(No Model.) 2 Sheets—Sheet 1.

L. W. BOYNTON.

WASHBOILER.

No. 564,777. Patented July 28, 1896.

Fig. 1.

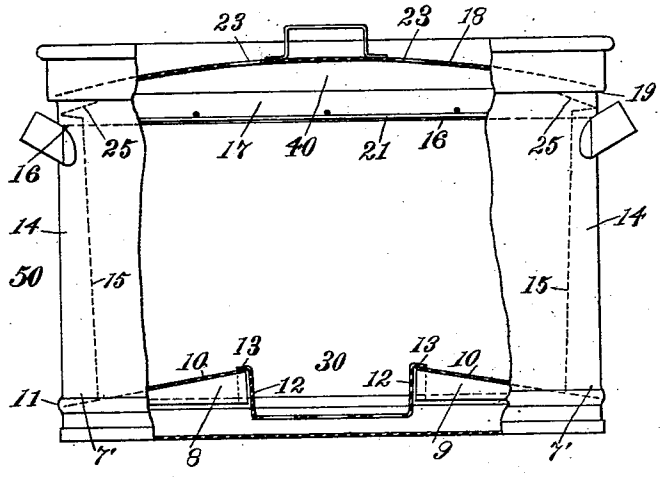


Fig. 6.

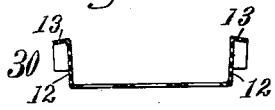


Fig. 7.

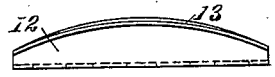
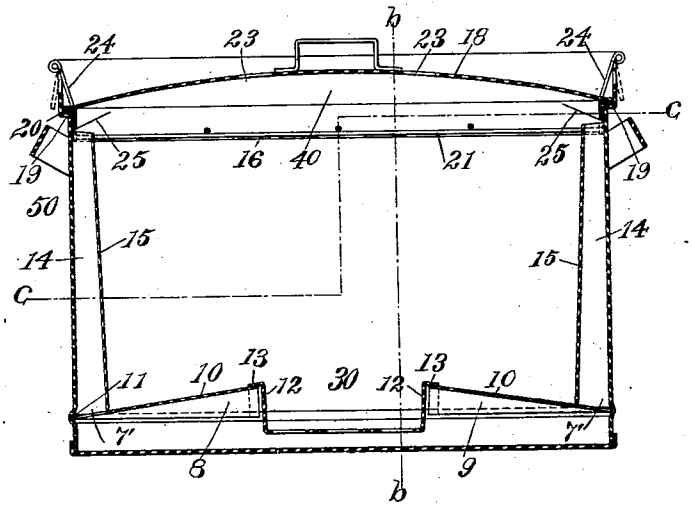


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

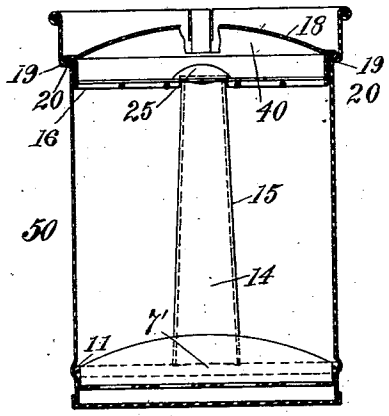


Fig. 4.

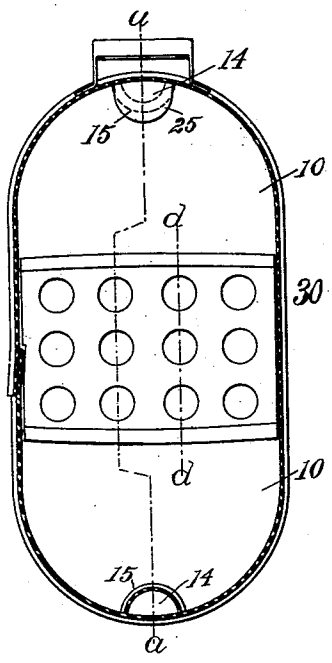
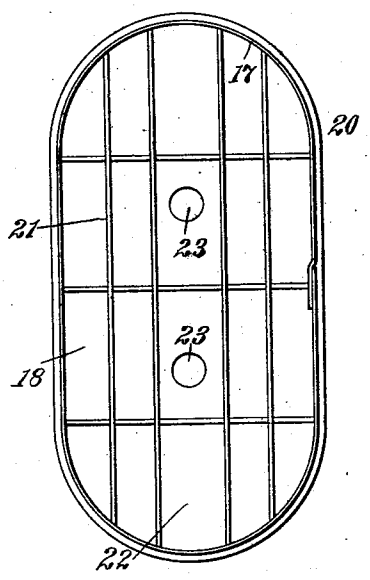


Fig. 5.



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UNITED STATES PATENT OFFICE.

LEANDER W. BOYNTON, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO W. F. BOYNTON, OF NEW YORK, N. Y.

WASHBOILER.

SPECIFICATION forming part of Letters Patent No. 564,777, dated July 28, 1896.

Application filed July 1, 1895. Serial No. 554,577. (No model.)

To all whom it may concern:

Be it known that I, LEANDER W. BOYNTON, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Washboilers, of which the following is a specification.

This invention relates to washboilers; and the object of the invention is to provide a washboiler in which the clothes may be washed and the dirt separated therefrom mainly by the operation of boiling.

A further object of the invention is to provide a boiler in which a constant circulation of the water therein will be maintained, and in which the boiling water will be somewhat cooled and spread substantially over the entire surface of the clothes, and thereby more thoroughly penetrate the same.

A further object of the invention is to construct a boiler with such simplicity that no part thereof is liable to get out of working order, and to provide a boiler easily accessible at all points in order that it may be thoroughly cleaned.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view of the boiler having a portion of one side broken away and showing the operation of the same when in use. Fig. 2 is a longitudinal vertical section of the same in line *a a*, Fig. 4. Fig. 3 is a vertical transverse section of the same in line *b b*, Fig. 2. Fig. 4 is a horizontal transverse section in line *c c*, Fig. 2. Fig. 5 is a view of the under side of the cover. Fig. 6 is a sectional view in line *d d* of the removable middle plate, and Fig. 7 is a side view thereof.

Similar characters designate like parts in all the figures of the drawings.

This improved washboiler may be constructed of any suitable material and shape. In the preferred form thereof herein shown the boiler (designated generally as 50) has rectilinear sides and approximately curved ends, and is provided with the usual handles for lifting the same.

The boiler is provided with two independent and separated roof-plates 10, extending from side to side thereof, and curved transversely of said boiler, and inclined downwardly from the inner to the outer ends thereof, forming two separated heating-chambers 8 and 9 at opposite ends of the boiler, which chambers are larger at their inner than at their outer ends adjacent to the ends of the boiler, and larger adjacent to their middle than at their sides, and have a relatively large space between the inner ends thereof, said chambers opening into the boiler at their inner ends from their roof-plates to the bottom of said boiler.

For supporting the roof-plates 10 of the heating-chambers 8 and 9 the boiler has formed therein, at a point relatively adjacent to the bottom of the boiler, an interior groove or recess 11, in which the edges of said roof-plates are set for the purpose of supporting the same. This groove or recess also serves to stiffen the wall of the boiler. In order to separate these heating or reaction chambers 8 and 9 from each other, and substantially from the upper portion of the boiler, a removable middle plate (designated generally as 30, and which, in practice, is perforated for the downward passage of the water in the boiler) is set between said roof-plates, and holds these plates apart and in said grooves, and is preferably on a horizontal plane with the openings, hereinafter described, in the inner ends of the chambers or slightly below the same, and is provided at its ends with vertical plates 12, adapted to form the inner end walls (also designated as the resistance or retaining walls) of said chambers, said vertical plates 12 having laterally-projecting flanges 13 or like devices, whereby said plate is supported on the inner ends of said roof-plates, and the vertical plates thereof substantially close the inner ends of the chambers and form retaining or resistance walls for the water in ebullition, and thereby prevent the outflow of the water in the chambers. By this particular construction of the chambers the water will be retained therein until steam is generated and reaches a high degree of tension, when the boiling water will be thrown upward with great force; that is to say, the curved inclined roof-plates forming the chambers being larger at their inner than at their outer ends, steam will be generated and retained in the heating-chambers much longer—in proportion to the size of the cham-

bers—than if the roof-plates thereof were on a horizontal plane, and owing to its compression through the smaller portion of the chambers will be forced through the passage-ways 14, hereinafter described, with great force, and against the cover, for the purpose hereinafter set forth.

Adjacent the end walls of the boiler vertical passage-ways 14 are formed in any suitable way, but as herein shown they are formed by semicircular plates 15, secured to the end walls of the boiler, to permit a relatively large column of water to be directed against the cover, the lower ends of the passage-ways communicating with the chambers through openings 7′ in the roof-plates 10, and the upper open ends extending to a point substantially in a line or slightly above the lower edge 16 of the downwardly-projecting flange or rim 17 of the cover 18, hereinafter described.

Adjacent the upper ends of the vertical passage-ways 14, and preferably secured to the end walls of the boiler, are upwardly-curved deflecting and spreading plates 25, adapted to first deflect the column of water from its vertical direction and then spread the same into a relatively thin approximately fan-shaped sheet and direct it in an inclined direction toward the middle or opposite end of the cover, where it will be made more thoroughly effective than would be the case if the water were not spread into a thin sheet. On striking the cover it is broken into a spray and spread substantially over every part of the clothes, penetrating the same by intersecting and crossing currents on its return downward passage toward the bottom of the boiler.

A suitable rim, bead, or groove 19 is formed in the interior wall of the boiler and extends around the entire wall below the upper edge thereof, and on this support, which also tends to stiffen the boiler, the cover 18, by means of its edge 20, is adapted to rest. This cover 18, in order to form a means for spraying the water and thereby causing it to penetrate substantially every part of the clothing, is so disposed within the boiler that the lower edge 16 of its downwardly-projecting flange or rim 17 will be in line with or slightly below the upper ends of the vertical passage-ways 14, and is curved or extended upwardly, so as to permit the water to have a certain amount of upward motion in which to spread after leaving the passage-ways and before it strikes the cover.

By setting the cover into the boiler below the edge thereof overflow of the water in ebullition is also prevented.

In order to permit the free discharge of the water from the open upper ends of the passage-ways 14 to the top of the cover and keep the clothes in the boiler away from the ends of such passage-ways, the cover is provided with a guard-screen or framework 21 of any suitable design and construction adapted for the purpose herein set forth, and is herein shown consisting of intersecting wires secured to the lower portion of the downwardly-projecting rim or flange 17 of the cover 18 in any suitable way, and thereby forming a relatively large space 40 between the top of the cover and the framework, in which the discharged water will have plenty of play to be spread into a thin approximately fan-shaped sheet before reaching the cover, and an open space 22 is preferably formed in this guard-screen 21 to permit the upper ends of the passage-ways to extend above or on a level with the screen, so that the clothes cannot work over the ends of the passage-ways and thereby prevent the desired action of the water.

Suitable holes 23 are provided in the cover for the escape of steam, and a suitable catch 24, if desired, may be used to hold the cover in the boiler.

In the use of this improved boiler the clothes, having been placed therein and the boiler partially filled with water, will be pressed below the open upper ends of the passage-ways 14 by means of the guard-screen 21, secured to the cover, and the free discharge of the water from such passage-ways permitted at all times.

The boiling water will be retained in the heating or reaction chambers 8 and 9 until the steam generated has reached a high degree of tension, when it will be thrown with great force, by means of the particular construction of chambers, up through the passage-ways, deflected from its vertical direction to an inclined direction, spread into a thin approximately fan-shaped sheet, and directed against the top of the cover by means of the curved deflecting and spreading plates 25, where it will be broken into a spray and spread substantially over every part of the clothes in the boiler, to thereby penetrate the same on its return downward passage by its intersecting and crossing currents.

The discharge of the columns of water each time creates a suction, drawing additional water into the heating-chambers, to be retained therein until a portion thereof is generated into steam at a high degree of tension, when the boiling water will be thrown out as before, thus creating a constant circulation of the water through the clothes. The clothes tend to move upwardly by the heating of the water in the chamber, this action thereby helping to remove the dirt from the clothes and also permitting the thorough penetration of the suds therethrough. By means of this construction of passage-ways and cover, together with the great amount of forcing-power obtained by the particular construction of the heating-chambers, the column of water is directed against the cover with great force, whereby it is broken into a spray, as before stated, and tends to rebound with considerable force and action upon the surface of the clothes.

When it is desired to clean the boiler, it is simply necessary to remove the middle plate

30, whereby, owing to the enlarged inner ends of the chambers, they will be easily accessible and the boiler can be thoroughly cleaned. By this simple construction of the boiler the movable parts thereof are reduced to a minimum, and the use of valves in the plate 30 obviated, as the clothes resting upon the outer edges of the heating-chambers, which form a support for the clothes and thereby prevent them from being pressed too compactly on the plate, prevent the return of the water through such plate after it reaches the bottom of the boiler, while the vertical plates 12 effectually retain the water in the heating-chambers, and also tend to hold the roof-plates in place.

Having thus described my invention, I claim—

1. A boiler having removable roof-plates, and a perforated middle plate which serves to secure the roof-plates in position.

2. A boiler having a groove in its interior wall adjacent to the bottom thereof, and having two independent and separated roof-plates disposed in said groove and extending from side to side of said boiler, and forming two separated and independent chambers at each end of the boiler; a removable, perforated middle plate resting between said chambers and adapted to hold the roof-plates in said grooves, and each of said chambers having a passage-way opening below the top of the boiler.

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