(No Model.) 2 Sheets—Sheet 1.

A. L. GOODENOW.

HOT AIR FURNACE.

No. 356,392. Patented Jan. 18, 1887.

Fig. 1.

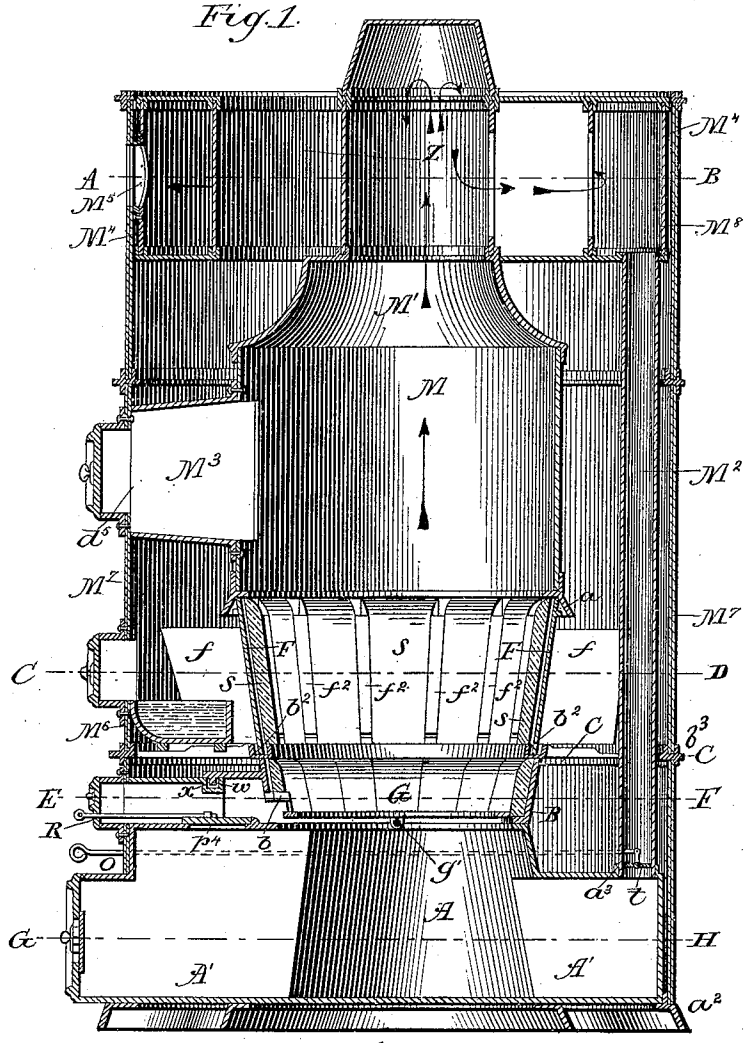
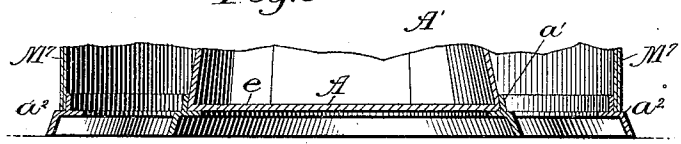


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

A. L. GOODENOW.

HOT AIR FURNACE.

No. 356,392. Patented Jan. 18, 1887.

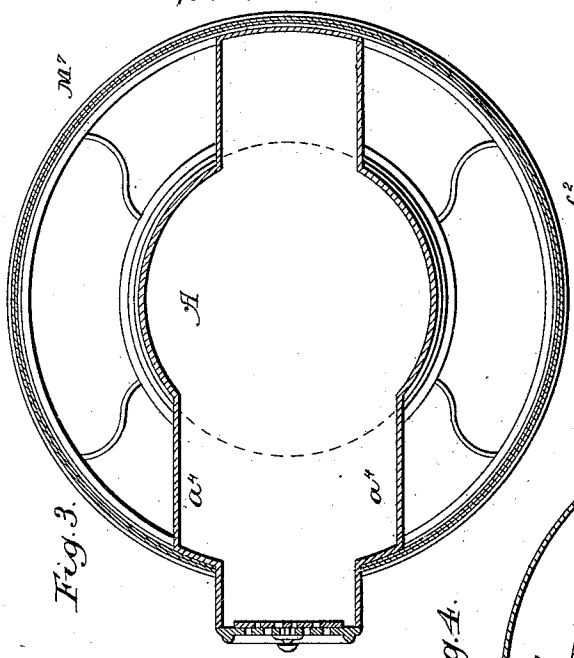

Fig. 3.

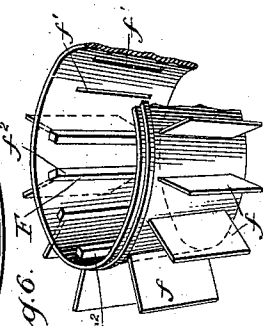

Fig. 6.

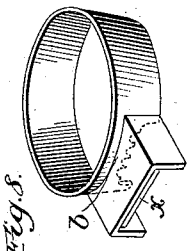

Fig. 8.

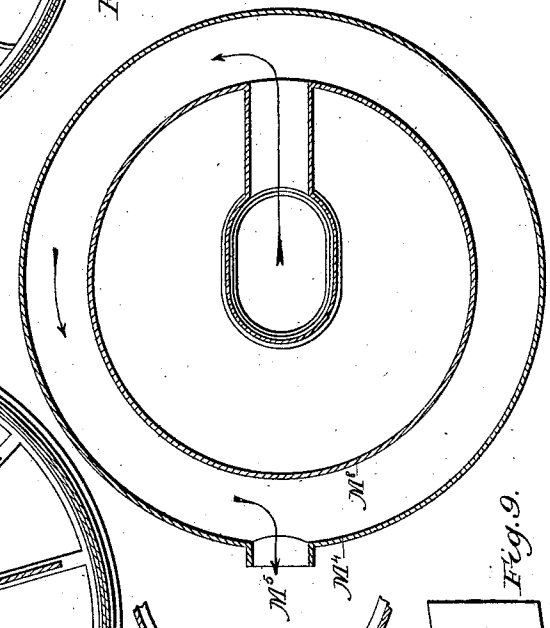

Fig. 4.

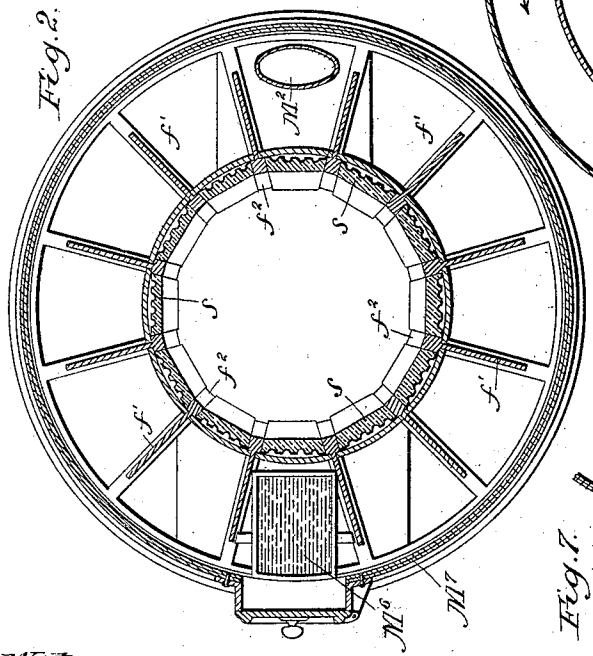

Fig. 2.

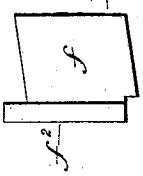

Fig. 9.

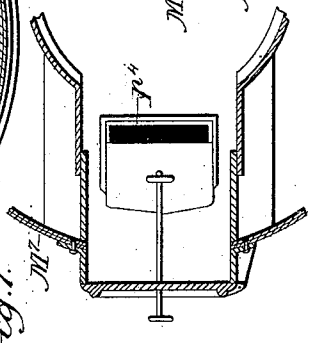

Fig. 7.

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UNITED STATES PATENT OFFICE.

ALBERT L. GOODENOW, OF UTICA, NEW YORK.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 356,392, dated January 18, 1887.

Application filed May 3, 1884. Serial No. 130,195. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. GOODENOW, of the city of Utica, in the county of Oneida and State of New York, and a citizen of the United States, have invented a new and useful Improvement in Hot-Air Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

My invention relates to hot-air furnaces; and it consists in certain details of construction and arrangement hereinafter described, and more specifically pointed out in the accompanying drawings, in which—

Figure 1 is a vertical central section of the entire furnace; Fig. 2, a horizontal section on the line C D of Fig. 1; Fig. 3, a horizontal section on line G H of Fig. 1; Fig. 4, a horizontal section on line A B of Fig. 1; Fig. 5, a vertical cross-section of the ash-pit base; Fig. 6, a perspective view (reduced) of the upper fire-pot; Fig. 7, a partly horizontal section on the line E F, Fig. 1; Fig. 8, a perspective view (reduced) of the lower fire-pot; Fig. 9, side elevation of one of the radiating wings.

The object of my invention is to produce a convenient compact furnace affording a large amount of radiating-surface in a small space, and one that will produce the maximum amount of heat required from a given amount of fuel, also one in which the flues may be readily and conveniently freed from dust and ashes without diffusing same throughout the surrounding atmosphere.

In constructing my furnace I provide an ash-pit base, A, (shown in Figs. 1, 3, and 5,) having a flanged circle, a', to receive the circular part of the ash-pit, also an exterior ring or flange, a^2, to which the outer shell of the furnace is fitted. Upon this base is placed the ash-pit casing, the walls of which are represented by a^4, Figs. 3 and 5. At the top and rear of the ash-pit is a flue-collar, a^3, and over the center of the ash-pit is the grate G, the particular construction of which is described in another pending application.

Mounted upon the ash-pit is the lower fire-pot, B, (shown in Fig. 8,) and consisting of a ring provided with an opening in front for the purpose of permitting cinders, &c., to be raked from the grate. The fire-pot above this opening is provided with corrugations b, and the opening is surrounded and inclosed at its top and sides by an outwardly-projecting housing, K, cast integral with the fire-pot, and provided at its outer end with a downwardly-projecting flange, x.

Fitted upon the upper surface of the lower fire-pot is a ring, C, corresponding in circumference with the furnace and having an inner groove, b^2, for the reception of the upper fire-pot, F, and an outer groove, b^3, for the outer wall or shell of the furnace. Upon this ring is mounted the upper fire-pot, F, which is provided with vertical openings or slits f', through which project the radiating wings $f f$. These wings are confined in the slits by shoulders f^2 on their inner ends, which rest against the interior wall of the upper fire-pot, and between these shoulders are placed fire-bricks s, which form the inner lining of the fire-pot and hold the wings firmly in place.

Upon the top of the upper fire-pot and inclosing same is a flanged ring, a, which forms a seat for the lower combustion-dome, M. Above this dome and resting upon it is the upper combustion-dome, M′, over which and supported by it is a chamber or space, Z, opening into the circular radiating flue M^4, surrounding and inclosing the same, and provided with a smoke-exit flue, M^5.

Between the ash-pit and circular radiating flue at the rear of the furnace is a direct-draft flue, M^2, provided with a damper, t, which is operated by a rod or handle, O, extending to the front of the furnace.

M^3 is the feed-section, and in front of the upper fire-pot, within the casing, is located a water-vat, M^6, designed to contribute the requisite moisture to the heated air diffused by the furnace.

M^7 represents the outer shell or casing of the furnace, and M^8 the circular radiating flue.

When desired to operate my furnace, the fire is started and the coal introduced through the feed-section. Air is then admitted through the front of the ash-pit, and passes up through the grate to the fire. The products of combustion pass up through the combustion-chambers M, M′, and Z into the radiating flue M^4, thence around both sides of same to the smoke-

exit M^5. Meantime the heat is reflected from all the radiating-surfaces of the fire-pots, wings *f*, combustion-domes, and circular radiating flue, and it will be observed that an exceedingly large amount of radiating-surface is afforded in a small space. When it is desired to shake down the fire, the damper in the draft-flue M^2 is opened by means of the handle O, which affords a direct draft from the rear of the ash-pit to the circular radiator-flue, and causes all dust and fine ashes to pass up and out through the smoke-exit M^5.

All cinders may be raked off the grate through the opening in the front of the fire-pot into the housing K, where they are permitted to drop down into the ash-pit through the opening in its top, the slide p^4 being withdrawn by means of its handle or rod R.

When desired to clean out the circular radiator, a brush may be inserted in the smoke-exit and the dust, soot, and ashes brushed back from either side to the rear, where they drop down through the draft-flue M^2 into the ash-pit, the damper *t* being opened for the purpose.

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

1. A furnace having an outer shell, an ash-pit, and ash-pit base, a fire-pot made in two sections, the upper section having shouldered radiating flanges, said ash-pit base having an interior flanged circle to receive the circular part of the ash-pit and an exterior ring or flange to receive the furnace-shell, all arranged and combined substantially as and for the purpose described.

2. The combination, with the furnace-shell, of the ash-pit base having an exterior flanged circle, the ash-pit casing provided with a flue-collar and central grate, a fire-pot made in two sections, the upper section being provided with vertical openings and having shouldered flanges projecting through said openings, a combustion-dome, a circular radiating flue, and a dust-flue connecting the ash-pit and radiating flue, substantially as and for the purpose described.

3. The combination, with the furnace-shell, of the ash-pit base, the fire-pot made in two sections, one of which is provided with shouldered radiating flanges, a combustion-dome, a radiating flue, a supporting-ring mounted upon the lower section of the fire-pot, said ring having an inner groove or seat for the reception of the upper section, and an exterior groove for the reception of the furnace-shell, substantially as and for the purpose set forth.

4. A furnace having a fire-pot made in two sections, the upper section lined with fire-brick and provided with vertical openings and shouldered flanges projecting through said openings, in combination with the ash-pit, combustion-dome, and dust-flue, substantially as and for the purpose set forth.

5. The combination, with a fire-pot made in two sections, the upper provided with vertical openings or slits in its sides, of the removable radiating wings having shoulders on their inner ends, which rest against the interior wall of the upper section, substantially as and for the purpose described.

6. The combination, with a fire-pot made in two sections, the upper section having vertical slots and shouldered radiating flanges, of the lower combustion-dome, a flanged ring on the upper section of the fire-pot forming a seat for the lower combustion-dome, a circular radiating flue, a chamber opening into said flue, and a smoke-exit flue, substantially as and for the purpose described.

7. The combination, with a furnace, of the ash-pit, the circular radiator, the smoke-exit flue, the draft-flue connecting the ash-pit and radiator, and a damper in said draft-flue provided with a handle projecting from the front of the furnace, whereby the damper is operated from the front of the furnace, substantially as and for the purpose described.

Dated and signed at Utica, New York, this 1st day of May, 1884.

ALBERT L. GOODENOW.

Witnesses:
C. D. F. HOXIE,
GEORGE P. PERRY.