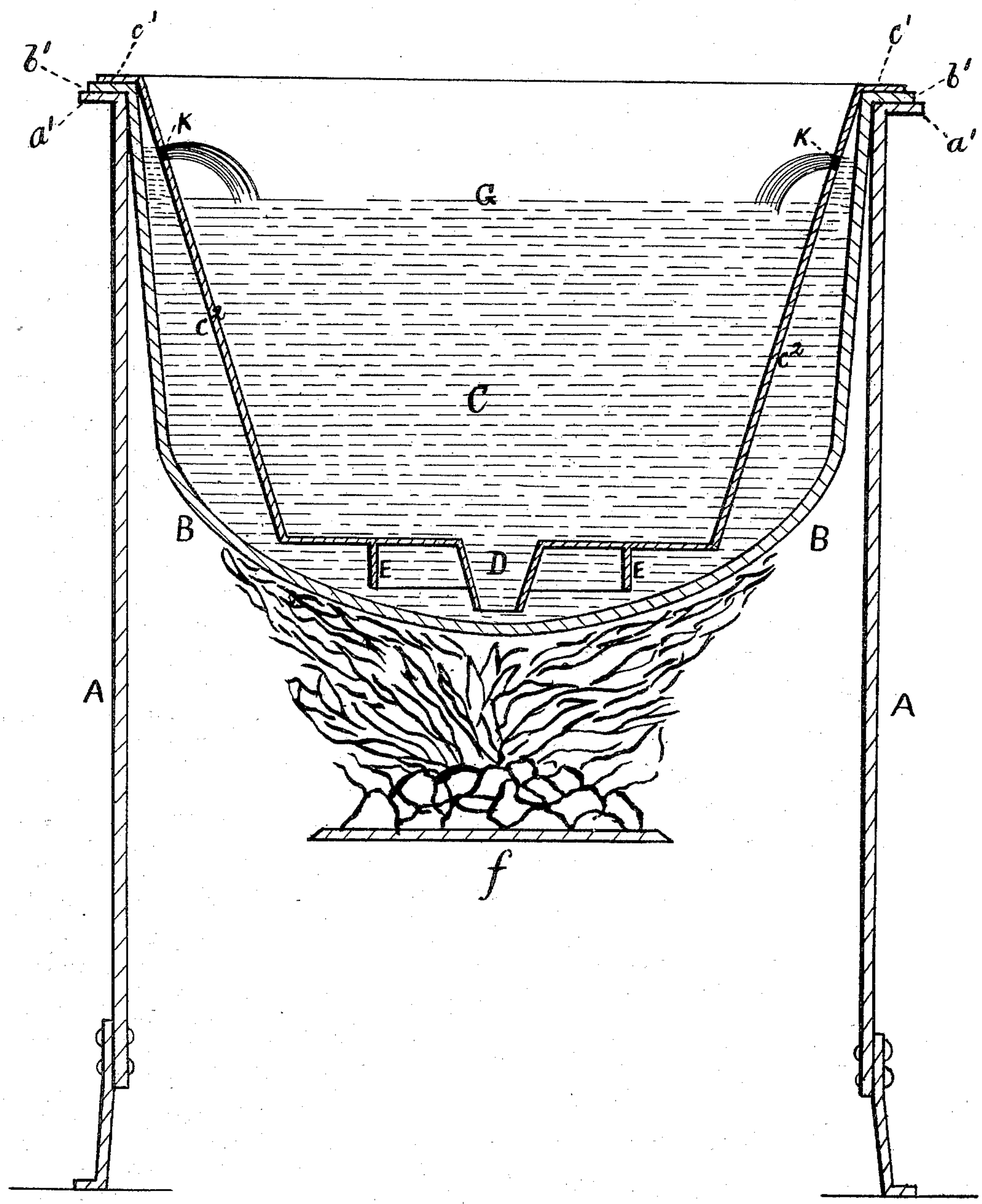
(No Model.)

S. A. MACKIE.

WASHBOILER.

No. 493,631. Patented Mar. 21, 1893.



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UNITED STATES PATENT OFFICE.

SUSAN ARABELLA MACKIE, OF LONDON, ENGLAND.

WASHBOILER.

SPECIFICATION forming part of Letters Patent No. 493,631, dated March 21, 1893.

Application filed November 20, 1891. Serial No. 412,589. (No model.) Patented in England April 18, 1890, No. 5,917; in France November 17, 1890, No. 209,570; in South Australia December 2, 1890, No. 1,783; in Tasmania December 3, 1890, No. 878/10; in New South Wales December 3, 1890, No. 2,655, and in New Zealand January 7, 1891, No. 4,799.

To all whom it may concern.

Be it known that I, SUSAN ARABELLA MACKIE, gentlewoman, a subject of the United Kingdom of Great Britain and Ireland, residing at 27 Chancery Lane, in the county of Middlesex, in that part of said United Kingdom called England, have invented new and useful Improvements in Boiling Apparatus for Washing and Laundry Purposes, (for which I have obtained patents in the following countries, namely: Great Britain by Letters Patent No. 5,917, dated April 18, 1890; France by Letters Patent No. 209,570, dated November 17, 1890; Tasmania, No. 878/10, dated December 3, 1890; New Zealand, No. 4,799, dated January 7, 1891; New South Wales, No. 2,655, dated December 3, 1890, and South Australia, No. 1,783, dated December 2, 1890.)

The following is a specification of the invention.

The circulation of boiling water between an outer and inner vessel has been effected in many ways.

My invention consists of the particular combination, hereinafter described and claimed, of a funnel and ring attached to a pot or vessel which can be put into an ordinary or other boiler, or which can be put into any convenient portion of a divided boiler. In a double boiler with a space between the inner and the outer shells, the water or other fluid under the pressure of the steam or vapor generated will be forced up the space, and will jet through orifices in the upper portion of the inner shell back into the boiler. In this way a constant circulation of the water or other fluid is maintained. By means of my invention the circulation is effected in a very satisfactory manner.

In the accompanying drawing. the figure is a vertical section of the entire apparatus.

A is the furnace, *f* the fire. B the boiler with its flange, *b'*, resting on the furnace top, *a'*.

C is the internal pot or inner shell resting by its flange, *c'*, upon the boiler flange, *b'*.

c^2, c^2, are the sides inclosing the internal space and contents of the pot or vessel, C.

D is the funnel or downwardly extending outlet, and E the steam ring or trap which are the novel and special combination of which my invention consists.

A certain amount of the steam generated by the action of the heat on the water at the bottom of the boiler B in ascending will be caught in the annular space between this funnel and ring. Since it cannot pass through the shell of pot C nor through the wall of said funnel, nor through the said ring, its expansive power as it accumulates under the influence of the heat must be exerted downward against the mass of water and below. This steam-pressure will be transmitted to the mass of water at the sides of pot C raising the same as far as the orifices K and causing it to jet into the said pot as illustrated. The weight of the mass of the water within said pot is so great as to overcome the back pressure of the said steam, so that there will be a continuous and effective circulation. If there were no ring E, the steam as produced would escape gradually around the corner edge of the pot. Of course a certain amount will thus escape in any event; but the ring E insures the retention of enough of it to soon form an expanding volume or vapor spring. The operation is repeated again and again, the clothes or other articles being washed clean and beautifully white by the soapy water passing through them. The funnel serves another purpose, for the orifice being small any steam from the boiling water in the external boiler meeting the cooler water descending through the funnel is condensed, and a sort of water-hammer action is set up which causes a descent with considerable force of the water through the funnel into the outer vessel. The result is that the water within the inner vessel, if it be constructed of proper proportions as shown in the accompanying drawing, never boils, and this is of the greatest consequence in cleansing the clothes or other articles, without any hand labor at all, into snowy whiteness. The exact form of the outer boiler is not, important, as the inner vessel with the steam trap or ring and funnel can be made to suit any kind of boiler hemispherical or otherwise, and open or closed.

The water poured into the boiler should rise to a level in the two vessels, preferably one

or two inches below the row of jet holes in the upper portion of the inner vessel, but it may be of a lower or higher level, as the action of circulation will go on if the holes are entirely submerged. The sole purpose of the rim is to support the inner vessel at the proper distance from the bottom of the outer boiler, so as to give a free space beneath the funnel for the descending water to get free, and also to center the inner vessel so that there is a proper distance between it and the outer boiler.

The inner vessel with its steam-trap and funnel can be applied to the making of coffee, extract of meat, cleansing of fibers, or any other purpose for which it is suitable. In the drawings, the orifice of the funnel is seen below the lower edge of the steam-trap or ring so that no steam can get at the orifice except that steam which is formed immediately beneath it. Tested by the thermometer it has been found that while the boiling water in circulation between the two vessels is at 212° Fahrenheit, the water within the inner vessel is never above 206° Fahrenheit.

I am aware that it is not new to construct a double shell boiling apparatus of substantially the construction shown, without the ring E or any equivalent therefor. But this ring or some very similar device is necessary to make a steam pocket. The said ring or some equivalent is therefore a vital feature of my invention and essential to the satisfactory operation of the boiling apparatus. I do not claim the devices shown without such ring or some equivalent, but,

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

In boiling apparatus for laundry and other purposes the combination of a boiler B with a pot C arranged within the same, the two vessels having communication with each other at or near the top and the said pot being provided at the bottom with a downwardly-extending funnel or outlet D and a ring E forming a space between them for the reception of steam in order that the accumulation and expansion of steam therein may force the water up through the space between the sides of the pot and boiler and into the said pot at the top thereof, substantially as set forth.

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