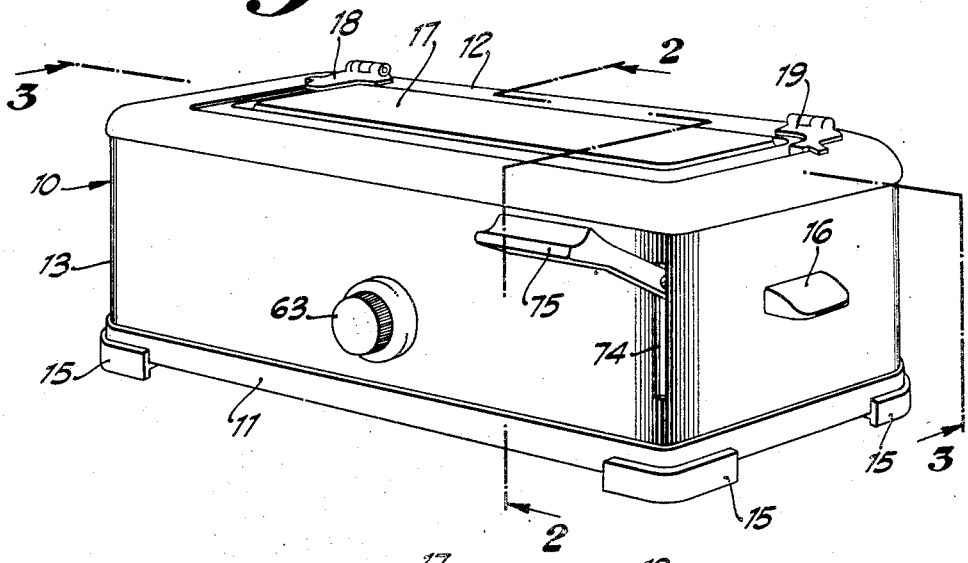
Feb. 14, 1950 E. R. SCHIPANSKI 2,497,326

STERILIZER

Filed April 26, 1947 3 Sheets-Sheet 1

Fig. 1.



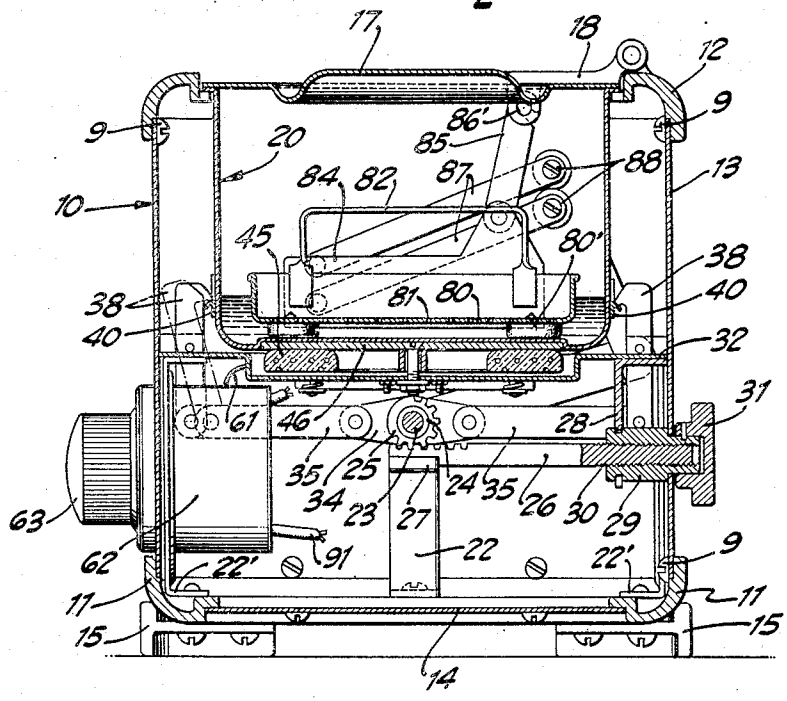


Fig. 2.

Inventor
EMIL R. SCHIPANSKI,

By

Attorney

Feb. 14, 1950 E. R. SCHIPANSKI 2,497,326

STERILIZER

Filed April 26, 1947 3 Sheets-Sheet 2

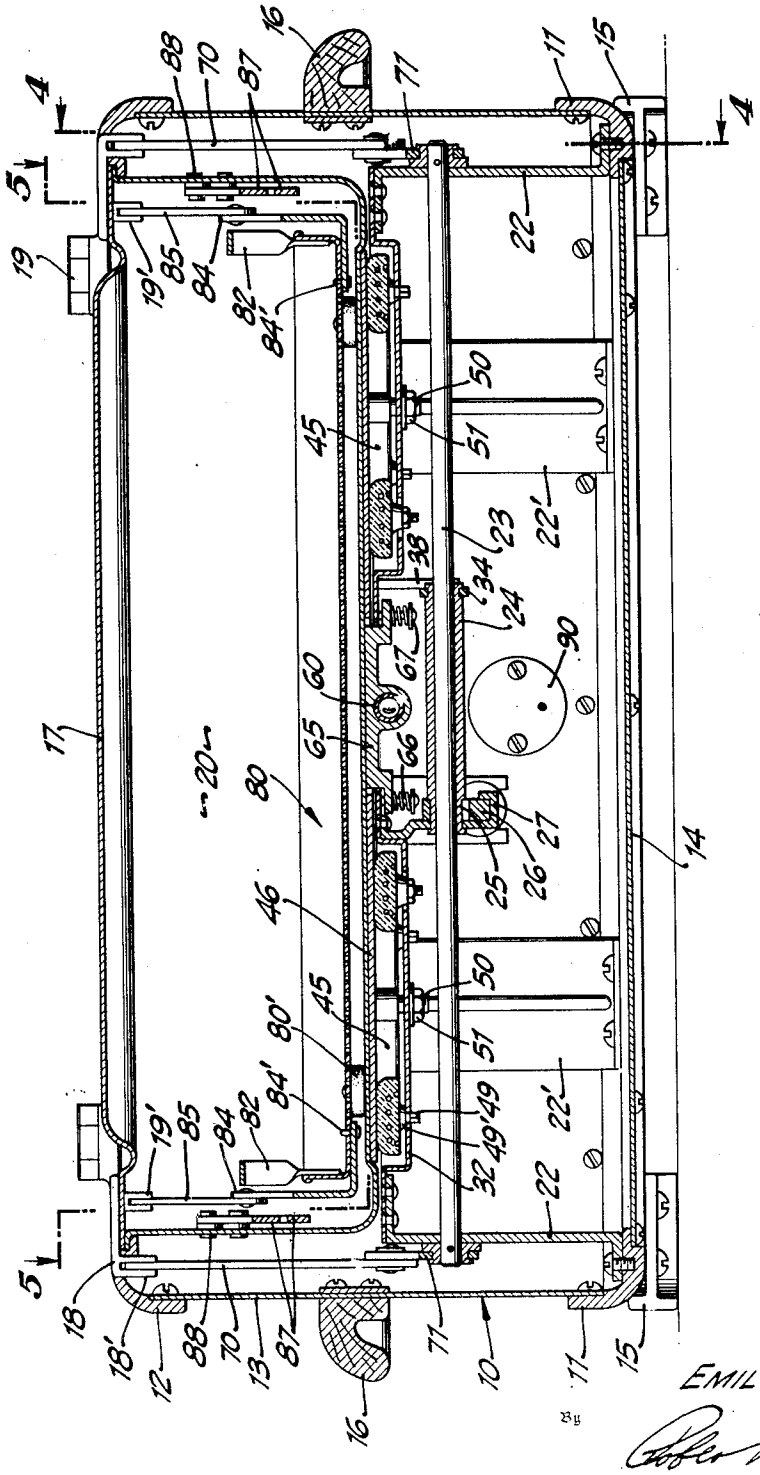


Fig. 3.

Inventor
EMIL R. SCHIPANSKI,
By
Robert W. Fulwider
Attorney

Feb. 14, 1950 E. R. SCHIPANSKI 2,497,326

STERILIZER

Filed April 26, 1947 3 Sheets-Sheet 3

Fig. 4.

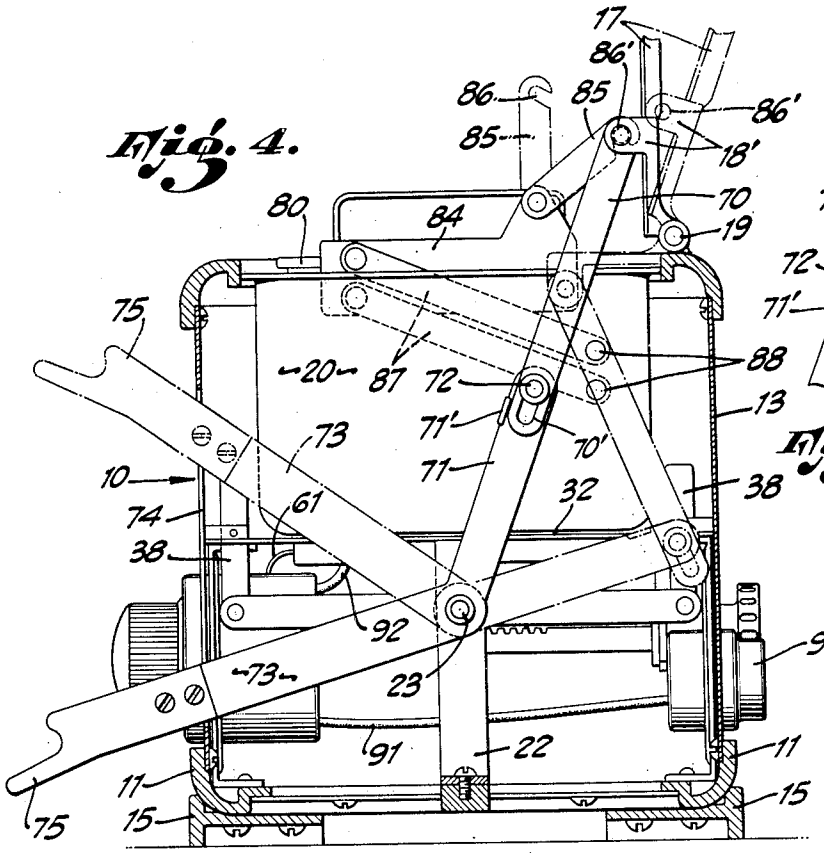


Fig. 4a.

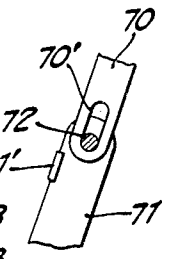
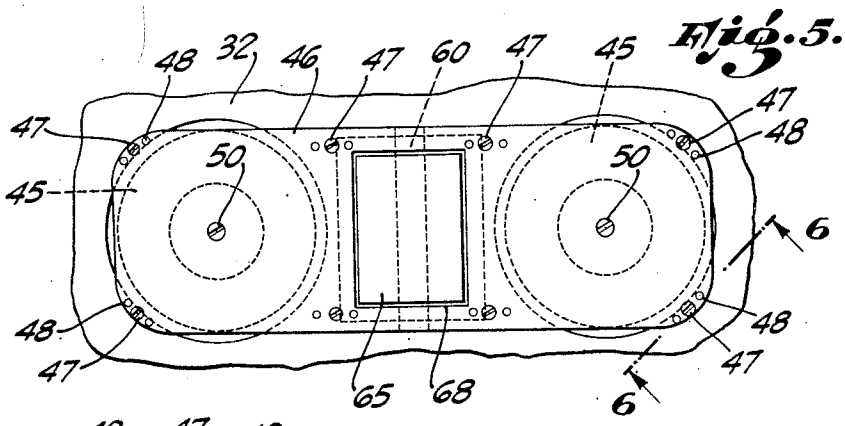


Fig. 5.



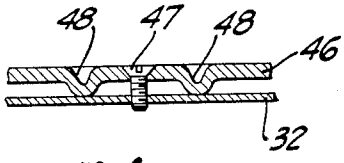


Fig. 6.

Inventor
EMIL R. SCHIPANSKI,
By
Attorney

Patented Feb. 14, 1950 2,497,326

UNITED STATES PATENT OFFICE

2,497,326

STERILIZER

Emil R. Schipanski, Gardena, Calif.

Application April 26, 1947, Serial No. 744,100

11 Claims. (Cl. 21—95)

1

My invention relates generally to medical and dental sterilizing equipment, and more particularly to instruments of the class described known as non-pressure sterilizers. Such devices are widely used by doctors and dentists for sterilizing surgical instruments, surgical needles, sutures, dental burrs, and the like. Basically, the non-pressure sterilizer is comprised of a boiler incorporating a heater and a tray adapted to be suspended within the boiler to support the articles to be sterilized therein. It is the usual practice to provide a housing to enclose the boiler tray and a lid to cover the housing. Furthermore, it is usual practice to suspend the tray from the lid so that the tray is withdrawn from the boiler when the lid is raised.

Such equipment as designed in the past has had several disadvantages which have interfered with its facile and efficient use. Among such disadvantages are the following. Sterilizers of the class described in common use heretofore have required the disassembly of a large part of the structure in order to replace the boiler should this become necessary. Since the boiler is a part most likely to be replaced in equipment of this type, the necessity of returning the equipment to the factory, or possibly discarding it entirely, when the boiler is worn out, has resulted in considerable inconvenience and economic loss.

In controlling the operation of the heater in devices of the class described, it is desirable that the heat delivered thereby be maintained at just that required to continuously boil the water in the boiler and no more. Furthermore, should the boiler boil dry, it is important that the heater be turned off at once. Such control has been accomplished in most cases by means of a thermostat deriving its heat directly from the heater. Such construction has the disadvantage that if the rate of heat transfer between the heater and the boiler is not accurately maintained, the heater may be turned off or controlled before the water reaches the desired temperature since the control element is responsive to the heater itself rather than to the temperature of the water in the boiler. Because of the frequent heating and cooling of apparatus of the class described, and because of corrosion, warping of metallic parts, and differences in coefficients of thermal expansion, considerable difficulty has been encountered in maintaining an accurate temperature control of the boiler water.

Still another disadvantage of previous construction lies in the fact that if the heat delivered by the heater to the boiler is not evenly distributed over the heat transfer surface, vigorous boiling will take place at certain isolated spots on the bottom surface of the boiler. Such isolated "hot spots" result in the deposition of mineral matter or other solids from the boiler water, and furthermore, result in inefficiency since considerably more heat is delivered by the heater than is actually required to keep the entire body of water at boiling temperature.

2

A still further disadvantage in prior devices lies in the fact that non-pressure sterilizers heretofore have mounted the lid-raising mechanism on the exterior of the housing. Due to the fact that such mechanism is in intimate contact with the boiler and tray, it soon becomes hot and becomes an ever present danger to the operator who may inadvertently touch the hot mechanism and receive a severe burn.

Bearing in mind the above listed difficulties encountered in previous equipment of the class described, it is a major object of my invention to provide a non-pressure sterilizer in which the boiler may be quickly and easily removed for cleaning, repair, or replacement.

It is another object of my invention to provide such a sterilizer in which means are incorporated to evenly distribute the heat delivered by the heater over a large surface of a boiler.

It is still another object of my invention to provide a boiler and thermostat structure in apparatus of the class described in which the thermostatic control element is mounted so as to be principally responsive to the temperature of the water in the boiler rather than the temperature of the heater.

A further object of my invention is to provide tray lifting mechanism in a non-pressure sterilizer, which mechanism is entirely enclosed to prevent accidental contact therewith by the operator or other persons.

The foregoing and other objects and advantages of my invention will become apparent from the following description of a sterilizer embodying the various features of my invention.

Briefly described, the sterilizer described herein is comprised of a completely enclosed outer housing or cabinet with the removable boiler, the lid and tray lifting control, the heaters, and the thermostatic control enclosed therein. The movable boiler is held in the structure by a number of pivotally supported dogs which are operable from outside of the housing by means of a knob accessible at the rear thereof. Heat is evenly distributed to the bottom of the boiler by means of a relatively large, flat, highly heat conduct-

ing plate against which the boiler is clamped by means of the aforesaid dogs.

As was earlier stated, it is desirable that the thermostatic control element be responsive to the temperature of the water in the boiler rather than to the temperature of the heater. To this end the thermostatic element is mounted out of direct contact with the heater and heat distribution plate, and furthermore, is spring pressed against the bottom of the boiler so that in spite of slight corrosion, warping or differing coefficients of thermal expansion, the control element will be held tightly against the boiler at all times.

For a more detailed description of my invention, reference should now be had to the attached drawings in which:

Figure 1 is a perspective view of a non-pressure sterilizer embodying my invention and with the lid closed;

Figure 2 is an elevational section taken on the line 2—2 in Figure 1;

Figure 3 is a front elevational section taken on the line 3—3 in Figure 1;

Figure 4 is an elevational section on the line 4—4 in Figure 3 with the device in open position;

Figure 4a is an enlarged detail of portions of the mechanism shown in Figure 4;

Figure 5 is a plan section taken on the line 5—5 in Figure 3 with boiler removed; and,

Figure 6 is an elevational section taken on the line 6—6 in Figure 5.

Referring now to the drawings, it will be seen that the numeral 10 indicates generally a housing enclosing the sterilizer embodying my invention. The housing 10 is comprised of a cast or otherwise fabricated base frame 11 and a similarly fabricated top frame 12 joined by a sheet metal shell 13, the shell being secured to the frame by means of screws 9 around the upper and lower edges.

The bottom of the housing is closed by a plate 14 secured in a suitable recess in the lower frame section 11 and the entire unit is supported on four feet 15 secured to the lower frame 11. A hinged lid providing a closure for the top of the housing is mounted in a recess in the upper frame 12 and is secured thereto by means of a pair of hinges 18 and 19.

Lifting handles 16 are provided at the ends of the housing whereby to conveniently lift or move the device. Various controls and handles projecting from the housing will be described in detail hereinafter.

The boiler 20 of the present sterilizer is constructed in the form of a rectangular tank of suitable proportions to be received through the upper opening, the frame 12. The boiler is supported therein on its bottom surface and is removably secured against a supporting plate 46 by a pivotally mounted dog mechanism now to be described. The dog operating mechanism is rotatably carried on a longitudinal rod 23 which is journally secured on a pair of Z-shaped brackets 22, which in turn are secured to the lower frame 11. A horizontal intermediate partition member 32 is supported by the brackets 22 at the upper ends thereof and is additionally supported by four flanged struts 22' which connect it to the lower frame 11 as shown in Figures 3 and 4.

A tubular sleeve 24 is supported for free rotation on the rod 23 intermediate the ends thereof. Rotation of the sleeve in one direction serves to unlock the boiler securing dogs 38 about to be described, while rotation of the sleeve in the other direction moves the dogs 38 inwardly so as to clamp the boiler 20 in place. The sleeve 24 is driven in such rotation by means of a pinion 25 affixed to the left end thereof (as viewed in Figure 3), the pinion 25 being driven by a slidably mounted rack 26 engaged therewith. The rack 26 is supported in a bracket 27 which depends from the partition 32 and has a suitable seat formed therein at the lower end whereby to receive the rack and permit longitudinal sliding motion thereof while preventing rotation thereof about its longitudinal axis.

In order to drive the pinion 25 by moving the rack back and forth along its longitudinal axis, this member is threaded at its outer end as indicated by the numeral 30 in Figure 2. An interiorly threaded sleeve 29 is engaged with the threads 30 and is journally supported in the shell 13. Longitudinal motion of the sleeve 29 is prevented by a forked bracket 28 secured to the intermediate partition 32 depending therefrom, and engaged with a groove in the sleeve 29. A knob 31 is secured to the sleeve 29 for manual rotation thereof, and as shown in Figure 2, is positioned in the rear of the sterilizer. Thus rotation of the knob 31 rotates the sleeve 29, and since the rack 26 is prevented from rotation by the depending bracket 27, such rotation of the sleeve 29 causes inward or outward motion of the rack along its longitudinal axis, the direction of such motion dependent on the direction of rotation of the sleeve.

In order now to move the dogs 38 in response to rotation of the sleeve 24, these parts are interconnected by a toggle mechanism comprised of a pair of links 35 and a double crank 34 secured to the sleeve 24. All connections between the dogs 38, the links 35, and the crank 34 are pivotal in nature so that rotation of the crank 34 pulls inwardly on the links 35, and thus pulls inwardly on the lower ends of the dogs 38. The dogs 38 being pivotally supported intermediate their ends by the intermediate partition 32, the upper ends of the dogs are moved outwardly by inward motion of the lower ends thereof. Conversely, rotation of the crank 34 to the horizontal position shown in Figure 2, pushes the links 35 outwardly and forces the upper ends of the dogs 38 inwardly. A pair of lugs 40 are secured to the sides of the boiler 20 positioned to be engaged by the upper ends of the dogs 38, and as will be noted from an examination of Figure 2, the lugs 40 are formed with a slanting upper surface so that pressure engagement of the dogs 38 forces the boiler downwardly toward the intermediate partition 32, pressing the boiler into secure engagement with the plate 46.

Turning now to a description of the heater and heat distribution means, reference should be had to Figures 2, 3, and 5. As was stated earlier, it is desired to deliver and distribute the heat evenly over a wide surface of the bottom of the boiler 20. The heat is produced by a pair of ring-shaped electric heating elements 45 of conventional design, and is distributed by means of the horizontal plate 46 which is, as above stated, placed in intimate contact with the bottom of the boiler 20. The heat distribution plate 46 is supported on the upper surface of the partition 32 and secured thereto by means of eight screws 47. As is shown in Figure 6, a pair of downward projections 48 are formed in the heat distribution plate 46 adjacent each of the screws 47 whereby to support the plate at a slight distance above the partition 32 for the purpose of preventing

excessive transfer of heat from the distribution plate 46 to the partition 32 and thence to the outer housing.

Each of the heating elements 45 is secured in a suitable circular recess to the upper surface of the intermediate partition 32 being located therein by means of downwardly projecting studs or locating pins 49 formed in the heating element and engaging complementary apertures formed in the partition 32.

As will be noted from an examination of Figure 3, the heating elements have boxes 49' formed therein adjacent each of the locating pins 49. Thus the heating element 45 is supported away from the partition 32 whereby to reduce the rate of heat transfer from the heating element 45 to the partition 32. The heat distribution plate 46 is held in close heat transfer relationship with the heating element 45 by means of a pair of clamping screws 50 which are located at the center of each element, pass through the plate 46, the partition 32, and are secured by a nut 51 at the under surface of the partition 32.

Thus the greatest part of the heat delivered by the heating element 45 passes directly into the heat distribution plate 46 and thence into the boiler 20 heating the water therein. An optimum heat transfer from the plate 46 is maintained at all times due to the downward pressure urged by the clamping dogs 38.

As was previously stated, it is desirable that the heat control unit in a device of the class described be principally responsive to the temperature of the boiler rather than to the temperature of the heating element. The temperature sensitive element in the present instance is a liquid filled bulb 60 of conventional design which is connected by a capillary tube 61 to a controlling thermostatic switch 62 having a control knob 63 projecting from the front of the housing. The details of the thermostatic switch 62 being of conventional design, need not be described.

In order that the temperature responsive bulb 60 be held in close heat transfer relationship with the boiler and its contents at all times, this bulb 60 is pressed or otherwise securely fastened into a heat conducting plate 65, which in turn is held against the lower surface of the broiler 20 by means of four compression springs 66. The compression springs are anchored against threaded studs 67, which in turn are secured in the intermediate partition 32. As will be noted in Figure 5, a space 68 is left between the plate 65 and the heat distribution plate 46, a rectangular opening being formed in the latter member in order to clear the plate 65. By reason of the spring mounting of the plate 65, it is always urged upwardly against the under surface of the boiler 20, and should portions of the boiler or portions of the heat distribution plate 46 warp so as to change their relative position somewhat, the plate 65 will move under the urging of the springs 66 and always be held in close heat transfer relation with the boiler and its contents.

Turning to a discussion of the mechanism by which the lid 17 is raised to give access to the interior of the sterilizer, reference should now be had to Figure 3. In Figures 3 and 4 it will be noted that the hinges 18 and 19 are formed with downwardly projecting yoke portions 18' which extend into the housing. Pivotally secured in each of the yokes 18' is a downwardly extending thrust link 70, one such link being provided at each end of the housing. Each of the links 70 is secured by a knuckle joint to a crank arm 71, the crank arm 71 being keyed to the end of the journally supported shaft 23 as best seen in Figure 3. As can be seen best in Figure 4, the crank arm 71 is formed with a projecting lug 71' adjacent the knuckle joint, and furthermore, the link 70 extends somewhat beyond the pivot 72 of the joint so as to strike the lug 71' whereby to prevent the relative pivotal motion of the members 71 and 70 beyond a substantially straight position indicated in full lines in Figure 4. Thus when the lid is in an upright position such as shown by the full lines in Figure 4, the members 70 and 71 form a relatively straight strut between the yoke 18' on the axis of the rod 23 whereby to hold the lid 17 in an upright position.

In order now to raise and lower the lid from the front of the housing, one of the crank arms 71 at the right-hand end of the housing as viewed in Figure 1, is formed in bell crank fashion with a lever 73 extending forwardly through a slot 74 in the forward surface of the shell 13. The lever 73 is provided with a heat insulating handle 75. As can be best seen in Figure 4, downward pressure on the handle 75 rotates the two crank arms 71 in an anti-clockwise direction, thus thrusting upwardly on the links 70 and raising the lid to the position shown in full lines in Figure 4. The lid 17 remains in this position, being held there by the locking action between the members 70 and 71 which takes place at the pivotal joint between the two members due to the lower end of the links 70 striking against the lugs 71'. To again lower the lid, the handle is raised to the position shown in phantom lines in Figures 4.

As is shown in Figure 4a, the connection of the members 70 and 71 is effected by the engagement of the pivot pin 72 with an elongated slot 70' in the lower end of the links 70. Thus when it is desired to remove the boiler as previously described, the lid may be pushed rearwardly to the position shown in phantom lines in Figure 4 so as to clear the boiler when it is removed through the aperture in the upper frame 12.

Articles to be sterilized in the boiler 20 are held in a tray 80 which is suspended within the boiler 20 as shown in Figures 2 and 3. The tray 80 is provided with four button-like feet 80' which are positioned and adapted to rest on the bottom of the boiler 20 and support the tray above the bottom of the boiler. The bottom of the tray is provided with perforations 81 and a pair of handles 82 are secured to the ends of the tray by which it may be lifted out of the boiler in a manner about to be described.

As was previously mentioned, it is desirable that the tray be lifted from its position within boiler simultaneously with the lifting of the lid 17. To this end, the tray 80 is suspended from the lid 17 by a pair of depending brackets 84, the brackets 84 being connected to the hinges 18 and 19 by a pair of suspension links 85 which are received in yoke portions 19' formed in the hinges 18 and 19. The brackets 84 are provided with upwardly projecting pins 84' which engage certain of the perforations 81 in order to prevent the tray from sliding forwardly or rearwardly on the brackets 84. As can be seen in Figures 2 and 4, the upper ends of the suspension links 85 are formed with hook-like apertures 86 whereby they are adapted to hook over a pin 86' secured in the yoke portion 19'. The purpose of the hook-shaped aperture 86 is that the tray-supporting brackets 84 may be disconnected from the lid in order that the boiler may be removed.

The lid 80 is maintained in a horizontal posi-

tion at all times during the lifting thereof by means of a pair of horizontal arms 87, each pivotally connected to the boiler at one end by a shoulder screw 88 and to the tray-supporting bracket 84 at the other end by a rivet or other suitable pivotal connection. Thus the arms 87 serve as a parallel mechanism to maintain the brackets 84, and hence the tray 80, in a horizontal position at all times. Thus it will be seen that when the lid is lifted to the position shown in full lines in Figure 4, the tray is drawn upwardly by the link 85 to the position shown in full lines in Figure 4. When in this position the tray may be lifted from the brackets 84 in order to carry the sterilized articles to their intended place of use, and another loaded tray may be placed on the brackets in order that it may be lowered into the boiler for the purpose of sterilizing articles therein. If it is desired to remove the boiler, the brackets 84 must be disconnected from the lid as previously stated, this being accomplished by unhooking the links 85 from the pin 86' as previously described.

A suitable electrical connector 90 is provided at the rear of the housing for the purpose of connecting the sterilizer to a source of electric power for the heaters 45. The wiring within the housing comprises leads 91 from the connector 90 to the thermostatic controls 62, and leads 92 from the thermostatic control to the electric heaters 45. The details of the circuit wiring being conventional, are not described herein.

Thus it will be seen that I have provided a non-pressure sterilizer of the class described which incorporates the following features.

First, the heated portions of the mechanism are protectively enclosed by the housing 10 so as to prevent accidental contact therewith.

Second, heat from the electric heaters 45 is distributed uniformly over the bottom of the boiler 20 by means of the heat distribution plate 46, and the plate 46 is so mounted to the partition 32 that excessive heat transfer from the plate 46 to the partition 32 is prevented.

Third, the pivotable dogs 38 and the mechanism connected thereto permit easy and rapid removal of the boiler 20 should this be necessary.

Fourth, the thermostatic control element is, by reason of the heat transfer plate 65, responsive principally to the temperature of the boiler rather than to the temperature of the heating elements 45, this condition of optimum heat transfer being maintained at all times through the operation of the compression springs 66. Fifth, the general organization and structure of the sterilizer embodying my invention provides for maximum convenience in operation and for a degree of portability not attained in previous devices of the class described.

While the apparatus shown and described herein is fully capable of achieving the objects and providing the advantages hereinbefore stated, it is capable of considerable modification within the spirit of the invention and for this reason I do not mean to be limited to the form shown and described herein, but rather to the scope of the appended claims.

I claim:

1. Sterilizing apparatus of the class described including means forming a housing having an opening with a hinged lid; mechanism within said housing operatively connected to said lid, said mechanism having a handle portion extending outside of said housing operable to open said closure; a boiler within said housing adapted to pass through said opening; movable means within said housing to releasably secure said boiler therein; releasing means operatively associated with said securing means and extending outside of said housing whereby to permit selective manual operation of said securing means to secure or release said boiler; means in said housing to support said boiler on a relatively large bottom area thereof said support means being held in close heat exchange relation with said boiler by said movable securing means; heater means mounted in close heat exchange relation to said support means whereby to evenly heat said boiler through said support means; thermostatic control means for said heater including a temperature responsive element in heat exchange contact with said boiler and spring mounting means to urge said element against said boiler; a tray in said boiler adapted to hold articles for sterilization by liquid in said boiler; and support mechanism for said tray connected to said lid whereby to move said tray out of said boiler and housing in response to opening of said lid.

2. Sterilizing apparatus of the class described including: an enclosed housing having a top opening; a closure for said opening hingedly secured to said housing; a rod longitudinally disposed and journally supported in said housing; a pair of crank arms secured to said rod, one adjacent each end thereof; a pair of links each pivotally connected at one end thereof to said closure and at the other end thereof to an outer end of one of said cranks whereby rotation of said rod opens said closure; a lever fixed to one end of said rod and projecting out of said housing whereby to rotate said rod by pressure on said lever to open said closure; a boiler of generally rectangular shape positioned in said housing, adapted to pass through said opening, and having a plurality of lugs attached to the sides thereof; a horizontal support plate in said housing adapted to support said boiler with a relatively large surface area of said boiler in heat exchange contact with said plate, said plate having a portion cut away to expose a portion of the bottom surface of said boiler; a plurality of dogs pivotally mounted in said housing and adapted to be moved to engage said lugs whereby to clamp said boiler against said plate; a member rotatably mounted in said housing and having a plurality of cranks fixed thereto; links connecting said cranks on said rotatable member to said dogs whereby rotation of said member in one direction moves said dogs into engagement with said lugs to clamp said boiler, and rotation of said member in the other direction moves said dogs out of said engagement to release said boiler; heater means secured to said plate; and thermostatic control means for said heater including a temperature sensitive element resiliently secured against said exposed portion of said boiler surface and out of direct heat exchange contact with said plate.

3. Sterilizing apparatus of the class described including: housing means having an opening with a hinged closure, manually operable mechanism for opening and closing said closure, and boiler supporting and heating means formed therein; a removable boiler in said housing, supported on said support means, and adapted to receive articles for sterilization therein; securing means including a plurality of movable dogs mounted in said housing and adapted to engage said boiler to secure the same against said supporting means; and mechanism operable from

outside said housing and connected to said securing means whereby to selectively operate the same to secure or release said boiler.

4. Sterilizing apparatus of the class described including: a housing having an opening with a hinged closure; mechanism in said housing to open and close said closure; an article-receiving tray dependently carried by said closure; a removable boiler adapted and positioned in said housing to receive said tray when said closure is in a closed position; movable members in said housing adapted to engage and secure said boiler therein; mechanism operatively connected to said members and projecting outside of said housing whereby to manually operate said movable members to selectively engage or disengage said boiler; and means in said housing to maintain said boiler at a temperature sufficient to boil water therein.

5. Sterilizing apparatus of the class described including: means forming an enclosed housing; a removable boiler in said housing; a supporting plate fixed in said housing and adapted to engage a relatively large surface of said boiler in heat exchange contact therewith; spacing means in said plate to hold the same out of heat exchange contact with said housing; thermostatic control means for said heater including a temperature sensitive element positioned in said housing adjacent said boiler and out of heat exchange contact with said plate; and resilient means connected between said temperature sensitive element and said housing adapted to urge said temperature sensitive element into heat exchange contact with said boiler.

6. Sterilizing apparatus of the class described including: means forming an enclosed housing having an opening with a hinged closure; a removable boiler in said housing; means in said housing to secure and suport said boiler therein; means in said support means to heat said boiler; thermostatic control means for said heating means including a temperature sensitive element in heat exchange contact with said boiler; and resilient mounting members for said element adapted to urge the same into said heat exchange contact with said boiler.

7. Sterilizing apparatus of the class described including: a housing having an opening with a hinged closure therefor; mechanism in said housing to open and close said closure; a boiler positioned in said housing and adapted to be removed through said opening; means dependently and detachably secured to said closure to support an article-receiving tray in said boiler when said closure is in a closed position and to support said tray out of said boiler when said closure is in an open position; a plurality of parallel arms pivotally connected between said boiler and tray supporting means whereby to hold said tray horizontal during motion into and out of said boiler; and means in said housing to heat said boiler.

8. Sterilizing apparatus of the class described including: means forming an enclosed housing with an opening therein; a closure for said opening hingedly attached to said housing and having a plurality of attachment members projecting from the inner surface thereof; a removable boiler in said housing adapted to be heated to boil water therein; tray supporting means pivotally attached to said boiler whereby to support a tray in horizontal position for movement into or out of said boiler; and connecting links pivotally attached to said tray supporting means and detachably connected to said attachment members whereby opening of said closure moves said tray out of said boiler and whereby said tray supporting means may be disconnected from said closure to permit removal of said boiler from said housing.

9. Sterilizing apparatus of the class described including: means forming an enclosed housing having a top opening with a normally horizontal hinged closure; a removable boiler in said housing; means to heat said boiler; a rod journally mounted in longitudinal position with said housing; crank arms secured to the ends of said rod; connecting rods connected between said crank arms and said closure whereby rotation of said rod operates through said crank arms and connecting rod to lift said closure to a substantially vertical position; a bell crank arm fixed to said rod and projecting through said housing whereby to manually rotate said rod to lift said closure; and pin and slot connection means in said crank arms and connecting rods whereby to permit said closure to be moved beyond said substantially vertical position whereby to permit removal of said boiler through said opening.

10. In sterilizing apparatus of the class described having an outer housing with an opening and a hinged closure; means to support a removable boiler within said housing; movable clamping means adjacent said supporting means operable to engage and secure a boiler within said housing against said supporting means; and thermostatically controlled heating means secured to said supporting means and adapted to heat said boiler through said supporting means.

11. In sterilizing apparatus of the class described: means forming an enclosed housing having a stationary portion with a top opening and a hinged closure for said opening; mechanism to open and close said closure, said mechanism including a plurality of pivotally joined members and being connected between said stationary housing portion and closure, said members being substantially entirely within said housing; and a handle of heat insulating material connected to one of said members and projecting through a wall of said housing below the top thereof whereby to operate said mechanism to open and close said closure.

EMIL R. SCHIPANSKI.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,384,403	Pelton et al.	July 12, 1921
1,767,034	Anderson	June 24, 1930
1,939,713	Meitzler	Dec. 19, 1933