

(No Model.)

F. SUCCIE.  
STEAM OR HOT WATER HEATER.

No. 601,687.

Patented Apr. 5, 1898.

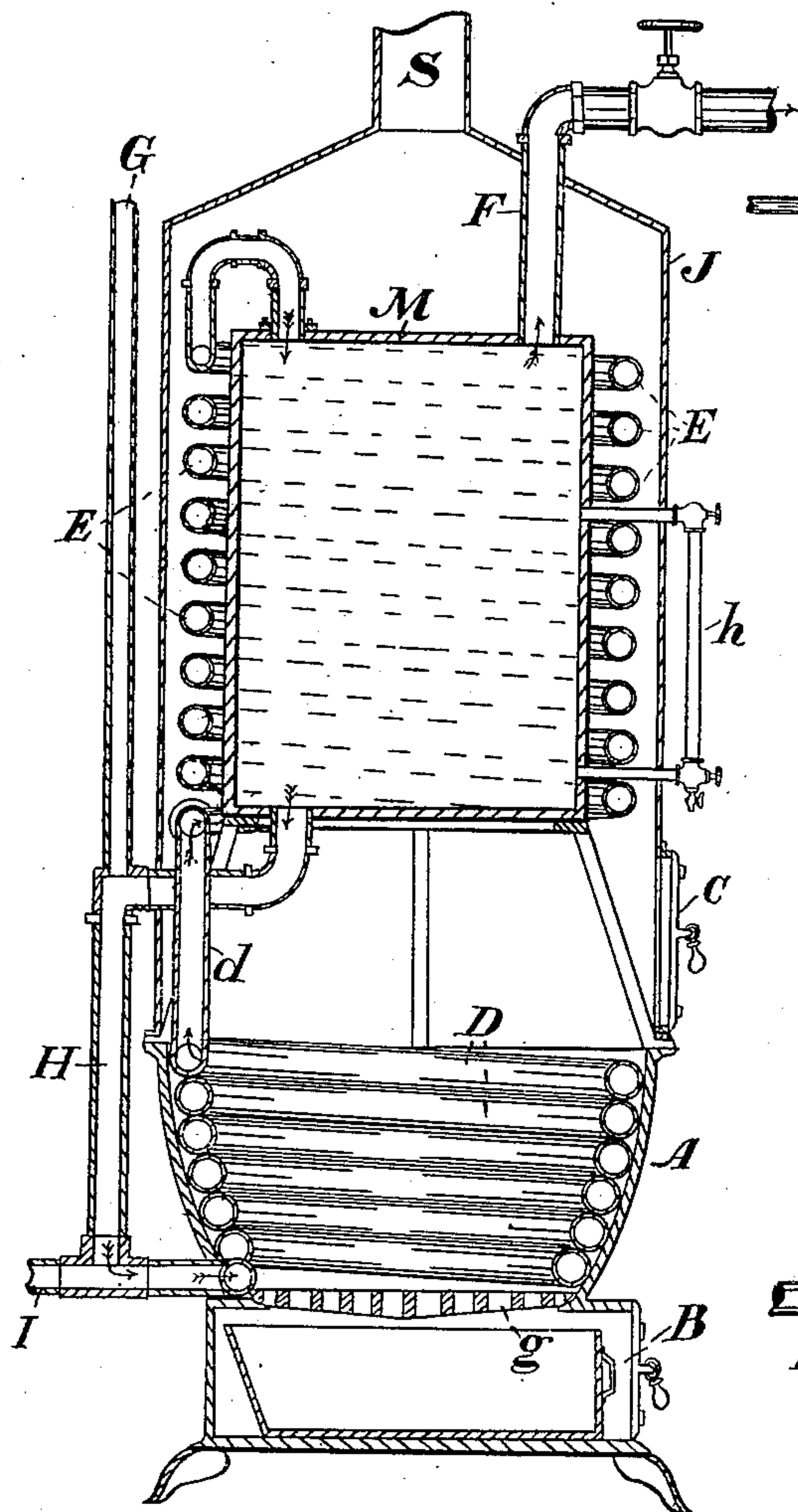


Fig. 1

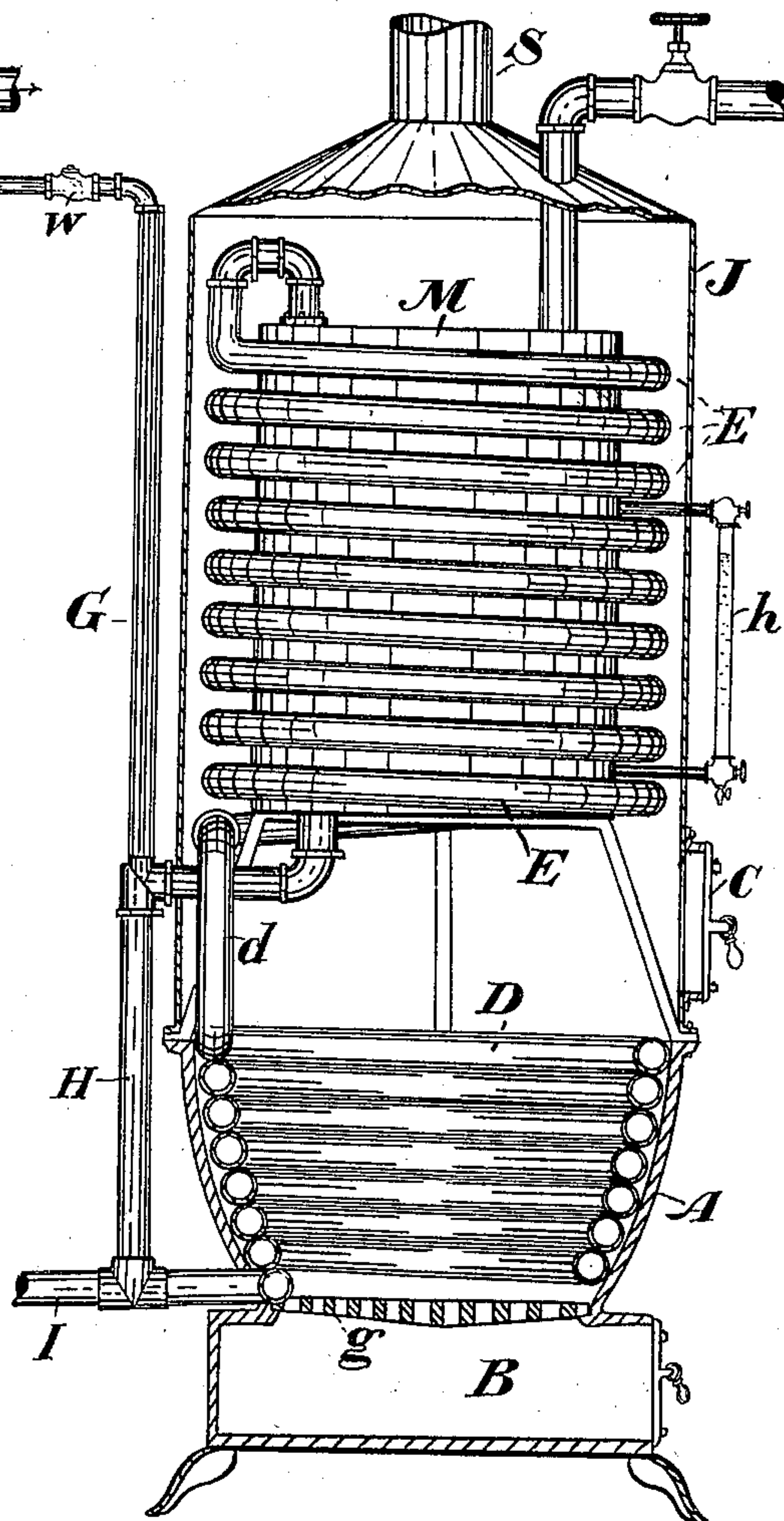


Fig. 2

Witnesses:

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*Fred Succie*  
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*Att'y.*



# UNITED STATES PATENT OFFICE.

FRED SUCCIE, OF BREWER, MAINE.

## STEAM OR HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 601,687, dated April 5, 1898.

Application filed February 6, 1897. Serial No. 622,381. (No model.)

*To all whom it may concern:*

Be it known that I, FRED SUCCIE, a citizen of the United States, residing at Brewer, in the county of Penobscot and State of Maine, have invented a new and useful Steam or Hot-Water Heater; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to produce a steam or hot-water heater of small proportions and few parts that will heat a large area with a small proportion of fuel.

Throughout the description reference is made to the accompanying drawings, in which—

Figure 1 shows a vertical sectional view of my improved heater complete. Fig. 2 represents an elevation of the same with section through the outside case, fire-box, grate, and lower water-coil.

Similar letters of reference refer to correspondingly like parts throughout both figures.

Referring to the drawings, the furnace consists of a fire-pot A, an ash-pit B, and a grate *g* between the two. In the combustion-chamber and supported by braces or other suitable means from the top of the fire-pot is an upright cylindrical boiler M, which is provided with the usual water-gage *h*, connected to its side, a flow-pipe F, extending from the top, and a return-pipe H, entering the bottom.

Loosely surrounding the sides of the boiler M is an open pipe-coil E, having its upper end connected with the top of the boiler, while its lower extremity, near the lower end of the boiler, extends downward to the top of the fire-pot A, where it is connected to the upper end of a fire-coil D, which lines the fire-pot.

The fire-coil D is composed of quite large pipe wound into a close coil perfectly fitting the walls of the fire-pot upon the inside. As the fire-pot is generally constructed of cast-iron and, as shown in the drawings, decreases in diameter toward the grate, the coil D is wound to correspond, and the lower extremity of the latter passes through the wall of the fire-pot at the top of the said grate. This lower end of the fire-coil D, outside of the fire-pot A, connects with the pipe H, entering from the bottom of the boiler M, and it is further

extended into a pipe I, called a "blow-off," by the means of which the boiler and coils are emptied. A valve is attached to an extension of the blow-off pipe I, which when closed retains the amount of water used in the boiler.

Extending upward from the top of the fire-pot A and inclosing the boiler with its surrounding coil is a casing J, made of thin iron, and to the top of which, above the top of the boiler, is a hood *k*, having a smoke-pipe S extending upward from its center. Extending through this hood *k* is the flow-pipe F, which connects with the radiators and is supplied with the usual valves and connections for that purpose. A return-pipe G from said radiators connects with the boiler-return pipe H and completes the circuit, a supply-pipe connecting with the radiator-return G for the purpose of filling the boiler, in which case a check-valve *w* is used between the supply and the boiler-return H.

The inclosing case J is flanged at its lower end and is bolted to a flanged projection at the top of or upper edge of the fire-pot. A fuel-door C is attached to an opening in this casing between the fire-pot and boiler and through which the fuel is admitted to a fire built within the fire-coil D, and the ash-pit B is provided with a door for taking out the ashes, which is constructed with the usual draft-slides for admitting air to the fire to support combustion.

It can be readily understood that with the boiler filled two-thirds full of water both coils will be filled to an equal height of the water in said boiler, and with a fire in the fire-pot A the fire-coil D, being in contact with said fire, will necessarily heat the water in this coil first. As heated water always rises, it will pass through the upright connecting-pipe *d* to the upper coil E, the steam passing from the latter into the steam-space above the water in the top of the boiler. While this process is going on the cold water at the bottom of the boiler will pass through the boiler-return H and enter the lower end of the fire-coil to take the place of the water that has been converted into steam, consequently starting up a circulation, which continues as long as heat is generated under the said boiler. The heat that rises from the fire-pot will come in direct contact with the bottom of the boiler



M, directly over the same, and as it must necessarily pass around the sides of the boiler in order to pass up the smoke-flue it will circulate around each pipe of the open coil E and help heat the water therein, as well as coming in contact with the side of the boiler in its course.

With this construction all the heat of the fire is utilized by being confined and consumed by its perpetual contact with the colder bodies, consisting of the water-coils and boiler, and very little, if any, will escape with the smoke through the smoke-pipe S.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

The furnace, the boiler located above the

fire-pot, a coil of pipe connected at its upper end to the boiler and extending spirally around it, and a second coil arranged inside of the fire-pot of the furnace, and forming a continuation of the coil which surrounds the boiler; a blow-off pipe, a pipe connected with both the blow-off pipe and the bottom of the boiler, a return-pipe, and a support for the boiler extending up from the top of the fire-pot, substantially as shown and described.

In testimony that I claim the foregoing as my invention I hereunto subscribe my name.

FRED SUCCIE.

In presence of—

JOHN V. ROBINSON,  
CLARENCE C. AVERILL.