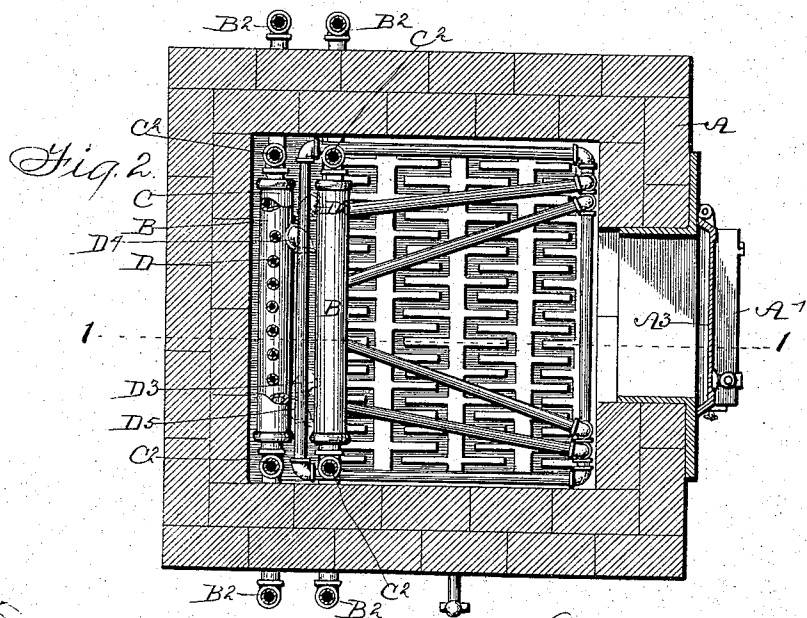
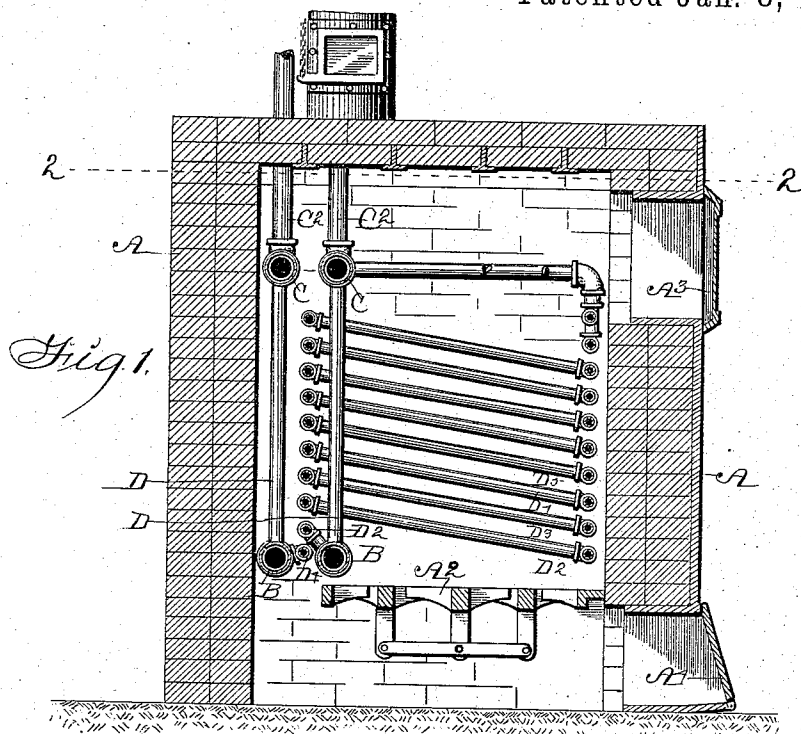


(No Model.)

W. C. JOHNSON.
HOT WATER FURNACE.

No. 532,069.

Patented Jan. 8, 1895.



Witnesses: {
R. R. Orwig
C. F. Wilson
Inventor: Warren C. Johnson,
By Thomas G. and J. Ralph Orwig, Attys.

UNITED STATES PATENT OFFICE.

WARREN C. JOHNSON, OF OSKALOOSA, IOWA.

HOT-WATER FURNACE.

SPECIFICATION forming part of Letters Patent No. 532,069, dated January 8, 1895.

Application filed July 24, 1894. Serial No. 518,465. (No model.)

To all whom it may concern:

Be it known that I, WARREN C. JOHNSON, a citizen of the United States of America, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented an Improved Hot-Water Furnace, of which the following is a specification.

The object of this invention is to provide a simple, strong, and durable furnace for heating water in which the pipes are so arranged that the water will slowly but freely circulate around the fire and all of the radiating surface of the fire be utilized and said pipes be capable of being made from straight pipe sections and elbows of the ordinary kind, so that no expensive machinery is necessary for the construction of a furnace.

My invention consists primarily of the arrangement and combination within a furnace of a rectangular coil of pipes to completely surround the fire box and further in the arrangement and disposition within the furnace of certain other pipes to be included in the circuit, as hereinafter set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view through the line 1—1 of Fig. 2. Fig. 2 is a horizontal sectional view through the line 2—2 of Fig. 1.

Referring to the accompanying drawings the reference letter A is used to indicate the brick casing of the furnace; A², a rocking grate therein; A³, the door near the top of the front of the casing to feed fuel to the furnace, and A⁴, is a door leading to the ash pit beneath the grate, all of said parts being of the ordinary construction.

B, B, indicate two pipes extended transversely of the rear of the furnace above the grates and having the pipes of ingress B² leading into their ends.

C, C, are two pipes similar to the pipes B, B and directly above them near the top of the furnace, the pipes of egress C² leading upwardly therefrom.

D, D, indicate two rows of pipes of much smaller diameter than the pipes B and C extended vertically between them thereby forming a double heating surface at the back of the furnace. Two pipes D² and D³ are connected with the rear face of the lower one of the pipes B extended parallel therewith the one above the other to one side of the furnace.

D⁴ and D⁵ are like pipes connected with the opposite end portions of the remaining one of the pipes B and extended to the same side of the furnace as, and above, the pipes D² and D³. All of these pipes are then passed around the fire box in the shape of a rectangular coil made of straight pipe sections and elbow joints, and at the upper forward corners of the coil they are extended inwardly in a horizontal plane to the inner one of the pipes C thus providing means whereby the water may freely but slowly circulate about the fire and become thoroughly heated before leaving the furnace and also providing means whereby the fuel may be admitted into the fire box.

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

1. An improved hot water furnace comprising a suitable casing, a grate therein, a fuel door near the top of the furnace, a draft door beneath the grate, two parallel horizontal pipes immediately above the grate, two like pipes above them, pipes of ingress leading into the lower pipes and pipes of egress leading from the upper pipes, two pipes leading from each of said lower pipes coiled around the fire box as shown and described and entering the forward one of said upper horizontal pipes at the top of the furnace, and a series of straight pipe sections communicating between the upper and lower horizontal pipes substantially as and for the purposes stated.

2. An improved hot water furnace, comprising a suitable casing, a grate therein, a fuel door near the top of the furnace and a draft door beneath the grate, two transverse pipes at the rear lower portion of the fire box, two like pipes above them, pipes of ingress leading into the lower pipes, and pipes of egress leading from the upper pipes, two pipes leading from each of said lower pipes, coiled around the fire box as shown and described and entering the forward one of said transverse pipes at the top of the furnace and a series of straight pipe sections communicating between the upper and lower transverse pipes, all arranged and combined, to operate substantially as set forth.

WARREN C. JOHNSON.

Witnesses:

A. A. HUGG,

W. L. MCQUNTON.