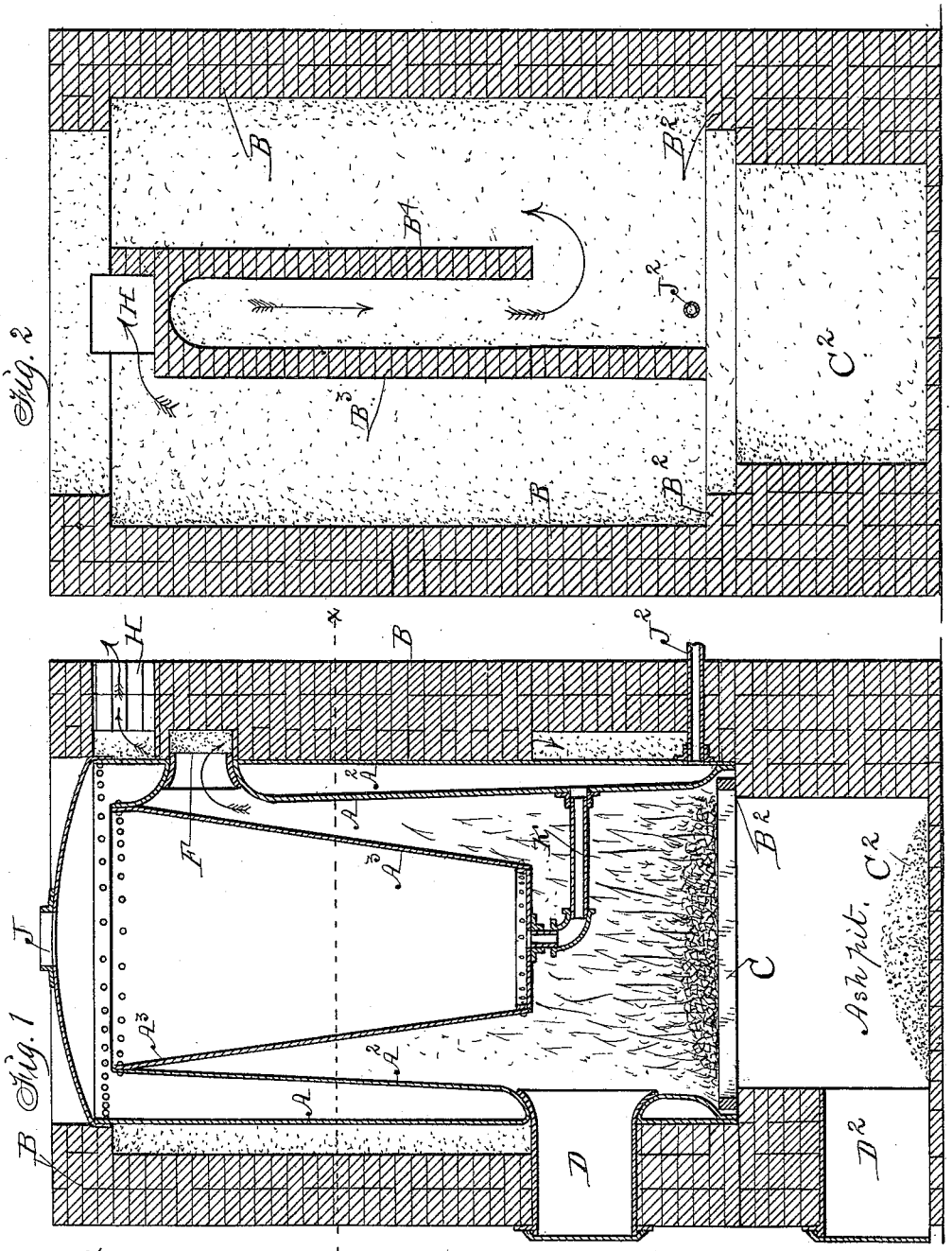
(No Model.) 2 Sheets—Sheet 1.

A. ANDERSON.

WATER HEATING FURNACE.

No. 526,096. Patented Sept. 18, 1894.



Witnesses:
R. H. Orwig.
C. F. Wilcox

Inventor: Alfred. Anderson,
By Thomas G. Orwig, Attorney.

(No Model.) 2 Sheets—Sheet 2.

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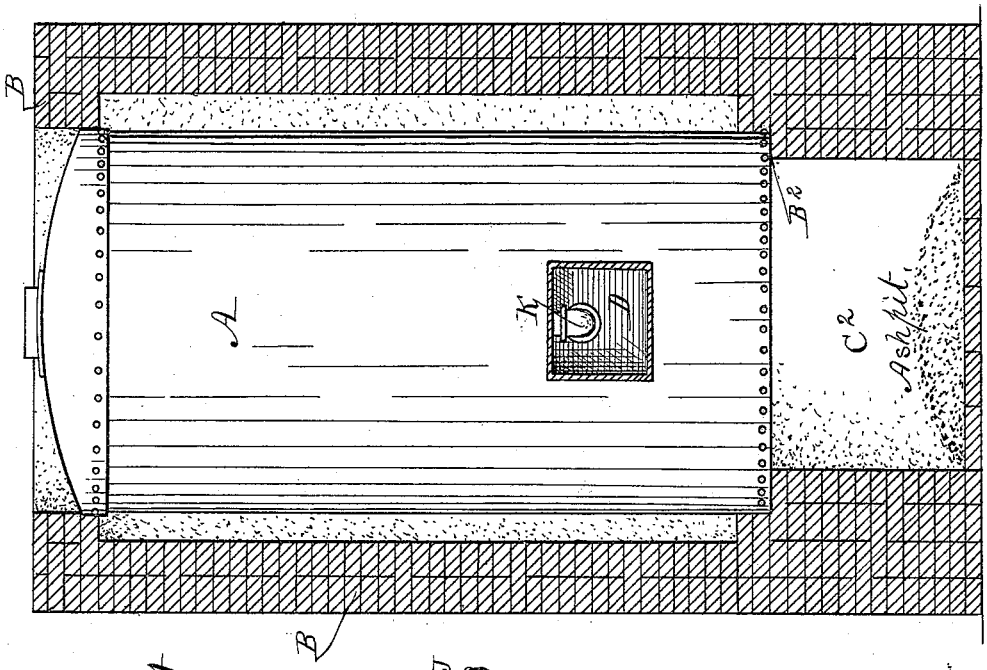

Fig. 1

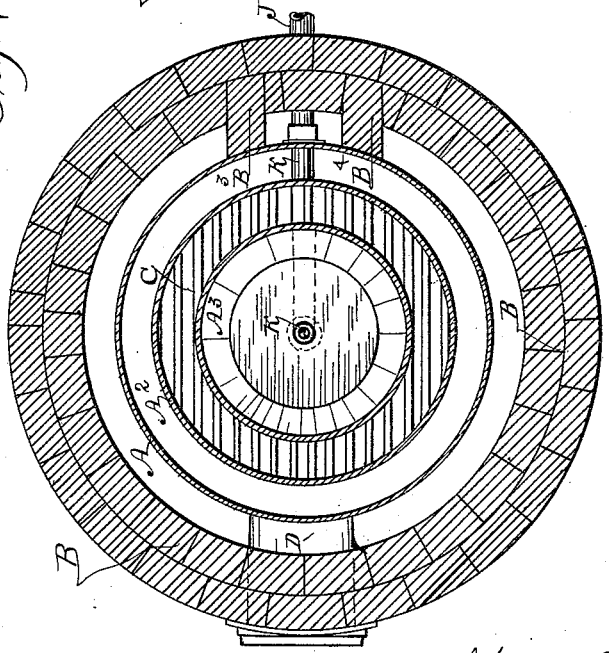

Fig. 2

Witnesses:
R. E. Orwig.
C. F. Wilcox.

Inventor: Alfred Anderson,
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UNITED STATES PATENT OFFICE.

ALFRED ANDERSON, OF DES MOINES, IOWA.

WATER-HEATING FURNACE.

SPECIFICATION forming part of Letters Patent No. 526,096, dated September 18, 1894.

Application filed February 6, 1894. Serial No. 499,306. (No model.)

To all whom it may concern:

Be it known that I, ALFRED ANDERSON, a citizen of the United States of America, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Water-Heating Furnace, of which the following is a specification.

My object is to facilitate heating and circulating water in a building for the purpose of warming the atmosphere therein and maintaining a uniform temperature of any degree desired.

My invention consists in a boiler furnace adapted to circulate the products of combustion as required to envelop the surface of the boiler and to advantageously heat and circulate water, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the furnace wall and the boiler showing the form of the boiler, the combustion chamber within the boiler, the grate and the passage way for the products of combustion extending outward from the boiler downward on the outside of the boiler and then around the boiler and upward to an escape flue in the furnace wall. Fig. 2 is a vertical sectional view of the furnace wall, taken at a right angle relative to Fig. 1, to show the downward passage way for the products of combustion. Fig. 3 is a transverse sectional view on the line *x x* of Fig. 1. Fig. 4 is a sectional view of the furnace wall corresponding with Fig. 2, and the boiler placed in position therein.

A represents the outside wall and A^2 the concentric inner wall of the double-walled upright boiler.

A^3 is an open-topped tapering boiler section fixed to the top end of the inner wall A^2 to extend downward as shown in Fig. 1.

B represents a furnace wall in concentric position with the boiler. It has an annular shoulder B^2 at its lower portion adapted to support the boiler, and also a grate C, in such a manner that the grate will be within the open lower end of the boiler as clearly shown in Fig. 1.

C^2 is an ash pit below the boiler and grate.

D is a door frame extending through the furnace wall and the walls A and A^2 of the boiler, through which fuel is placed upon the grate C.

D^2 is a passage way to the ash pit.

F is a passage way through the top portion of the double wall A, A^2, of the boiler leading from the combustion chamber above the grate C and around the suspended boiler section A^3 into a downward passage formed between the outer boiler wall A and the furnace wall B by means of a partition wall B^3 that extends from the said passage way F down to the annular shoulder B^2 and a parallel partition B^4 that extends from the top of the boiler down to a point below the center of the boiler, as shown in Fig. 2. The top of the wall B projects inward against the top of the boiler and closes the annular space between the boiler and the furnace wall within which annular space the products of combustion circulate as they ascend to an escape passage H that extends outward through the top portion of the wall B, as shown in Figs. 1 and 2, to be connected with the chimney in any suitable way.

J is an opening in the top of the boiler for connecting a pipe therewith to conduct hot water through branch pipes connected therewith to radiators located in different apartments in a building.

J^2 is a tube connected with the lower end of the boiler for returning water from radiators as required to maintain a circulation between the boiler and the radiators.

K is a tube connected with the closed lower end of the boiler section A^3 and the wall A^2 as required to establish communication between the lower end of said section and the main boiler and also for the purpose of draining the said suspended boiler section A^3 whenever desired.

From the foregoing description of the construction and function of each part of the complete invention the practical operation thereof will be readily understood by persons familiar with the art of heating buildings with hot water, and the advantages of the invention for heating and circulating water therewith are obvious.

I claim as my invention—

1. In an upright boiler furnace, a boiler having a double wall and the inner wall ex-

tending to near the top of the outer wall and a tapering boiler section having an open top and a closed bottom fixed to the top of said inner wall and its bottom connected with said double walled boiler by means of a tube, and a passage way for the products of combustion extended through the top portion of said double wall, in combination with a concentric furnace wall having a partition extending from the top of said passage way down to the bottom of the boiler and a parallel partition extending from below the center of the boiler up to the top thereof and an opening through the furnace wall at the top of the boiler, for the purposes stated.

2. An improved boiler furnace comprising a double walled upright boiler having a tapering boiler section fixed to the top of the inner wall and open at its top and closed at its bottom and extended below the central portion of the double wall and a tube connected with its closed bottom and the said concentric and double-walled boiler, a concentric furnace wall having an annular shoulder at its lower portion adapted to support the lower end of the double wall of the boiler and also a grate, a grate within the lower end of the boiler and supported upon said annular shoulder, a passage way for fuel extended through the furnace wall and the double walled portion of the boiler, an annular space between the furnace wall and the boiler, a passage for products of combustion extended through the top portion of the double wall of the boiler into a passage way for products of combustion to pass downward, a passage way between the furnace wall and the boiler composed of two parallel partitions, as shown and described, and a passage way for products of combustion extended outward from the annular space between the boiler and the furnace wall at the top portion of said wall, all arranged and combined to operate in the manner set forth for the purposes stated.

ALFRED ANDERSON.

Witnesses:
J. RALPH ORWIG,
THOMAS G. ORWIG.