

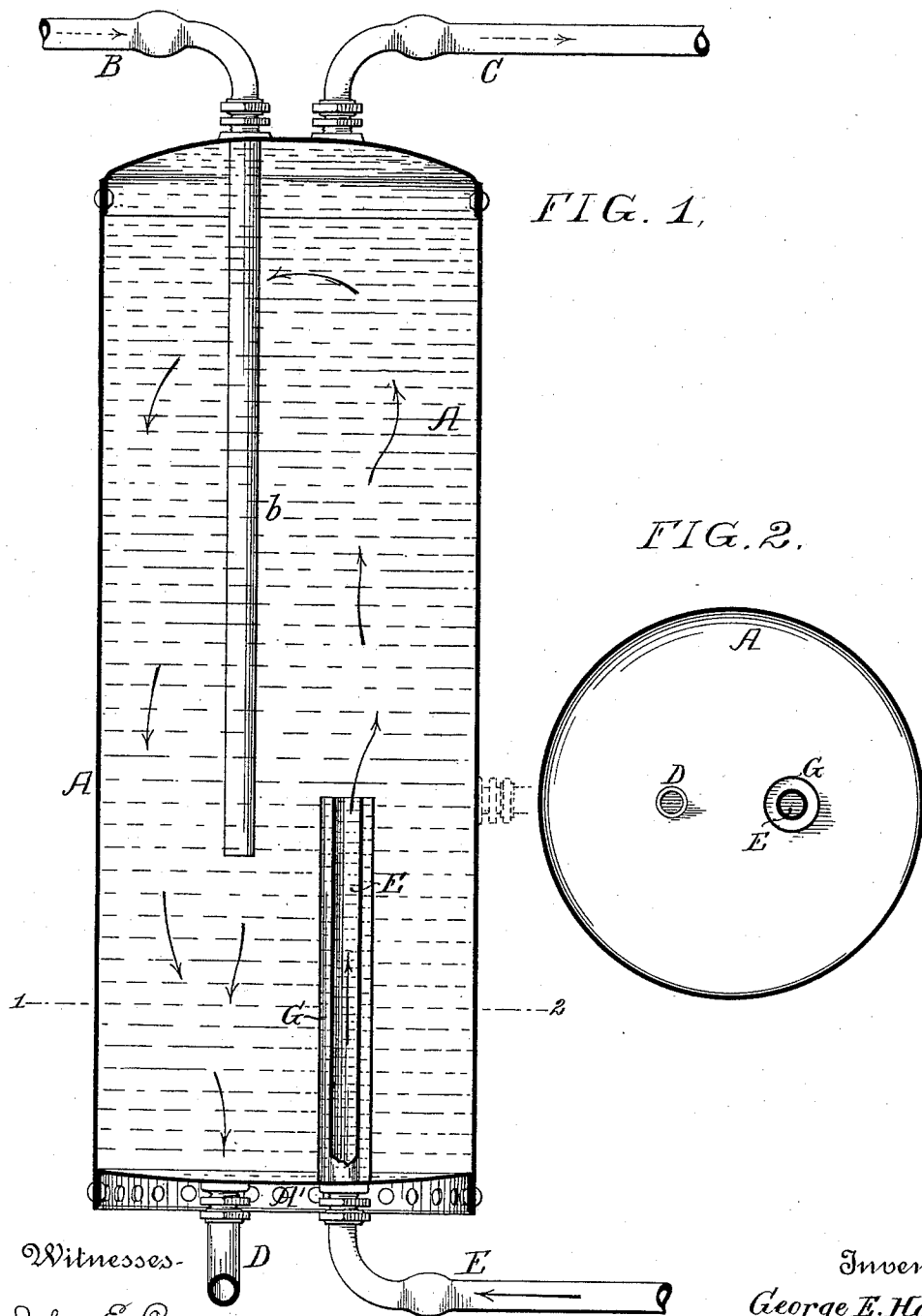
(No Model.)

G. E. HOPKIN.

BOILER.

No. 387,076.

Patented July 31, 1888.



UNITED STATES PATENT OFFICE.

GEORGE E. HOPKIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE ABRAM COX STOVE COMPANY, OF SAME PLACE.

BOILER.

SPECIFICATION forming part of Letters Patent No. 387,076, dated July 31, 1888.

Application filed April 7, 1888. Serial No. 269,955. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HOPKIN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Boilers, of which the following is a specification.

My invention relates to improvements in circulating-boilers used in connection with water-backs and similar water-heaters connected with a range or cook-stove.
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The object of my invention is to insert both the circulating-pipes in the bottom of the boiler, and at the same time insure complete and rapid circulation of the water.

15 In the accompanying drawings, Figure 1 is a longitudinal section of my improved boiler; and Fig. 2 is a sectional plan on the line 1 2, Fig. 1.

A is the boiler, and B the cold-water-inlet pipe, having a portion, *b*, extending some distance into the boiler.
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C is the hot-water outlet at the top of the boiler.

D is the cold-water connecting-pipe extending from the base of the boiler to the water-back in the range, and E is the hot water connection extending from the water-back into the boiler. This pipe E extends up into the boiler, as shown in Fig. 1, for a purpose described hereinafter.
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Usually the hot-water inlet from the water-back is tapped into the boiler at the point indicated by dotted lines in Fig. 1. The object of extending the pipe E to this point is to prevent the chilling of the hot water as it enters the boiler by coming in contact with the cooler water, which falls to the bottom, and consequently out through the outlet-pipe D.
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The object of inserting the inlet and outlet tubes in the bottom of the boiler is that shorter connections can be made, requiring less plumbing, and in cases where the boiler is placed directly upon the range the connections can be placed below the top of the range and out
40 of sight; but in this construction of boiler,

where the tube E extends to the point indicated in Fig. 1, I have found that the circulation is very poor and sometimes is reversed, as the cold water which surrounds the tube chills the water as it passes up the pipe E, and consequently prevents the rapid circulation of the water. I overcome this difficulty by placing a tube or sleeve, G, around this pipe E, extending from the base of the boiler to the top of the pipe, as shown in Fig. 1. This tube is open at the top and filled with water, but, owing to the small amount of water contained in the tube G and inlet-pipe E, the chilling of the hot water in the inlet-pipe is prevented, and I have found by a series of experiments that the hot water will heat the limited amount of water contained between the tubes, which in turn prevents the chilling of the water in the inlet-pipe E, and consequently a rapid circulation of water in the boiler is insured. When the water between the tubes becomes hot, the hot water rises and water not so warm takes its place.
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I am aware that it has been common to insert one tube inside of another in connecting circulating-boilers to water-backs; but one of these tubes was utilized for the cold water and the other for the hot, and consequently the hot water would be chilled from the start, and it is this chilling of the water which I prevent by the devices above described.
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I claim as my invention—

The combination, in a circulating-boiler, of the inlet-pipe from the water-back or heating-coil extending into the boiler with an incasing-tube around said inlet-pipe, substantially as and for the purpose described.
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In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE E. HOPKIN.

Witnesses:

HARRY SMITH,
HENRY HOWSON.