

(No Model.)

E. O. BARTHOLOMEW.
CENTER DRAFT GRATE ATTACHMENT.

No. 453,101.

Patented May 26, 1891.

Fig. I.

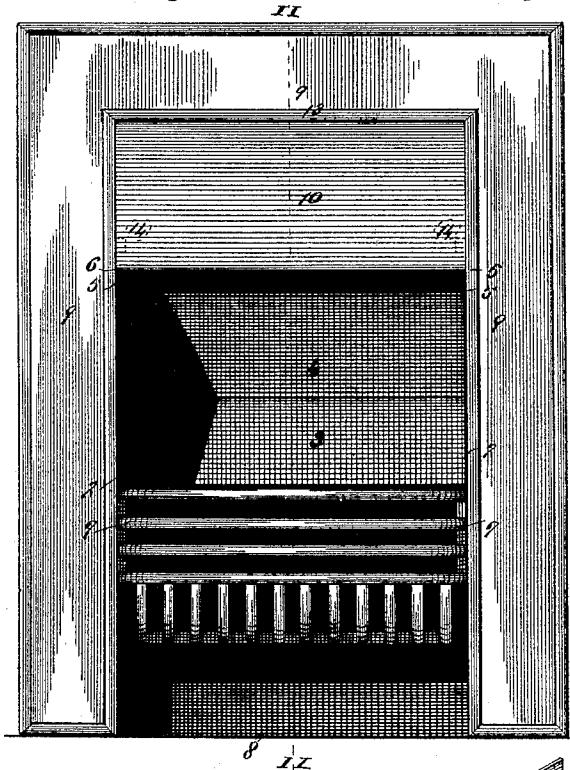


Fig. II.

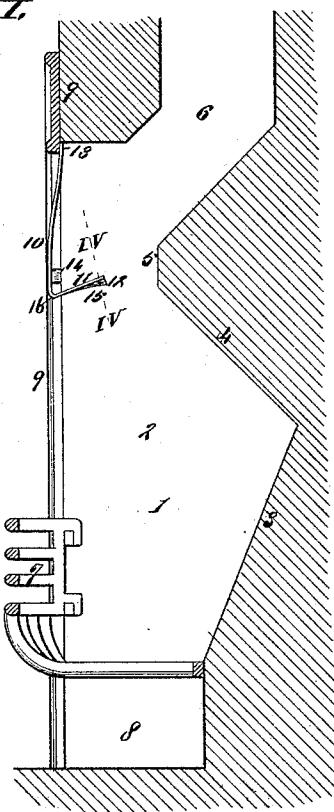


Fig. III.

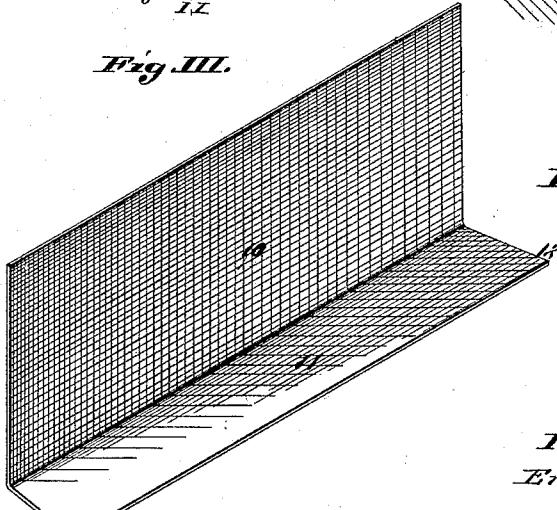
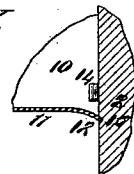


Fig. IV.



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UNITED STATES PATENT OFFICE.

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CENTER-DRAFT GRATE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 453,101, dated May 26, 1891.

Application filed November 3, 1890. Serial No. 370,096. (No model.)

To all whom it may concern:

Be it known that I, ERMON O. BARTHOLOMEW, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Center-Draft Grate Attachments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to devices for the direction of a center draft from the fire through the throat-entrance to the chimney for preventing the escape of smoke into the room and for the economic restraint of the 15 escape and loss of heat up the chimney; and the invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a front elevation of a grate with 20 my center-draft hood attached. Fig. II is a vertical section taken on line II II, Fig. I, and shows the location and means of attachment of the center-draft guide and smoke-arrester hood. Fig. III is an enlarged perspective 25 detached view of the hood; and Fig. IV is a detail vertical section taken on line IV IV, Fig. II, and shows the curved spring-tension of the angle-flange of the hood to the jamb, into which it is also slightly recessed.

30 Referring to the drawings, 1 represents the fire-place; 2, the jambs of said fire-place; 3, the back wall; 4, the coping; 5, the throat; 6, the chimney; 7, the grate; 8, the ash-pit, and 9 the inclosing or mantel frame.

35 10 represents the center-draft guide and smoke-arrester hood, 11 the inwardly-directed angle-flange of said hood, and 12 the projecting angle-points of said flanges.

13 represents the projecting pendent edges 40 of the surmounting mantel-frame, against the inside edge of which the upper edge of the hood 10 is seated or rests; 14, the lugs that project laterally from the vertical sections of said mantel-frame or from the jambs of the fire-place, against the front of which projecting 45 lugs the end edges of said hood rests; and 15, the recesses in the jambs, into which the projecting curved angle-points 12 of the flanges of the hood are sprung and maintain their 50 spring hold. The center-draft guide and smoke-arrester hood is preferably made of sheet-iron, but may be made of any other suit-

able material. Now it is well known that there are objections that housekeepers frequently and truthfully urge against the use of open grates or fire-places, although they are the most healthy means of heating the apartments of a house, for no house is or can be as well ventilated without the air of the aerated draft from open fire-places. First, a large proportion of the heat ascends the chimney and becomes the waste product of combustion; second, large volumes of smoke, especially in certain conditions of the weather and directions of the wind and especially during the ignition of the fire, sometimes emerge into the room instead of ascending the chimney; third, from the lack of a centralized and steady draft gases frequently escape into the room; fourth, with the usual open throat at the entrance to the chimney, when downward atmospheric currents prevail, the wind as it drives down the chimney has free play to puff out the smoke, soot, and ash into the room; and, fifth, the lack of a steady center draft causes the unequal combustion of the fuel in the grate.

I will now more specifically describe the construction of the most important element of my invention—namely, the center-draft guide and smoke-arrester hood 10, and its mode of attachment and functions, and describe the means by which the above-described objectionable features of the open grate, as usually constructed, may be obviated. The said hood 10 may be made out of sheet-iron or any other suitable incombustible material, and is bent at the angle line 16 and inclined upward, so as to provide an angle-flange 11, that will receive that portion of the ascending smoke and draft that carries it that has a tendency to escape into the room and control or centralize its movement to the throat proper at the entrance to the chimney. It will be seen that the said angle-flange 11 is cut or formed flaring toward the points 12, the advantages of which will be described with its means of attachment. The upper edge of said hood is seated against the inside of usually pendent projection 13 of the horizontal section of the mantel-frame, and near its angle turn 16 above the same the hood passes outside the lateral lugs 14, that project from the vertical side pieces of the mantel-frame or jambs and the

projecting angle points 12 are sprung in a curved direction downward, so as to enter readily into the slight recesses 15 in the jambs of the fire-place, and thus hold and spring-
 5 brace the said center-draft and smoke-arrester hood in its operative position. I do not confine myself to any exact depth of said hood 10, or width or inclination of said angle-flange 11, for it is evident that it may be ad-
 10 vantageously varied in accordance with the height of the chimney and the resultant rapidity of draft up the same without any departure from the essential features of the invention. Thus when the chimney is short
 15 and the draft consequently sluggish the hood may be made deeper, so as to still further reinforce the current and the angle-flange be bent more acutely; also, both said features of the hood may be varied to suit the fuel
 20 consumed in the grate, whether it be bituminous soft coal, hard coal, or wood.

Following up in order, as stated above, the five objections truthfully made against the use of open grates as they are usually constructed, I will now describe how my center-draft guide and smoke-arrester hood overcomes said difficulties, so as to afford the unobjectionable use of open fire-places or grates, which are the most healthy means of at the
 25 same time both heating and ventilating the apartments of houses. First, as the hood comes down beneath the throat at the entrance to the chimney and the angle-flange is inclined upward from its lower point 16 with
 30 an approximation of its upper edge with the projected point of the coping at the throat-entrance to the chimney, it is evident that but comparatively little waste products of combustion can ascend through the thus central-
 35 ized throat; second, as the hood incloses the upper portion of the front opening of the fire-place, and especially as it thus retains the forwardly-guided current induced by the forward inclination of the customary coping 4
 40 5 and turns and guides it up the chimney, it is thus prevented from puffing the smoke and soot out into the room; third, a centralized steady draft is continuously maintained by stopping its exhaust by closing the opening
 45 50 in the front of the fire-place above the throat-level and for a certain distance below the same and in the provision of an inclined upwardly-projected flange that guides the current into said throat; fourth, when down-
 55 ward atmospheric currents prevail, they cannot, when this device is used, have free play

to puff out smoke, soot, and ash into the room, for the hood is a buffer-stay against said adverse action of the wind, and the reduced centralized entrance to the throat is not so 60 expansive; but it is readily guarded and occupied by the ascending rarefied air from the fire in the grate, so that although downward currents may prevail in the atmosphere they meet with an effectual buffer-stay both with 65 said hood, its angle-flange, and the rapid centralized current through the reduced entrance to the throat; fifth, by the use of said hood and its angle-guide flange a steady center draft from the fire to the throat-entrance to 70 chimney is maintained, so as to cause a more equal combustion of the fuel in the grate; also, as the draft is both more regular and more rapid, there is a much more perfect combustion of the fuel, and as said draft pro- 75 vides a far more abundant supply of oxygen the carbon that would otherwise be carried off as waste products of combustion in the form of smoke is consumed, and thus pro- 80 vides a large amount of additional heat with a more cheerful fire, so that there is also less smoke to find vent for in the chimney, and it is utilized instead of being sent forth to pollute the atmosphere.

I claim as my invention—

1. In combination with a fire-grate, the approximately vertical hood 10, the upwardly-inclined angle-flange 11, and the curved projecting attachment-points 12 on said angle-flange, the said hood, angle-flange, and curved 90 points being arranged to be secured in the front upper open portion of the fire-place to improve the draft, arrest the smoke, and economize the heat, substantially as and for the purpose set forth. 95

2. In combination with a fire-grate, the hood 10, the upwardly-inclined angle-flange 11, the curved attachment-corners 12 of said flange, the pendent ledge 13 from the horizontal section of the mantel-frame, and the lugs 14, the 100 jambs of the fire-place being provided with recesses 15, the said hood, angle-flange, and the curved points of said angle-flange being secured by a spring-lock seat against said pendent ledge and lugs and in said recesses in the 105 jambs, substantially as and for the purpose set forth.

ERMON O. BARTHOLOMEW.

In presence of—

A. M. EBERSOLE,
BENJN. A. KNIGHT.