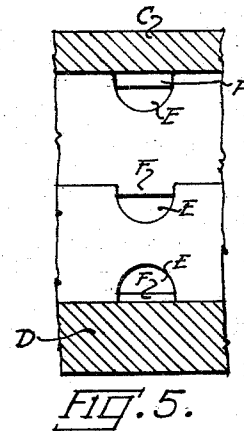
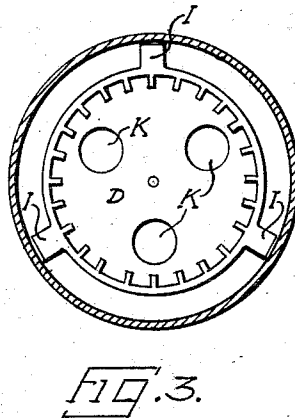
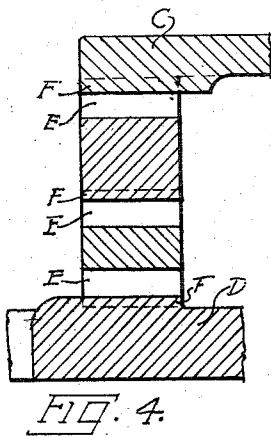
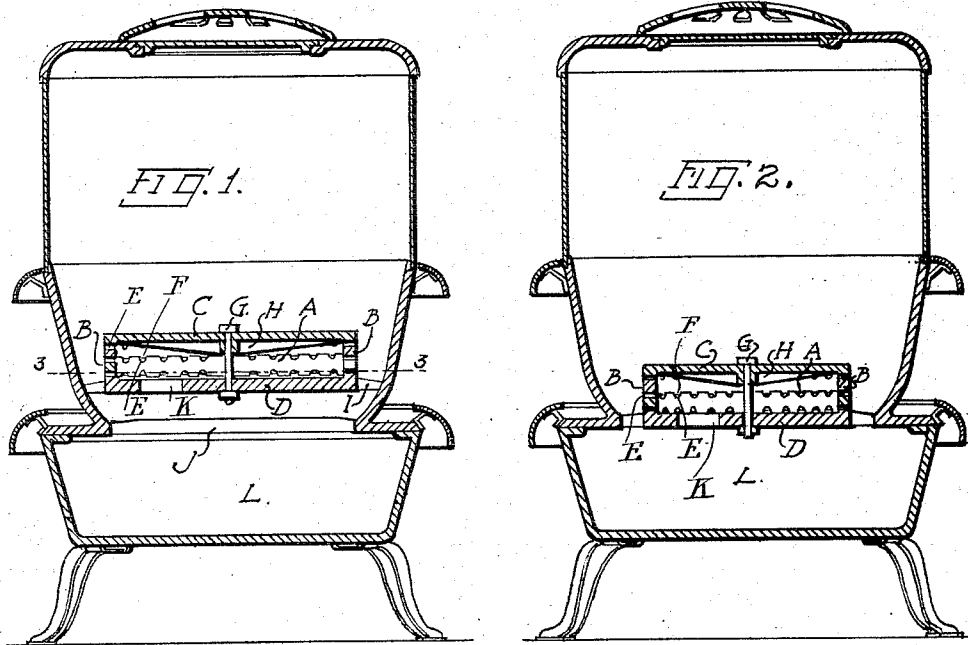


M. E. ALLEY.
STOVE AND FURNACE.
APPLICATION FILED MAY 26, 1909.

1,018,647.

Patented Feb. 27, 1912.



WITNESSES
J. Hill
E. M. Mock.

INVENTOR
Moses E. Alley
BY E. M. Bullard
ATTORNEY

UNITED STATES PATENT OFFICE.

MOSES E. ALLEY, OF TACOMA, WASHINGTON, ASSIGNOR OF TWO-THIRDS TO FRED-
ERICK CHARLES MATHEWS, OF TACOMA, WASHINGTON.

STOVE AND FURNACE.

1,018,647.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed May 26, 1909. Serial No. 498,438.

To all whom it may concern:

Be it known that I, MOSES E. ALLEY, a citizen of the United States, residing at the city of Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Stoves and Furnaces, of which the following is a specification.

My invention pertains to improvements in ordinary heating stoves and furnaces.

The object of my invention are,—First. To provide the means for uniformly distributing the draft of air into the fuel around the sides of the fire box or combustion chamber, and thus cause a steady combustion against the outer walls of the said combustion chamber. Second. To prevent the fuel burning within the center of the combustion chamber, whereby a loss of heat has heretofore been caused, and, Third. To provide a means for warming the air draft before the same is brought in contact with the fuel in combustion, thereby securing the best results by causing a better and more thorough combustion.

I attain these objects by means of the device illustrated in the accompanying drawing, in which—

Figure 1 is a vertical section through the center of an ordinary stove, with my invention located therein above the grate. Fig. 2 is a vertical section of a heating stove with my device located on and made a part of the grate. Fig. 3 is a horizontal section at 3—3 Fig. 1. Fig. 4 is an enlarged section through the annular walls of my invention, and Fig. 5 is a partial elevation of the side showing the openings through which the air passes into the combustion chamber.

Similar letters refer to similar parts in the several views.

My invention comprises an air box or chamber A having annular walls B—B, a top plate C, and a perforated bottom plate D. The annular walls B—B are designed to be cast in two or more sections, as illustrated in Figs. 1, 2, 4, and 5. These sections may be cast in one circular form, or they may be cast in segments, as the convenience of manufacture may suggest. The lower piece is cast with radiating grooves E—E at suitable and regular intervals as indicated. The bottom plate and upper annular section are provided with short radial extensions F, designed to fit into the radial grooves de-

scribed, and partially inclose the same, leaving an opening through which the air may pass from the inner side to the fuel resting on and around the sides of the chamber A. The upper side of the second annular section is provided with similar grooves E in which radial extensions from the top plate C are made to fit into and partially close the same. These sections may be multiplied and extended until the chamber A is made of any desired height. They may be made round, elliptical, or oblong, as the form of the firebox may require. The top and bottom plates are securely held together by means of a center bolt G, as seen in Figs. 1 and 2. The upper plate C may be reinforced with ribs H on the under side so as to resist the weight of the fuel resting thereon, should the size of the chamber so require.

It is to be observed that the bottom plate D is designed to be constructed with three or more lugs I—I, extending from the outer edge. These lugs are designed to rest against the walls of the firebox of the stove and support the same at a suitable height above the grate J. This leaves a narrow space between the annular walls B—B of the chamber A and the walls of the firebox, through which the ashes may fall as the fuel is consumed in combustion. This will be understood by reference to Figs. 1 and 3.

By providing the air box with a bottom plate and locating it above the grate J the space between the grate and bottom-plate forms an auxiliary air chamber which causes a strong draft through the annular opening between the wall of the combustion chamber or fire box and wall of the central air chamber so that the fuel near the edge of the top plate is heated and combustion promoted. It also serves to heat the air before entering the main air box, whereby the air which passes from the air box is heated to a greater degree and thus further promoting combustion.

My invention may be also used as illustrated in Fig. 2, where the bottom plate D is made a part of the regular grate of the stove, and is designed to be manufactured as a part of the stove, while the chamber shown in Fig. 1 is designed to be located in any stove already made and in use.

It is to be observed that the bottom plate D is provided with air holes K—K, through which air is admitted into the chamber A

from the regular course through the ash pan L.

In the use of my improvement, the fuel is placed in the firebox or combustion chamber, over and around the chamber A, and the fire is started in the usual manner. The draft of air from the ash box L below, passes into the center of the chamber through the air holes K—K, and out through the small ports formed by the radial grooves E—E. The air may also pass up through the openings at the sides of the chamber, but this will be prevented largely by the ashes accumulated therein. The ports E—E being located at regular intervals around the walls of the chamber A, are constantly free from ashes, and provide a steady and evenly distributed supply of air to the fuel in combustion, and cause the same to burn with uniform regularity, securing a maximum amount of heat with a minimum waste. It will be observed that this will cause the combustion to take place directly against the outer walls of the combustion chamber, thus securing the best radiation possible of the heat produced, and will only cause the fuel to burn where radiation is desired.

The top plate C prevents the fuel burning in the center of the combustion chamber, and thus makes a great saving of fuel. As the fuel burns away at the sides of the furnace, fresh fuel falls off from the top of the plate C around the sides of the chamber A, and the combustion is continued in the place desired.

It is to be observed that the chamber A

being surrounded with fuel in combustion, will always be kept extremely hot, and the air passing slowly through the chamber will become heated before passing into the fuel, and will thus secure a more effective combustion.

It is to be further observed that the supply of air is designed to be regulated by the draft door common to all stoves and furnaces.

It is to be observed that the annular walls are designed to be made of cast iron, and they are of such form that the radial grooves E and F can be made to fit in and engage each other without tool finishing, and therefore, can be maintained at a minimum expense.

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

The combination with the fire-box of a stove, of a centrally disposed air-box having side-walls comprising a number of superimposed sections, some of the sections being formed with radially extending grooves and other sections formed with radial extensions fitting partially within the radial grooves of the contiguous sections thus forming openings for feeding air through the box to the fire, substantially as described.

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

MOSES E. ALLEY.

Witnesses:

FRANK D. NASH,
H. J. GRELEUS.