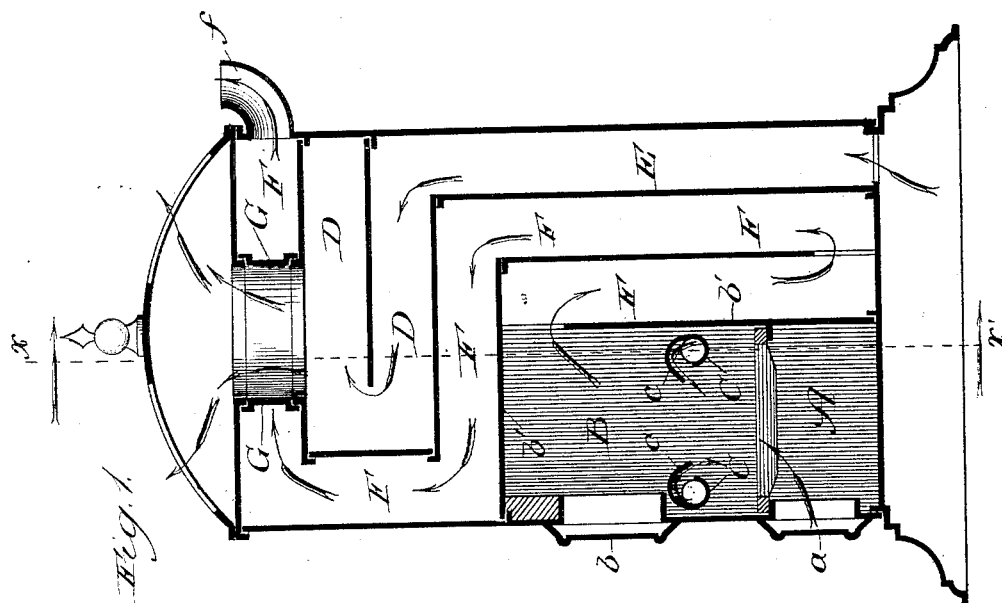
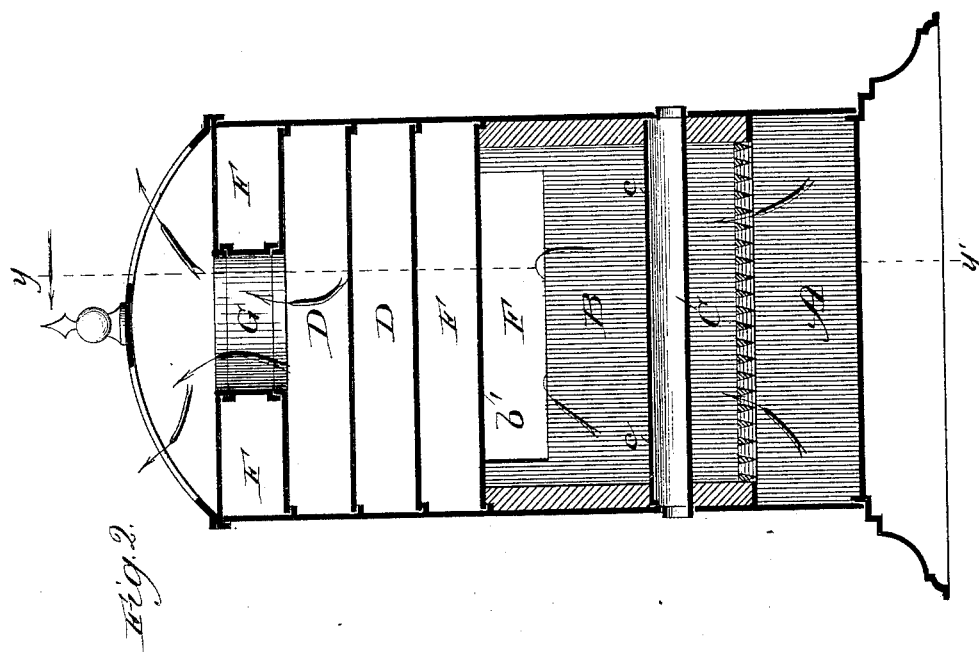


(No Model.)

G. F. HIGGINS.
STOVE.

No. 419,122.

Patented Jan. 7, 1890.



Witnesses:

Edw. Dayford,
Clifford M. White.

Inventor:

George Franklin Higgins,
By Banning & Banning, Attys.

UNITED STATES PATENT OFFICE.

GEORGE FRANKLIN HIGGINS, OF CHICAGO, ILLINOIS.

STOVE.

SPECIFICATION forming part of Letters Patent No. 419,122, dated January 7, 1890.

Application filed February 19, 1889. Serial No. 300,504. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FRANKLIN HIGGINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Stoves, of which the following is a specification.

The object of my invention is to make a simple, economical, surface-burning stove for either hard or soft coal; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation, in section, of my improved stove; and Fig. 2, a front elevation, in section, of the same.

A is a fire-box, and *a* an ash-door therein; B, a combustion-chamber; *b*, a fuel-door therein, and *b'* a deflecting-plate at the top and side of the combustion-chamber; C, an inlet for introducing cold air into the fire-box or combustion-chamber, and *c* a cap forming a lip to prevent the fuel from stopping the inflow of cold air; D, a hot box; E, a flue or chamber for introducing atmospheric air, communicating with the hot box; F, a sinuous flue for the heated products of combustion, formed in part by the deflectors of the combustion-chamber, and *f* an outlet therefrom; and G, a collar forming a register to permit the warm air to escape for heating purposes.

My improved stove comprises, essentially, a fire-box, combustion-chamber, flues, hot box, and inlets and outlets so arranged with reference to each other that atmospheric air is heated by direct introduction into the hot box and then allowed to escape through registers into the room desired to be warmed. The fire-box, the upper part of which I call a "combustion-chamber," is in the usual form. One peculiarity of the combustion-chamber consists in providing the air inlet or inlets with a cap, preferably forming a lip, to prevent the inflow of air from being stopped or choked by the fuel. The air-inlet having this cap or lip cannot be choked to an extent that will interfere with the inflow of the atmospheric air necessary for combustion. I prefer to have four of these inlets—two at the front and two at the back; but more or less may be used, as desired. I also prefer to have them at oppo-

site sides in the combustion-chamber, with their caps pointing inwardly toward each other, so that the atmospheric air coming in from opposite sides will be directed and passed over the fire to cause the gas to burn from the top or below the top of the coal, and not from a point materially above it.

Another peculiarity of the combustion-chamber consists in so forming its top and side as to deflect the heated air or products of combustion and cause them to be carried down and around in a sinuous flue F, as indicated by arrows. The top and side of the combustion-chamber being thus formed operate to deflect and carry the heated air or products of combustion down to a very low point, so that after leaving this point they will in their upward progress pass along almost the entire length of the flue or chamber employed to introduce atmospheric air for heating or warming purposes. In this way, by extending the top of the combustion-chamber to a point beyond its back and then deflecting and extending it down to near the bottom, a continuous flue is formed; or, in other words, the flue at the side of the combustion-chamber is divided vertically, and thus made into two flues, or, as I prefer to call it, a "double flue." The heated air or products of combustion descend in that part of this flue next to the combustion-chamber, and afterward ascend in that part next to the cold-air flue. The atmospheric air desired to be heated and introduced into the room for warming purposes first comes in at or near the bottom, and then passes up through the flue or chamber E at the back of the stove and into the hot box near the top, from which, after becoming sufficiently heated, it is allowed to escape by registers or otherwise into the room desired to be warmed. The position of this back flue or chamber with reference to the hot-air flue at its side and the hot box at its top is such as to give the advantages of both a radiating and a circulating stove in one construction, and this, too, in a very simple and efficient way.

As already stated, in my improved stove the heated products of combustion are brought down to a point near the bottom and then allowed to pass up by the side of the air-cham-

ber and in contact with the hot box, whereas
in all other surface-burning stoves with which
I am acquainted the heated products of com-
bustion are allowed to pass directly up from
5 the flue to their outlet and then become lost
or wasted. This difference of construction
and operation gives a greater capacity for
heating and radiation, and, as just suggested,
enables the atmospheric air in the back cham-
10 ber and hot box to be heated by what is now
useless, lost, or waste heat.

I do not herein claim means for heating at-
mospheric air before its introduction into the
combustion-chamber, the same being the sub-
15 ject of another application filed by me Octo-
ber 8, 1889, Serial No. 326,315.

I claim—

A stove having a fire-pot, a flue leading
therefrom and extending downward behind
the fire-pot to the base of the stove, thence 20
upward and over the top of the fire-pot to the
front of the stove, and finally to an exit-open-
ing at the rear of the stove, and a hot-air
flue leading from an opening in the base and
winding contiguously to that portion of the 25
smoke-flue which extends upward from its
base and communicating with an opening in
the top of the stove, substantially as described.

GEORGE FRANKLIN HIGGINS.

Witnesses:

EPHRAIM BANNING,
WILLIAM H. HIGGINS.