

C. J. WOOLSON.

Grate.

No. 38,194.

Patented April 14, 1863.

Fig. 2

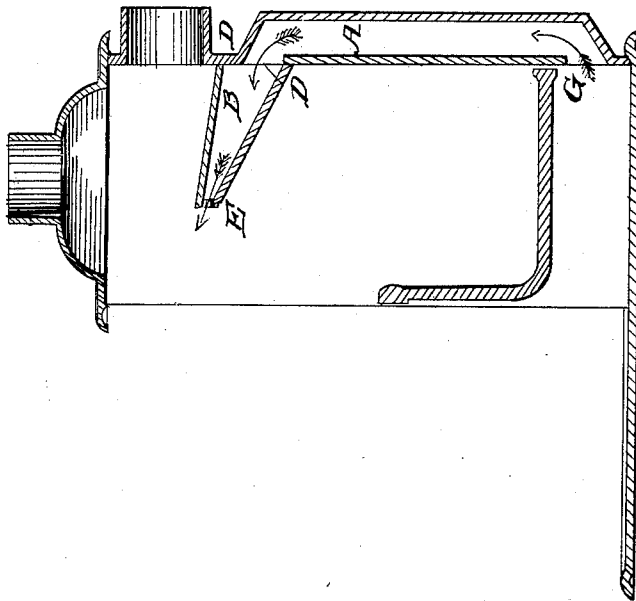
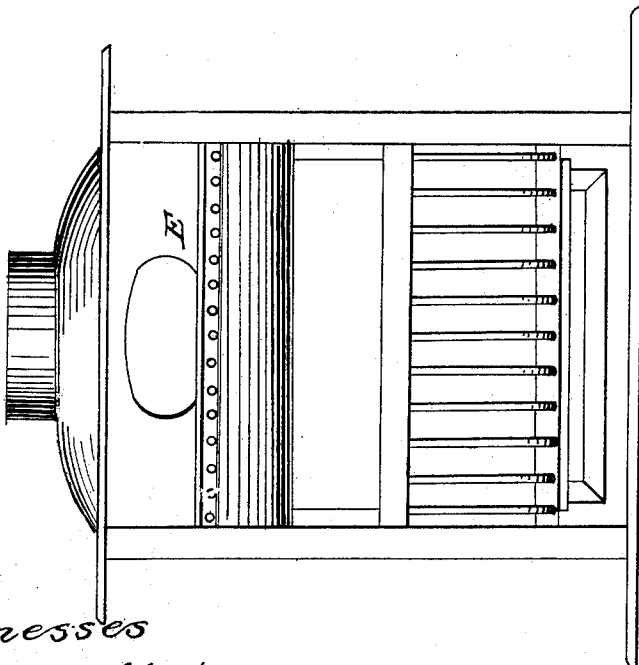


Fig. 1



Witnesses
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CHARLES J. WOOLSON, OF CLEVELAND, OHIO.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **38,194**, dated April 14, 1863.

To all whom it may concern :

Be it known that I, CHARLES J. WOOLSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in stoves and grates for the purpose of consuming smoke and gas in the fire-chambers thereof; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front view, and Fig. 2 is a transverse vertical section.

My invention relates to such a construction of an air-chamber that the air is received between the fire-grate and hearth, rising through an air-chamber back of the fire-chamber, passing into the fire-chamber in a heated state and thus uniting with the smoke and gas, producing thereby a complete combustion thereof, the air-chamber being so constructed that it projects over the fire chamber in such a manner as to allow the most perfect commingling of the liberated gases and the heated air. The air-chamber consists of two sections, A and B. The section A is bounded on the front by the vertical back plate of the fire-chamber, and upon the back by the back plate of the stove or grate. The section B is turned obliquely forward and upward over the fire-chamber F. The plate B' forms the lower boundary of section B, and the plate D' forms its upper boundary. The plates B' and D' come nearly into contact with each other at E, leaving a narrow passage for the heated air into the fire-chamber F, or this passage may be divided into a series of small openings, as shown in Fig. 1. At the bottom of the air-chamber section A is an opening, C C, just beneath the coal-grate G, for the admission of the

cold air into the section A. The object of introducing the air into the chamber at this point is threefold: First, an inward draft is produced which causes a better combustion of coal in the grate than would otherwise be experienced; second, the ingoing current of air becomes partially heated before entering the chamber A, and third, the ingoing current of cold air prevents the grates from becoming too much heated, which would otherwise render them less durable. The plate B', from its position, being inclined obliquely upward above the fire-chamber, projects the smoke and unconsumed gas, forward, where, by being deflected backward by the ingoing current of cold air, indicate, by the arrow 2, is thus forced to commingle with the ingoing current of heated air, indicated by the arrow 1, through the passage E, thus producing a most perfect combustion, the distance from E, along the upper side of plate D' to the back part of the stove at D being from ten to twelve inches and amply sufficient for that purpose. Thus the air which is admitted through the opening C below the grate is further heated in the chamber A, passes through the opening D D into section B, is projected into the fire-chamber at E, as hereinbefore specified, with the result above set forth.

What I claim as my improvement, and desire to secure by Letters Patent, is—

The construction and arrangement of the air-chambers, sections A and B, with the opening C' beneath the grate G, the deflecting-plate B', and opening or openings E, substantially as and for the purpose herein set forth.

CHARLES J. WOOLSON.

Witnesses:

HORACE G. HITCHCOCK,
C. C. CARTER.