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PRESSURE BOILER

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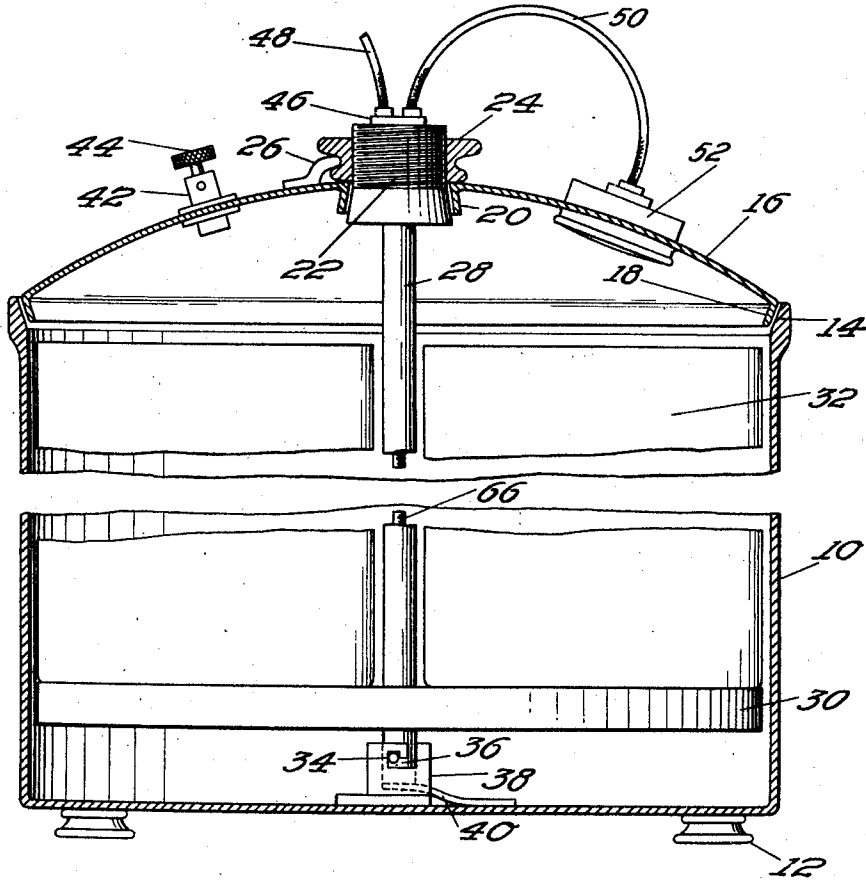


FIG. 1

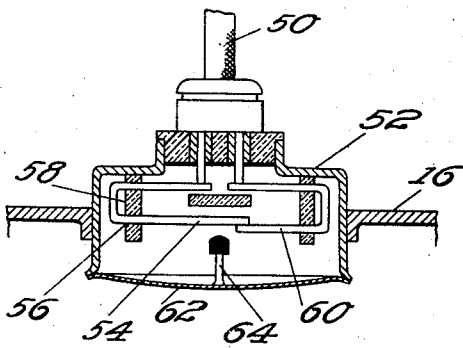


FIG. 2

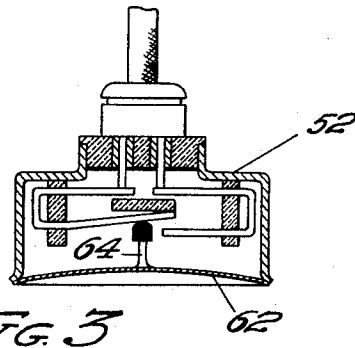


FIG. 3

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PRESSURE BOILER.

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This invention relates to improvements in an electrically heated pressure steam boiler, and has for its principal object the provision of an efficient device suitable for boiling edibles and the like, by means of steam under pressure.

One of the important objects of the invention is the provision of a novel construction of the steam boiler which positively prevents the leakage of steam from the boiler, due to the relatively high pressure generated within. Hence, the device eliminates the undesirable feature in boiling foods and the like, of permeating the whole household with odors which should be confined to the kitchen. And aside from the above-mentioned convenient feature of the device, the prevention of the leakage of steam also tends to increase the heat-retaining properties of the boiler and thereby increases its efficiency.

Another important object of the invention is the provision of means for keeping the confined steam substantially at a constant pressure, thereby affording a means of accurately determining the length of time various articles of food require for the proper cooking of the same. This constant pressure feature also serves as an additional safety measure in connection with the boiler.

Other and still further important objects of the invention will be apparent from the disclosures in the accompanying drawings and following specification.

The invention in a preferred form is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is an elevation of the device, partially in section.

Figure 2 is a detailed sectional view, illustrating the pressure operated switch in closed circuit position.

Figure 3 is a detailed sectional view of the pressure operated switch in open circuit position.

As shown in the drawings:

The reference numeral 10 indicates generally the cylindrical metal body of the steam pressure boiler. Several heat-insulating legs 12 are attached to the bottom of the boiler, so as to allow the boiler to be placed upon the varnished or painted surface of a table or the like, without marring or scorching the same. These legs may be constructed of any material having high heat resisting properties.

The upper and open end of the body 10 flares outwardly, the inner surface 14 of the flare being beveled to form a section of an inverted cone.

The cover 16 of the boiler is also constructed of metal and is of similar shape as a portion of the surface of a sphere. The outer edge 18 of the cover is bent or cast downwardly and inwardly at an angle similar to that of the beveled edge 14. This feature affords means for obtaining a very tight fit at the two contacting surfaces 14 and 18, when downward pressure is exerted on the cover.

A circular opening is provided in the central portion of the cover 16 and a circular flange or collar 20 extends downwardly from the edge of the said opening, the surface of which forms a section of a cone in upright position. Adapted to be fitted into this opening formed by the flange 20 is a block 22, the lower end of which is constructed in the form of a frustum of an upright cone, the apex angle of the frustum and the apex angle of the conical surface formed by the flange being equal. The upper portion of the block 22 is cylindrical in shape and is threaded on its outer surface, the threads being adapted to engage with the threads of the inner surface of a grooved annular nut 24. A plurality of retaining elements 26, affixed rigidly to the cover, operate in the groove of the annular nut to restrain any but rotatable motion of the same.

Attached integrally to the lower portion of the block 22 and extending downwardly therefrom is a hollow rod 28, and rigidly attached to this rod at substantially its lower end is a circular disc-like platform 30 for supporting the food containers 32. These container pans may be constructed with a cross-section substantially the shape of a sector of a circle, and a saving of space within the boiler can thereby be effected.

Extending transversely from the lower end of the rod 28 and positioned diametrically opposite each other are two locking-pins 34, adapted to be anchored in the bayonet slots 36 provided in the housing 38, which is rigidly attached to the bottom of the boiler. Bearing upon the bottom of the shaft 28 is a spring 40, which imparts an upward thrust to the shaft and hence to the cover when the pins 34 are disengaged from the slots.

Rigidly attached to, and extending through the cover 16, is a safety valve 42 of the ordinary pop-off type, which may be set to oper-

ate at some maximum safe internal pressure. Means are also provided to release the pressure manually by pulling the plunger 44 outwardly.

5 Electrical connections are made to the boiler by means of a plug and socket arrangement. The socket is of the ordinary two contact type and is fitted in the top of the element 22. The plug 46 is to all outward
10 appearances the ordinary two-point plug, but the internal connections are slightly varied. Assume that lead 48 is the ordinary duplex lead coming from the house circuit, one wire of the lead, for convenience we will
15 call plus, is connected directly to one point of the plug 46. The minus wire of the duplex lead 48 is connected to one wire of the duplex lead 50, then through the switch 52 and back to the other wire of the duplex 50,
20 then to the second point of the plug 46.

The switch 52 is rigidly connected to, and extends through the cover 16. It is obvious that the lower portion of the body of the switch is subject to the pressure within the
25 boiler. A thin metal diaphragm 62, normally bulging outwardly, comprises the bottom of the body of the switch, and attached to the center of the diaphragm on its inner face is a plunger 14. Referring now to Figures
30 2 and 3; one wire of the duplex lead 50 is connected to a contacting member 54 held rigidly at the point 56 by the element 58, composed of some insulating material. The member 54 is made of some flexible electrical conducting material and is normally positioned
35 in contact with a member 60, which is constructed of some metal which is non-flexible. The other wire of the duplex 50 is connected to this last-mentioned member 60. Figure 2,
40 as a whole, indicates the normal position of all the parts of the switch relative to each other. It can be readily observed that when a predetermined pressure is applied externally to the diaphragm 62, it will snap inwardly and assume the position shown in Figure 3. The action of the diaphragm is similar to the action of the bottom of an ordinary oil-can, and the transposition from the position shown in Figure 2 to the position
50 shown in Figure 3 is very rapid, and a quick break of the circuit is accomplished by means of the plunger 64 displacing the flexible member 54 from its normal position. This quick break of the circuit prevents the
55 formation of an arc at the contact points and hence lengthens the life of the contacting members 54 and 60.

The heating element of the device is contained within the platform 30, and connections between the socket, contained within
60 the member 22, and the heating elements is made by means of the duplex lead 66.

The manner of operating the boiler is as follows: A suitable amount of water is first
65 placed in the boiler. The cover 16 and its

accompanying parts, including the rod 28 and platform 30 are then placed in position. The rod 28 is anchored at the bottom of the boiler by means of the pins 34 and notches 36. The annular nut 24 is then turned to the
70 right until the conical surfaces 20 and 22 are in close contact with each other. At the same time, the conical surfaces 18 and 14 will also be pressed tightly upon each other. The heating of the water is now commenced. At the early stages of the heating, the plunger
75 44 is raised occasionally to relieve the pressure within the boiler due to the expansion of the heated air. If this is not done, the pressure switch will operate before the water is in a boiling state. When the water begins to boil, the pressure switch will maintain the steam pressure constant, by shutting the current off when the pressure goes above a pre-
80 determined point and turning the current on when the pressure goes below the said point. When the boiling is completed the annular nut is turned to the left and the cover thereby forced loose from its seat, by means of the action of the spring 40.

It will be apparent that herein is provided an automatically regulated pressure steam boiler, embodying novel and extremely useful features. The heretofore troublesome
85 problem of removing the cover after the boiling operation is over, is met and completely overcome. The pressure actuated switch makes the use of the boiler both simple and economical.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than as
100 necessitated by the prior art.

I claim as my invention:

1. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and
110 a locking element positioned in an opening in the cover, said locking element comprising a block cylindrical at its upper end, its lower end terminating in the shape of a frustrum of a cone, a hollow rod integrally attached to
115 said block and extending downwardly therefrom, a platform, circular in shape and integrally attached to the said rod, and means for anchoring the rod in the bottom of the body of the boiler.

2. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and a locking element positioned in an opening
120 in the cover, said locking element comprising a block cylindrical at its upper end, its lower end terminating in the shape of a frustrum of a cone, a hollow rod integrally attached to said block and extending downwardly therefrom, a platform, circular in shape and
125 130

integrally attached to the said rod, and an electrical heating element contained within said platform.

3. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and a locking element positioned in an opening in the cover, said locking element comprising a block, threaded at its upper end, an annular locking nut adapted to engage with the threads on the block, and means for rotatably mounting said nut upon the cover, said means including a plurality of retaining arms rigidly mounted upon the cover and adapted to operate in a groove in the nut.

4. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and a locking element positioned in an opening in the cover, said locking element comprising a block, cylindrical and threaded at its upper end, its lower end terminating in the shape of a frustrum of a cone, and means for obtaining intimate contact between the said frustrum and the edge of the opening in the cover.

5. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and a locking element positioned in an opening in the cover, said locking element comprising a block, cylindrical and threaded at its upper

end, its lower end terminating in the shape of a frustrum of a cone, and means for obtaining intimate contact between the said frustrum and the edge of the opening in the cover, said means including a struck down edge of the said opening, forming a conical section similar to the conical section of the frustrum shaped block, and additional means for tightly seating the said frustrum upon the said conically struck down edge.

6. A pressure steam boiler, including in combination, a body cylindrical in shape, a cover adapted to fit upon the said body, and a locking element positioned in an opening in the cover, said locking element comprising a block, cylindrical and threaded at its upper end, its lower end terminating in the shape of a frustrum of a cone, and means for obtaining intimate contact between the said frustrum and the edge of the opening in the cover, said means including a struck down edge of the said opening, forming a conical section similar to the conical section of the frustrum shaped block, and additional means for tightly seating the said frustrum upon the said conically struck down edge, said additional means comprising a nut rotatably mounted upon the said cover, and adapted to impart vertical motion to the said block.

In testimony whereof I affix my signature.
FOLKE S. PETERSON.