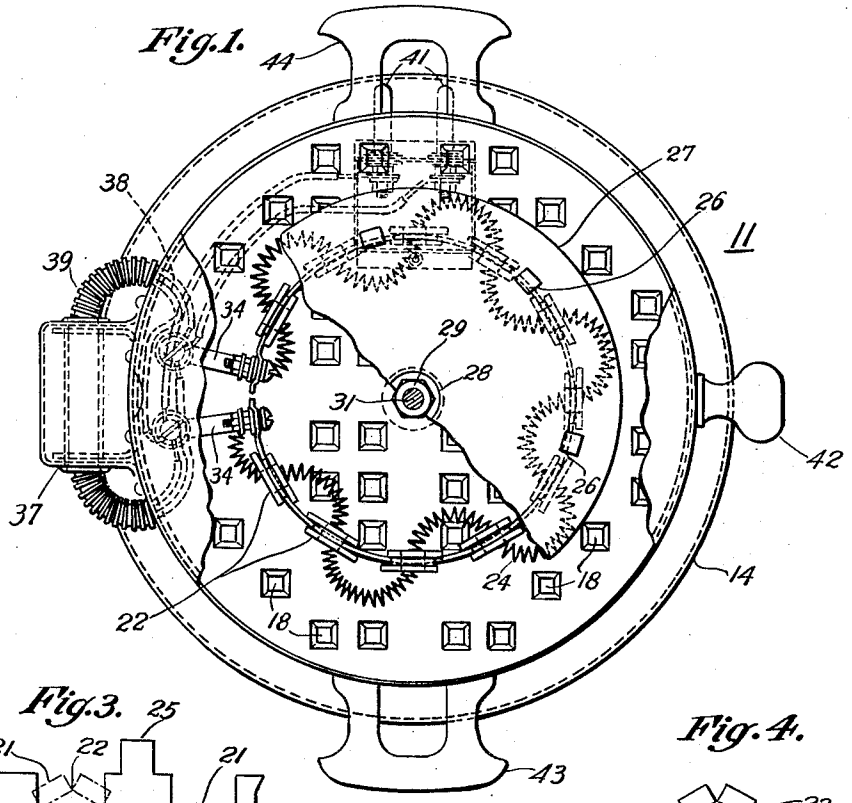


Fig. 3.

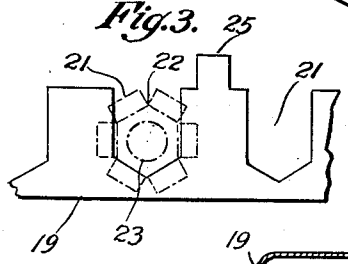


Fig. 4.

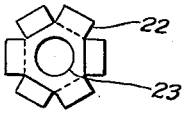
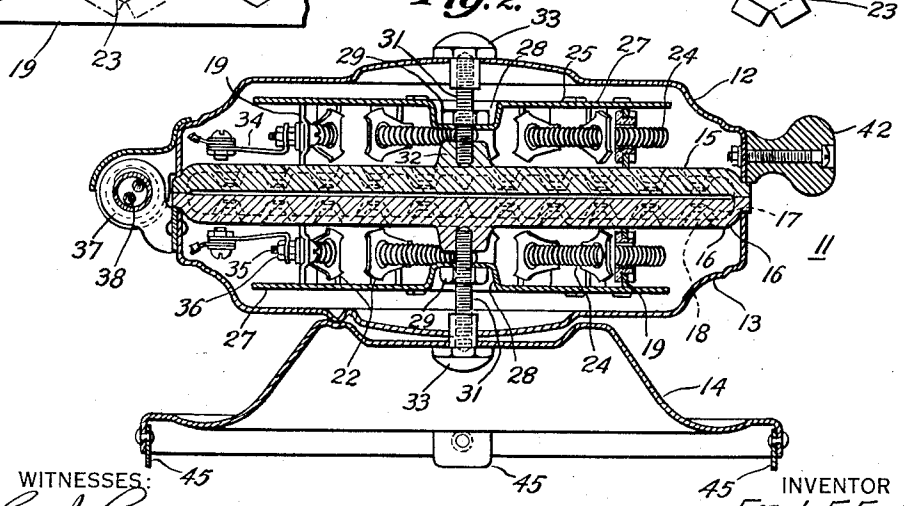


Fig. 2.



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UNITED STATES PATENT OFFICE.

FRANK F. FORSHEE, OF MANSFIELD, OHIO, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

WAFFLE IRON.

Application filed May 11, 1927. Serial No. 190,452.

My invention relates to electrically heated appliances and particularly to electric cooking devices.

An object of my invention is to provide a relatively simple and easily manufactured heating unit for cooking appliances.

In practicing my invention I provide a strip of sheet metal having a plurality of spaced recesses along one edge thereof, refractory thimbles in said recesses and a resistor extending through the thimbles and alternately on opposite sides of the strip. A clamping and reflector plate is secured to the strip which may be bent to substantially circular or polygonal shape, by means of lugs integral with the strip, which extend through openings in the plate.

In the drawings,

Fig. 1 is a top plan view, with portions of the device broken away, of a waffle iron having a heating element embodying my invention associated therewith;

Fig. 2 is a view in vertical section therethrough;

Fig. 3 is a fragmentary view, in side elevation, of a portion of a heating unit embodying my invention, and

Fig. 4 is a view, in front elevation, of a refractory thimble.

A waffle iron 11 comprises an upper casing 12, a lower casing 13 and a base member 14. All of these members are shown as substantially circular in shape although I do not wish to be restricted thereto.

Each of the casings has associated therewith a waffle mold member 15 and 16, respectively, which may be made in any manner well known in the art. I prefer to use aluminum molds, an outer surface of which is provided with the projecting portions 17 usually employed in said waffle molds, corresponding recesses 18 being provided in the inner surface of the mold for a purpose to be hereinafter set forth.

An electrical heating unit is provided for each of the waffle molds 15 and 16 and comprises a strip 19 of relatively thin sheet metal which is provided with a plurality of spaced recesses 21 along one edge thereof substantially as shown in Fig. 3 of the drawings.

Refractory thimbles 22 having an opening 23 therethrough are located in the respective recesses 21. The thimbles are not described in further detail as they are disclosed and claimed in my copending application Serial No. 188,447, filed May 3, 1927, and assigned to the Westinghouse Electric & Manufacturing Company. A helically wound resistor wire 24 is provided and extends through the openings 23 in spaced adjacent thimbles, extending alternately on opposite sides of the strip 19 as shown more particularly in Fig. 1 of the drawing.

The strip 19 is provided with a plurality of integral lugs 25, which extend through openings 26 in a clamping and reflecting plate 27. The openings 26 are so located in the plate 27 as to receive the lugs 25 after the strip 19 has had the thimbles and the resistor mounted thereon and the strip has been bent to either circular or polygonal shape. I have shown a substantially circular heating unit, the diameter of which has a definite relation to the diameter of the waffle mold with which it is operatively associated, as will be hereinafter set forth in detail. The lugs 25 are bent over against the outer surface of the plate 27 whereby the strip 19 is held in its proper operative position and in the form shown more particularly in Fig. 1 of the drawing.

Each of the plates 27 is provided with a central depression 28, each depression having located therein a nut 29 mounted on a stud 31, the inner end of which is in screw-threaded engagement with a central lug 32 on the rear surface of and constituting an integral part of the waffle mold. The nut 29 is tightened down to such an extent that the heating unit and more particularly the unbroken edge of the strip 19 is tightly clamped and pressed against the rear face of the waffle mold. The plate 27 is made of relatively thin sheet metal so that it is resilient and permits expansion and contraction of the strip 19 during repeated operations of the waffle iron.

The stud 31 extends through a suitable central opening in the casing and an ornamental nut 33 is screwed on the outer end of the stud to securely hold the waffle mold against the rim portion of the casing with which it is operatively associated.

Suitable terminal members 34 are provided for the two ends of each heating unit and are insulatedly mounted on the adjacent ends of the strip 19 by screws 35 and a plurality of cooperating nuts 36. A hinge member 37 is provided and is of any desired construction to permit of pivotally mounting the upper casing on the lower casing, the construction of the hinge members being such

as to permit of connecting conductors 38 extending therethrough. The conductors 38 are located in a flexible armored conduit 39 to protect the conductors. Suitable connection is made between the respective terminals of the two heating units, the connection conductors 38 and a plurality of terminal pins 41 (see Fig. 1) which are insulatedly mounted on either the lower casing 13 or on the hollow base 14 as may be found desirable.

A knob 42 is located on the upper casing 12 to permit of raising and lowering the upper casing, and carrying members 43 and 44 are mounted on the lower casing to permit of carrying the waffle iron. Heat insulating supporting members 45 are secured to the lower edge of the base 14 and extend downwardly therefrom to support the base away from the surface of a table.

The inner surface of the plate 27 is preferably made bright or is polished in order that it may act as a reflector for the resistor wire 24 when the same is energized in the usual manner. As the mass of the heating unit embodying the resistor wire, the refractory thimbles 22, strip 19 and the refractory strip 27 is relatively small, but little heat will be stored therein and as soon as the resistor wire 24 has been heated to a bright red heat or above, heat will be radiated against the rear surface of the waffle iron and against the inner surface of the plate 27 from which it will be reflected back to the waffle mold. The diameter of the substantially circular heating unit is such relatively to the diameter of the waffle mold that the latter will be uniformly heated thereby so that a waffle baked thereby will be baked uniformly over its entire surface.

In order to increase the area of the heat-receiving surface of the waffle mold I provide the depressions 18 hereinbefore mentioned, any suitable or desired number of these being provided.

The device embodying my invention thus provides a relatively simple and easily manufactured and assembled radiant heating unit for an electric cooking device. While I have shown and described such a heating unit as applied to a waffle iron, I do not desire to be limited thereto as it is applicable to any electrical heat cooking device embodying a baking or cooking member or surface.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof and I desire that only such limitations shall be placed thereon as are imposed by the prior art or are set forth in the appended claim.

I claim as my invention:

A heating unit for an appliance having a baking surface, said heating unit comprising a bent-on-edge metal strip having a plurality of spaced recesses along one edge thereof, refractory thimbles in said recesses, a resistor member extending through and supported by said thimbles, a sheet-metal plate operatively engaging the recessed edge of the strip and interfitting therewith to hold the strip in a predetermined shape and extending therebeyond to constitute a reflector for the resistor member, and a bolt extending through the plate and the baking surface for holding the strip tightly against the rear of the baking surface.

In testimony whereof, I have hereunto subscribed my name this 29th day of April, 1927.

FRANK F. FORSHEE.