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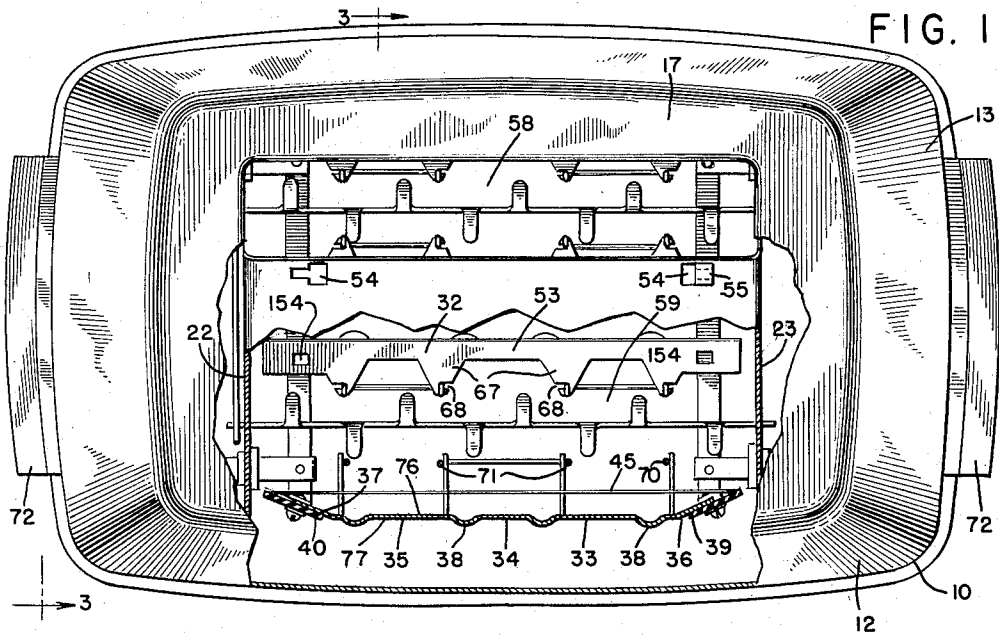
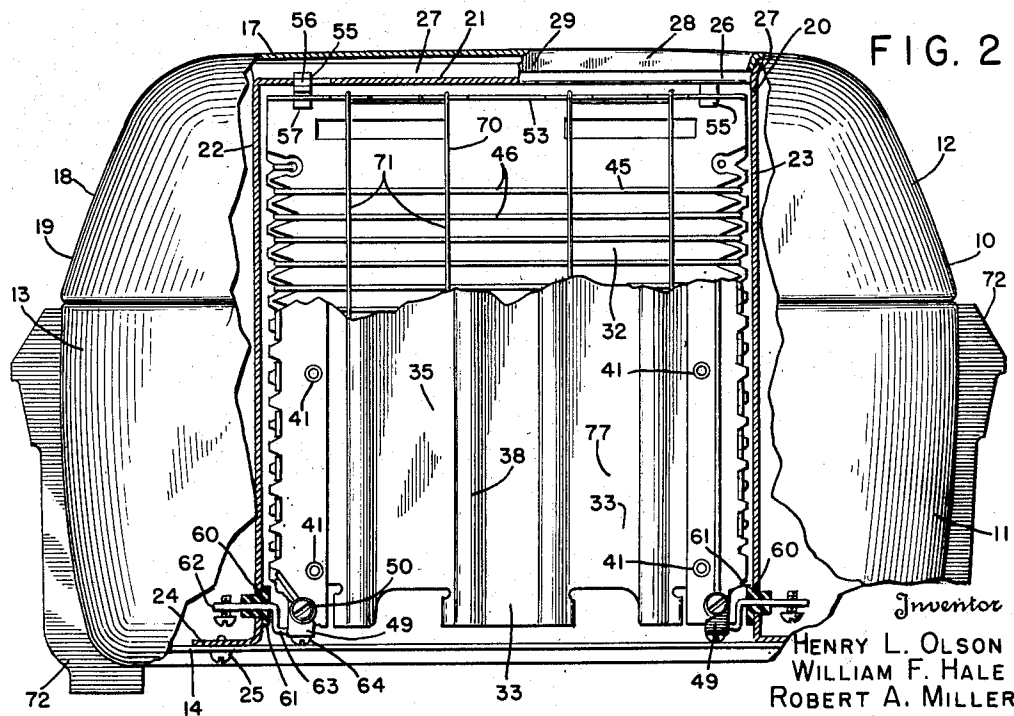
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HEATER FOR ELECTRIC TOASTERS

Filed Dec. 2, 1949

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

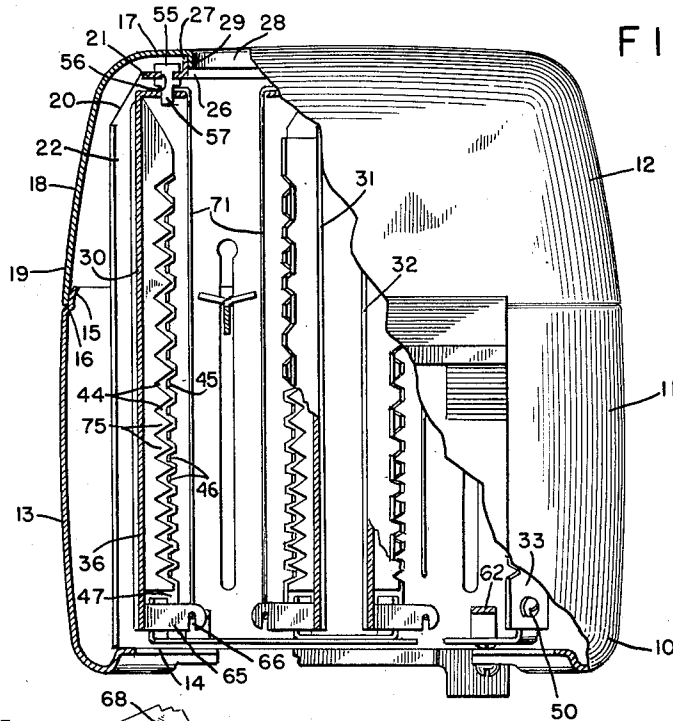


FIG. 3

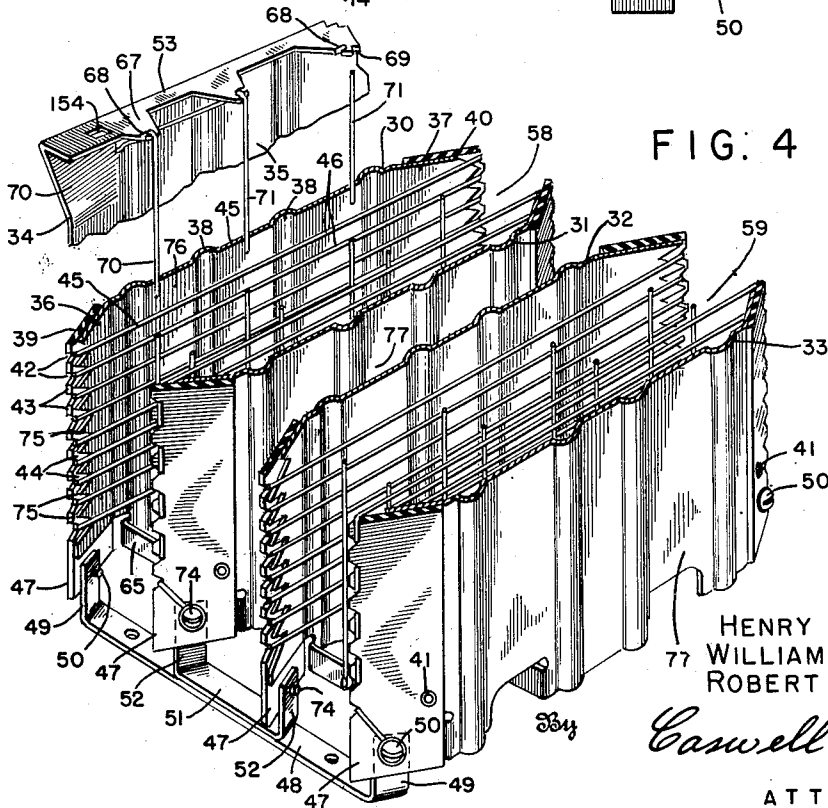


FIG. 4

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HEATER FOR ELECTRIC TOASTERS

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Our invention relates to electric toasters and particularly to a heater for use in an electric toaster.

An object of the invention resides in providing the heater with a metal frame on which a heating element constructed from a length of resistance wire is supported.

Another object of the invention resides in constructing the frame from a sheet of metal to provide a back having flanges at the lateral edges thereof and extending outwardly from the face of the back.

A still further object of the invention resides in attaching to the flanges insulating strips of sheet insulation to which the heating element is secured.

An object of the invention resides in providing the insulating strips with notches at their outermost edges forming teeth and in looping the heating element about said teeth to form in the heating element reaches spaced from one another and from the face of the back.

An object of the invention resides in constructing the flanges with notches registering with the notches of the insulating strips and disposed inwardly therefrom to cause the reaches of the heating element to clear the metal of the flanges and to form on the flanges teeth reinforcing the teeth of the insulating strips.

Another object of the invention resides in forming the face of the back with a reflecting surface.

A still further object of the invention resides in providing on the back ears projecting outwardly from the face of the same a distance greater than the projection of the heating element therefrom and in winding on said ears guide wires spaced from the heating elements.

Another object of the invention resides in mounting on a support in the toaster two heaters with the faces of the backs of the same facing one another and in spacing the guide wires thereof to form a toasting chamber for the reception of a slice of bread.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

The heater disclosed in the drawings comprises a frame constructed of sheet metal and formed with a back substantially rectangular in form and adapted to be disposed in a substantially vertical position. This back has a face and a rear surface and the face thereof is constructed to form a reflector. Issuing outwardly from the lateral edges of the back are two flanges which

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extend away from the face of the back and form with said face an obtuse angle. These flanges have attached to the rear surface thereof insulating strips which are constructed with spaced notches forming spaced teeth extending outwardly beyond the free edges of the flanges. A heating element consisting of a length of resistance wire is looped about alternate teeth to form reaches, spaced from one another and from the back and overlying the face thereof. At the upper and lower ends of the back are provided ears which extend outwardly beyond the heating element. A guide wire is looped about these ears to form vertical guides to guide the slices of bread into position adjacent the heating elements and to hold the bread out of direct engagement with the heating elements. The heaters are arranged in pairs in the toaster with the faces of the heaters in each pair facing one another and with the guide wires spaced to provide toasting chambers therebetween.

In the drawings:

Fig. 1 is a plan view of a toaster illustrating an embodiment of my invention with portions of the toaster broken away to illustrate the construction thereof.

Fig. 2 is an elevational view of the toaster shown in Fig. 1 with parts broken away to illustrate the heaters.

Fig. 3 is a fragmentary cross sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a perspective view of the heater assembly of the toaster removed from the toaster.

For the purpose of illustrating the invention we have shown in the drawings a case 10 constructed with a lower section 11 and an upper section 12. The lower section has a lateral wall structure 13 which extends about the case and is open at the top and bottom. At the lowermost portion of the said wall structure is formed an inwardly turned flange 14 on which the toaster mechanism is supported. The upper marginal portion of the wall structure 13 is constructed with an offset 15 forming a rabbet 16 extending about the lower section. The upper section 12 of the case is dome-shaped in form and has a top 17 and a lateral wall structure 18. The lower marginal portion 19 of the lateral wall structure 18 is received within the rabbet 16 and the parts are secured together in any suitable manner. Plastic ornaments 72 secured to the ends of the wall structure 13 of case section 11 project below the lowermost portion thereof and form feet for supporting the toaster proper above the table or counter on which the toaster rests.

Within the case 10 is located an inverted U-shaped framework 20. This framework includes a top wall 21 and end walls 22 and 23 which extend vertically downwardly from the top wall 21. The walls 22 and 23 are formed with outwardly turned flanges 24 which rest upon the flange 14 and are secured thereto by means of screws 25. In the top wall 21 are formed openings 26 which are surrounded by an upturned flange 27. Similar openings 28 in the top 17 of the upper section 12 of case 10 register with the openings 26. The top 17 is formed with downwardly turned lips 29 which encircle the openings 28 and fit into the flanges 27 to hold the upper portion of the case 10 and the upper portion of the framework 20 in proper relation. The openings 26 and 28 register with bread ovens formed in the framework 20 which will be further described in detail.

In the toaster in which the instant invention is used four heaters indicated by the reference numerals 30, 31, 32 and 33 are employed. These heaters being identical in construction, the description of the heaters will be confined principally to the heater 30. This heater consists of a metal frame 34 constructed of aluminum or some other metal on which a polished surface may be formed. The said metal frame is constructed with a back 35 having flanges 36 and 37 bent outwardly therefrom at a slight angle to bring the edges of said flanges spaced outwardly from the back 35. The entire frame is stiffened by means of reinforcing ribs 38 pressed into the said back and extending vertically with reference thereto and parallel to the flanges 36 and 37. The back 35 has a face 76 and a rear surface 77.

Attached to the rear surfaces of the flanges 36 and 37 are insulating strips 39 and 40 constructed from sheet insulating material which are secured to said flanges by means of rivets 41. These strips extend outwardly beyond the edges of the flanges 36 and 37 and are formed with a series of spaced notches 42 which leave teeth 43 therebetween. Similar notches 44 but of greater depth are formed in the flanges 36 and 37 and which register with the notches 42. These notches form teeth 75 on the flanges 36 and 37 which overlie the teeth 43 and reinforce the same. Said teeth are disposed inwardly of the teeth 43. The heating element of the invention is indicated at 45 and consists of an elongated conductor of resistance wire which is successively wound across the two insulating strips 39 and 40 threading the same through the notches 42 in said insulating strips to form spaced reaches 46, and placing the portions of the wire between reaches on the back side of said insulating strips and across the lugs 43. This spaces the reaches 46 from the back 35 and insulates said heating element from the frame 34. The face 76 of the back 35 is suitably polished to form a reflector whereby the heat from the heating element 45 is reflected in a direction away from the back 35. At the lower ends of the flanges 36 and 37, the metal thereof is removed to leave end portions 47 on the insulating strips 39 and 40 to which suitable terminals may be attached.

The ends of the heating elements 45 of the two heaters 30 and 35 are connected to a bus bar 48 which has ears 49 bent upwardly therefrom and which overlie the end portions 47 of the insulating strips 39 and 40. Screws 50 extend through the insulating strips 39 and are screwed into the ears 49. The ends of the heating ele-

ments 45 are clamped between the end portions 47 and the screws 50 and form an electrical contact therewith. The two heaters 31 and 32 are similarly supported on bus bars 51 which have ears 52 turned upwardly therefrom. These ears are secured to the lower portions 47 of the heaters 31 and 32 and are secured thereto by means of screws 74 which extend through said portions of the insulating strips and are threaded into said ears. The ends of the conductor forming the heating elements 45 of the said heaters are similarly connected to the bus bars 51.

The heaters 30 and 31 are arranged with the heating elements 45 thereof facing one another and likewise the heaters 32 and 33 are similarly located. The parts are spaced by means of the bus bars 48 and 51 so that two toasting chambers or ovens 58 and 59 are formed between said heaters and which, when the heaters are properly installed in the toaster, register with the openings 26 and 28 in the case section 12 and top 21 of the framework 20 so that slices of bread may be inserted into the toasting chambers 58 and 59 and through said openings.

The method of supporting the heaters is as follows: At the upper portion of the back 35 of the frame 34 is formed an inwardly turned flange 53. This flange near its ends is formed with two rectangular holes 54. Opposite the holes in the flanges 53 and in the top wall 21 of framework 20 is formed T-shaped holes 54. Buttons 55 of insulating material are inserted into the enlarged portions of the said holes. These buttons have grooves 56 which are adapted to receive the marginal portions of the said top wall when the said buttons are moved toward the reduced portions of the holes 54. The said buttons have stems 57 which extend downwardly into the holes 54 in the flanges 53 and which support the upper portions of the entire heater and hold the same in proper position.

The lower portion of the heater is supported in the following manner: In the sidewalls 22 and 23 are formed openings 60. In these openings are inserted insulating bushings 61 which support terminal strips 62. These strips extend through the said bushings and are formed with offsets 63 which are secured to the bus bars 48 by means of screws 64. The said terminals may be connected to the wiring of the toaster and serve to energize the heating elements 45.

To prevent the bread from coming in direct contact with the heating elements, guide wires are employed which guide the toast into position in the toasting chambers 58 and 59 and which are mounted on the frames 34. At the lower portion of the back 35 of the frame 34 are formed outwardly turned ears 65. These ears have downwardly extending notches 66 in the same. Corresponding ears 67 are formed on the flange 53. These ears have laterally extending openings 68 and notches 69 formed at the forward edges of the same. A single piece of wire 70 is attached at one end to one of the ears 65 and is successively wound from the said ears to the ears 67. The said wire is inserted into the openings 68 and follows along the notches 69 to form spaced reaches 71 which lie flush with the outermost portions of the ears 67. The reaches are spaced from the heating elements 45 and form guides for guiding the bread into the chambers 58 and 59 and support the bread in upright position and in spaced relation to the said heating elements.

The advantages of the invention are manifest.

Each heater becomes a complete unit including a support, heating element and guide. The parts are hence held in proper relation to one another. With the invention the parts are easily assembled and remain in position. There are no loose parts to rattle. By use of the fine wire for the guide wires streaks on the toast are prevented. Due to the reflectors employed the heat is directed toward the toast and less current is consumed and the toaster runs cooler. By constructing the frame from metal small strips of insulation may be employed and the cost of insulation greatly reduced. The entire heater assembly may be removed without disconnecting the various heaters from one another.

Changes in the specific form of our invention, as herein described, may be made within the scope of what is claimed without departing from the spirit of our invention.

Having described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In a toaster a support, a heater carried thereby and comprising a block for disposition in a vertical plane and having a face, flanges at the lateral edges of the back and extending outwardly from said face, insulators secured to said flanges and having projections located near the free edges of said flanges, a heating element comprising a length of resistance wire looped about said projections and forming reaches spaced from one another and from the face of said back, ears disposed at the upper and lower edges of said back and extending outwardly from said face, and guide wires carried by said ears and extending in an up and down direction, said guide wires being spaced outwardly of said heating element, and a second heater carried by said support similar to said first heater and disposed with its face facing the face of said first heater and with the guide wires thereof spaced from the guide wires of said first heater to form a toasting chamber therebetween, the flanges of the opposed heaters extending towards one another to partially enclose the space between the backs of the heaters at the ends of the same.

2. In a toaster a support, a heater carried thereby and comprising a back for disposition in a vertical plane and having a face, flanges at the lateral edges of the back and extending outwardly from said face, insulators secured to said flanges and having projections located near the free edges of said flanges, a heating element comprising a length of resistance wire looped about said projections and forming reaches spaced from one another and from the face of said back, ears disposed at the upper and lower edges of said back and extending outwardly from said face, and guide wires carried by said ears and extending in an up and down direction, said guide wires being spaced outwardly of said heating element, and a second heater carried by said support similar to said first heater and disposed with its face facing the face of said first heater and with the guide wires thereof spaced from the guide wires of said first heater to form a toasting chamber therebetween, and reflectors formed on the inner surfaces of said backs, said reflectors facing one another.

3. In a toaster a support, a heater carried thereby and comprising a back having a rear surface and a face, flanges at the lateral edges of the back and extending outwardly from said face, said flanges having rear surfaces corresponding to the rear surface of said back, strips of sheet insulation overlying the rear surfaces of said flanges

and secured thereto, the marginal edges of said strips extending outwardly beyond the marginal edges of said flanges, notches in the marginal portions of said strips of insulation and forming therein teeth, notches in the marginal portions of said flanges registering with the notches of the strips and forming teeth therein overlying the teeth of the strips and reinforcing the same, the edges of the teeth of the flanges lying inwardly of the edges of the teeth of the strips and a heating element comprising a length of resistance wire looped about alternate teeth of said strips of insulation and forming reaches spaced from one another by virtue of said notches and from the face of said back by virtue of said flanges.

4. In a toaster a support, a heater carried thereby and comprising a back having a rear surface and a face, flanges at the lateral edges of the back and extending outwardly from said face said flanges forming an obtuse angle therewith and having rear surfaces corresponding to the rear surface of said back, strips of sheet insulation overlying the rear surfaces of said flanges and secured thereto, the marginal edges of said strips extending outwardly beyond the marginal edges of said flanges, notches in the marginal portions of said strips of insulation and forming therein teeth, notches in the marginal portions of said flanges registering with the notches of the strips and forming teeth therein overlying the teeth of the strips and reinforcing the same, the edges of the teeth of the flanges lying inwardly of the edges of the teeth of the strips and a heating element comprising a length of resistance wire looped about alternate teeth of said strips of insulation and forming reaches spaced from one another by virtue of said notches and from the face of said back by virtue of said flanges, the angularity of said flanges urging the looped portions of said resistance wire into the notches of said strips.

5. In a toaster a support, a heater carried thereby and comprising a back for disposition in a vertical plane and having a face, flanges at the lateral edges of the back integral therewith and extending outwardly from said face, insulators secured to said flanges and having projections located near the free edges of said flanges, a heating element comprising a length of resistance wire looped about said projections and forming reaches spaced from one another and from the face of said back, ears disposed at the upper and lower edges of said back and integral therewith and extending outwardly from said face and from the same side thereof as said flanges, and guide wires carried by said ears and extending in an up and down direction, said guide wires being spaced outwardly of said heating element, and a second heater carried by said support and similar to said first heater and disposed with its face facing the face of said first heater and with the guide wires thereof spaced from the guide wires of said first heater to form a toasting chamber therebetween.

6. In a toaster a frame having spaced vertical planiform end frame members, insulators mounted in said frame members and disposed near the lower portions thereof, terminals carried by said insulators and having flat horizontal portions projecting into the space between said end frame members, a bus bar overlying the flat portions of the terminals on each end frame member, screws engaging said terminals and bus bars and holding the bus bars attached to said

terminals, spaced ears extending upwardly from said bus bars, the ears on one bus bar lying opposite the ears on the other bus bar, a plurality of heaters each having a planiform vertical back with flanges at the vertical edges thereof, strips of insulating material overlying said flanges and a heating element carried by said insulating strips and insulated from said back, said insulating strips overlying said ears, and screws engaging said insulating strips and ears to hold the heaters attached to said bus bars, one end of the heating element of each of said heaters being connected to an ear of one of said bus bars and the other end to an ear on the other bus bar.

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