

United States Patent

[11] 3,609,298

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08075 |
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| [22] | Filed | June 17, 1970 |
| [45] | Patented | Sept. 28, 1971 |

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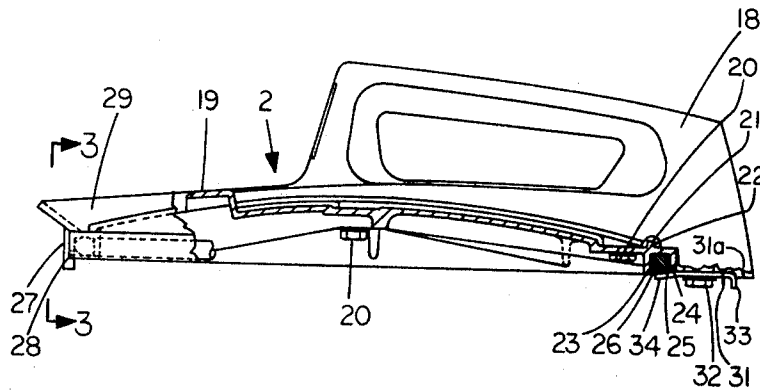
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- [54] ELECTRICALLY HEATED KETTLE WITH
DISASSEMBLY CONTROL MEANS
9 Claims, 6 Drawing Figs.**

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| [52] | U.S. Cl..... | 219/441,
219/311, 219/435, 219/437 |
| [51] | Int. Cl..... | F27d 11/02 |
| [50] | Field of Search..... | 219/441-442,
438, 437, 435 |

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| [56] | | References Cited |
| | | UNITED STATES PATENTS |
| 2,189,127 | 2/1940 | Brannon..... |
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ABSTRACT: An electric kettle comprising a container component, a lid component and a control component with the lid component being releasably interrelated with the container component at front and rear portions of the kettle and with the control component being releasably interrelated with the container component in the rear portion of the kettle and being positioned with respect to the container component and the lid component so that the control component must be released before release of the lid component from the container component can be had. The container component includes a fixed heating element with an external thermostat sensing projection and a pair of projecting male terminal elements; the lid component includes a handle and pouring spout; and the control component includes a pair of female terminal elements in electrical connection with a power supply cord and mating with the male terminal elements, and a thermostat assembly with a projecting clamp to engage the thermostat sensing projection. The kettle thus provides a componentized assembly wherein any of the components may be readily cleaned or replaced by the user.



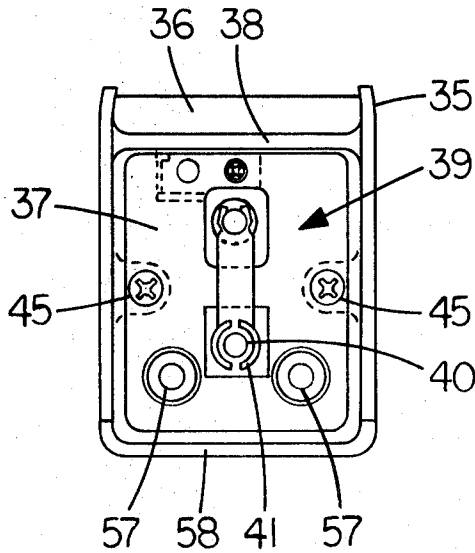


FIG. 5

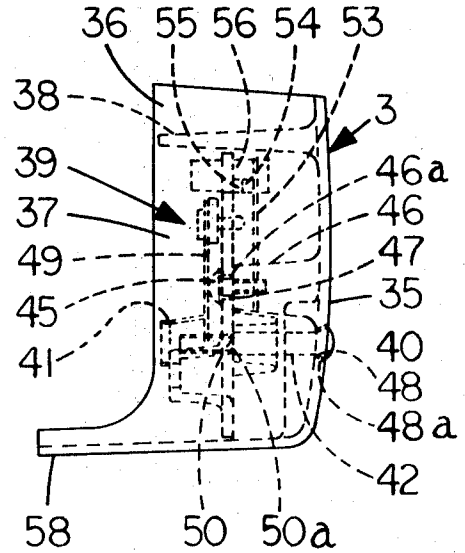


FIG. 6

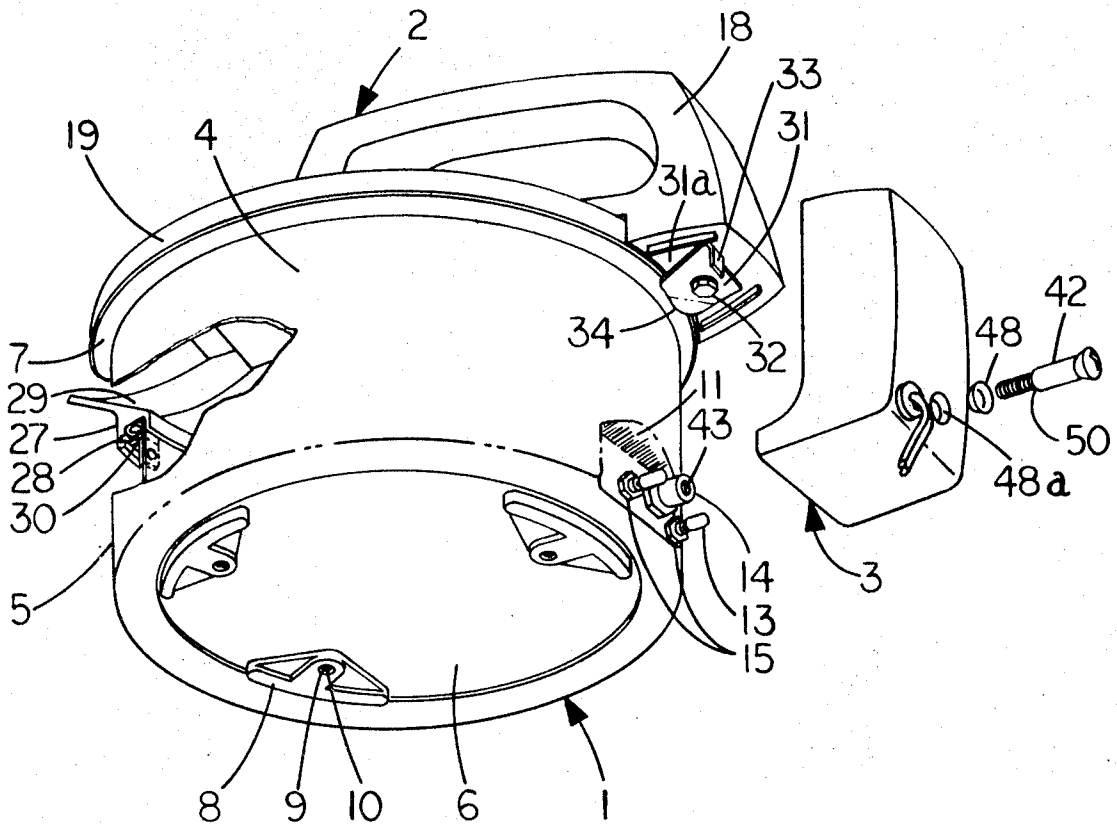


FIG. 1

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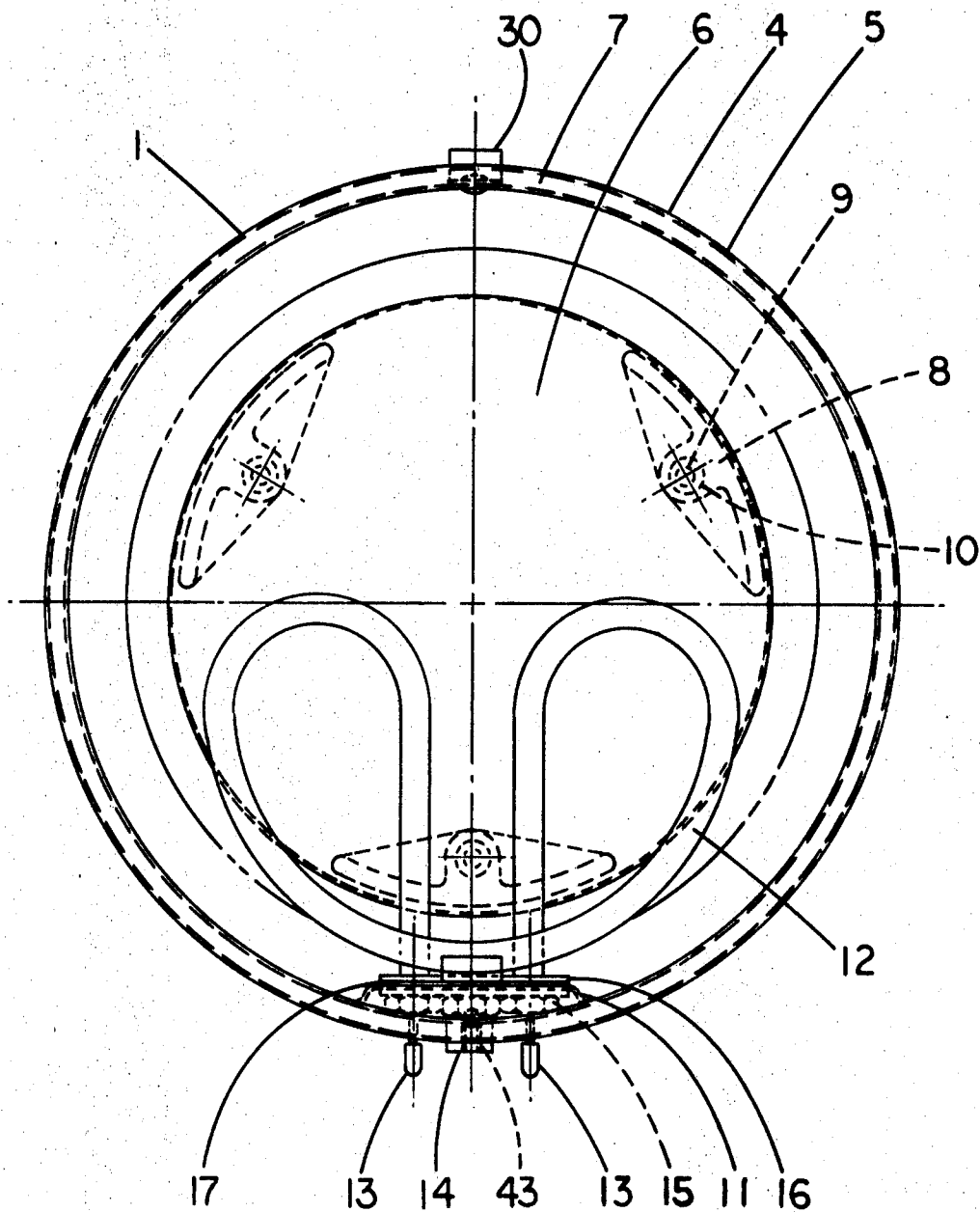


FIG. 4

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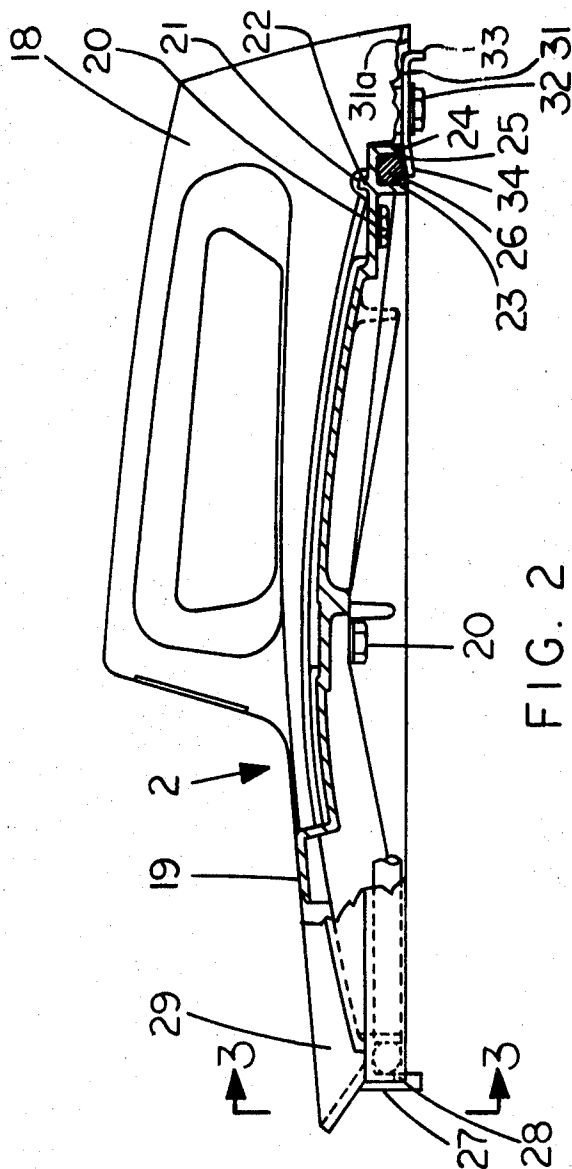


FIG. 2

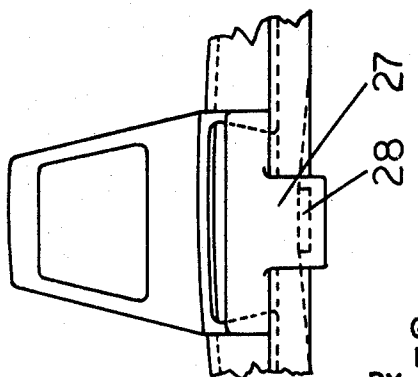


FIG. 3

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ELECTRICALLY HEATED KETTLE WITH DISASSEMBLY CONTROL MEANS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of electrically heated containers and, more particularly, to the field of electric kettles.

2. Description of the Prior Art

The field of electrically heated containers and, more particularly, electric kettles is well developed, and U.S. Pat. Nos. 881,968, issued Mar. 17, 1908 and 2,189,127 issued Feb. 6, 1940 are exemplary of the development of this field. Both patents show components which are adapted for ready removal for servicing, maintenance and/or repair, the former patent showing a removable lid and heating coil assembly and the latter patent showing a removable lid and housing piece.

These patents and the prior art in general, although showing the broad concept of componentization in kettle construction fail to envisage the concept of a kettle construction comprising a plurality of components somewhat comparable in cost and interrelated by means permitting safe assembly and disassembly by the user for cleaning and repair. Thus, the prior art not only has permitted the user to come into physical contact with the heating elements and electrical elements while the elements were still connected to the power supply but, also, failed to provide adequate access to the kettle container and lid for cleaning and to provide an economical manner of kettle repair.

SUMMARY OF THE INVENTION

This invention is directed toward a kettle construction comprising a plurality of components interrelated by means permitting safe and facile release of the components from each other so that the components may be readily and safely assembled and disassembled by the user for cleaning or repair.

It is therefore an object of the present invention to provide a kettle construction comprising readily releasable components for ease of cleaning or repair.

This and other objects, features and advantages of the present invention will become more apparent when reading the following description and claims in the light of the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the kettle construction broken away in parts to show the interrelationship of the components;

FIG. 2 is a side elevation view of the lid component cross-sectioned in part;

FIG. 3 is a front elevation view of the lid component along lines 3-3 of FIG. 2;

FIG. 4 is a top view of the container component;

FIG. 5 is a front elevation view of the control component; and

FIG. 6 is a side elevation view of the control component.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawing with reference numerals, FIG. 1 shown a kettle construction comprising a container component generally designated at 1, a lid component generally designated at 2 and a control component generally designated at 3.

The container component as shown in FIGS. 1 and 4 comprises a pan 4 preferably made of stainless steel and defined by a sidewall 5 and a base 6 with the sidewall having a bead 7 at its top and being substantially vertical from the bead to the base. The base has three equiangularly spaced feet 8 of a phenolic composition held to the base by a stud 9 and nut 10 combination, the stud being spot welded to the base. The sidewall 5 has a recessed area 11 supporting the heating element 12, preferably made of stainless steel and having a 1500 watt capacity, by the projection therethrough of a pair of male

terminal elements 13, each of which is coaxial with a respective heater element end, and a thermostat sensing element 14 attached to the element center and in thermal contact with it. Each of the elements 13 and 14 is fixed within the recessed portion 11 of the sidewall 5 by a nut and washer assembly 15 on the exterior and an abutment plate and gasket combination 16 and 17 on the interior. The thermostat sensing element 14 includes a threaded bore 43 for purposes to be described hereinafter.

The sidewall 5 also has a tongue 30 in a plane parallel to the plane of the base 6 and adjacent bead 7, to be described hereinafter.

Referring now to FIGS. 1 and 2, the lid component comprises a handle piece 18, preferably made of a phenolic composition and a cover piece 19, preferably made of polypropylene, both being joined by screws 20.

The cover piece about its periphery comprises a downwardly extending, continuous channel 25 defined by inner and outer flanges 23 and 24 with the outer flange cutaway along the front and rear portions thereof. Within the channel 25 is positioned an annular gasket 26 adhesively secured thereto.

Adjacent the front portion thereof, the cover piece 19 has a downwardly extending flange 27 abutting flange 24 in part and forming, as seen in FIG. 3, with the cutaway of flange 24 a slot 28 adapted to receive the tongue 30 of the container component. The spout area 29 of the cover piece is of conventional construction and may or may not include closure means, pivotable or otherwise.

At the rear portion of the handle piece 18 in a cavity 31a therein, a rotatable interrelating or latch means 31 is positioned, the means 31 being rotatively held by screw 32. The interrelating means 31, as shown in FIG. 2 includes a finger grip flange 33 projecting downwardly and a bead underlying portion 34. The portion 34 in the direction of rotation may or may not include a turned-down corner 34a for purposes of cam-wise facilitating the rotation of the means 31 into the cutaway of flange 23 beneath the bead 7 of the container, the bead 7 in itself being rounded for camming purposes. Also, the flange 33 of the bead underlying portion 34 is intended to contact the periphery of cavity 31a as positioned with respect to the pivot pin 32 so that further rotation after underlying bead positioning is precluded.

Referring now to FIGS. 5 and 6, the control component comprises a housing 35, preferably made of phenolic composition and divided into upper and lower chambers 36 and 37 by flange 38, and a thermostat assembly generally designated at 39 and received within lower chamber 37. The thermostat assembly is maintained loosely within lower chamber 37 by a pair of screws 45 which are received through the assembly and threaded into respective threaded bores in bosses 46 with shoulders 46a of screws 45 abutting against the front ends of the bosses 46 to permit the loose positioning of the assembly. Thus, the assembly 39 may move within chamber 37 within the confines of the holes 47, concentric with respective bores 46.

Additionally, a screw 42 having a shoulder 50 which abuts against an internal shoulder 50a on the thermostat assembly extends through the assembly 39 and coaxial thermostat clamp 41 into threaded engagement with bore 43 of the thermostat sensing element 14 on the container component. A spring washer 48 is positioned within the cavity 48a to floatingly hold the control component against the container component when the screw 42 is threaded into the bore 43. The spring washer is positioned between the base of the cavity 48a and the head of the screw 42 and, because of the resultant floating positioning of the housing 35 with respect to the component 1 and the loose fit of assembly 39 with respect to the housing 35, results in very sensitive thermostatic control. Thermostat assembly 39 is, however, held tightly to the container component 1 at element 14.

The thermostat assembly itself is of conventional construction and comprises a flexible blade 53 adapted to be contacted

by a bimetallic pusher 49, the latter being in thermal contact with the sensing element 14 through clamp 41. The flexible blade 53 has a contact 54 which is biased to closed position against a contact 55 on fixed blade 56. Thus, as the pusher 49 is heated through conduction by its contact with clamp 41, the pusher will bend toward the flexible blade 53 and engage same in response to the sensed temperature of the heating element clamp 41 to break the contact between contacts 54 and 55 and open the electrical circuit to the heating element.

Assembly of the components is accomplished manually by first inserting tongue 30 of the container component 1 into slot 28 of the lid component 2 and then lowering the channel 25 containing the annular gasket 26 onto bead 7 of the container component. When the lid component and container component are properly positioned as above, the latch means 31 is rotated by the assembler by means of the finger grip flange 33 until the portion 34 clearly underlies the bead 7 or until rotation is stopped. It should be noted that insertion of the tongue 30 into the slot 28 is accomplished at an angle so that the following positioning of the bead 7 within the channel 25 provides a compression of the gasket 26. This compression is also accomplished when latch 31 is rotated under the bead 7. As stated previously, the corner 34a of latch 31 is preferably turned slightly downwardly so as to provide cam positioning of the portion 34 under the bead 7 and facilitate its compressive positioning with respect to the gasket 26.

Once the lid and container components are assembled, the control component is positioned with respect to the container component and lid component so that accessibility to the latch means 31 is precluded while the control component is in position. Thus, the control component female terminals 57 receive the container component male terminals 13 therein and the thermostat clamp 41 clampingly telescopes over the thermostat sensing element 14, and the screw with spring washer 48 in cavity 48a threadedly engages the bore 43 in element 14 to secure the control component 3 to the container component 1. It should here be noted that the control component includes the leg portion 58 which underlies a portion of the base 6 of the container component to assist in stabilizing the floating positioning of the control component.

With the disclosed ability of the user to assembly and disassemble, the user has access to the container component and heating element and the lid component for cleaning in addition to servicing. Also, the requirement of initial disconnection of the control component (before access to the latch means 31 can be had) removes the possibility of contact with a hot heating element when the lid component is removed.

For purposes of this disclosure, the tongue 30 and slot 28, the latch means 31 and bead 7, the male and female terminals 13 and 57, and the clamp and sensing element 40 and 14 are considered generically to be the interrelating means of the components.

In the light of the foregoing, an electric kettle is provided which not only may be readily repaired by replacement of any damaged or malfunctioning component, but may also be readily cleaned because of the ease of accessibility of the component surface areas to cleaning media.

Since the preferred embodiment may be modified within the scope of the present invention as, e.g., by providing a plurality of latch means of the type shown at 31 around the periphery of the lid component to engage under the bead of the container component, by providing the screw 42 with a finger-grip wing-type head so that it would be manually operably without the use of tools along with the other interrelating means et cetera, the preferred embodiment should be viewed as illustrative and not in a limiting sense. In this regard, it should also be noted that the preferred embodiment may be modified so that the cover piece and handle piece are two separate components with the handle piece having the tongue and latch interrelating means to clampingly hold the cover piece to the container component.

What we claim is:

1. An electric kettle having heating means and comprising a plurality of components, said plurality of components comprising a container component, a lid component and a control component, said control component including a thermostat assembly, electrical and mechanical means interrelating certain ones of said components to certain others of said components in assembly, and said interrelating means being operable so that, upon disassembly, connection of the heating means to the power supply is automatically terminated before access of the disassembler to the heating means may be had.

2. The kettle set forth in claim 1 wherein said assembly is movably positioned with respect to said control component.

3. The kettle set forth in claim 1 wherein said container and lid components are interrelated at at least two points along the periphery of said container component by said interrelating means into sealed relation.

4. The kettle set forth in claim 3 wherein said mechanical interrelating means includes tongue means on one of said lid and container components and means defining a slot on the other of said lid and container components receiving said tongue means at one of said at least two points and rotatable latch means on one of said container and lid components and keeper means on the other of said container and lid components interrelated with said latch means at the other of said at least two points.

5. The kettle set forth in claim 4 wherein said lid component includes sealing means engaging the top portion of said container in operation to provide a seal therebetween and said tongue means and slot interrelation and said latch means and keeper means interrelation being operable to effect compression of said sealing means between said lid and container component.

6. The kettle set forth in claim 1 wherein said container component has thermostat sensing means and said control component has means, in releasable thermal contact with said sensing means in operation.

7. The kettle set forth in claim 6 wherein said interrelating means includes a pair of male terminal elements on one of said container and control components and a pair of female terminal elements on the other of said container and control components, one of said pairs of terminal elements being connectable to an electrical power supply through a power supply cord and the other of said pairs of terminal elements being in electrical connection with heating element means, and said pairs of male and female terminal elements in operation being mated to provide electrical circuitry from said power supply to said heating element means.

8. An electric kettle comprising a lid component, a container component and a control component, one of said container and lid components having sealing means, said lid component being interrelated with said container component at at least two points about the periphery of said container component by means mechanically operative to provide a seal therebetween, said container component including heating element means and said control component including a thermostat assembly, mechanical and electrical means interrelating said container and control components including a thermostat sensing element on said container component in thermal contact with said heating element means and means on said control component in thermal contact with said thermostat assembly, said thermostat sensing element and control component means being in releasable thermal contact, and said mechanical and electric means further including a pair of male terminal elements on one of said control and container components and a pair of female terminal elements on the other of said control and container components, one of said pairs of terminal elements being in electrical connection with said heating element means and the other of said pairs of terminal elements being adapted to be placed in electrical connection with an electrical power supply through a power supply cord, and said control component being positioned on said container component adjacent at least one of said at least two points to preclude removal of said lid component from

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said container component before said control component is removed from said container component.

9. The method of assembling an electric kettle comprising a lid component, a container component and a control component comprising the steps of interrelating said lid component and control component in sealed relation with releasable mechanical means, providing said control component with

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parts of electrical and thermal circuits, providing said container component with other parts of said electrical and thermal circuits, and interrelating said control component and said container component so that said parts of said electrical and thermal circuits are connected and access to said mechanical means is precluded.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,609,298 Dated September 28, 1971

Inventor(s) Gerald J. Adamson, et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet after "[45] Patented Sept. 28, 1971" insert the following -- [73] Assignee Proctor-Silex Incorporated, Philadelphia, Pa. -- .

Signed and sealed this 24th day of October 1972.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents