A. C. MOTT, Jr.

HOT AIR FURNACE.

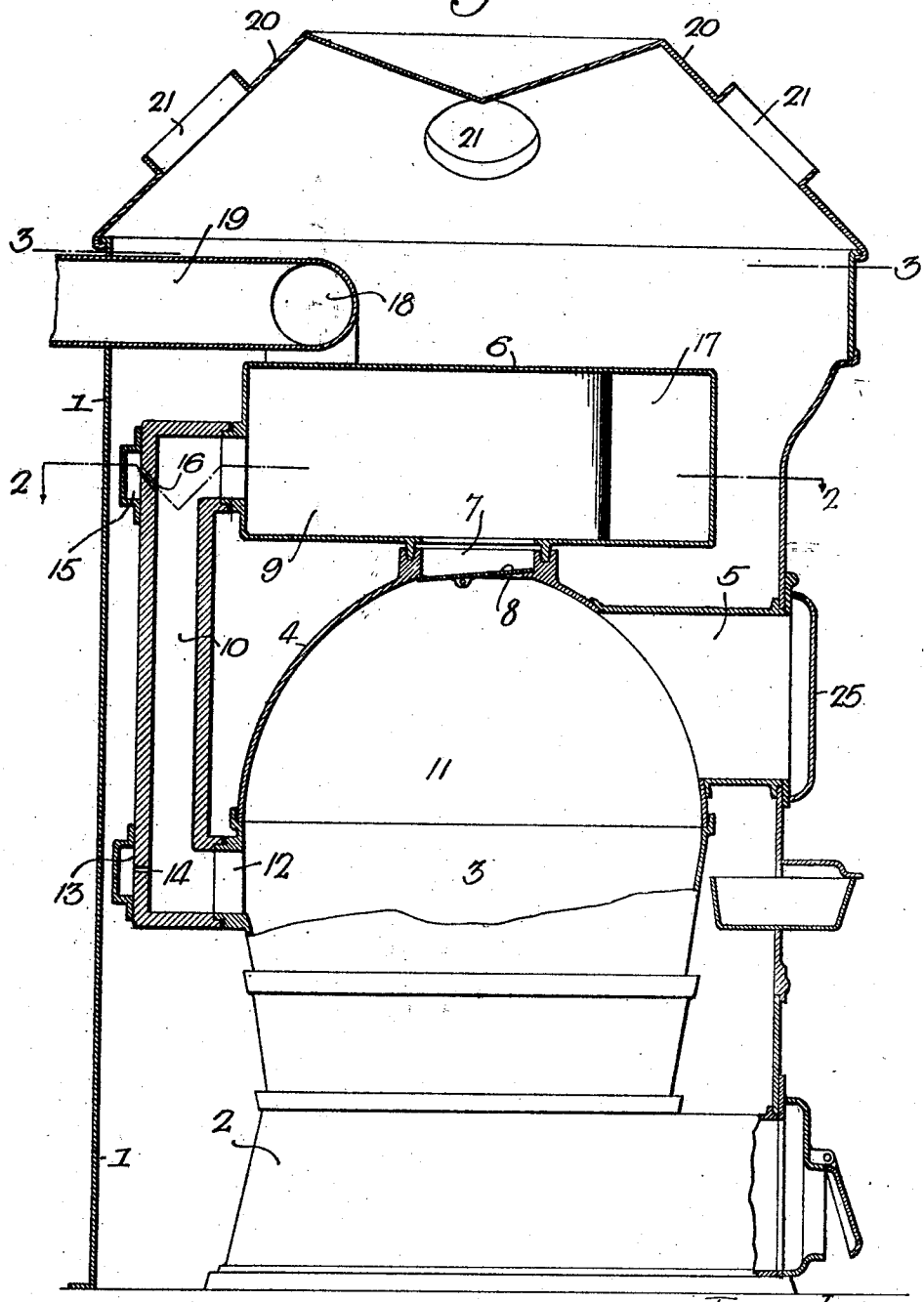
APPLICATION FILED DEC. 1, 1921.

1,428,047.

Patented Sept. 5, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor.
Abram C. Mott, Jr.
by his Attorneys.
Fourmet Brown

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2 SHEETS—SHEET 2.

Fig. 2.

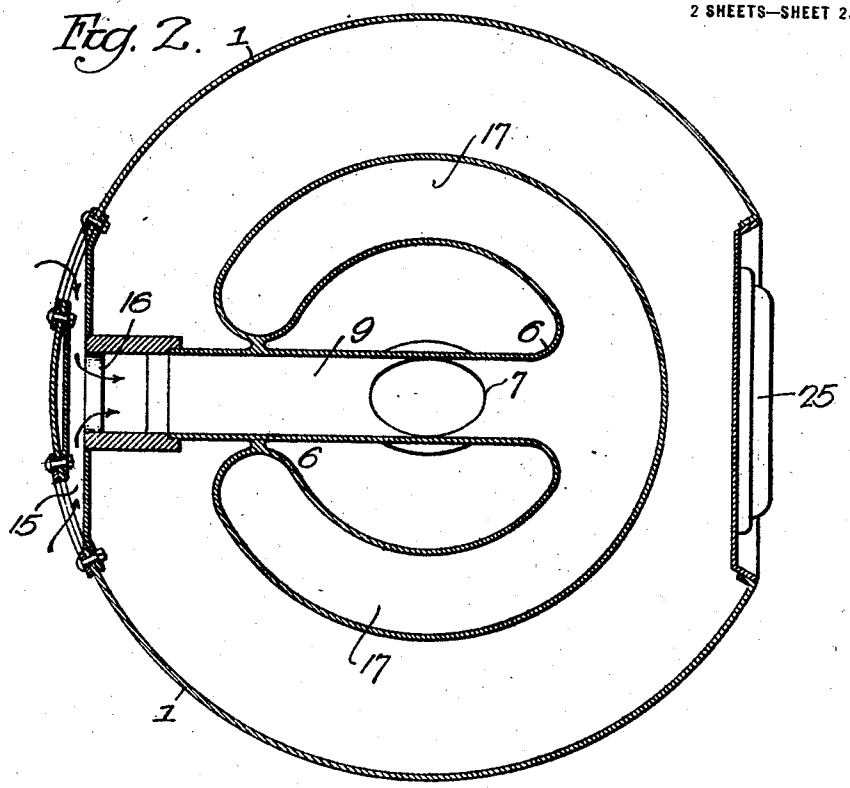
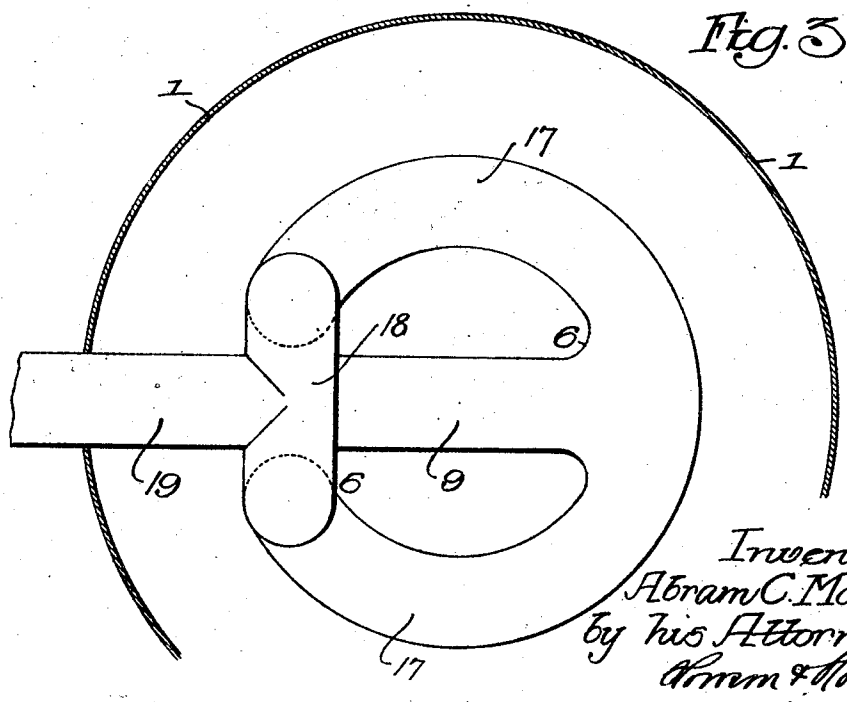


Fig. 3



Inventor—
Abram C. Mott, Jr.
by his Attorneys—
Dimm & Howson

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UNITED STATES PATENT OFFICE.

ABRAM C. MOTT, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ABRAM COX STOVE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

HOT-AIR FURNACE.

Application filed December 1, 1921. Serial No. 519,093.

To all whom it may concern:

Be it known that I, ABRAM C. MOTT, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Hot-Air Furnaces, of which the following is a specification.

The object of my invention is to provide a hot air furnace with a smoke consuming chamber so as to thoroughly consume the products of combustion before they leave the furnace.

In the accompanying drawings:—

Fig. 1 is a sectional elevation of a hot air furnace illustrating my invention;

Fig. 2 is a sectional plan view on the line 2—2 Fig. 1; and

Fig. 3 is a sectional plan view on the line 3—3 Fig. 1.

1 is the casing of the furnace, 2 is the base structure containing the ash pit and in which the grate is located. 3 is the fire pot which is mounted on the base and 4 is the dome located above the fire pot and inclosing the main combustion chamber 11. 5 is the feed opening for fuel closed by a door 25.

Located above the dome is a radiator 6 made as clearly shown in Figs. 2 and 3. The dome communicates with the radiator through a passage 7 in which is a damper 8. The central section 9 of the radiator is connected to the upper end of a secondary combustion chamber 10, the lower end of this chamber is connected to the lower portion of the main combustion chamber 11, the opening 12 from this latter chamber being in the fire pot section as shown in Fig. 1, so that the products of combustion pass from the main chamber to the secondary chamber in close proximity to the bed of fuel.

The secondary combustion chamber 10 is made of cast iron and its walls are comparatively thick as shown so as to retain the heat. 13 is an inlet passage leading from the outside of the casing 1 to a narrow slot 14 in the casing of the secondary combustion chamber 10 to allow fresh air to enter the chamber at this point to aid combustion. 15 is an inlet passage extending through the casing 1 and communicating with a downwardly inclined slot 16 extending through the casing of the chamber 10 directly opposite its connection with the radiator 6 so that additional air is added to the products of combustion before they leave the chamber 10 to increase the heat as they enter the radiator 6.

The radiator is made as shown in Fig. 2 having a central section 9 which as stated communicates with the chamber 10 and side passages 17 which communicate with the central section 9 and with a cross pipe 18 coupled to the smoke pipe 19 which extends through the casing 1 of the furnace.

20 is the top of the furnace secured to the casing 1 and in this top are the openings through which hot air is carried to given points.

By the above construction the products of combustion become heated and partly consumed in the primary combustion chamber and as they pass in close proximity to the bed of fuel as they leave the combustion chamber to enter the secondary combustion chamber air is added and as they come in contact with the heated walls of the said secondary chamber and become highly heated so as to burn substantially all of the gases, air is added to the products of combustion at the upper end of the secondary chamber so as to completely burn the gases as they pass through the radiator and before they leave the furnace.

By inclosing the secondary combustion chamber within the casing it is kept at an even temperature and does not have to be insulated and the body of the combustion chamber gives off a certain amount of heat which is added to the hot air in circulation within the casing 1.

While I have shown the air inlets 14 and 16 connected to a passage leading outside of the casing, one or both of these air inlets may open directly into the hot air chamber.

In the drawings I have shown a special form of radiator, but this radiator may be modified without departing from the main feature of the invention.

I claim:

1. The combination in a hot air furnace of a casing, a fire box and dome therein forming a primary combustion chamber, a radiator above the dome and within the casing, a secondary combustion chamber within the casing communicating with the primary combustion chamber at its lower end and

with the radiator at its upper end, and an air passage communicating with the secondary combustion chamber and extending outside of the casing.

2. The combination in a hot air furnace of a casing, a fire box and dome therein forming a primary combustion chamber, a radiator above the dome, a passage directly connecting the radiator with the dome, a damper in said passage, a heavy cast metal section forming a secondary combustion chamber located within the casing, the lower end of said chamber communicating with the primary combustion chamber and the upper end communicating with the radiator, and an air passage extending through the casing and communicating with the secondary combustion chamber.

3. The combination in a hot air furnace of a casing, a fire box and dome forming a primary combustion chamber, a radiator above the dome, a vertically arranged section forming a secondary combustion chamber and located between the casing and the dome and connected to the primary combustion chamber through a passage in the fire box, and connected at its upper end with the radiator, and a smoke pipe communicating with the radiator and extending through the casing.

4. The combination in a hot air furnace of a casing, a fire box and dome forming a primary combustion chamber, a radiator within the upper portion of the casing, and a secondary combustion chamber connecting the primary combustion chamber with the radiator, said secondary combustion chamber being located within the casing.

5. The combination in a hot air furnace of a casing, a fire box and dome forming a primary combustion chamber, a radiator above the dome and a passage leading directly from the primary combustion chamber to the radiator, a damper in said passage, a secondary combustion chamber at the side of the dome and within the casing, said secondary chamber communicating at the lower end with the primary combustion chamber and at the upper end with the radiator, and means for supplying the secondary combustion chamber with air.

ABRAM C. MOTT, JR.