

A. WILLIAMS.
GAS AND SMOKE BURNING FURNACE OR STOVE.
APPLICATION FILED JAN. 3, 1912.

1,042,737.

Patented Oct. 29, 1912.

Fig. 1.

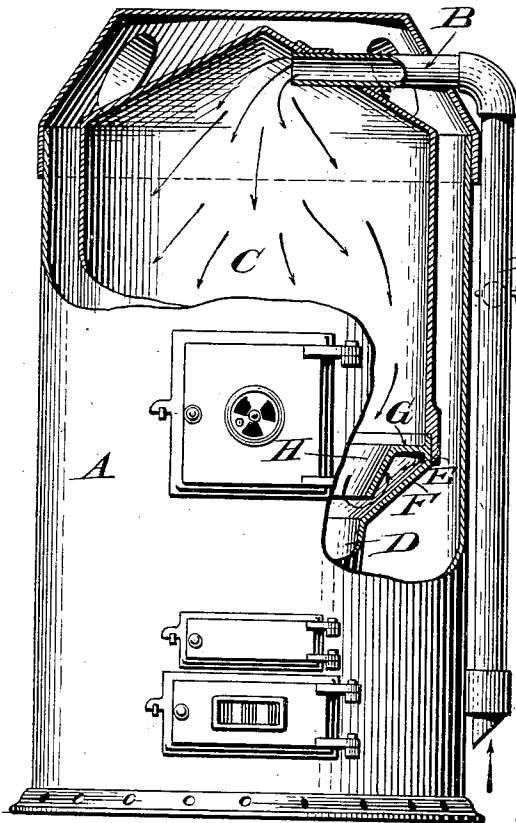


Fig. 2.

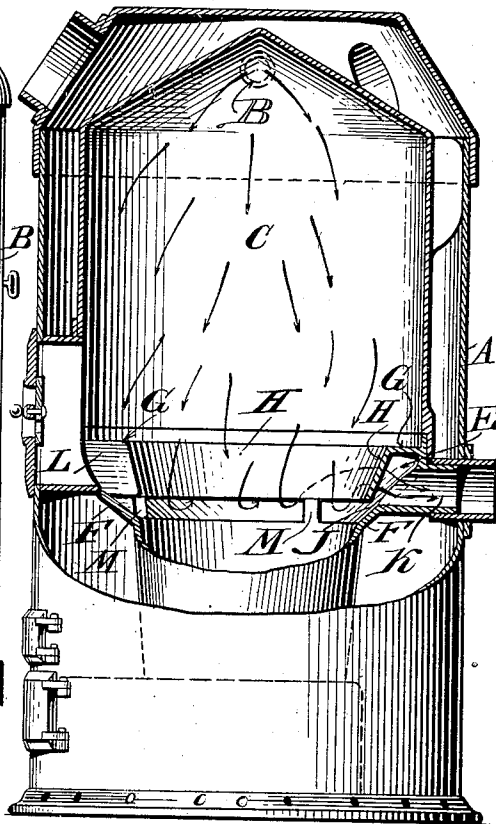


Fig. 4.

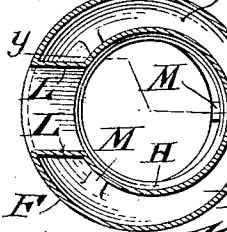


Fig. 3.

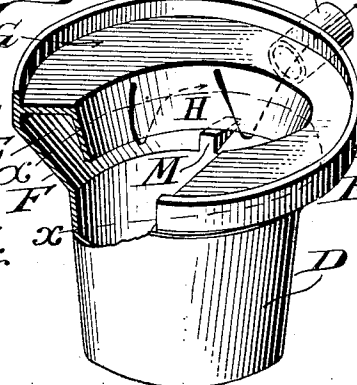


Fig. 6.

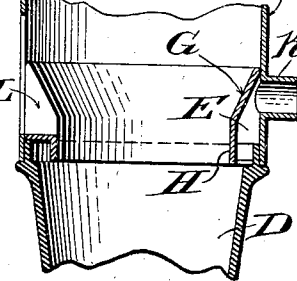
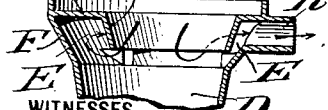


Fig. 5.



WITNESSES

H. Dieterich
L. H. Douville.

BY

INVENTOR
Alfred Williams
By *W. H. Fairbank*
ATTORNEYS

UNITED STATES PATENT OFFICE.

ALFRED WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA.

GAS AND SMOKE BURNING FURNACE OR STOVE.

1,042,737.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed January 3, 1912. Serial No. 669,185.

To all whom it may concern:

Be it known that I, ALFRED WILLIAMS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented new and useful Gas and Smoke Burning Furnaces or Stoves, of which the following is a specification.

My invention consists of a furnace, a stove or other heating appliance adapted to have fresh or atmospheric air impacted uniformly upon the burning fuel so as to cause perfect combustion of the gas and smoke, and an increase of the volume and temperature of heat.

The invention consists further of means for discharging the products of combustion after the admitted air is consumed with the smoke and gas prior to its discharge.

The invention is satisfactorily illustrated in the accompanying drawing, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific arrangement and organization shown and described.

Figure 1 represents a front view partly broken away of a furnace embodying my invention. Fig. 2 represents a vertical section thereof at a right angle to Fig. 1. Fig. 3 represents a perspective view of a detached portion. Fig. 4 represents a horizontal section thereof on line $x-x$ Fig. 3 on a reduced scale. Fig. 5 represents an irregular vertical section on line $y-y$ Fig. 4. Fig. 6 represents a vertical section of another embodiment of the invention.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings:—A designates a furnace which excepting the feature of my invention applied thereto is of well known construction.

B designates a pipe for conveying atmospheric air to the combustion chamber C of the furnace, the same in the present case being supported on the exterior casing and having one end open to the atmosphere and the other end opening into said chamber through the dome or top of the latter.

D designates the fire pot of the furnace, and E designates an annular passage which is cast with or otherwise supported on said fire pot and composed of the exterior wall F the upper wall G inturned therefrom and the wall H depending from said wall G,

said walls G, H, being set in from the wall F, thus producing said passage E whose lower end J as the inlet to said passage opens toward the fire pot. Connected with the wall F, is the collar K forming the smoke outlet of the combustion chamber, the same leading to what may be termed the smoke pipe of the furnace and being in communication with the passage E, it being noticed that said collar K is far below the top of the combustion chamber and adjacent to the top of the fire pot, it now being seen that fresh or atmospheric air is admitted in a large volume into the combustion chamber so as to fill the same and it is consumed with the smoke and gas thus increasing the volume of heat and intensifying the temperature thereof in the chamber C. Furthermore said air fills the combustion chamber and so is injected in a large volume upon the mass of burning fuel all around the inner wall of the passage E and so mingles with the flames, the resultant products of combustion then reaching the inlet J of the passage E and directed into the latter when they are discharged through the collar K into the chimney or flue of the building.

In order to cause a uniform distribution of the air to the fire or bed of fuel, and prevent the products of combustion from directly seeking the exit or collar K the passage E gradually widens forwardly from said collar to the terminals at the furnace door, see Figs. 4 and 5 so that greater quantities of the products of combustion are induced to enter and be drawn into said passage opposite to said collar and so in proportion all around the passage, the less quantities being induced to enter the passage where said collar is attached, it being noticed that the front terminals of the passage at the furnace door are closed as at L so as to prevent the escape of the products of combustion thereat.

In order to prevent the inner members of the passage E from sinking on the fire pot D and closing the inlet J thereto, the lower end of the wall H of said passage rests on blocks M which rise at intervals from the top of the fire pot without materially closing said inlet.

In Fig. 6, the lower end of the casing N of the combustion chamber C comprises the exterior wall of the passage E in lieu of the wall F of the casting shown in Figs. 1, 2,

and 3. The exit collar K is connected with said casting, without, however, producing different results from those first stated.

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

1. In a furnace, a combustion chamber having an air inlet at its top, a fire pot having a horizontal wall extending inwardly
10 from the upper portion thereof, a substantially vertical wall depending from the inner edge of said horizontal wall to form an annular passage within the fire pot, and
15 wall thereof, the bottom of said passage opening into the fire pot.

2. A furnace comprising a combustion-chamber having an air-inlet at its top, a fire-pot below such chamber, and a passage intermediate of said chamber and fire-pot and
20 formed with closed ends at the sides of the feeding opening of the furnace and with a smoke-outlet at a diametrically opposite

point, said passage having an opening in its under side communicating with the fire-pot 25 and having the greatest cross-sectional area at said closed ends and reducing toward the smoke-outlet.

3. In a furnace, a combustion chamber having an air-inlet at its top, a fire-pot having a horizontal wall extending inwardly
30 from the upper portion thereof, a substantially vertical wall depending from the inner edge of said horizontal wall to form an annular passage within the upper portion of the fire-pot and formed with a
35 smoke-outlet, the bottom of said annular passage opening into the fire pot and a member intermediate of the fire-pot and the bottom of said depending wall adapted to
40 support the latter without materially obstructing said passage.

ALFRED WILLIAMS.

Witnesses:

JOHN A. WIEDERSHEIM,
N. BUSSINGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."