

(No Model.)

J. G. SMITH.
HOLLOW GRATE.

No. 254,398.
Fig. 1.

Patented Feb. 28, 1882.

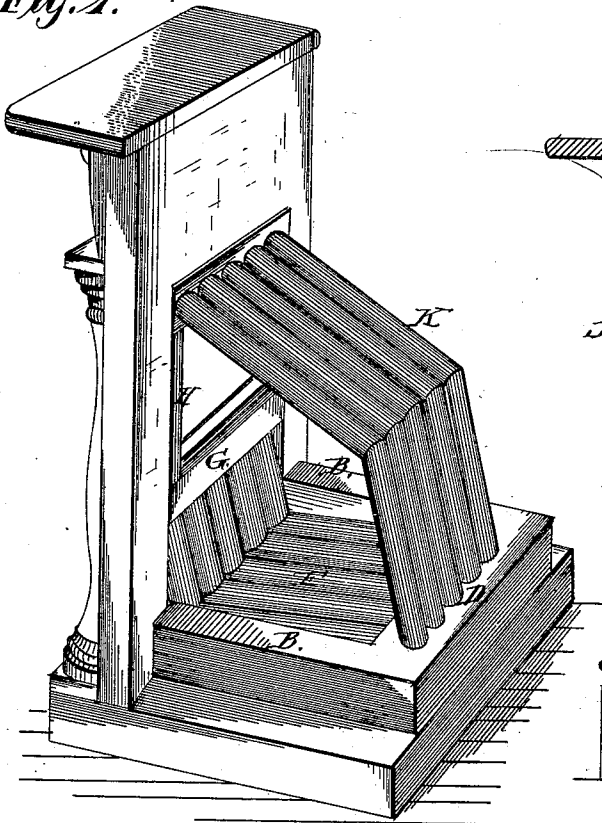


Fig. 2.

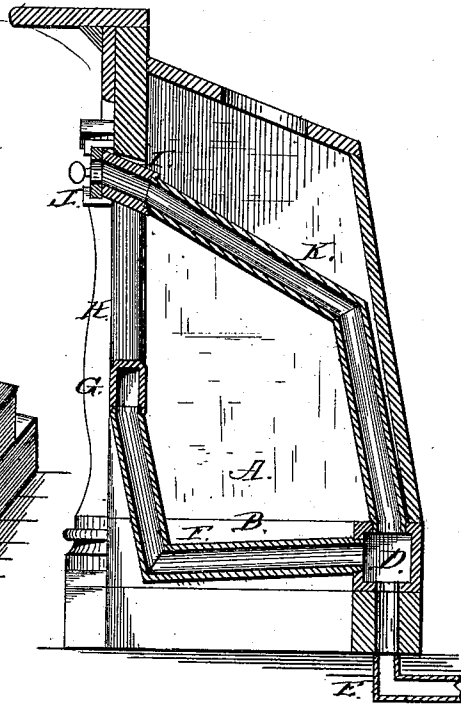
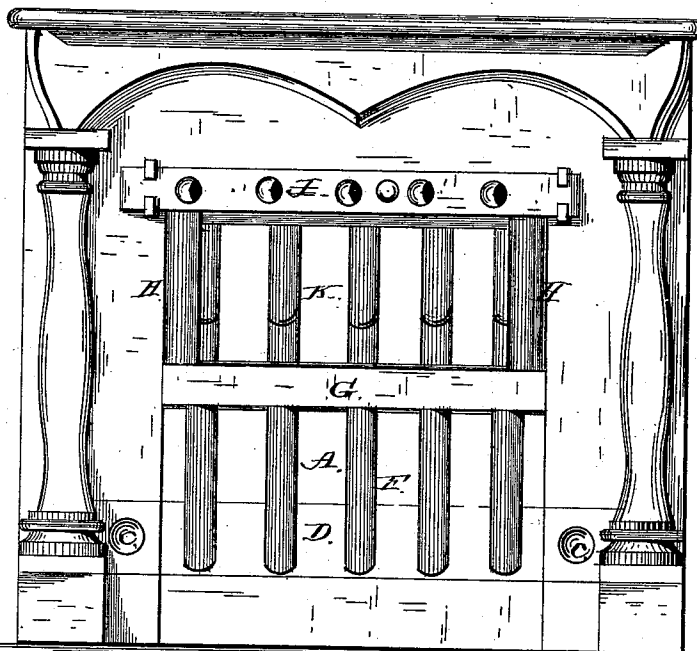


Fig. 3.



Witnesses.

Philip LeMass
John A. Ellis.

Inventor.

J. G. Smith,
by Anderson & Smith
his Attorneys

UNITED STATES PATENT OFFICE.

JAMES G. SMITH, OF CLEVELAND, OHIO.

HOLLOW GRATE.

SPECIFICATION forming part of Letters Patent No. 254,398, dated February 28, 1882.

Application filed September 29, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. SMITH, a citizen of the United States, resident at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and valuable Improvement in Hollow Grates; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a view in perspective of the hollow grate. Fig. 2 is a vertical sectional view, and Fig. 3 is a front elevation.

This invention has relation to hollow grate-bars for fire-places and open stoves; and it consists in the novel construction and arrangement of hollow flues across the ends and back of the fire-place or open stove, near the bottom of the same, hollow angular or curved grate-bars connecting the rear flue and a front flue forming the top of the grate, angular back flues connecting the rear flue, and a front top flue provided with perforations and a sliding damper having registering perforations, and vertical front flues connecting the grate-flue and the top flue, the rear flue adapted to receive cold air from beneath the base of the fire-place or open stove, and the end flues and top flue opening into the room, as will be hereinafter fully described, and particularly pointed out in the claim.

The object of this grate is to furnish rooms with a greater amount of heat from the same amount of fuel than is possible to obtain from the ordinary open stove and fire-place arrangement, and to provide a grate that will cost no more than a common ordinary grate and that shall last much longer.

Referring by letter to the accompanying drawings, A designates the fire-place or open-stove casing. End flues, B B, open at the front at C, connect with a rear flue, D. This flue D has open communication with the surrounding atmosphere through the base at E, as shown.

From the rear flue, D, a series of hollow bent

angular grate-bars, F, extend to and connect with a front cross-flue, G, which forms the top of the grate. This bar or flue G is connected by flues or pipes H H with a perforated top flue, I, traversing the front of the fire-place or open stove, and provided with a sliding damper, J, having registering perforations, which may be shifted to regulate the amount of heat which is to escape into the room from the upper cross-flue, I. Hollow bent or angular or curved tubes or pipes K connect the rear flue and the top flue, as shown, and through these flues the heated air is discharged through the top flue and damper into the room.

Cold air is admitted from the bottom and in front, near the bottom, and passes through the flues extending along the ends and across the back of the fire-place or open stove. The hollow grate-bars and the bent or angular tubes open into the rear flue, which, after being supplied with cold air, which is heated in its passage, discharges the same into the room.

The advantages of a hollow grate over the common solid grate are that double the amount of heat is obtained from the same amount of fuel, and the hollow grate-bars containing circulating air will last three times as long as a solid grate-bar and cost no more, as they contain less iron.

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

In a grate for fire-places or open stoves, the combination, with the end and rear flues, B B and D, the former having communications C C and the latter communication E, of the front cross-flue, G, top flue, I, hollow grate-bars F, vertical front flues, H H, hollow angular or curved pipes or flues K, and the sliding damper J, substantially as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES G. SMITH.

Witnesses:

HENRY GOLDSMITH,
N. FEIL.