(No Model.)

T. BURKHARD.

STEAM KETTLE.

No. 458,298. Patented Aug. 25, 1891.

Fig. 1.

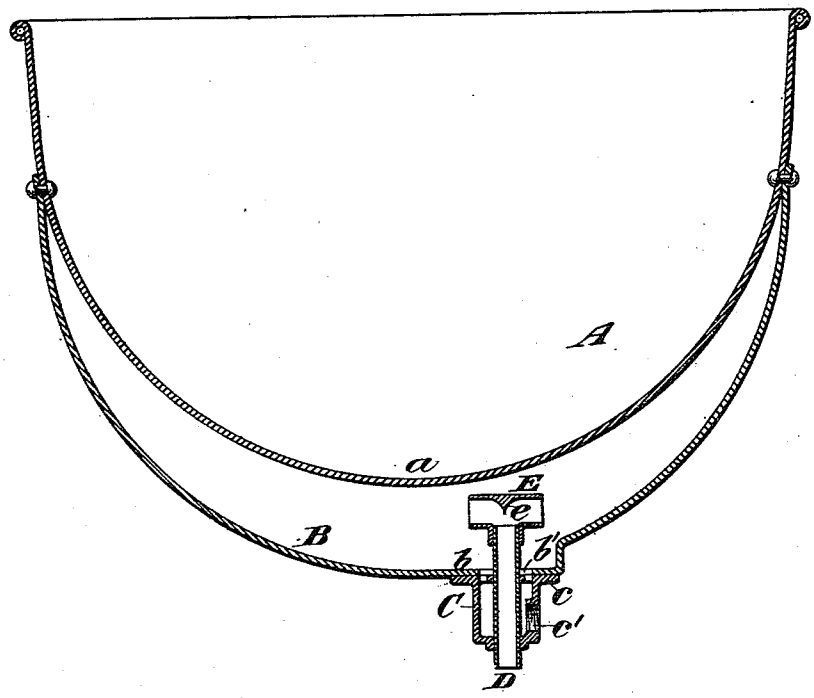


Fig. 3.

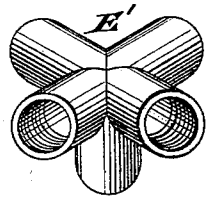
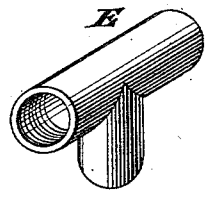


Fig. 2.



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

UNITED STATES PATENT OFFICE.

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STEAM-KETTLE.

SPECIFICATION forming part of Letters Patent No. 458,298, dated August 25, 1891.

Application filed March 25, 1891. Serial No. 386,296. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BURKHARD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Steam-Kettles, of which the following is a specification.

My invention relates to an improvement in steam-kettles, and more particularly in the means for admitting live steam into and discharging the exhaust-steam and water of condensation from the space between the bottom of the kettle and the false bottom.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a view of the kettle and its steam-heating attachments in vertical section. Fig. 2 is an enlarged view of the T or two-way nozzle in perspective, and Fig. 3 is an enlarged view of the X or four-way nozzle in perspective.

A represents the kettle provided with the bottom *a* and having the false bottom B, secured thereto and spaced from the bottom *a*, as is usual. The false bottom B is provided with a flattened portion *b*, through which is an opening *b'*.

Surrounding the opening *b'* and fixed to the outside of the bottom B is a well C, the upper end of which is formed skeleton opposite the opening *b'*, so as to admit of free access through the opening *b'* into the well. The well C is provided with a laterally-projecting flange *c* at its upper end, which has an extended contact against the flattened portion *b* of the bottom B, and through which it may be riveted or otherwise fastened to the bottom. The well is provided at its lower end with a central opening for the reception of the steam-inlet pipe D, which extends upwardly through its skeleton upper end to a point between the bottom of the kettle and the false bottom B. The well is also provided at its lower portion and at one side with an opening *c'*, sufficiently large to provide for the free escape of the exhaust-steam and of any water of condensation which may have formed during the passage of the steam along the bottom of the kettle. The upper end of the steam-inlet pipe D within the space between the bottom of the kettle and the false bottom is provided with a cross-head, which may be simply a T-head E, as shown in Fig. 2, or an X-head E', as shown in Fig. 3. The branches of the cross-head extend in such directions as to distribute the entering steam laterally beneath the bottom of the kettle A, and for the purpose of distributing it in opposite directions in the proper proportion to obtain the best heating effects I provide the top of the interior wall of the cross-head with a depending wedge-shaped guide *e*, which may be so located over the top of the inlet-pipe D as to send the steam in equal quantities to the right and left, or in case of the four-way head the guide *e* may be of conical shape to distribute the heat equally in the four directions. By shifting the said guide *e* more or less to one side of the axial line of the inlet-pipe D, a greater proportion of the entering steam may be turned to one side or the other, as may be required. By causing the exhaust-steam to escape along side and in contact with the steam-inlet pipe D, I am enabled to prevent it from condensing to any considerable extent, and a rapid circulation of live steam beneath the bottom of the kettle is maintained by the ready exhaust through the opening *c'* near the bottom of the well.

It is obvious that any water formed from the condensation of the steam will find its way to the bottom of the well C and will escape along the bottom of the opening *c'*.

The above-described structure has the merit of being extremely simple and inexpensive, and serves to distribute the live steam with great rapidity throughout the space beneath the bottom of the kettle, the currents from the opposite ends of the T-head being thrown to a considerable distance up the side of the kettle in contact with the bottom of the kettle, while the return currents of the cooler steam flow along back in proximity to the false bottom B to the point where they escape.

What I claim is—

1. The combination, with the kettle and its false bottom, of a steam-inlet pipe extending through the false bottom and provided with a cross-head within the space between the bottom of the kettle and the false bottom, and an opening through the false bottom for the escape of the exhaust-steam and water, substantially as set forth.

2. The combination, with the kettle and its

false bottom, of a steam-inlet pipe extending through the false bottom and provided at its end between the bottom of the kettle and the false bottom with a cross-head having an interior depending guide in position to distribute the entering steam in opposite directions, and an opening in the false bottom for the escape of the exhaust-steam and water, substantially as set forth.

3. The combination, with the kettle and its false bottom, of a well depending from the exterior of the false bottom, a steam-inlet pipe extending upwardly through the well and false bottom into the space between the bottom of the kettle and the false bottom, the said false bottom and well being provided with openings which register with each other in proximity to the steam-inlet pipe and the said well being further provided with an exhaust-opening, substantially as set forth.

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