

(No Model.)

2 Sheets—Sheet 1.

O. W. BENNETT & W. B. MULLER.
HEATING STOVE.

No. 416,089.

Patented Nov. 26, 1889.

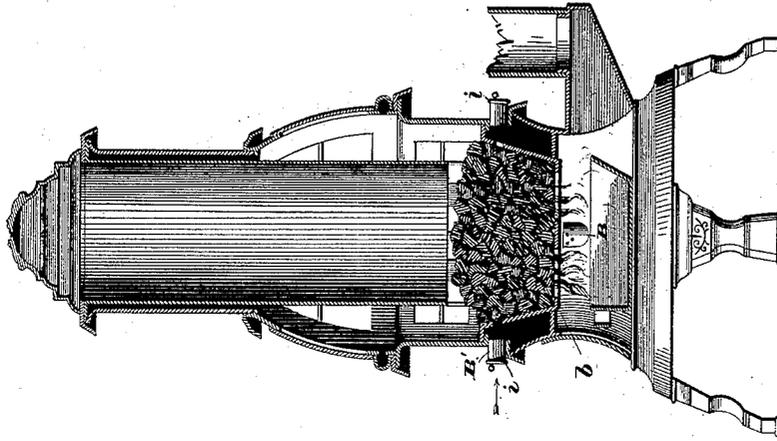
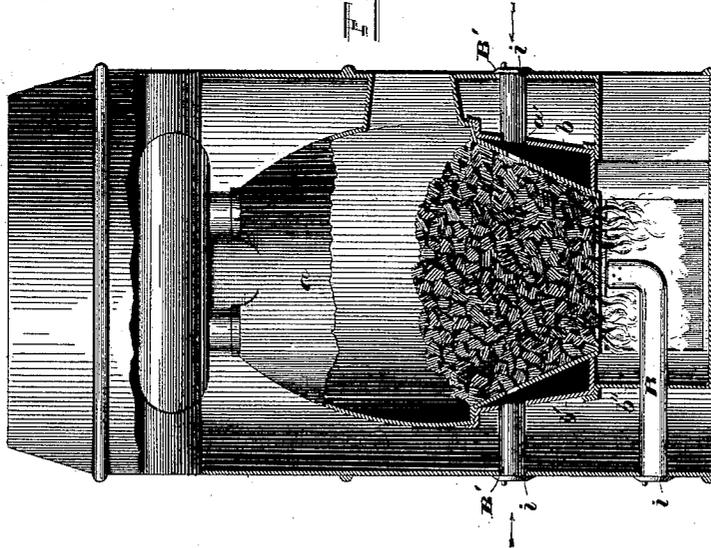


Fig. 1



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WITNESSES

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Fig. 2

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Fig. 3.

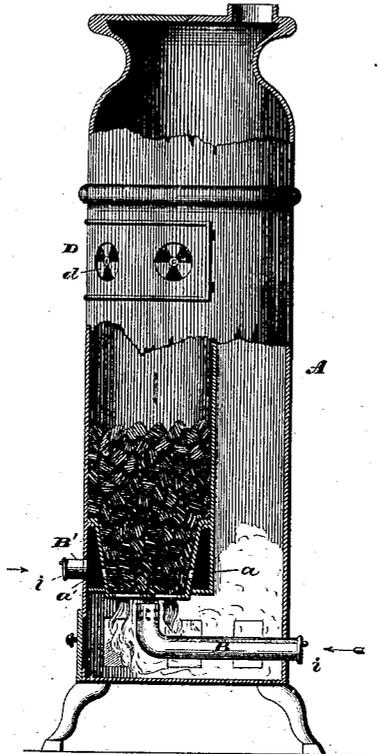


Fig. 4.

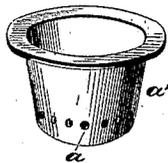


Fig. 5.



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UNITED STATES PATENT OFFICE.

ORSON W. BENNETT AND WILLIAM B. MULLER, OF WASHINGTON, DISTRICT OF COLUMBIA.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 416,089, dated November 26, 1889.

Application filed September 11, 1886. Renewed August 29, 1889. Serial No. 322,278. (No model.)

To all whom it may concern:

Be it known that we, ORSON W. BENNETT and WILLIAM B. MULLER, citizens of the United States of America, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Heating-Stoves; and we do hereby 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 letters of reference marked thereon, which form a part of this specification.

Our invention relates to certain new and useful improvements in stoves and furnaces, the object of our invention being to provide a cheap and effective means whereby sufficient oxygen will be fed to the flames from the fuel to cause a complete combustion of the hydrocarbon gases, the air-supply pipes through which the oxygen is fed to the fuel being so located that air will be fed through the fuel and to the outer edges of the flame and to the center thereof, as will be herein-after fully set forth.

In the accompanying drawings, which illustrate my invention, Figure 1 is a vertical sectional view of hot-air furnaces constructed in accordance with our invention. Fig. 2 is a vertical sectional view showing our invention applied to a magazine-stove. Fig. 3 is a side view, partly in section, showing the application of our invention to a heating-stove having a downward draft through the fuel. Fig. 4 is a detail perspective view of the fire-pot of such a stove. Fig. 5 is a detail perspective view showing a damper applied to the end of the air-supply tubes.

The invention illustrated in the accompanying drawings is especially adapted to be applied to that class of stoves and furnaces which are provided with fire-pots, beneath which the grate is located, the fuel contained in the fire-pot being adapted to be ignited from the lower surface of the fuel, adjacent to the grate-bars, when there is a downdraft through the fuel instead of an updraft. When our improvement is applied to stoves, as shown, the fuel is ignited beneath the grate and a draft or current of air is caused to

enter the magazine or fire-chamber from above the fuel, so as to pass downwardly through said fuel to the grate, so as to direct the flame and products of combustion downwardly or in an opposite direction from its ordinary course in stoves as heretofore constructed.

Prior to our invention it has been proposed to provide a stove with means for supplying air to the fuel by a perforated ring around the fire-pot, and also to provide a second ring, which will be located at the base of the magazine, so as to provide a means for feeding air near the center of the fuel, said ring being connected by a pipe or tube to the upper portion of the stove, as set forth in the patent of Isaac N. Ross, dated December 1, 1868, and our invention is designed more especially as an improvement upon said patent.

In the patent above referred to the fuel is ignited at the lower portion of the grate, and the air is not fed to the flame until the fuel is sufficiently burned, so as to ignite the upper surface of the fuel, and the pipe which supplies the air to the annulus at the base of the magazine, when heated, instead of feeding the air to the annulus, will, when heated, cause the hot air to rise therein and draw the air from the annulus at the base of the magazine, and the gases liberated from the fuel will pass into the room.

In the drawings, A refers to the outer casing of a stove or hot-air furnace, within which is supported a fire-chamber *a*, the lower portion of which is provided with a fire-pot *b*, the upper portion of said fire-pot being provided with a series of perforations *a'*, which are located at a suitable point above the grate-bars and below the upper edge of the fire-pot. This fire-pot is surrounded by a wall *b'*, having a ring or base-plate *b''*, so as to provide an airtight chamber which will surround the fire-pot.

A' refers to the grate, beneath which is located a pipe or tube B, the upper end of which is perforated. This pipe B extends to a central point beneath the grate, as shown in Fig. 1. The wall *b'* is provided at suitable points with air-supply pipes *B'*, which pass through the outer walls of the furnace and through the walls *b'* to a point near the perforations *a'* of the fire-pot, and said tubes

B and B' are provided at their ends which pass through the outer walls of the furnace with dampers *i*, as shown in Fig. 5 of the drawings.

5 By supplying the tubes B and B' with dampers the air or oxygen supply can be regulated so as to cause the fire to burn slow or fast, and the heat in the fire-chamber will produce an upward draft, so as to not only
10 draw a supply of air through the grate and fuel, but also through the air-supply pipes B and B', thus causing air to be drawn through the tubes B and B' and preventing any back-draft, which would cause the gases to escape
15 through said tubes into the room.

In Fig. 1 we have shown our invention applied to a magazine-stove, and the arrangement and construction of the parts are substantially the same as heretofore described.

20 In Fig. 3 we have shown our invention applied to a heating-stove, in which A refers to the outer cylinder, which is provided at its interior with a fuel-reservoir, above which is located a door D, having damper *d*, the grate and fire-pot being constructed substantially
25 the same as in the stove and hot-air furnace hereinbefore described, and illustrated in Figs. 2 and 4 of the drawings.

An air-supply tube B' enters the chamber adjacent to the fire-pot, so as to provide means of supplying air through the perforations *a'* in said fire-pot. The tube B has its inner end upturned, so as to be adjacent to the under side of the grate. The fire in this case is ignited
35 at the grate, and air is admitted through the dampers *d* in the door D and passes downwardly through the fuel out of the grate, and from thence upward to an exit pipe or chimney, and air is fed through the pipe B'
40 to the space surrounding the fire-pot, and from thence through the perforations *a'* in said fire-pot to the flames from the fuel, and air is also drawn into the tube B to the center of said flames, thus providing a means for
45 feeding air above to the center and outer edges of the flame, so as to cause a complete burning or consumption of the gases from the fuel.

The device hereinbefore described may be
50 varied, the leading idea being to supply air

or oxygen to the hydrocarbon gases from the fuel around the lower edges of the fire-pot adjacent to the flames from the fuel, and also to the center of the fuel by an independent supply-pipe, thus providing a means whereby
55 the gases which are generated by the burning of the fuel will be completely consumed and the heating capacity of the stove or furnace increased, so as to get the full benefit of the fuel.

The percentage of ashes or waste products is so small in a stove or furnace constructed as hereinbefore described as to be reduced to an inappreciable quantity, and we produce the maximum quantity of heat with a mini-
65 mum amount of fuel.

By the arrangement of the air-supply tubes B and B' the poorest quality of bituminous coal may be employed as fuel, and all the gas and smoke which emanate therefrom will be
70 consumed, as the smoke and flame as they pass from the fuel are met by a fresh supply of oxygen, which is drawn through the air-supply pipes, which at once unites with the combustible gases and consumes them.

We claim—

The combination, in a stove or furnace constructed substantially as shown, of a fire-pot, a closed casing surrounding the fire-pot, so as to form an air-chamber, air-ducts B',
80 extending from the outer walls of the stove or furnace to the air-space in the casing surrounding the fire-pot, said fire-pot being provided with openings opposite the inner ends of the air-ducts, and an air-supply pipe ex-
85 tending from the outer walls of the stove or furnace and terminating beneath the central portion of the grate, the outer ends of the air-supply pipes being provided with dampers, substantially as shown, and for the purpose
90 set forth, whereby a downdraft of heated air through the fuel and grate is provided and a supply of air is admitted beneath the grate.

In testimony whereof we affix our signatures in presence of two witnesses.

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WILLIAM B. MULLER.

Witnesses:

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HORACE L. BEALL.