July 5, 1927. 1,635,003

C. LE R. LEWIS

WATER HEATER

Filed Nov. 9, 1925

Fig. 1.

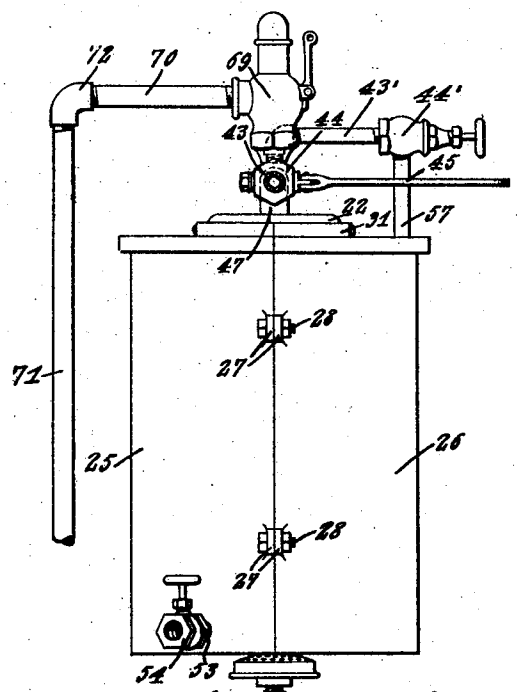


Fig. 2.

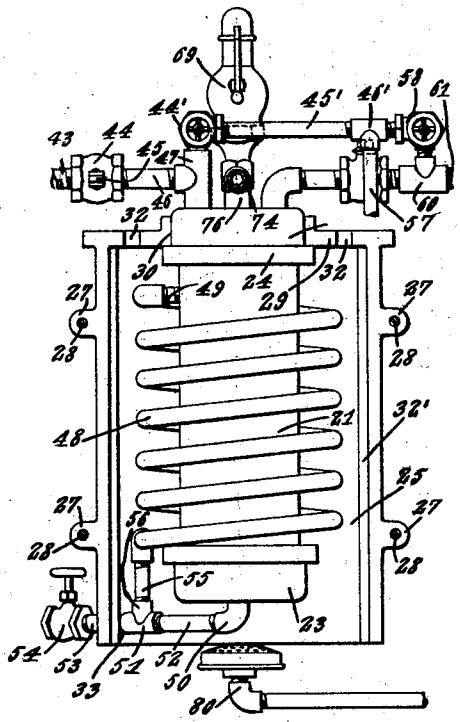


Fig. 3.

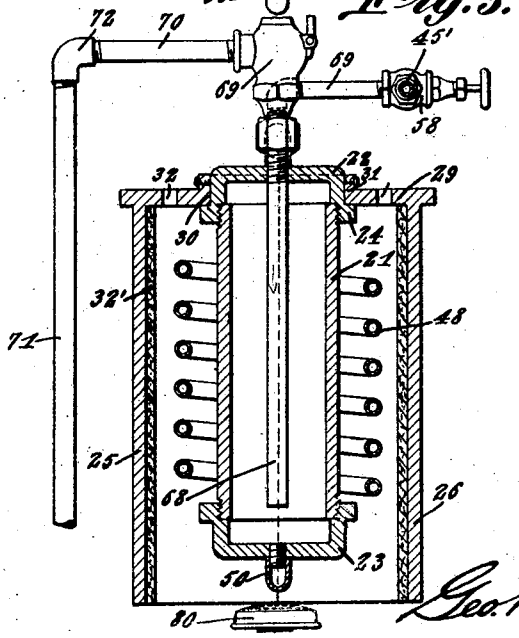
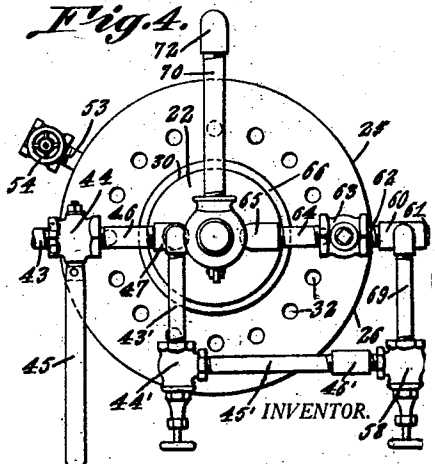


Fig. 4.



INVENTOR.

BY

Claude LeRoy Lewis,

Geo. P. Kimmel. ATTORNEY.

Patented July 5, 1927. 1,635,003

UNITED STATES PATENT OFFICE.

CLAUDE LE ROY LEWIS, OF OMAHA, NEBRASKA, ASSIGNOR OF ONE-THIRD TO G. W. STREET AND ONE-THIRD TO JOHN WALKER, OF OMAHA, NEBRASKA.

WATER HEATER.

Application filed November 9, 1925. Serial No. 67,860.

This invention relates to a water heater designed primarily for use in connection with sterilizing and rinsing machines of that type as disclosed in my application filed June 9, 1925, Serial Number 35,949, but it is to be understood that a water heater in accordance with this invention can be employed in any connection for which it is found applicable, and the invention has for its object to provide a water heater, in a manner as hereinafter set forth, for producing highly heated water for use in sterilizing cream and milk cans and at a temperature of from 280 to 350 degrees, which will act more satisfactorily than steam when sterilizing at the same temperature.

A further object of the invention is to provide, in a manner as hereinafter set forth, a water heater including a water tank surrounded by a water conducting coil and with the heat applied directly on the coil and the tank so all the heat is utilized on all the water in both the coil and the tank whereby the water is heated to the desired temperature.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is an elevation of a water heater in accordance with this invention.

Figure 2 is an elevation with one of the sections of the jacket thereof removed.

Figure 3 is a vertical sectional view of the heater.

Figure 4 is a top plan view thereof.

Referring to the drawings in detail, the heater comprises a water tank consisting of a tubular body portion 21 of the desired height and diameter having attached to its upper end a head cap 22 and to its lower end a bottom cap 23. The lower portion of the cap 22 is provided with a laterally extending annular flange 24 providing a support for a sectional enclosing shell or jacket for the water tank. The jacket is formed of two semi-circular sections 25, 26, having their end edges abutting each other. Each of said sections has each of its end edges formed with a plurality of laterally extending spaced apertured lugs 27. The lugs of the section 25 abut against the lugs of the section 26, and extending through the abutting lugs are hold-fast devices 28 for detachably connecting the sections together. The section 25 as well as the section 26 has formed integral with the top thereof a segmental plate 29 which extends inwardly. The plates 29 of said sections are oppositely disposed with respect to each other and each has its inner edge formed with a semi-circular cutout portion 30. When the sections 25 and 26 are in abutting engagement the cutout portions 30 of the plates 29 provide a circular opening through which extends upwardly the top or head cap 22. When the sections 25 and 26 are in abutting engagement, the jacket is supported from the flange 24 as the plates 29 extend onto said flange 24, and this arrangement is obtained in view of the fact that the opening formed by the cutout portions 30 is of less diameter than the outer diameter of the flange 24. Formed integral with each of the plates 29 as well as extending upwardly therefrom, is a semi-circular flange 31 having its inner face forming a continuation of the wall of the cutout portion 30. The flanges 31 surround the head or top cap 22. Each of the plates 29 is furthermore provided with a series of spaced vent openings 32. The section 25 of the jacket, near its bottom edge, is provided with an opening 33 for a purpose to be presently referred to. The caps 22 and 23 have threaded engagement with the body portion 21.

Each of the sections of the shell or jacket is lined with a heat retaining means, such as asbestos, as at 32′.

A valve controlled discharge element is provided for the water tank and such element is adapted to be coupled with the nozzle of a rinsing apparatus, or such element can be employed for supplying hot water for any purpose desired. The dis-

charge element as shown includes a pipe branch or coupling nipple 43, which is attached to a cutoff valve 44, operated through the medium of a hand lever 45. Communicating with the cutoff valve 44 is a pipe branch 46, having attached thereto a T-coupling 47, which is secured to the head cap 22 and opens into the water tank.

Connected to the T-coupling 47 is a pipe branch 43′ which opens into a manually operated controlling valve 44′. Leading from the valve 44′ is a pipe branch 45′ connected to a T-coupling 46′, from which extends a conducting pipe 57. Connected to the T-coupling 46′ is a manually operated controlling valve 58, having leading therefrom a pipe branch 69, which is connected to a T-coupling 60 having a water supply line 61 attached thereto. The construction just referred to provides means which permits of the drawing off of either hot or cold water or both. When the valve 44′ is closed and the valve 58 opened, cold water can be conducted off through pipe 57. When the valve 44′ is open and the valve 58 closed, hot water can be conducted off through pipe 57. When both valves 44′ and 58 are open, hot and cold water can be conducted off through pipe 57.

Surrounding the body portion 21 of the water tank, as well as spaced from the sections 25 and 26 of the jacket, is a heating coil 48, having its upper end communicating with the water tank below the cap 22 through the medium of a nipple 49. Depending from the cap 23 as well as communicating therewith is an elbow 50 connected with an inverted T coupling 51 by a pipe branch 52. Attached to the coupling 51 and extending through the opening 33 is a nipple 53, which is secured to a drain valve 54. Attached to the lower end of the coil 48 is a depending elbow, which is connected by a vertically disposed branch pipe 55, with the vertical leg 56 of the coupling 51.

A valved pipe line 61 is employed for supplying water to the tank 21 and the said line 61 includes a nipple 62 which leads from the T-coupling 60 and is connected to a check valve 63. Extended from the check valve 63 is a pipe branch 64 which opens into a depending elbow 65 extending through the head cap 22 and has secured therewith a vertically disposed water inlet pipe 68 which extends to a point in proximity to the bottom cap 23 of the water tank. The check valve 63 is to prevent water being forced back into the supply line when pressure in the supply line has been reduced, causing the water in the tank to change to steam due to reduced pressure.

Connected to the head cap 22 of the water tank, as well as communicating with the interior of the latter, is a safety valve 69 having leading therefrom a discharge line comprising a pair of pipe branches 70, 71 connected together by an elbow 72.

A heater element, such as a gas burner, as indicated at 80 is positioned below the water tank as well as the jacket and is employed for heating the water. Any suitable means can be utilized for the purpose of heating the water in the coil and in the tank. The means shown is illustrated by way of example.

As is well known at atmospheric pressure water boils at 212 Fahr., but under the pressure employed, which is the pressure of city water pipes, the temperature to which the water is heated by a device, in accordance with this invention, varies from 280 to 350 degrees, depending upon the pressure of the city water in the pipes, so when using the water heater in connection with a sterilizing and rinsing apparatus water at a temperature of from 280 to 350 degrees is employed, which will do the work better than steam at the same temperature.

As heretofore set forth the coil is built around the water tank and the heat is applied not only directly on the coil but also on the tank, therefore, all the heat is utilized on all the water in both the coil and the tank, and furthermore as the shell or jacket is lined with asbestos the heat is retained within the shell.

It is thought that the many advantages of a water heater, in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. In a water heater for the purpose set forth, a water tank adapted to be arranged over a heating element and having a peripheral support in proximity to its upper end, a water heating coil surrounding the tank and having its upper end opening into the tank below and in proximity to said support, said coil having its lower end depending below the tank and opening into the bottom of the latter centrally thereof, and a suspended jacket enclosing and spaced from said coil, said jacket having an open lower end positioned below the bottom of the tank, and said jacket having an inwardly extending upper end abutting against and surrounding the upper portion of the tank below the top of the latter, and further engaging said peripheral support whereby the jacket will be suspended from said support and the tank extended above the upper end of the jacket.

2. In a water heater constructed in accordance with claim 1, the said inwardly ex-

tending upper end of said jacket disposed at right angles with respect to the body portion of the jacket and formed with vent openings for the space between the body portion of the jacket and the tank.

3. A water heater constructed in accordance with claim 1, a water outlet means arranged axially of the upper end of the tank and exteriorly of the jacket, and a water supply means arranged exteriorly of the jacket, extending through the upper end of the tank eccentrically thereof and terminating at a point in proximity to the bottom of the tank.

4. A water heater constructed in accordance with claim 1, the said inwardly extending upper end of said jacket disposed at right angles with respect to the body portion of the jacket and provided with vent openings for the space between the body portion of the jacket and the tank, a water outlet means arranged axially of the upper end of the tank and exteriorly of the jacket, and a water supply means arranged exteriorly of the jacket, extending through the upper end of the tank eccentrically thereof and terminating at a point in proximity to the bottom of the tank.

5. In a water heater for the purpose set forth a water tank adapted to be arranged over a heating element and formed with a peripheral support in proximity to its upper end, a water heating coil surrounding the tank and having its upper end opening into the tank below and in proximity to said support, said coil having its lower end depending below the bottom of the tank and opening into said bottom centrally thereof, a suspended jacket surrounding and spaced from said coil, depending below the bottom of the tank and having its lower end open, said jacket formed of two sections each having its upper end provided with an inwardly extending apertured plate seating on said support, each of said plates having its upper end formed with a cut-out portion, said cut-out portions alining to provide an opening corresponding to the shape of and for the extension of the tank above said plates, the edges of said cut-away portions abutting against the tank, and means for clamping the sections together.

6. In a water heater for the purpose set forth a water tank adapted to be positioned over a heating element therefor and including a body portion, a head cap for the latter provided with a flange at its lower end and a bottom cap for the body portion, a water heating coil arranged between said caps and having its convolutions completely surrounding said body portion, said coil having its upper end opening into said body portion below and in proximity to the flange of said head cap, means depending from the lower end of the coil below said tank and opening into the latter through said bottom cap axially of such cap and providing for communication between the lower portion of the coil and the bottom of the tank, and a jacket mounted on and suspended by the flange of the head cap, surrounding and spaced from said coil and depending below said bottom cap, said head cap extended above the top of the jacket, said jacket including a closed upper end provided with vent openings for the space between the tank and the jacket.

7. A water heater constructed in accordance with claim 6, a cold water supply line arranged exteriorly of the jacket, secured to and extending through the top of the head cap eccentrically thereof and depending to a point in proximity to said bottom cap, and a valved water outlet line arranged exteriorly of the jacket and connected to the top of the head cap axially thereof.

8. A water heater comprising a water tank adapted to be arranged over a heating element therefor and including a cylindrical body portion of uniform diameter throughout, a head cap secured to the upper end of the body portion and extended upwardly therefrom and a bottom cap secured to the lower end of the body portion and depending therefrom, said head cap having its bottom formed with a laterally extending annular flange to provide a peripheral support, a water heating coil surrounding said body portion, opening thereinto near the upper end thereof and further opening into the bottom cap axially thereof, and a cylindrical jacket of greater diameter and length than the diameter and length of the tank, said jacket including a top surrounding the head cap above and engaging with and suspended by said support and further having its top formed with an opening for the passage of the head cap, and said jacket further having its top provided with vent openings for the space formed between the body portion of the jacket and the body portion of the tank.

9. A water heater constructed in accordance with claim 8, said head cap having its top provided with an axially disposed opening and an eccentrically arranged opening, a water outlet means secured in said axially arranged opening, and a water supply means extending through said eccentrically disposed opening to a point in proximity to said bottom cap.

In testimony whereof, I affix my signature hereto.

CLAUDE LE ROY LEWIS.