

(No Model.)

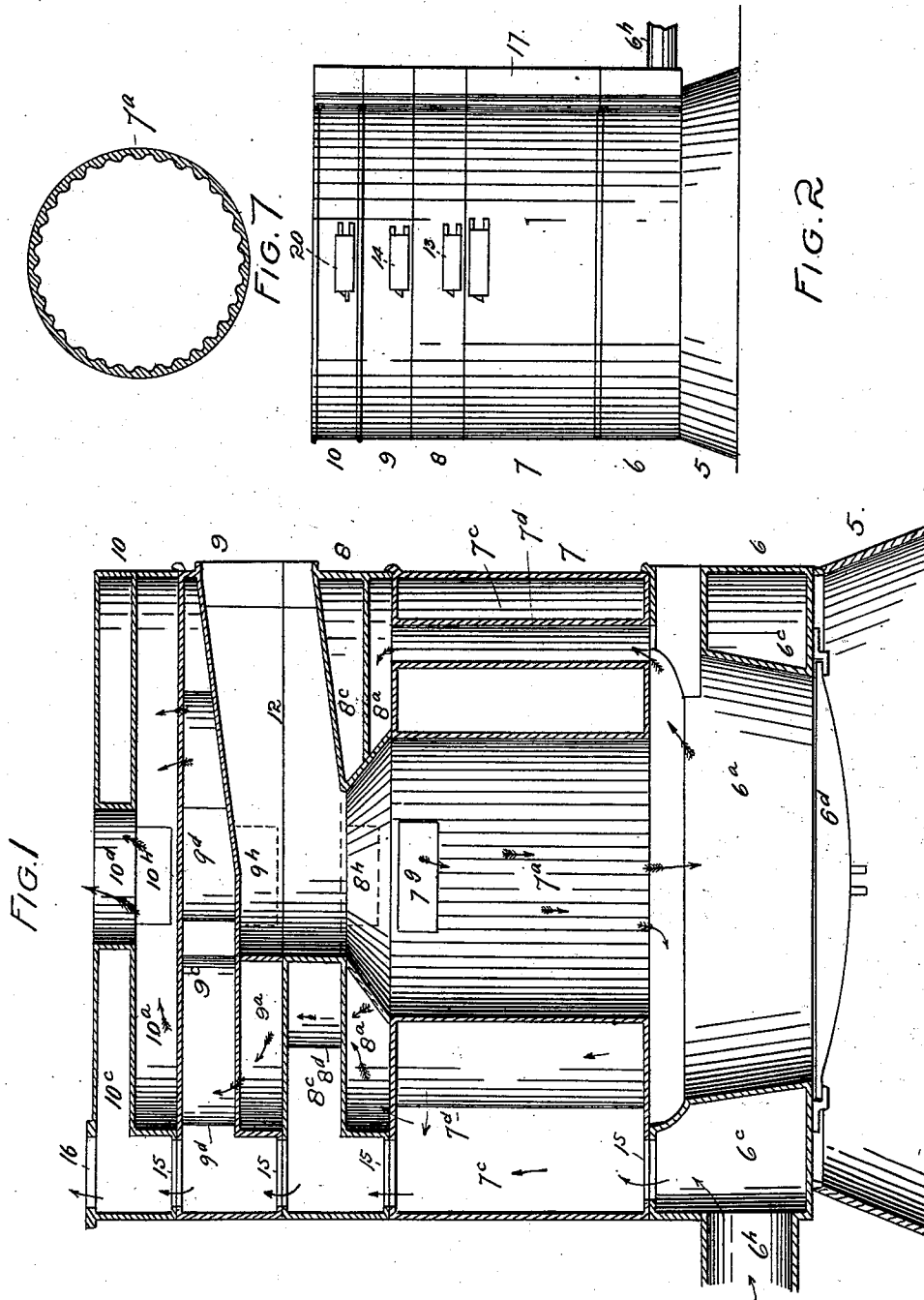
2 Sheets—Sheet 1.

C. S. FAUROT.

FURNACE FOR HOT WATER HEATING SYSTEMS.

No. 563,365.

Patented July 7, 1896.



Witnesses
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(No Model.)

2 Sheets—Sheet 2.

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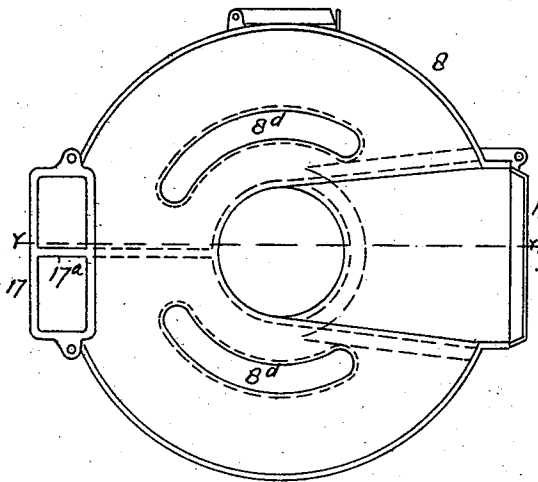


FIG. 5.

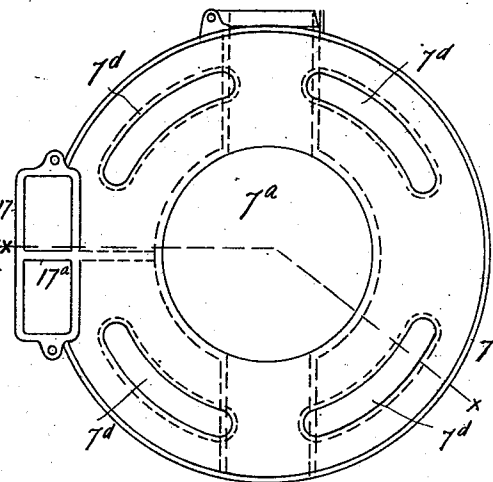


FIG. 4.

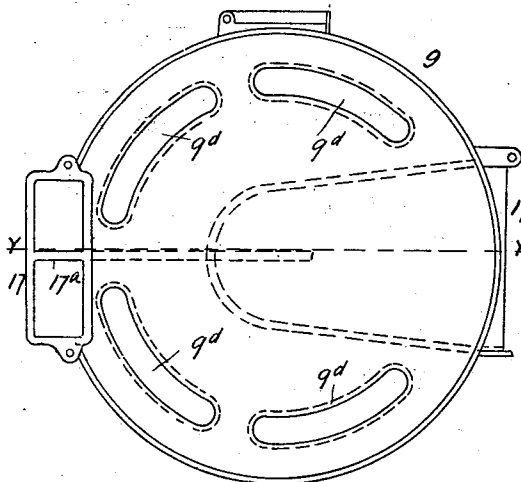


FIG. 6.

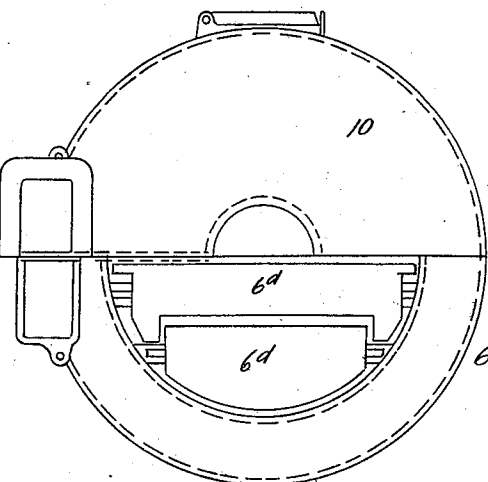


FIG. 3.

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UNITED STATES PATENT OFFICE.

CHARLES S. FAUROT, OF DENVER, COLORADO.

FURNACE FOR HOT-WATER HEATING SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 563,365, dated July 7, 1896.

Application filed July 16, 1895. Serial No. 556,199. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. FAUROT, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Furnaces for Hot-Water Heating Systems; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in furnaces for hot-water heating systems; and it consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a vertical longitudinal section of the furnace, taken on the line *xx*, Fig. 4, and on the line *yy*, Figs. 3, 5, and 6. Fig. 2 is a side elevation of the same shown on a smaller scale. Fig. 3 is a combination plan view. The lower half of this view shows the fire-pot section, and the upper half the top section, of the furnace. Fig. 4 is a top or plan view of the fuel-magazine section, or that located immediately above the fire-pot section. Fig. 5 illustrates the hot-water section located immediately above and engaging the fuel-magazine section. Fig. 6 illustrates the hot-water section immediately above the section shown in Fig. 5. Fig. 7 is a horizontal or cross section taken through the fuel-magazine.

Similar reference-characters indicating corresponding parts in the views, let the numeral 5 designate the ash-pit section, 6 the fire-pot section, 7 the fuel-magazine, and 8, 9, and 10 the hot-water sections, respectively, and named in order from the fuel-magazine section upward, beginning with the lowest.

The section 6 comprises the fire-pot 6^a and the water-jacket 6^c, surrounding the fire-pot. The grate in the bottom of the fire-pot is composed of sections 6^d, journaled in suitable sockets. The section 6 is provided with

a front passage-way 6^e, communicating with the fire-pot. The water-jacket 6^c is provided with a port 6^h. The furnace is supplied with water via this port.

The section 7 sits on top of the section 6, and comprises the fuel-magazine 7^a, the water-jacket 7^c, surrounding the fuel-magazine, and the flues 7^d, passing through the water-jacket, and through which the products of combustion pass to the section 8 above. The section 7 is provided with a lateral draft-flue 7^e, passing through the water-jacket 7^c of the section 7 and communicating with the fuel-magazine.

The section 8 comprises the chamber 8^a, which receives the products of combustion from the flues 7^d, the water-chamber 8^c, and the flues 8^d through which the products of combustion pass to the section 9 above. These flues pass through the water space or chamber 8^c. The inner wall of this section 8 comprises the conical top of the fuel-magazine. A lateral passage-way 12, leading to the top of, and communicating with, the fuel-magazine, is cored out of the sections 8 and 9. The necessary fuel is fed to the furnace through this passage. In order that the water may pass entirely around the furnace in section 8, and to the end that the water-space may not be materially diminished on account of the coring out of the feed-passage, the bottom of the water-chamber is lowered in the front part of the furnace, and the chamber 8^a correspondingly diminished in depth. The section 8 is provided with a clean-out port 8^h, (indicated by dotted lines in Fig. 1,) and communicating with the chamber 8^a. This port is controlled by a small hinged door 13. (See Fig. 2.)

The section 9 comprises the chamber 9^a, which receives the products of combustion from the flues 8^d of the section 8, the water-chamber 9^c and the flues 9^d, which pass through the water-chamber and lead from the chamber 9^a to the corresponding chamber of the section next above. The section 9 is provided with a clean-out port 9^h, communicating with the chamber 9^a, and controlled by a small hinged door 14. (See Fig. 2.)

The section 10 comprises the chamber 10^a, which receives the products of combustion

from the flues 9^d, and the water-chamber 10^c, surrounding a flue 10^d, leading from the chamber 10^a, and through which the combustion-gases escape from the furnace. The chamber 10^a is provided with a clean-out port 10^h, closed by a hinged door 20.

It must be understood that there may be any desired number of sections between the section 7 and the top section 10. In other words, the furnace may be built up to any desired height by placing one section above another in the manner shown in the drawings and heretofore described.

The furnace is provided with a water-back 17, having a vertical partition 17^a, made up of the parts belonging to all the sections. This water-back is provided with coinciding ports 15, through which the water passes from one section to the other. The water enters each section on one side of this partition and escapes therefrom on the opposite side after passing around the furnace. The water-back partition in section 6 extends inward to the fire-pot, so that the water after entering on one side of the partition cannot escape from this section until it has passed entirely around the fire-pot. This partition in sections 7 and 8 extends inward to the fuel-magazine. In section 9 the partition extends inward past the center of the furnace, and in section 10, to the wall of the escape-flue 10^d. These extensions of the partition 17^a are indicated by dotted lines in Figs. 3 to 6, inclusive. After circulating around all the sections, or through all the water-chambers 6^c, 7^c, 8^c, 9^c, and 10^c, the water is finally taken from an aperture 16 in the water-back at the top of the furnace. The course of the water through the furnace is indicated by the plain arrows.

This is a "down-draft-furnace." The fuel is fed to the fuel-magazine and the fire-pot through the passage-way 12. After a fire has been kindled on the grate, the air necessary to support combustion is introduced via the draft-flue 7^s. The course of the products of combustion through the furnace is indicated by the feathered arrows. The inner surface of the fuel-magazine's wall is longitudinally ribbed or corrugated to allow the air to pass downward from the draft-flue 7^s and around the fuel in the magazine 7^d.

Having thus described my invention, what I claim is—

1. A furnace of the character described, comprising the sections 6, 7, 8 and 9; the section 6 comprising the fire-pot and a water-chamber surrounding the same; the section 7 being located above the section 6, and comprising the fuel-magazine communicating with the fire-pot at the bottom, the water-chamber surrounding the fuel-magazine, and the flues 7^d leading from the fire-pot through the water-chamber; the section 8 comprising the chamber 8^a which receives the products of combustion from the flues 7^d, the water-chamber 8^c and the flues 8^d leading from the

chamber 8^a, and passing through the water-chamber; the section 9 comprising the chamber 9^a which receives the products of combustion from the flues 8^d, a water-chamber 9^c and the flues 9^d which pass through the water-chamber and lead from the chamber 9^a to a corresponding chamber of the section next above; a lateral passage being cored out of sections 8 and 9 and leading to the upper part of the fuel-magazine, the bottom of the water-chamber being lowered in section 8 to allow the water to pass entirely around the furnace, and beneath the floor of the lateral feed-passage, the furnace being provided with a water-back, and the sections so partitioned that the water passes around the water-chamber of each section before it passes to the section next above, as and for the purpose set forth.

2. The furnace comprising the sections 6, 7, 8 and 9, the section 6 being composed of the fire-pot and the water-chamber surrounding the same; the section 7 being located above the section 6, and comprising the fuel-magazine communicating with the fire-pot at the bottom, the water-chamber surrounding the fuel-magazine, and the flues 7^d leading from the fire-pot through the water-chamber, the fuel-magazine being longitudinally corrugated or ribbed on its inner surface; the section 8 comprising the chamber 8^a which receives the products of combustion from the flues 7^d, the water-chamber 8^c, and the flues 8^d leading from the chamber 8^a and passing through the water-chamber; the section 9 comprising the chamber 9^a which receives the products of combustion from the flues 8^d, the water-chamber 9^c and the flues 9^d which pass through the water-chamber and lead from the chamber 9^a to the corresponding chamber next above; a lateral passage being cored out of sections 8 and 9, and leading to the upper portion of the fuel-magazine, the bottom of the water-chamber being lowered in section 8 to allow the water to pass entirely around the furnace, and beneath the floor of the lateral feed-passage, the furnace being provided with a water-back, and the sections so partitioned that the water passes around the water-chamber of each section before it passes to the section next above, as and for the purpose set forth.

3. A furnace of the character described, comprising the sections 6, 7, 8 and 9; the section 6 comprising the fire-pot and the water-chamber; the section 7 comprising the fuel-magazine, the water-chamber and the flues; the section 8 comprising a chamber which receives the products of combustion from the fire-pot through the flues 7^d, the water-chamber and the flues which carry the products of combustion upward; the section 9 comprising the chamber 9^a which receives the products of combustion from the flues below, the water-chamber 9^c, and the flues which carry the products of combustion upward; a lateral passage being cored out of the sections 8 and 9 and

leading to the upper portion of the fuel-mag-
azine, the bottom of the water-chamber 8° be-
ing lowered in the section 8 to allow the wa-
ter to pass entirely around the furnace, and
5 beneath the floor of the lateral feed-passage,
the furnace being provided with a water-back,
and partitions, as described, and for the pur-
pose set forth.

In testimony whereof I affix my signature
in the presence of two witnesses.

CHARLES S. FAUROT.

Witnesses:

CHAS. E. DAWSON,
ALFRED J. O'BRIEN.