

[54] **DETACHABLE ELECTRICAL HEATING GRIDDLE**

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[51] Int. Cl. H05b 3/68

[58] Field of Search 219/431, 432-436, 219/439, 441-448, 449, 452, 457, 459, 462, 464, 521, 524-525, 530, 540, 541; 338/274; 99/422-425

[56] **References Cited****UNITED STATES PATENTS**

2,914,650	11/1959	Sheahan.....	219/436
3,632,982	1/1972	Linger.....	219/447

1,704,270	3/1929	Wells.....	219/432
2,009,790	7/1935	Shroyer.....	219/462 X
2,043,195	6/1936	Finlayson.....	338/274 X
2,060,968	11/1936	Beck et al.....	219/457
2,785,270	3/1957	Burger.....	219/541 X
2,840,684	6/1958	Watkins, Jr.....	99/425 X
3,140,389	7/1964	Windes.....	219/447
3,191,005	6/1965	Cox.....	219/528
3,218,434	11/1965	Lee et al.....	219/385

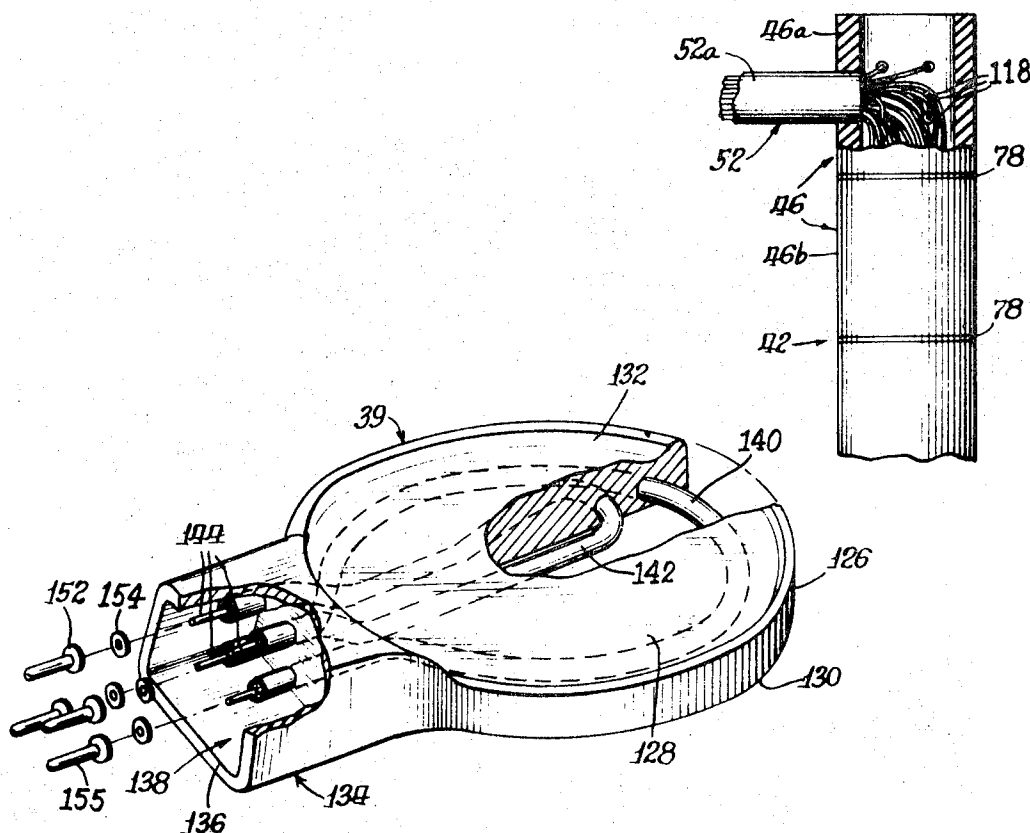
FOREIGN PATENTS OR APPLICATIONS

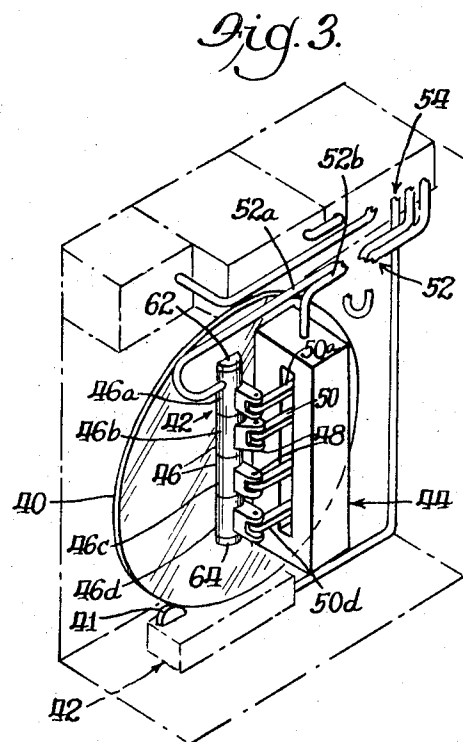
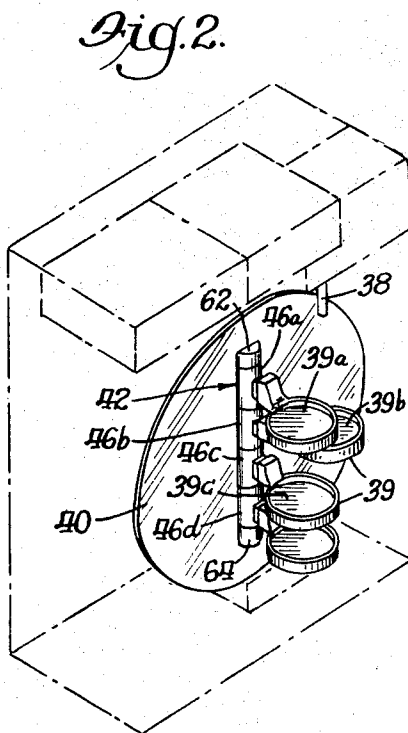
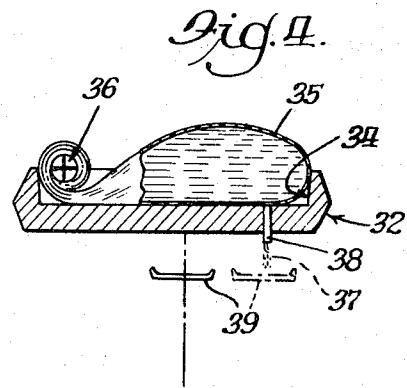
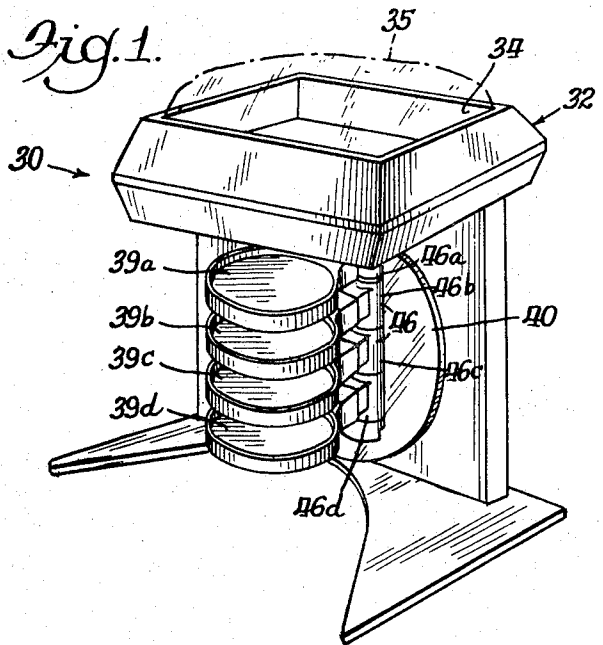
165,431	2/1950	Austria.....	219/457
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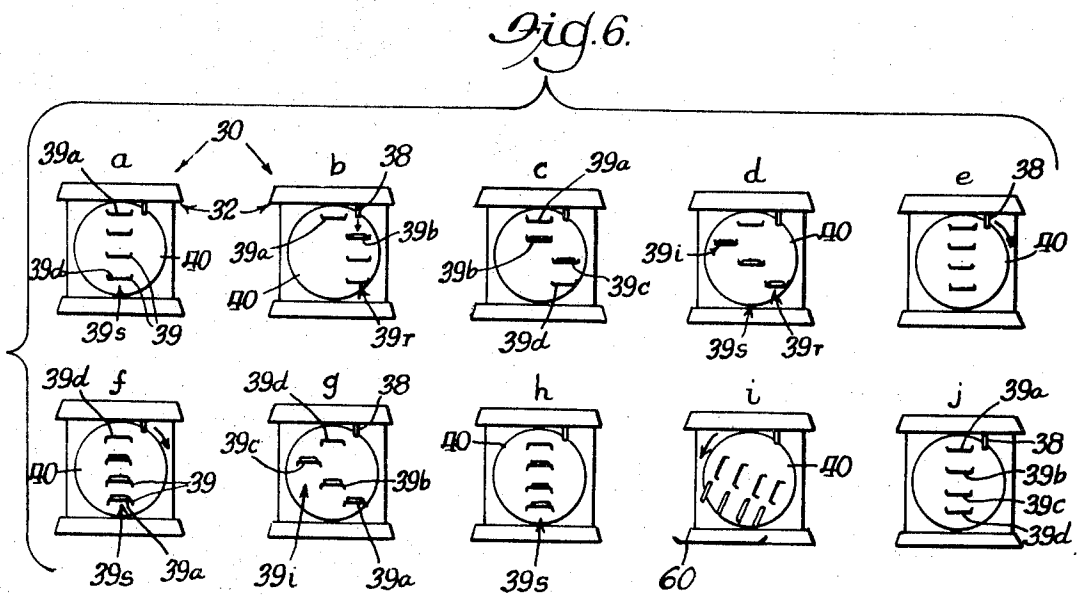
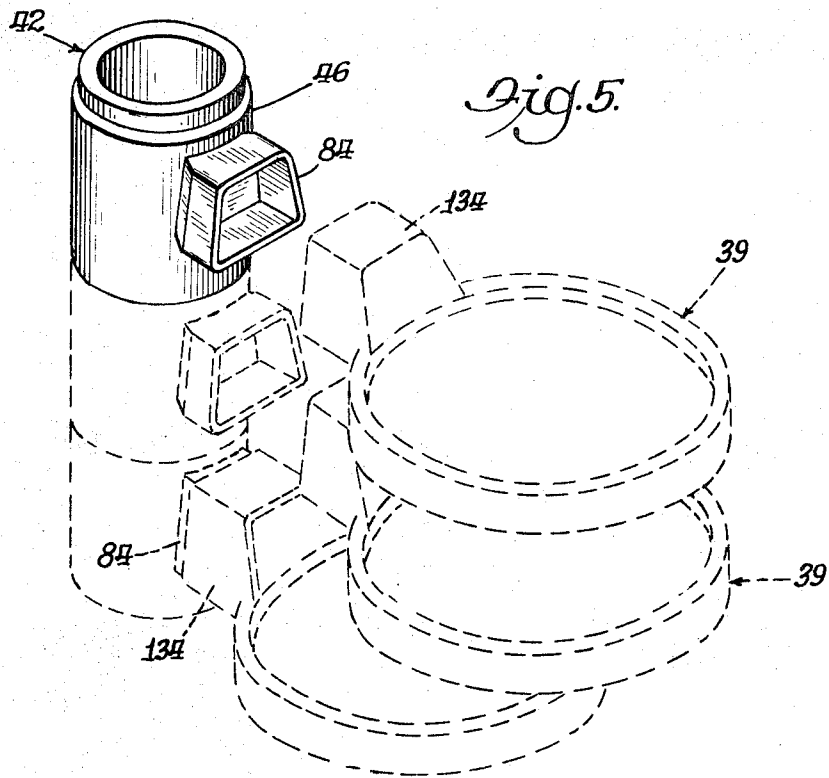
Primary Examiner—Volodymyr Y. Mayewsky
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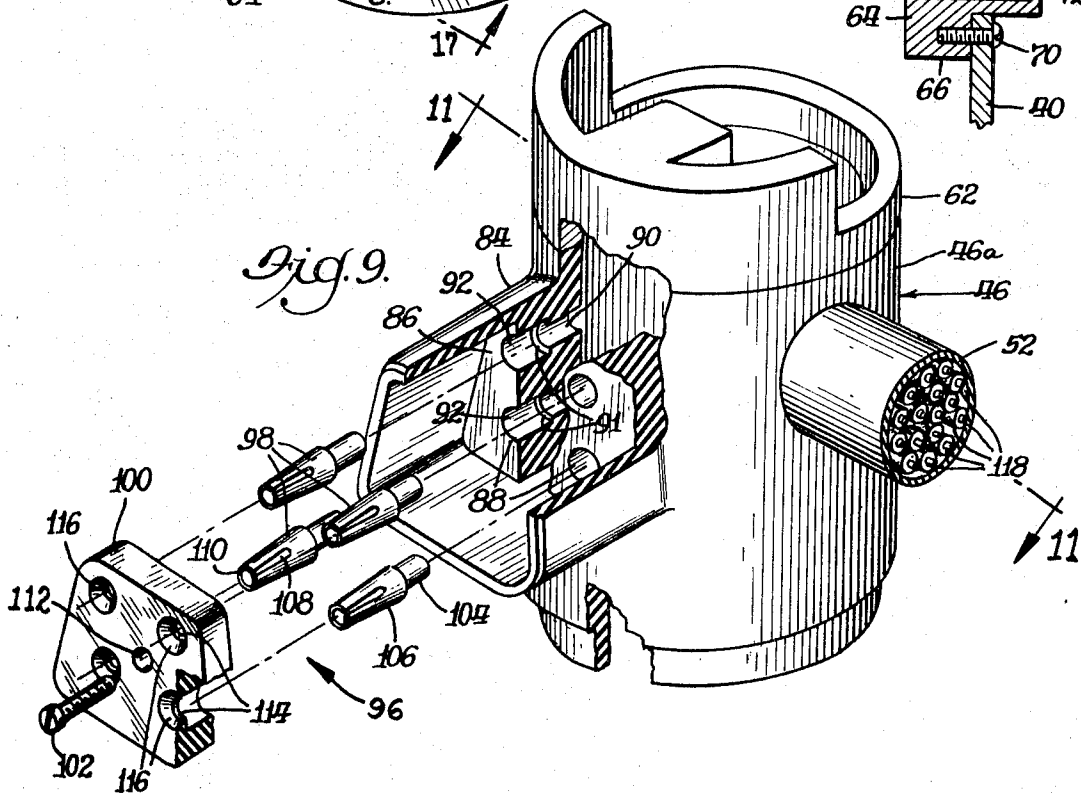
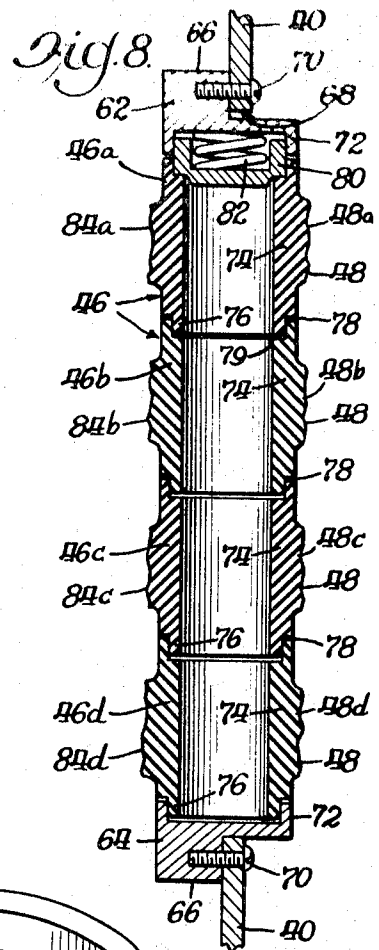
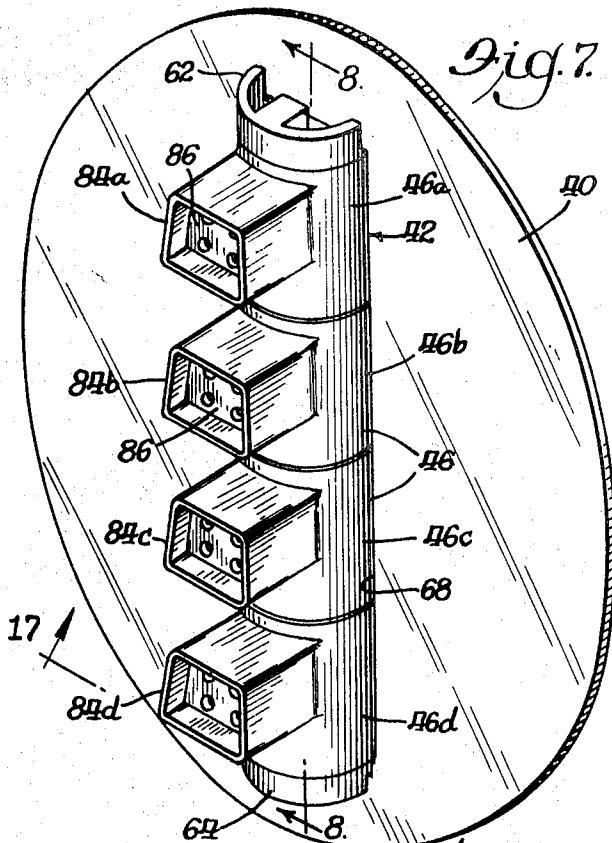
[57] **ABSTRACT**

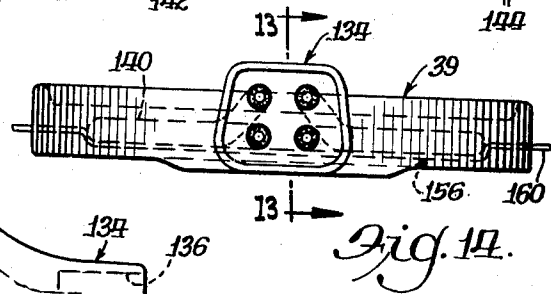
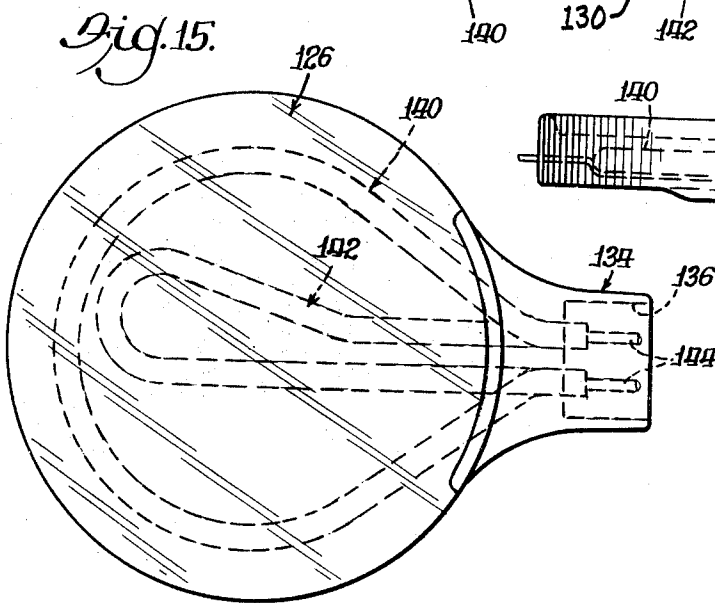
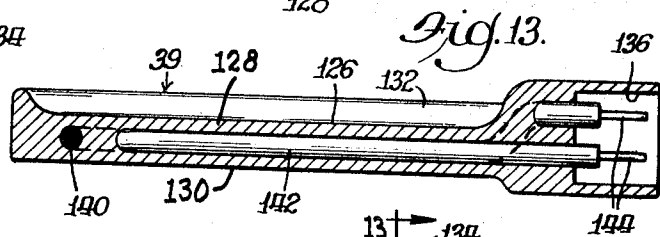
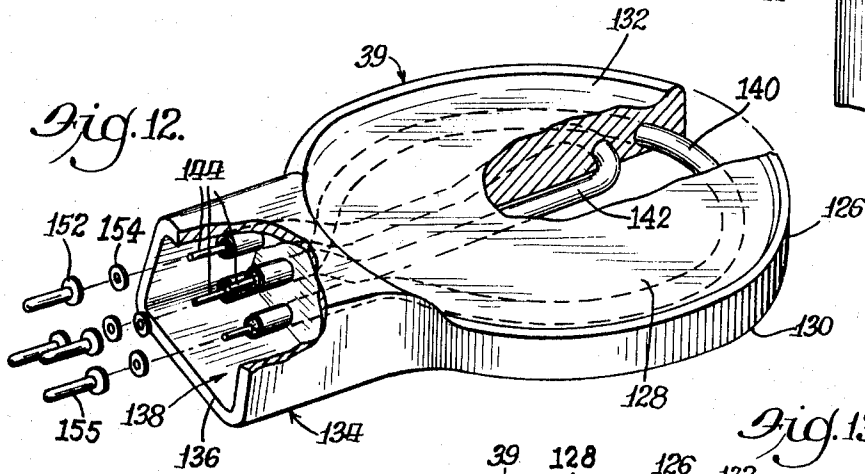
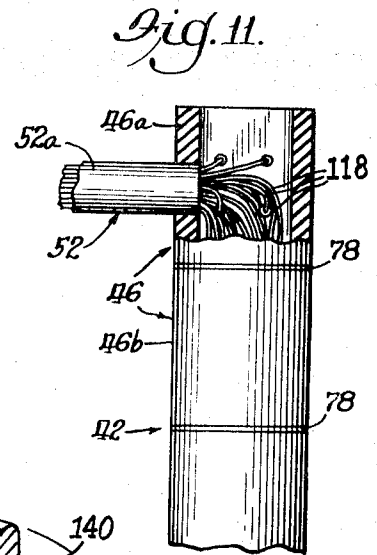
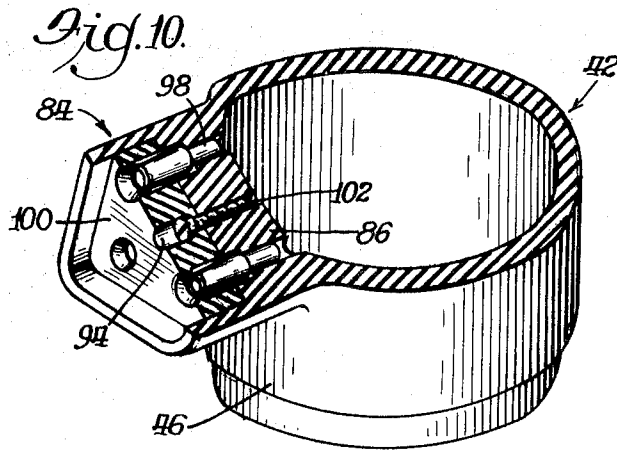
An electrically heated griddle for detachably mounting in a cantilever fashion to a mounting member, including heating and sensing elements internally imbedded in a thin, flat plate with terminals on said elements for engagement with contacts of the mounting member, and an integral mounting arm extending radially from the periphery of the plate with a polygonal portion for telescoping and frictional engagement in a predetermined position on the mounting member and including an enlarged solid portion adjacent the plate with said terminals being grouped therein and extending there-through for engagement with said contacts.

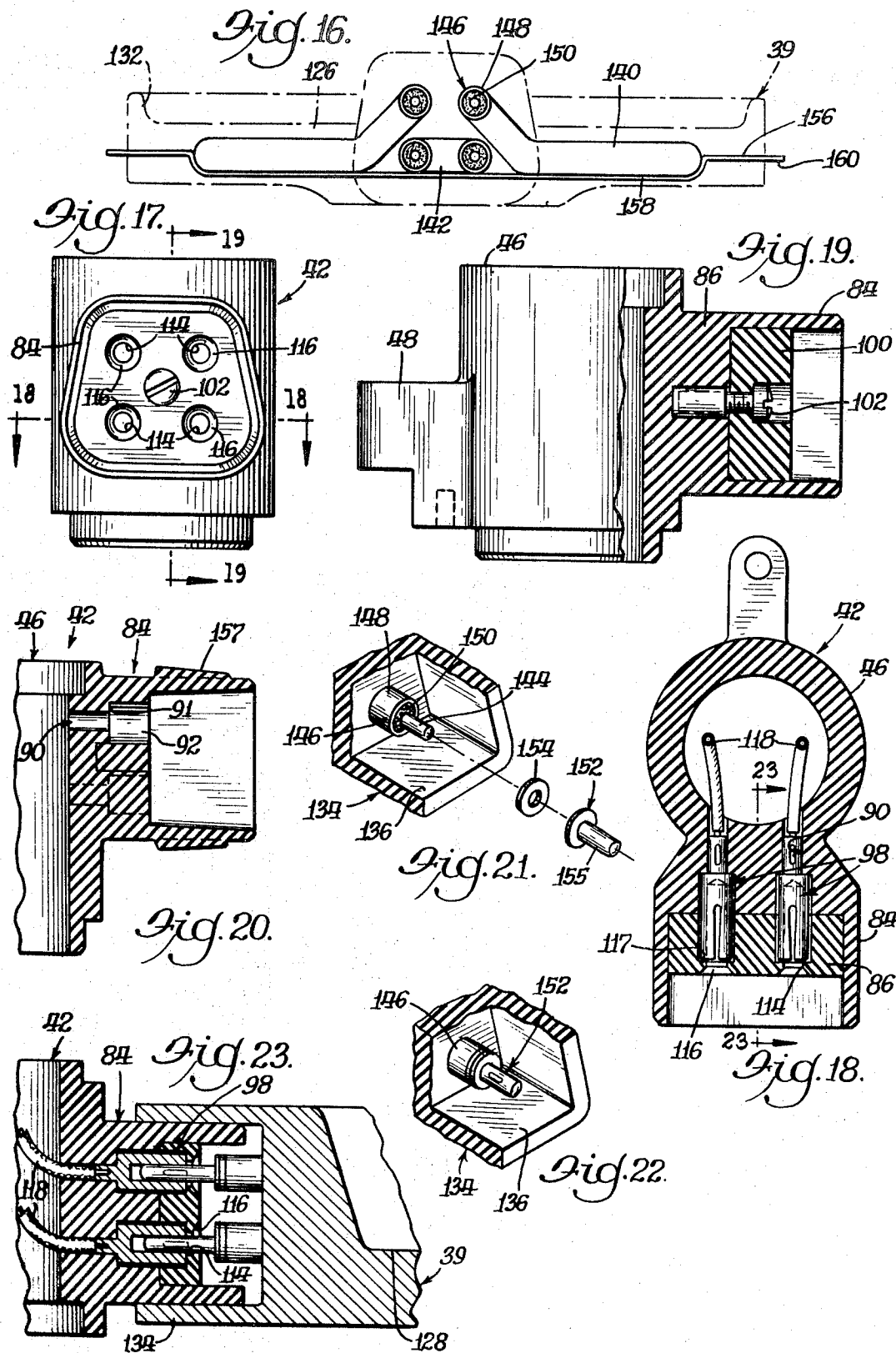
4 Claims, 23 Drawing Figures











DETACHABLE ELECTRICAL HEATING GRIDDLE

This is a division of application Ser. No. 79,409, filed Oct. 9, 1970 and issued as U.S. Pat. No. 3,683,150.

FIELD OF THE INVENTION

The invention resides in the field of automatic pancake making machines of a kind including a cabinet having an upper compartment in which a container of batter is placed, and a lower compartment in which the griddles are placed for baking pancakes thereon. In applying heat to the griddles, the heat of course tends to migrate to the upper compartment having the batter, and if excessive heat should reach the upper compartment, the batter could be at least partially baked, impeding the free flow thereof onto the griddles for baking.

The invention relates particularly to various features, arrangements and constructions as to accomplish the above indicated objectives, and for other effects including: electrical elements for individually heating the griddles and for individually sensing the heat thereof; means for supporting the griddles for movement of them individually into and out of various positions, i.e., for filling, frying and discharging; means providing wires leading to the heating and sensing elements in the individual griddles and for accommodating those wires in the movements of the griddles into the various positions thereof; means for individually and demountably supporting the griddles including means for mechanically mounting them and in so mounting them automatically making connection between the electrical wires in the supporting means and the electrical elements in the griddles; heating elements operative for heating the individual griddles in a uniform manner, and sensing elements operative for accurately sensing the heat of the griddles so as to provide high uniformity of heating the griddles; sealed electrical elements in the griddles enabling the demounted griddles to be immersed in water for cleaning purposes; the means for heating the individual griddles effective for heating all of them uniformly regardless of the orientation thereof, i.e., as to position for filling or frying; means for mounting the griddles in a cantilever arrangement which mechanically supports the griddles in proper position without imposing stress on the electrical contact elements; a plurality of griddles which are all freely interchangeable as to position; an arrangement for automatic positioning the interconnecting electrical contacts which includes a floating condition of at least certain of the contacts, so as to effect complete electrical contact notwithstanding any misalignment of mechanical parts in the mounting means.

DESCRIPTION OF A PREFERRED EMBODIMENT

In the drawings:

FIG. 1 is a perspective view of a pancake making machine embodying the features of the present invention, showing only certain major features;

FIG. 2 is a perspective view, semi-diagrammatic in nature, showing principally the griddles and their mounting;

FIG. 3 is a perspective view similar in nature to FIG. 1, taken from the diagonally opposite corner from FIG. 1, and showing diagrammatically internal mechanism for moving the griddles;

FIG. 4 is a diagrammatic view of a portion of the machine showing the manner in which the batter is dispensed;

FIG. 5 is a perspective view partially in full lines, and partially dot-dash lines, showing the mounting means for the griddles, and with indication of the means for placing the griddles in mounting position on the mounting means;

FIG. 6 is a series of diagrammatic illustrations, indicating the different positions of the griddles in stacked, filling, frying and discharging positions;

FIG. 7 is a perspective view of a rotating mounting disc, and a column therein, the latter directly supporting the griddles;

FIG. 8 is a vertical sectional view of the column shown in FIG. 7, taken substantially at line 8—8 of FIG. 7;

FIG. 9 is an exploded perspective view of one of the sections of the column of FIGS. 7, 8, together with an end element and electrical elements incorporated in the section;

FIG. 10 is a perspective view, partially in section, of the column section of FIG. 9, showing certain of the electrical elements positioned therein;

FIG. 11 is a sectional view of a portion of the supporting column, and taken on line 11—11 of FIG. 9;

FIG. 12 is an exploded perspective view, partially in section, of a griddle utilized in the machine;

FIG. 13 is a sectional view taken at line 13—13 of FIG. 12;

FIG. 14 is an end view taken from the right of FIG. 13;

FIG. 15 is a plan view taken from the top of FIG. 13;

FIG. 16 is a view oriented as though taken from the right of FIG. 15 but showing in full lines the internal elements of the griddle, and in dot-dash lines the outline of the griddle itself;

FIG. 17 is a face view taken at line 17—17 of FIG. 7;

FIG. 18 is a sectional view taken at line 18—18 of FIG. 17;

FIG. 19 is a sectional view taken at line 19—19 of FIG. 17;

FIG. 20 is a sectional view oriented similarly to FIG. 19 and showing a section of the mounting means and a mounting element of the griddle fitted thereover;

FIG. 21 is an exploded perspective view, fragmentary in character, of an electrical element of the griddle, and terminal elements to be secured thereto;

FIG. 22 is a view similar to FIG. 21 but with the terminal elements fitted in place on the electrical elements of the griddle; and

FIG. 23 is a sectional view taken at line 23—23 of FIG. 18 showing the connection of the electrical contact elements between the griddle and the mounting means therefor.

Referring in detail to the accompanying drawings, attention is directed first to FIGS. 1—3 showing the pancake machine as a whole, and indicated at 30, having a cabinet 32 of suitable construction including an upper compartment 34 open to the top for receiving a container 35 for batter for making the pancakes, the container 35 being for example in plastic form and adapted for compression by suitable means 36 indicated diagrammatically in FIG. 4 for compressing the container and thereby discharging batter indicated at 37 from a spout 38 onto one of a plurality of griddles

39, individually identified in FIG. 2 and others as 39a, 39b, 39c and 39d. The means 36 may be actuated by suitable mechanism, preferably in response to an automatically initiated means such as a switch, and it is continued to be operated for dispensing batter onto each of the griddles 39 as explained more fully hereinbelow. Briefly, at this point it is stated that the griddles 39 are individually moved to a filling position shown at 39r (right) in FIG. 6, from their normal position in a stack, 39s (stacked) shown in dot-dash lines in that figure, and then withdrawn therefrom after filling, to be followed by a baking operation also described hereinbelow. Certain ones are also moved to a third position 39l (left), again as referred to below.

It is stated that the overall mechanism including the cabinet and the means for dispensing the batter as well as the means for moving or swinging the griddles into and of their different positions, in themselves, are not part of the present invention.

Attention is next directed to FIGS. 2 and 3 which are generally similar to FIG. 1 but more diagrammatic in their overall depiction, and showing the mounting of the griddles more in detail. The construction includes a rotary disc 40, preferably in the form of a plate, mounted in a vertical plane and adapted for rotation in its own plane by suitable means such as a driving roller 41 driven by a suitable rotating mechanism indicated in its entirety and diagrammatically at 42. The disc 40 is adapted to be driven or rotated in opposite directions, within certain limits, as referred to again hereinbelow.

Mounted in the disc 40 is a column 42 serving as a mounting means or support for mounting the griddles 39, (see below), and upon rotation of the disc, the griddles and the mounting means therefor are rotated accordingly together as a unit about the axis of the disc. Also mounted on the disc 40 and carried thereby is a positioning mechanism indicated in its entirety at 44 (FIG. 3) which serves to swing the griddles 39 individually from the vertically stacked position at 39s (stacked) FIG. 1 to their filling position 34r (right) shown also in that figure.

The column 42 includes a plurality of, in this case four, sections 46 (FIGS. 7 and 8) individually identified 46a, 46b, 46c, and 46d, supporting the griddles, and each having actuating lugs 48 (FIG. 3) individually identified (with the corresponding same subscripts), which are pivotally connected to links or connecting rods 50, individually identified with the corresponding same subscripts, the latter being directly actuated by components of the positioning mechanism 44. Briefly, it is to be stated at this point that upon actuation of the positioning mechanism, and specifically actuation of the links 50, the griddles 39 are moved from the stacked position 34s to each of opposite positions, i.e., the filling position 39r and the opposite position 39l illustrated specifically in FIG. 6. The detail construction of the column or mounting means 42 is described fully hereinbelow.

FIG. 8 shows cables and electrical lines indicated in the aggregate at 52 and attention is directed particularly to certain ones thereof individually identified 52a, 52b. The cables are connected at one end with a suitable source 54 and at their other ends to the various controls or components in the machine, and the particular arrangement is that the specific cables 52a, 52b are connected with movable components of the machine, namely the griddles 39, and the positioning mechanism

44, so that upon movement of the latter components, the flexible cables 52a, 52b are sufficiently long, and flexible, to follow the movements of those components. It is to be noted that the disc 40 moves a full 180° in one direction and a substantial amount in the other direction, although it may be less than 180° in the latter direction as described below in connection with frying the pancakes and discharging them.

Attention is now directed to FIG. 6 showing diagrammatically the whole machine and the different positions of the griddles and the mounting means including the disc 40. In FIG. 6a the griddles 39 are in a stacked position 34s which is also a central or neutral position. FIG. 6b shows the lower three griddles moved into a filling position 34r, and in that position being also in vertical alignment under the spout 38. The batter is then discharged onto the top one of those three griddles, i.e., 39b, and that one is moved to the left to the position of FIG. 6c; then batter is discharged into the second griddle 39c; thereafter the first two of the griddles 39b, 39c are shifted out of those positions (to the left) exposing the griddle 39d and the batter is dispensed onto the latter griddle. The griddles are left in those positions for a certain period to fry the pancakes, and then they are moved into the stacked position represented in FIG. 6e.

To fry the pancakes on the opposite side, the entire assembly, by means of the disc 40, is rotated 180° to the position represented in FIG. 6f in which the pancakes fall from their original griddles onto the ones therebelow. Comparison is made between FIGS. 6f and 6a; — in FIG. 6a the upper griddle 39a is idle while in FIG. 6f the griddle 39d is uppermost and the pancakes are deposited on the other three griddles. Thereafter the griddles are moved to the position of FIG. 6g, and the lower three griddles bearing the pancakes staggered, and the pancakes are baked for the desired period of time. Thereafter the griddles are moved again to the stacked position represented in FIG. 6h, and the stack as an assembly, including the disc 40 is rotated, preferably in the direction opposite that of FIGS. 6e, 6f, to a position suitable for the pancakes to slide off the griddles onto a plate or receiver 60. This angle for discharging the pancakes may be as desired, such for example as in the neighborhood of 70° from the vertical. Finally the assembly including the disc 40 is rotated further in that direction to its original position of FIG. 6a.

The positioning of the griddles as represented in FIGS. 6d and 6g is for the purpose of dispersing them and the pancakes thereon so that the heat from each will not unduly heat the next one thereabove, or in other words there is a maximum of free flow of gases throughout the compartment containing those griddles whereby to enable effective control of the heat applied to the individual griddles. This movement of the griddles between positions accommodates the electrical wires or conductors leading to the griddles for use in heating them. Also the fact of the rotational movements of the assembly including the disc 40 between its opposite positions also enters into the present invention, in that the present device facilitates such movement of that disc while still accommodating the electrical wires or conductors. The details of this arrangement and the construction of the means providing those accommodations are referred to again hereinbelow.

Referring to FIGS. 2, 3 and 7, the column 42 includes, in addition to the sections 46, end elements, viz., a cap element 62 and a foot element 64, these end

elements being so designated according to a first position of the column, namely, the starting position as represented in FIGS. 7, 8, although these two elements may be identical and they are reversed at times as between being the cap element and the foot element. The elements making up the column 42 are preferably made of thermosetting, high heat-insulating plastic material. The disc 40 is provided with an elongated aperture 68 for receiving the column 42 and the elements 62, 64 include body portions 66 extending longitudinally beyond the aperture and fitted against the disc, where screws 70 are utilized for securing the end elements, and thereby the column, to the disc. Each end element includes a surrounding flange 72. Each of the sections 46 includes a main cylindrical portion 74 having a reduced diameter extension 76 at the lower end and a counter bore 78 at the upper end, these sections being stacked with each reduced diameter extension fitted in the counterbore of the section therebelow. At the bottom the reduced diameter extension 76 is fitted within the flange 72 in the bottom element 64. Annular bearings 78 of suitable character are interposed between adjacent sections, and between the lower section and the foot element 64.

Interposed between the upper section 46a and the cap element 62 is an expansion plug 80 of cup shape form, resting in the counterbore 78 in that upper section and extending into the surrounding flange 72 in the cap element; a compression spring 82 is disposed in the cup of the expansion plug and reacts between that expansion plug and the cap element 62, biasing the sections 46 downwardly (FIG. 8), retaining the sections in a rigid column.

Each section 46 includes a radial arm or mounting element 84, preferably integral with the tubular body of the section, which serves as a mechanical supporting element for the respective griddle. This element 84 has a radially outer extension tubular in shape, and preferably non-rectangular in cross sectional outline, so as to establish a single and predetermined mounting position of the griddle, being for example wider at the bottom, and narrower at the top.

The element 84 has an apertured plug portion or element 86, adjacent the hollow portion of the column and extending only partially to the radially outer end of the element 84. The plug element 86 includes a plurality of (four) cavities 88 each having a reduced diameter bore portion 90 at its inner end opening into the interior of the column and an outer counterbore portion 92 opening radially outwardly into the interior of the element 84. The plug element 86 also includes a central tapped hole 94 for receiving a screw.

FIG. 9 also shows an assemblage of contact elements and a retainer means therefor indicated generally at 96 which includes a plurality of individual socket contacts 98, a retainer cap 100 and a securing screw 102. Each socket contact 98 includes a reduced portion 104 and an enlarged portion 106, the latter being slotted at 108 on opposite sides and tapered to a small end 110 for receiving a pin contact. The socket contacts 98 are inserted into the apertures 88 with the reduced portions 104 extending into the reduced portions 90 of the apertures, and the enlarged portions 106 fitted in the counterbores 92. The cap 100 is fitted against the plug element 86 and secured in place by the screw 102 which is fitted into a central aperture 112 in the cap and threaded into the tapped hole 94. The enlarged por-

tions 106 of the socket contacts are registered with apertures 114 in the cap 100, these apertures having radially outwardly facing chamfered counterbores 116 for facilitating insertion of the pin contacts therein and therethrough and into the socket contacts 98.

The cable 52a secured in the topmost section 46a in a suitable manner (FIGS. 9 and 11), includes a plurality of wires or conductors 118 leading into the interior of the column and leading to different ones of the griddles, four to each griddle. The conductors 118 lead to various control means for energizing the heating elements and responding the condition of the sensing element whereby to control the heating elements to heat the griddles to the desired temperatures in accordance with known temperature control techniques.

The socket contacts 98 (FIG. 9) are secured to the respective wires or conductors as by crimping the reduced portion 104 on the wires. The socket contacts 98 are dimensioned for limited relative floating movement in the cavities 88 (FIG. 19) for facilitating contact engagement with the pin contacts therein, accommodating slight misalignment as between the pin contacts and the socket contacts. The contacts are stopped against movement radially inwardly by the shoulders 91 and against movement radially outwardly by the shoulders 117 in the cap 100.

Attention is next directed to the construction of the griddles 43 themselves all of which are identical, and specifically to FIGS. 12-16. Each griddle includes a plate member 126 which is preferably a casting of aluminum material and it may be coated with tetrafluorethylene, known by various trade names, one of which is "Teflon", or other suitable material for preventing burning and sticking of the pancake to the plate and enabling the pancake to slide easily thereof. The griddle includes what is conveniently termed a top surface 128, a bottom surface 130 although these surfaces at times are reversed as to position and orientation; the top surface 128 terminates in a rim 132 which serves to confine the liquid batter in the first phase of the frying of the pancakes as referred to again hereinbelow. The griddle has a radial arm 134 having a tubular terminal extension 136 defining a cavity 138, this arm cooperating with the arm 84 of the mounting column 42.

The griddle plate 126 is provided with a heating element 140 (FIGS. 14-16) and a sensing element 142, both of which in themselves are of known kind, including for example a central heating conductor 144 and a surrounding coating 146 which may include an outer ceramic sheet 148 and an inner coating 150 of other material, both electrically insulating.

As shown in FIGS. 21, 22 the elements 140, 142 include loop portions, the former encircling the latter, and both lying in a common plane in the middle of the plate portion, and having end elements extending out of the plate portion of the griddle and into the socket 138 where the outer sheath 146 terminates shortly therebeyond while the inner conductor 144 extends beyond the outer sheath, for making electrical contact, and for this purpose a contact terminal element 152 is applied thereto; first an insulative washer 154 is applied over the extended end of the conductor and against the end surface of the surrounding insulation, this washer having at least limited resiliency; the element 152 includes a closed-end sleeve with a transverse flange at its open end, and is fitted over the end of the central conductor and pushed into compressing relation with

the washer and sealing the latter against the exposed end of the insulation on the element, and the sleeve crimped to the central conductor 144 in strong physical and mechanical connection therewith. This relationship is shown in FIG. 22 and the terminal element 152 retains the insulative washer in sealing engagement against the entrance of air and moisture into the electrical element, while the crimping displacement retains a strong mechanical connection therewith.

The heating element 140 and sensing element 142 may be substantially the same in character, and are embedded in the body of the griddle, and hence sealed therein, and with the seal at the ends of the elements, the griddles when unmounted may be immersed in a cleaning liquid without danger of any of the liquid penetrating into the interior of the construction, and without affecting the electrical contacts.

The arm 134 on the griddle cooperates with the arm 84 on the column section for supporting the griddle, the tubular extension 136 telescoping over the tubular extension or arm 84 with a sliding fit, enabling free removal by the hand, but with sufficient friction to prevent accidental displacement of the griddle in normal circumstances. The griddle is held in cantilever fashion which in itself produces substantial friction. There is no strain or binding effect on the electrical contacts, despite the relatively large and heavy mechanical griddle and supporting means. If desired, one of the elements (e.g. 84) may be provided with a wedge element 157 to assure greater frictional engagement. It is to be noted that the elements 136, 84 are of non-rectangular shape as indicated above, assuring fitting of the griddle in only a single position, and restraining the griddle against rotation about the axis of those elements.

The terminals of the heating element 140 and the sensing element 142, as represented by the terminal elements or pin contacts 152, are aligned with the apertures 88 and the socket contacts 98 therein, and in response to fitting the griddle on the column, by interconnecting the tubular elements 136, 84, the pin contacts 152 are inserted into the socket contacts 98 and they make the desired connection between the electrical elements in the griddle and the respective ones of the wires 118 in the supporting column.

The loose fit of the socket contacts 98 and the floating action thereof, accommodates misalignment as between those pin contacts and the normal position of the socket contacts and this action is further facilitated by the concave shape of the entrance to the apertures 88, which assists in the entry of the pin contacts there-through and into the socket contacts.

The relative arrangement of the heating element 140 and the sensing element 142 in the griddle is of importance. The heating element 140 assumes, in the major portion of the griddle an arcuate shape, and is adjacent the periphery thereof. The terminal portions of this heating element converge as they enter into the arm 134, and then assume a straight direction parallel with the radius of the griddle in the mounting arm.

The sensing element 142 is disposed within the heating element and nearer the center thereof; its central portion assumes the form of a loop while the terminal portions are in parallel arrangement, parallel with the same radius through the mounting arm 134. The extreme terminal portions of the heating element as shown in FIG. 13 are displaced from the terminal portions of the sensing element, in direction axially of the

griddle, so as to accommodate similar circumferential spacing between the terminal portions of each of the elements.

It is desired of course that the heating element and sensing element be disposed at a predetermined position axially of the griddle plate, such as midway, and for this purpose a support strip placement strip 156 is utilized. This strip may be of any suitable material, such as stainless steel and it has a main central portion 158 directly supporting the heating element and sensing element and having terminal portions 160 extending for example in the midplane of those elements. The strip 156 is secured to the heating element and sensing element and placed in the mold for casting the griddle, and in such casting it is imbedded in the casting except for the extreme end portions which are later cut off from the finished casting.

Attention is directed again to FIG. 6 in connection with the frying of the pancakes. As indicated above, as the griddles are put in their first or stacked position, the rim 136 is uppermost. With the griddle in such position and in filling position as in the right hand position of FIG. 6d, the batter is discharged (in liquid form), and it is contained by the rim 132. After the frying in the first stage, that is, on the first side, and the griddle assembly is inverted, the half-fried pancakes drop from the then upper griddles onto the griddles therebelow and in such position the "lower" side 130 of each griddle is uppermost and this side does not have such a rim but it is not necessary because of the half-fried condition of the pancakes, they do not run, and when the griddle assembly is rotated to the position of FIG. 6i for discharging the pancakes, the absence of the rim enables the fully fried pancakes to readily slide off of the griddles and onto the plate.

Summarizing certain features of the invention: the griddles are independently heated, by the incorporation in each the heating element and the sensing element, and therefore the griddle is heated almost entirely under the control of that griddle, and is affected at a very minimum from any ambient heat produced by any of the other griddles. As a consequence, as the heat of a griddle reaches the desired level, the controlling influences are brought into play to prevent further heating. In cooperation with the separate means for heating the individual griddles, the demountability of the griddles enables the griddles to be individually cleaned, and in this connection the sealing effect of the elements imbedded within the griddle enables the griddle to be immersed in a cleaning fluid. The griddles are all identical in construction, enabling free placement of any of them in any position. The mounting column 42 is preferably of a thermosetting plastic material and as such provides a high degree of heat insulation from the griddles to the upper compartment in which the container of liquid batter is disposed, thereby eliminating or minimizing transmission of such heat as would tend to bake the mass of batter in the container 35, which is to be maintained in liquid form. The supporting means or column 42 is made of sections whereby to enable or facilitate individual movement of the griddles in the filling and baking cycles, this construction also accommodating the provision of individual wires or conductors to the heating and sensing elements in the different griddles. The construction also provides electrical connection means, such as various ones of the cables 52 which in addition to accommodating the swing-

ing of the individual griddles, also accommodates the movement of the column 42 and the complete griddle assembly in reciprocating movements about the axis of the disc 40, in the corresponding movements of the latter.

We claim:

1. A griddle for detachably mounting in a cantilever fashion to a mounting member having electrical contacts and comprising a thin, flat plate of high heat conductive material,

a pair of electrical elements embedded in the plate, one of the electrical elements being a heating element and including a loop disposed adjacent the periphery of the plate,

the other electrical element being a sensing element and including a loop within the loop of the heating element and disposed adjacent the center of the plate,

the electrical elements including terminals exposed to the exterior for engagement with said contacts of said mounting member with the contacts engageable with the heating element being connected with an electrical heating source, and and contacts engageable with the sensing element being connected with controls for controlling the heating element, and

an integral mounting arm extending radially from the periphery of the plate with a polygonal portion for telescoping and frictional engagement in a predetermined position on said mounting member and including a solid portion adjacent the plate of substantially greater axial extent than the plate, the terminals of the electrical elements being grouped

in said solid portion and extending therethrough, and being distributed in an axial direction beyond at least one of the opposed faces of the plate.

2. The griddle according to claim 1 wherein the mounting arm includes a tubular polygonal portion radially outwardly of the solid portion for use in mounting the griddle with the tubular portion having a wider bottom than its top, and the terminals of the electrical elements extend into the tubular portion.

3. The griddle of claim 2 wherein said electrical elements embedded in the solid portion include a central conductor and a sheath of insulation thereon, in the terminal portions, the central conductor extending beyond the sheath of insulation, and a contact member secured to each terminal portion in liquid sealing relation to the interior of the electrical element.

4. The griddle according to claim 3 wherein the sheath of insulation includes an outer shell impervious to liquid and an inner sleeve between the outer shell and the inner conductor,

the contact member includes a sleeve of imperforate material closed at one end and having a transverse flange at its other and open end, the contact member being disposed over the central conductor with the sleeve crimped thereon and the flange being disposed to the exposed end of the sheath of insulation,

and the construction includes a washer of resilient material fitted over the central conductor and compressed between the flange and the end of the sheath of insulation.

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