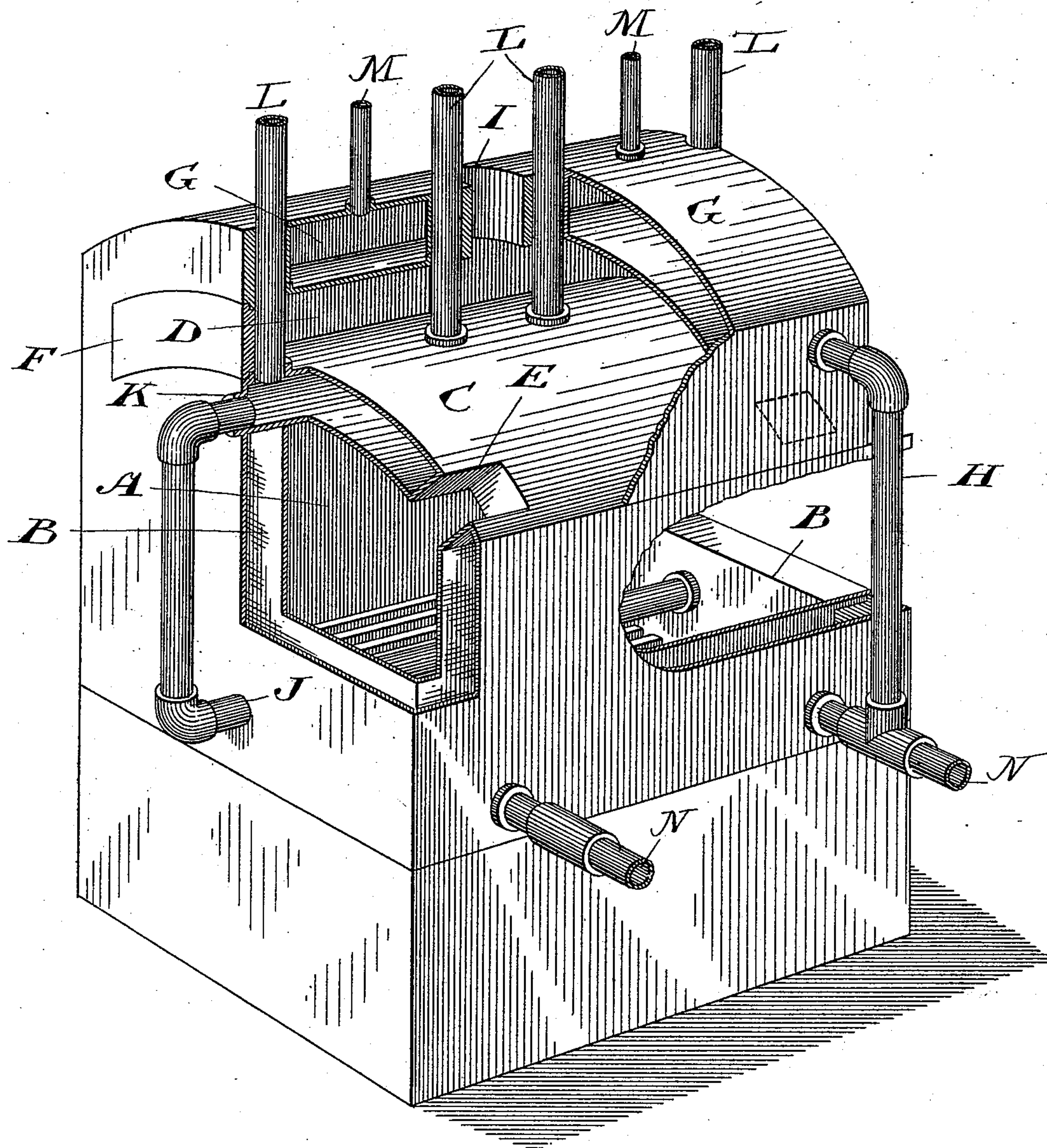


(No Model.)

T. BROOKS, M. REILLY & W. RUDKINS.  
HOT WATER BOILER FOR HEATING PURPOSES.

No. 528,626.

Patented Nov. 6, 1894.



*Witnesses*

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# UNITED STATES PATENT OFFICE.

THOMAS BROOKS, MICHAEL REILLY, AND WILLIAM RUDKINS, OF PETERBOROUGH, CANADA.

## HOT-WATER BOILER FOR HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 528,626, dated November 6, 1894.

Application filed June 1, 1893. Renewed August 1, 1894. Serial No. 519,215. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS BROOKS, MICHAEL REILLY, and WILLIAM RUDKINS, all of the town of Peterborough, in the county of Peterborough, in the Province of Ontario, Canada, have jointly invented a certain new and Improved Hot-Water Boiler for Heating Purposes, of which the following is a specification.

10 The object of the invention is to produce a hot water boiler for heating purposes with a large heating surface, all parts which are readily accessible and capable of being kept clean with very slight effort, and it consists  
15 in the peculiar construction, arrangement and combinations of parts hereinafter more particularly described and then definitely claimed.

20 The drawing represents a perspective view of our improved boiler.

Referring now to the details of the drawing by letter—A represents the furnace, on the two sides, two ends and top of which (except where the doors are placed) is formed  
25 a water space B. The top of this water space forms the crown C, and rising therefrom are the outlet pipes L through which the hottest water circulates to the radiators. Above the said crown C is a smoke box D, and the top  
30 of this smoke box is formed by a secondary water-space G; the latter being entirely independent of the main water space B. Smoke flues E are made, preferably at each corner, through the main water space B, and the products of combustion pass through these flues  
35 and enter the smoke box D before passing out the central smoke flue I in the secondary water-space; the products of combustion thus passing both on the top and bottom of the  
40 main water space B. These smoke flues, it will be observed, are large in diameter and as the water space in the crown C is shallow, the said smoke flues are very short, and are, as indicated, large in diameter so that the  
45 smoke from the furnace A will pass freely through the said flues.

A door F in one end of the smoke box D makes the smoke-box very accessible and enables the entire surface of the smoke-box to  
50 be kept clean with very little effort.

With the view of utilizing the heat of the

furnace A to its fullest extent, we place a water pipe J, which enters the water space B, at one end of the furnace A, and through a hole through the opposite end of the furnace, 55 thence up to a point K, where it enters the water space B, opposite to the space B formed at the top of the crown of the furnace. The water space B is protected by a thimble or otherwise at the point where the pipe J passes 60 through the end of the boiler so that the water in the pipe J cannot re-enter the boiler until it reaches a point where its flow will not in any way be impeded, but will enter freely into the large water space formed in 65 the crown of the furnace. In that way the water will circulate freely through the pipe J, and space B. As the pipe J passes through the the hottest part of the fire in the furnace, water in the said pipe is heated very quickly and 70 as it circulates, the water in the water space B is quickly raised in temperature. The return water enters the main water-space through the return pipes N. Branch pipes H connect these return pipes with the second- 75 ary water space G, so that as fast as the water circulates out of the spaces B and G through their respective pipes L and M, it is returned through the pipes N N, thus keeping up a constant circulation. 80

As the top part of the main water space gets (besides the heat from the passing products of combustion) the direct heat from the furnace, it is evident that the water in the main space B is heated to a higher degree 85 than that in the secondary space G. This being the case, the pipes L which convey the hottest water may be connected to the rooms needing the most heat, such as those a great distance from the furnace or those having a 90 side exposed to cold winds, while the pipes M may be connected to radiators in rooms needing only a little heat.

The operation of our device is as follows: The water on entering the pipe J, the space 95 around the fire-box and the supplemental water space G, becomes heated and circulates from the space G through the outlet pipes L and from the supplemental space G through the outlet pipes M to the radiators and re- 100 turns by way of the return pipes N to the water spaces, where it is reheated and again



circulates as before; the operation being carried on continuously.

From this description it will be seen that we secure a boiler with a very large heating surface, all of which is easily got at and kept clean so that no matter what nature of fuel is used, there will be no possibility of the draft being impeded. Consequently soft coal, peat or any kind of fuel, may be burned, and the furnace being extremely simple in form can be made of cast iron or any material with comparatively little expense.

What we claim as new is—

In a hot water heater and in combination with the fire-box thereof, a main water space formed on the sides and top of said fire-box, outlet pipes therefrom, a smoke-box above said water space, a secondary water space

above said smoke-box, forming a heater independent of said main water space, outlet pipes from said secondary water space, and a pipe running through the fire-box, and connecting with the main water space above the fire-box, whereby the main heater contains the hottest water and the secondary heater water of a lower temperature, thus allowing the hottest water to be conveyed to the coldest parts of the house, substantially as described.

Peterborough, May 6, 1893.

THOMAS BROOKS.  
MICHAEL REILLY.  
WILLIAM RUDKINS.

In presence of—

A. E. DIXON.  
GEO. EDMISON.

It is hereby certified that in Letters Patent No. 528,626, granted November 6, 1894, upon the application of Thomas Brooks, Michael Reilly, and William Rudkins, of Peterborough, Canada, for an improvement in "Hot-Water Boilers for Heating Purposes," an error appears in the printed specification requiring the following correction, viz: On page 1, in line 98, the reference letter "G" should be *B*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 13th day of November, A. D. 1894.

[SEAL.]

JNO. M. REYNOLDS,  
*Assistant Secretary of the Interior.*

Countersigned:

JOHN S. SEYMOUR,  
*Commissioner of Patents.*