(No Model.)

A. A. KLEIN.

WASH BOILER.

No. 379,582. Patented Mar. 20, 1888.

FIG. 1.

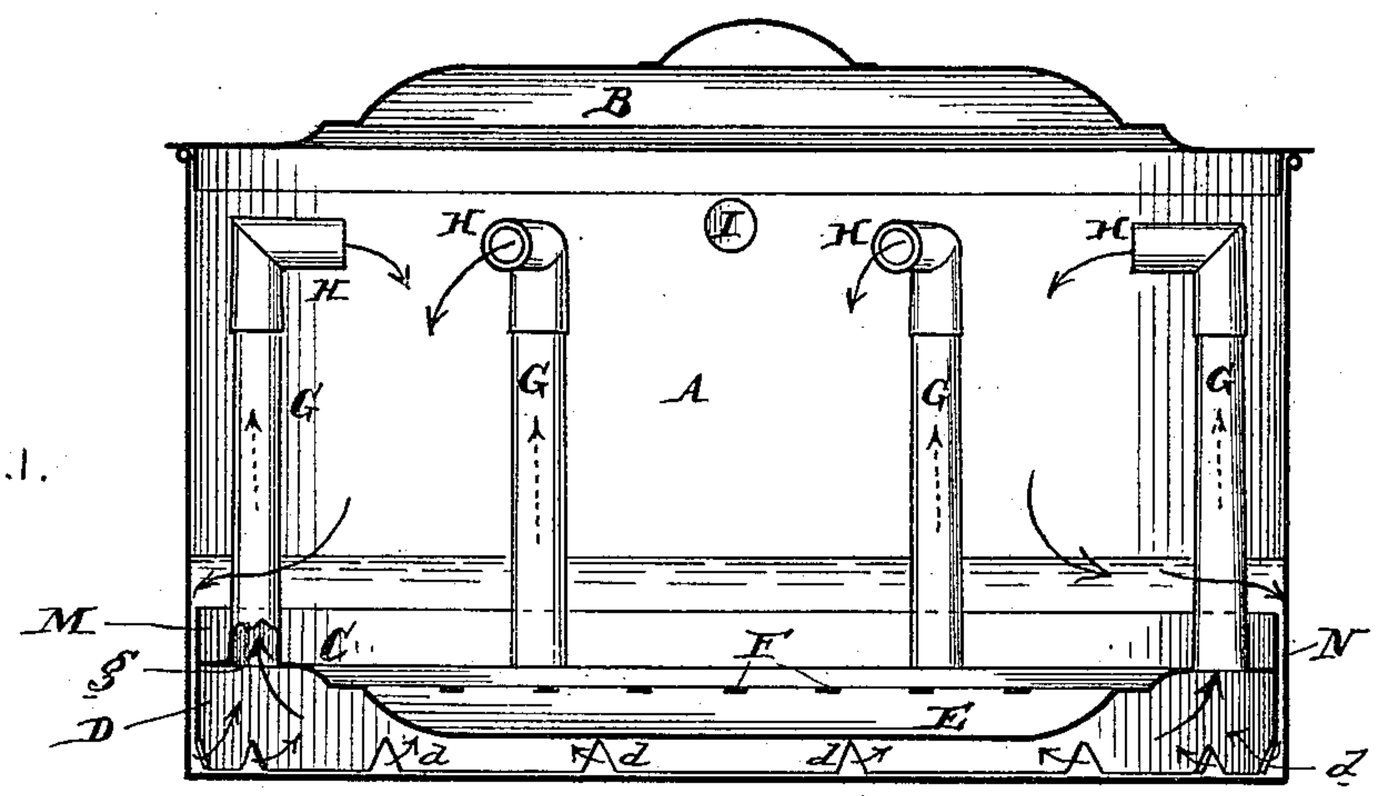


FIG. 2

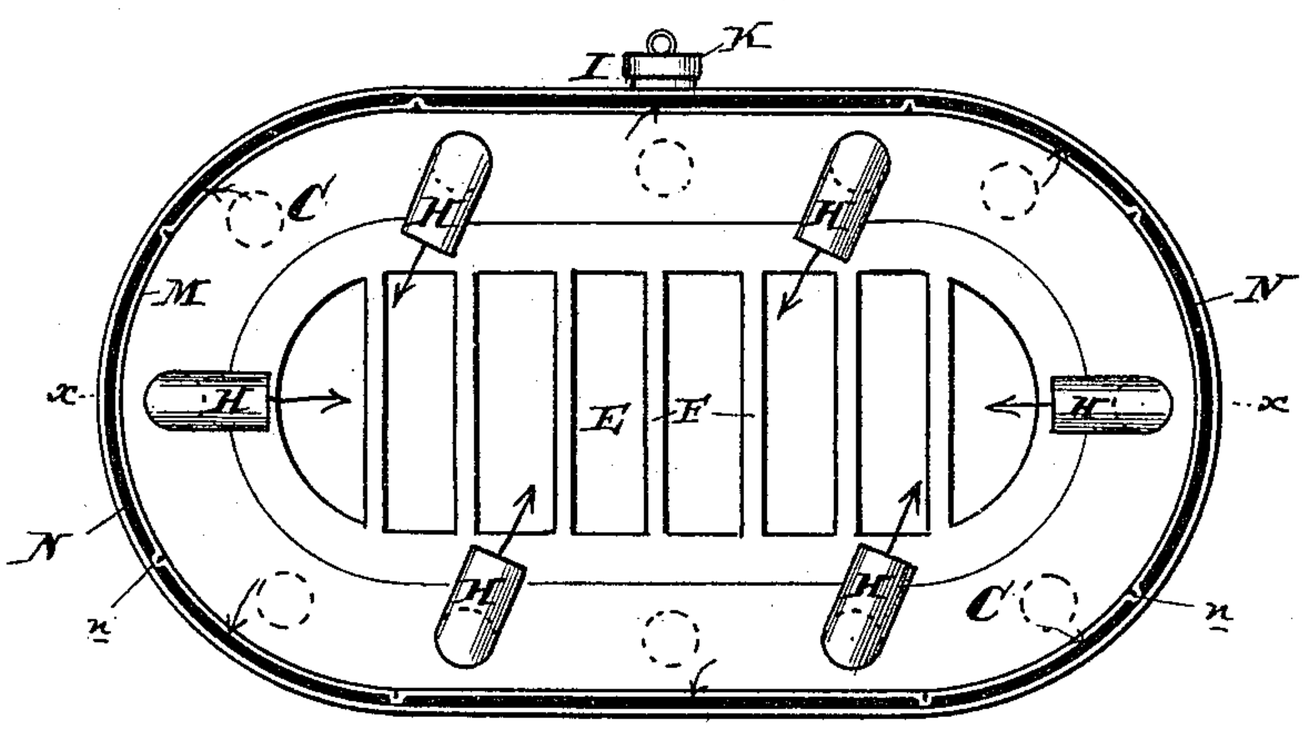
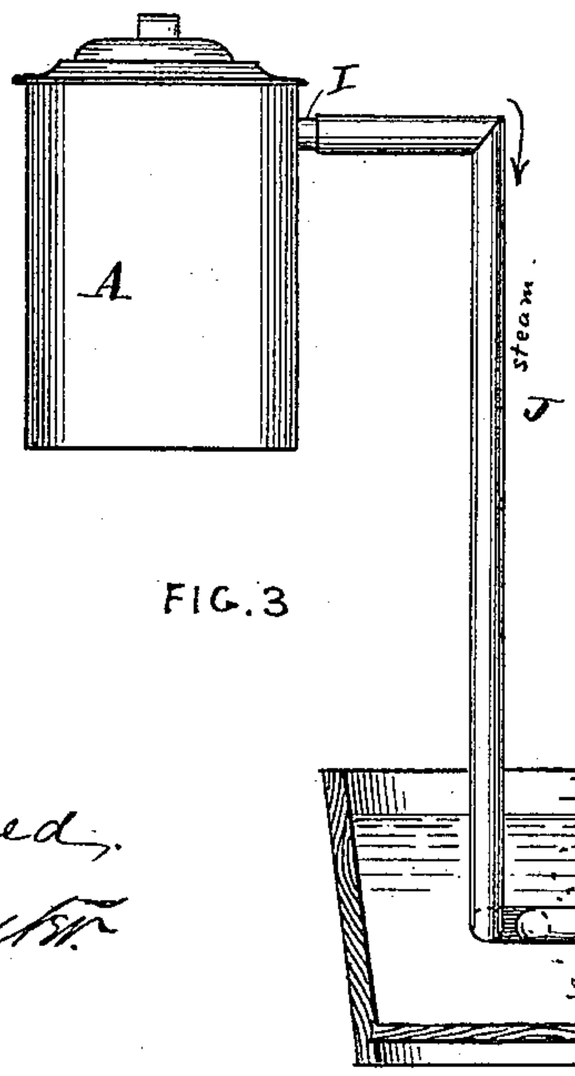


FIG. 3



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UNITED STATES PATENT OFFICE.

ADOLPH A. KLEIN, OF PHILADELPHIA, PENNSYLVANIA.

WASH-BOILER.

SPECIFICATION forming part of Letters Patent No. 379,582, dated March 20, 1888.

Application filed June 19, 1886. Serial No. 205,609. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH A. KLEIN, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Wash-Boilers, of which the following is a specification.

My invention has reference to wash-boilers; and it consists in certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof, and are referred to in the appended claim.

Wash-boilers in which the clothes are cleaned by the circulating of the hot water within the boiler are old; but the apparatus used heretofore has been more or less faulty for accomplishing a satisfactory circulation of the hot water; and it is the chief object of my invention to more perfectly accomplish this result, and thus present to the public a more efficient machine.

Figure 1 is a sectional elevation of a wash-boiler on line *x x* embodying my invention. Fig. 2 is plan view of same with the cover removed, and Fig. 3 is an end elevation showing connection with the steam-condenser.

A is the body of the boiler, similar to an ordinary wash-boiler, and has the cover B.

C is a loose diaphragm, having the recessed or depressed central part, E, and rim D. This rim encirles the whole diaphragm, extending both above and below the plane thereof, and is provided about its lower edge with holes, notches, or openings *d* to admit passage of the water. The upper part, M, of this rim is intended to hold in the clothes and to keep free the passage-way N between the rim of the diaphragm and the side of the boiler. This passage-way is thus insured and placed next to the outer wall of the boiler, where it is coolest, inducing a cooling action upon the descending water and augmenting the forced circulation set out hereinafter. The central recessed part, E, is covered by bars or grates F, which support the clothes, leaving an open space below for the collection of dirt. Supported upon this diaphragm are perpendicular pipes of any convenient number, which may be arranged as as shown in solid or dotted lines, and which open at *g* through the diaphragm. These pipes are provided with adjustable nozzles H, which are turned so as to give the hot water issuing through them any particular desired direction. This is best shown in Fig. 2. Here each pipe opens in a direction different from the other, the direction of the pipes on the sides being parallel, and of those on the end in the same line and opposite. The arrangement here shown is found to be the most advantageous, and is therefore given; but of course the mere arrangement of these nozzles or the particular number and location of the pipes is immaterial to the principles of the invention.

A hole, I, is made in the side of the boiler near the top, opening out. This may be closed by a cap, K, or have fitted into it a pipe, J, which is preferably provided with a coiled condenser end, *j*, which may be submerged in cold water.

The clothes to be washed are placed in the boiler after it is partially filled with water, yet preferably to leave the openings of the pipes G free and above the surface of the water. When the boiler is placed over a fire, the lower strata of water will become the hottest, and consequently, on account of the difference of densities, will rise through the pipes G, and, coming out through the nozzles H, will fall in streams upon the clothes and will replace an equal volume of water, which, on account of its greater density, will seek the bottom part below the diaphragm, passing through the passage-way N to the chamber under the diaphragm, and, becoming heated there, will in time rise and be replaced by other cooler water. Thus a constant movement of the water is kept up in the direction indicated by the arrows, and the clothes will in a short time be perfectly clean and free from dirt. The dirt will be deposited in the recessed part of the diaphragm, the water in which is not materially affected by the continuous motion of that without, but is always more or less still. In practice it is usual to mix a quantity of soap with the water for the more efficient washing of the clothes.

Obviously, if this apparatus is used continuously for a long time and the boiling operation kept up, a great amount of steam will be engendered. To prevent the escape of this steam into the room the device shown in Fig. 3 is employed. The pipe J is fixed to the opening I, and the curved or twisted condenser end *j*

is immersed in a pail of water, L. The outlet I also acts as an overflow for suds and foam. The steam will have vent through this pipe J, and will become condensed by passing through the coil *j* and water in pail L, raising this water to a high temperature, whereby it may be used for other purposes, or for the washing-machine itself.

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

The combination, in a wash-boiler, of the boiler-body A, having the lid B, the horizontal solid diaphragm C, having the depression E in the center, with the clothes-supporting grate F above it, a vertical bounding flange, D, above the perimeter of the diaphragm, having notches *d* in its lower edge, the area of the diaphragm being smaller than that of the body A, so as to form the annular passage-way N for cool water, a series of vertical hot-water-circulating pipes, G, opening through the diaphragm near its outer part and terminating in horizontal nozzles H, to direct the hot water toward the center, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

ADOLPH A. KLEIN.

Witnesses:
R. M. HUNTER,
WILLIAM C. MAYNE.