

A. L. HOUSTON.
GRATE AND FLUE THEREFOR.
APPLICATION FILED SEPT. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

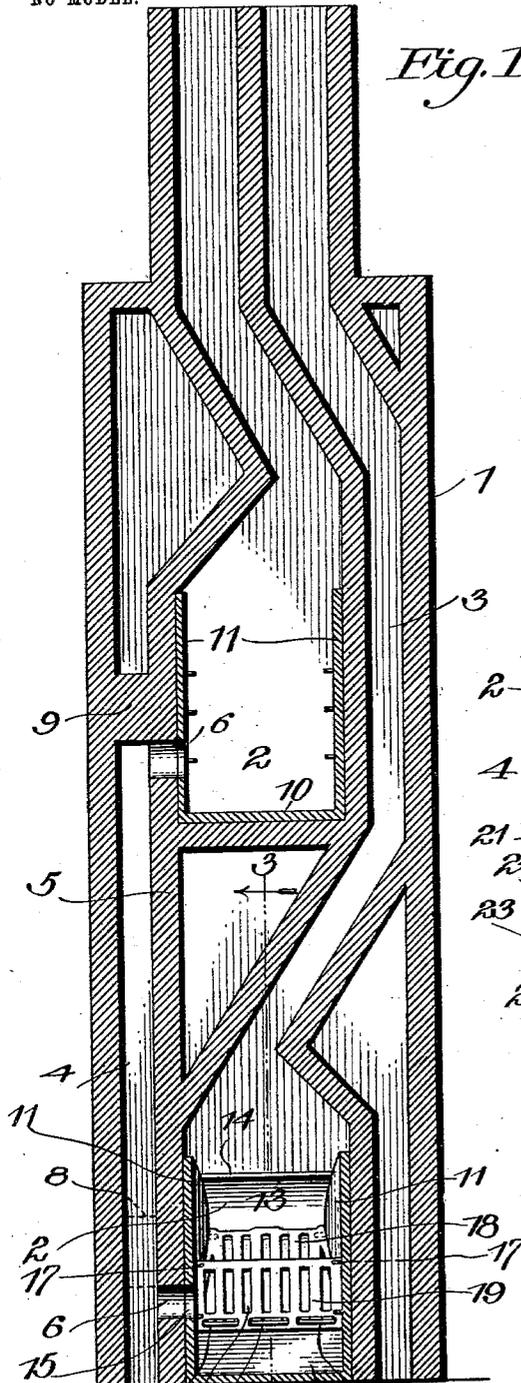


Fig. 1.

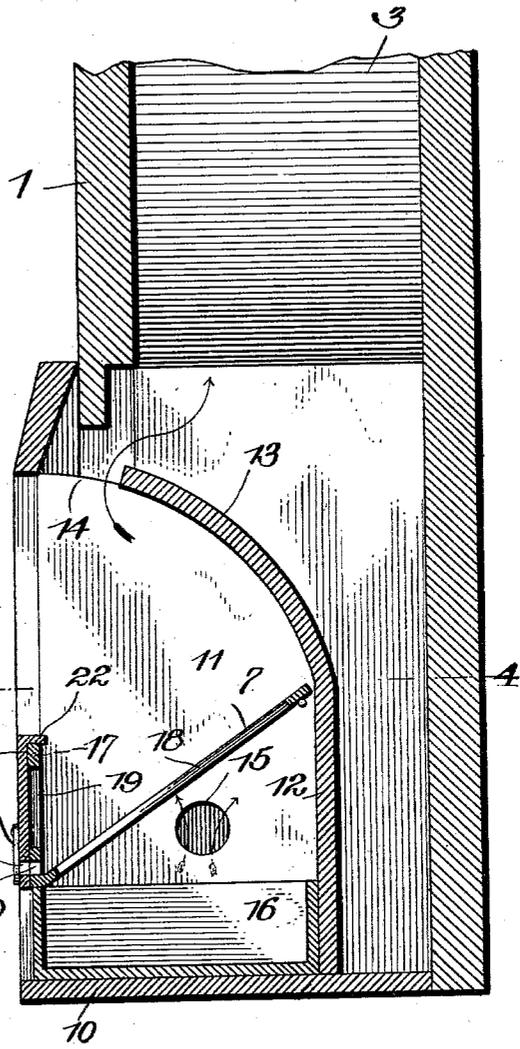


Fig. 3.

Witnesses
 E. Stewart
 J. S. Moore

A. L. Houston, Inventor.
 by C. A. Knowles
 Attorneys

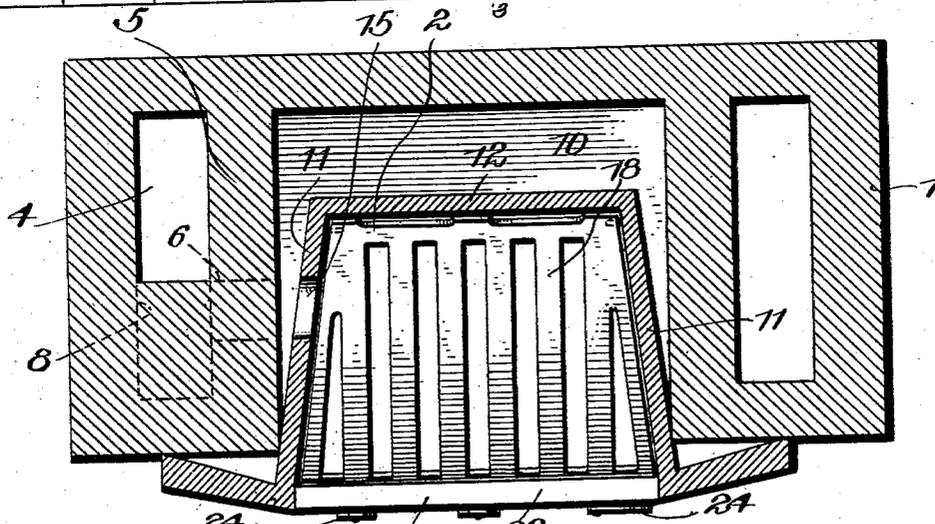
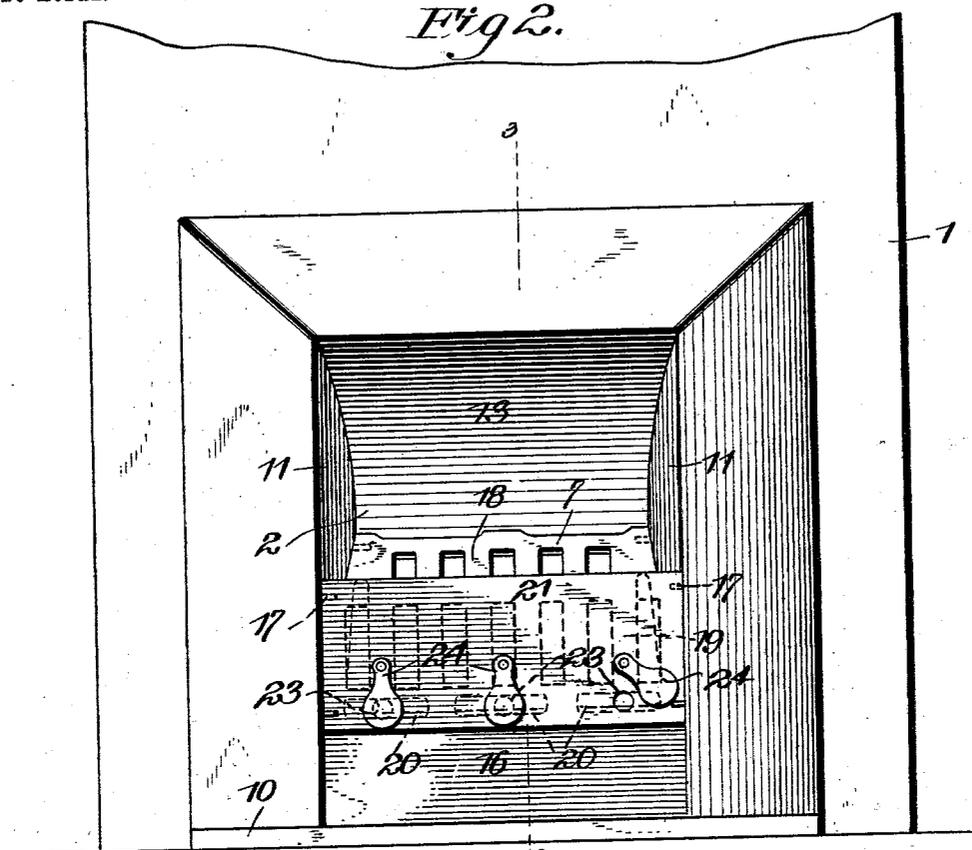
No. 753,263.

PATENTED MAR. 1, 1904.

A. L. HOUSTON.
GRATE AND FLUE THEREFOR.
APPLICATION FILED SEPT. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses
E. J. Stewart
A. J. Elmore

Fig. 4.
 A. L. Houston, Inventor.
 by *Calhoun & Co*
 Attorneys

UNITED STATES PATENT OFFICE.

ABRAHAM L. HOUSTON, OF BELLAIRE, OHIO.

GRATE AND FLUE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 753,263, dated March 1, 1904.

Application filed September 12, 1903. Serial No. 172,977. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. HOUSTON, a citizen of the United States, residing at Bellaire, in the county of Belmont and State of Ohio, have invented a new and useful Grate and Flue Therefor, of which the following is a specification.

In instances where the grates in open fireplaces are fed with a draft of air drawn directly from the room in which the fireplace is situated, the current of air being delivered to and beneath the grate from the front, it is necessary to maintain the fireplace beneath the grate practically free from ashes and the front of the grate entirely open in order that the air-current may have free access to the fuel and combustion be properly established. This necessity of maintaining the front of the grate open permits the escape of ashes therefrom onto the hearth and floor, presenting an unsightly appearance or entailing considerable labor on the part of the attendant. Further, owing to the draft entering the grate from the front the fuel is unequally consumed, that at the front undergoing rapid consumption, while that at the rear of the grate remains comparatively dead.

My invention has for its objects to overcome these defects and disadvantages and to provide for feeding the fuel with a draft of air from beneath, whereby the improved form of grate herein disclosed may be employed and its front maintained closed at all times, thus obviating the escape of ashes therefrom, while at the same time a uniform combustion of the fuel will be maintained.

To these ends the invention comprises the novel details of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a front sectional elevation of a chimney and grate embodying my invention. Fig. 2 is a front elevation of the grate and the adjacent portion of the chimney. Fig. 3 is a vertical transverse section on the line 3 3 of Figs. 1 and 2. Fig. 4 is a horizontal sectional plan on the line 4 4 of Fig. 3.

Referring to the drawings, 1 indicates a chimney, which in practice will be constructed of masonry, as usual, and provided with open

fireplaces 2, from each of which there extends upward through the chimney, as usual, a smoke-flue 3.

In accordance with my invention I form in the chimney, in addition to the usual smoke-flues, an air-flue 4, separated from the main flues and fireplaces by means of a partition 5, provided adjacent to the bottom of each fireplace with an aperture 6, through which the air passes freely from the flue into the fireplace and directly beneath the fuel-supporting grate 7 disposed therein. The flue 4 is provided just above the lowermost aperture 6 with a partial closure 8, which serves to direct a portion of the incoming air through the said aperture and permit the remainder to ascend the flue, which is further provided directly above the uppermost aperture 6 with a complete closure 9, whereby the air which passes the partial closure 8 will be directed through said uppermost aperture 6 beneath the fuel, as above explained, and will pass off through the smoke-flue 3. Thus it will be seen that the current of air for feeding the fuel is drawn directly through the chimney and delivered beneath the grate, whereby the front of the latter may, if so desired, be maintained entirely closed without affecting combustion of the fuel and obviation of the above-noted objectionable features attendant upon open grates is attained.

Each fireplace 2 consists of a hearth 10, side walls 11, and a rear wall 12, which in height equals about one-half the height of the side walls, the upper ends of which latter curve upwardly and forwardly from the rear wall and sustain an arched radiator-plate 13, which is disposed above the grate and serves to direct the heat therefrom outward into the room, said plate being provided at its front with an opening 14, through which the smoke and other products of combustion pass freely to the flue 3. One of the side walls 11 is provided with an aperture 15, which registers with and constitutes, in effect, a continuation of aperture 6.

Disposed upon the bottom 10 of the fireplace beneath the grate 7 is an ash-pan 16, which serves to receive the ashes from the grate 7, which latter is sustained above the pan by suitable lugs 17, projecting horizon-

tally inward from the side walls 11. The grate is preferably cast, as usual, in a single piece and comprises bottom bars 18, disposed in parallel spaced relation, as usual, and front bars 19, also spaced as usual, the grate being provided at its front beneath the bars 19 with a plurality of horizontal slots 20, the purpose of which will hereinafter appear. The fuel-sustaining portion of the grate, which comprises the bars 18, is preferably so formed relative to the front portion that when positioned in the fireplace it will incline upwardly from front to rear thereof, thus preventing the fuel banking at the rear of the grate and at the same time elevating the latter above the draft-inlet opening.

21 is a fender-plate which normally closes the front of the grate, said fender being provided along its upper longitudinal edge with a flange 22, which engages over the adjacent upper edge of the grate. The fender 21 is also provided with a plurality of openings 23, which when the fender is in position register with the horizontal slots 20 to permit the admission of a poker for stirring the fuel in the grate. The openings 23 are normally closed by pivoted flaps or valves 24. In practice the fender will when the latter is in position extend downward as far as the upper edge of the ash-pan, thus entirely closing the front of the grate to prevent escape of ashes or the like therefrom.

From the foregoing it will be seen that I provide for the proper feeding of grates with a draft of air from beneath, whereby the combustion of the fuel is properly maintained and the employment of a closed front grate is permitted, thus obviating the objectionable features heretofore pointed out. In attaining these ends I do not limit myself to the precise details herein shown and described, inasmuch as minor changes may be made therein without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim is—

The combination with a chimney having a plurality of fireplaces provided each with a combustion-chamber, of a smoke-duct leading from each combustion-chamber, an air-duct common to all the chambers and provided adjacent to each with an aperture leading to and delivering air beneath the same, a partial closure disposed in the duct above the lowermost aperture, and a complete closure situated in the duct above the uppermost aperture.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ABRAHAM L. HOUSTON.

Witnesses:

J. W. MORRELL,
ELWOOD MARTIN.