

D. CURLE.
Fire-Places.

No. 150,403.

Patented May 5, 1874.

Fig. 1.

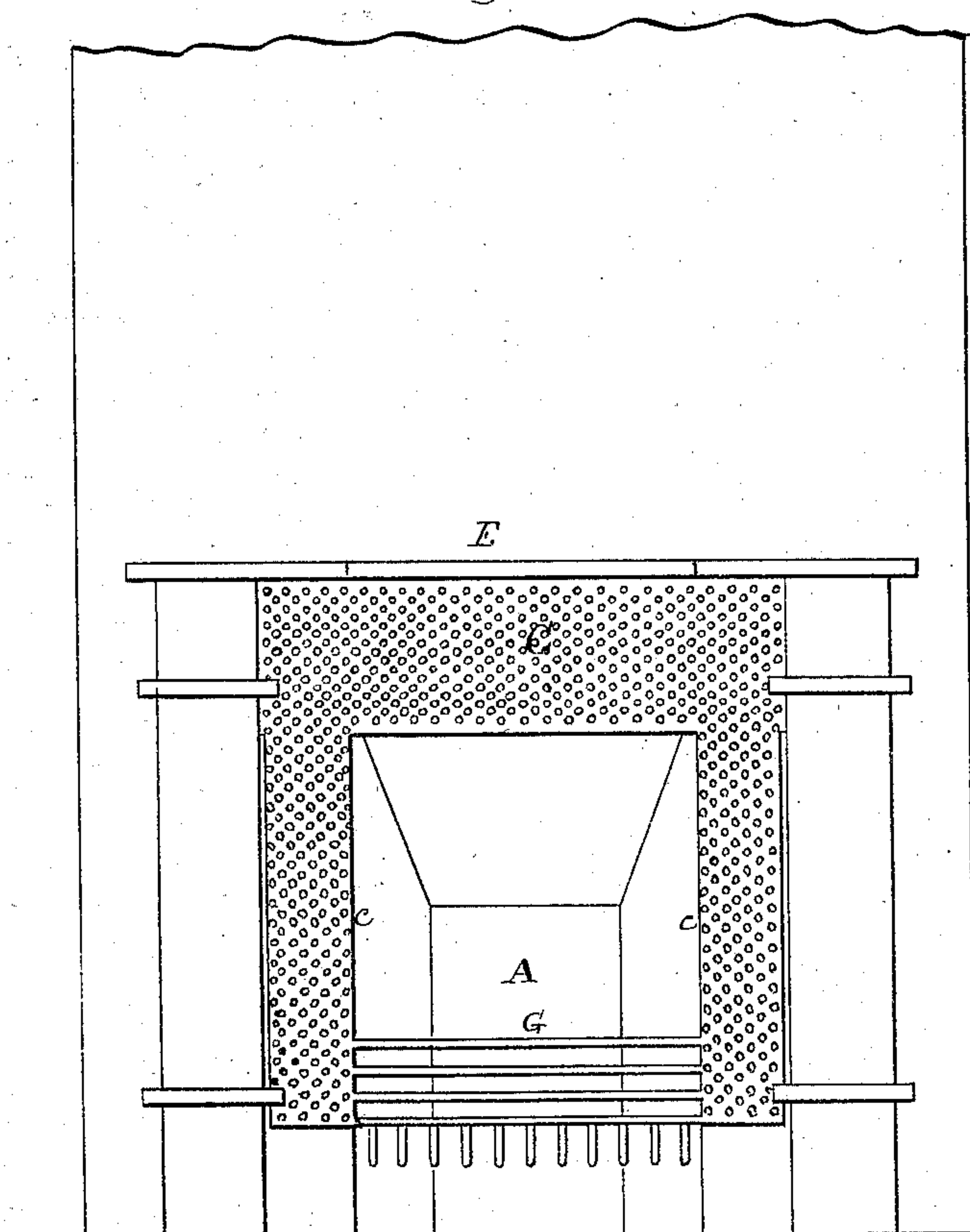


Fig. 2.

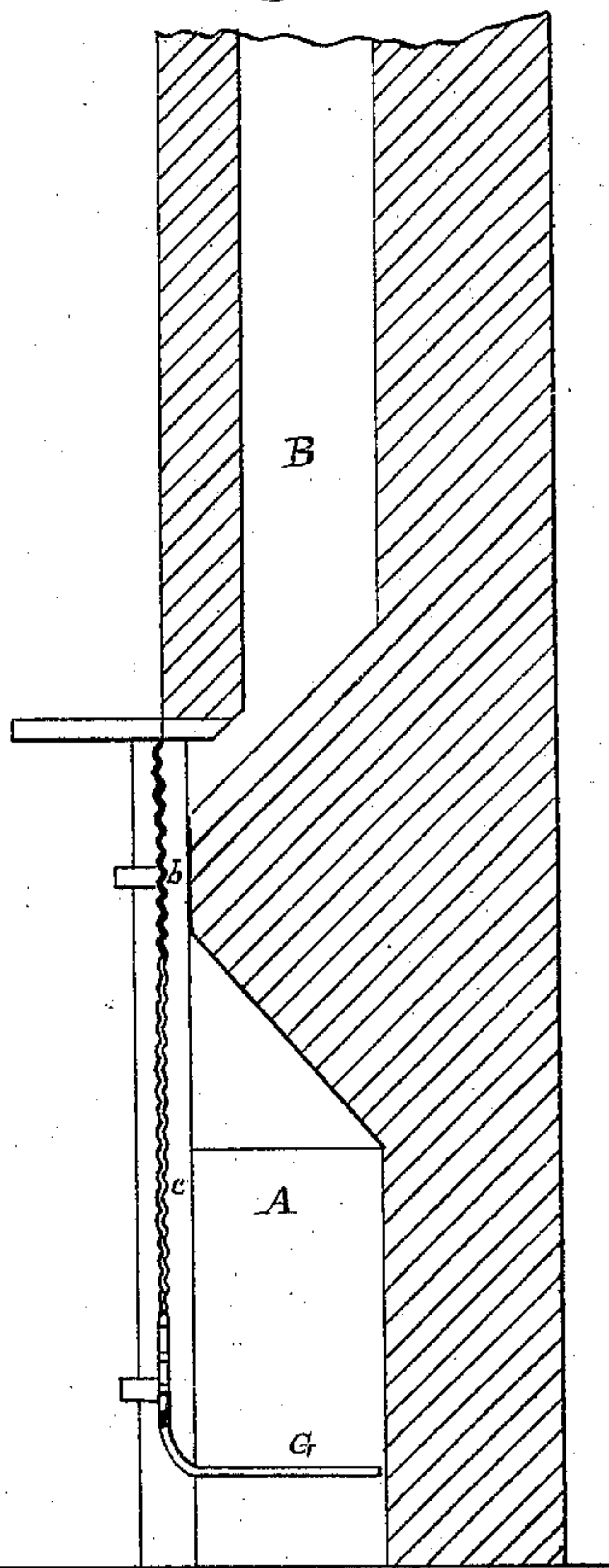


Fig. 3.



Witnessed.
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UNITED STATES PATENT OFFICE.

DUDLEY CURLE, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN FIRE-PLACES.

Specification forming part of Letters Patent No. **150,403**, dated May 5, 1874; application filed September 25, 1873.

To all whom it may concern:

Be it known that I, DUDLEY CURLE, of the city of Washington and District of Columbia, have invented certain Improvements for Warming Rooms, of which the following is a specification:

My invention consists, first, in an absorbing and radiating plate of peculiar construction, located above a fire-place, constituting the surface of a stove, or any desired portion thereof, to absorb and radiate into the room as large a proportion as possible of the caloric which usually passes off with the gaseous products of combustion; second, in connecting said absorbing and radiating plate with the fire-place grate, for the purpose of conducting off and radiating into the room a portion of the heat there generated, and thereby relieving the grate in some degree from excessive heat, and at the same time aiding to warm the room; third, in the combination of said absorbing and radiating plate with an improved fire-place and flue, as hereinafter described; fourth, in a tripartite mantel, as hereinafter described, in combination with said absorbing and radiating plate.

In the accompanying drawings, Figure 1 is a front view of a fire-place containing my invention; and Fig. 2 is a side sectional view of the same, showing a section of the flue; and Fig. 3 is an edge sectional view on an enlarged scale of the absorbing and radiating plate, the protuberances on one side being shown at *a a*, and the indentations on the reverse side at *i i*.

A is the fire-place, B the flue, *b* the throat of the flue, C the absorbing and radiating plate, and E the tripartite mantel, and G the fire-place grate. The absorbing and radiating plate is made of stout sheet or thin plate or cast metal, (copper by preference,) and both sides are made rough by numerous indentations on one side and corresponding pointed projections on the reverse side. These indentations and points should be quite small, and as near together as practicable, and the plate should be black or of some dark color.

When applied to a fire-place, the arch-bar should be placed as high up as the top of the mantel, and the absorbing and radiating plate is placed across the opening below said arch-

bar, extending down to the point usually occupied by it, thus forming the top of the fire-place opening and the front wall of the throat of the flue. I prefer to make this plate with two legs, *c c*, of the same material, and roughened in the same manner, extending down on each side of the fire-place to the grate, and connected therewith. The back of the fire-place, from a point a little above the grate, should incline forward, so as to form an obtuse angle of one hundred and thirty-five to one hundred and forty-five degrees, or thereabout, and the side jambs should be made flaring from back to front by a similar angle, so that the rays of heat reflected from said back and sides will, by a well-known law of reflection, be thrown into the room. An angle of one hundred and thirty-five degrees will effect this object most perfectly, but a somewhat more obtuse angle may be desirable for other reasons, and may be adopted without serious detriment. The back continues up on this incline to a point a little above the lower edge of said radiating-plate C and until it comes within, say, about an inch and a half of said plate, or, at all events, as near it as practicable without impairing the draft. Thence it rises vertically, parallel to the radiating-plate, a short distance, leaving a narrow or thin space, *b*, between it and the plate, constituting the throat of the flue. It then recedes back by an angle similar to that below till it reaches a point vertically above the base of the fire-place back, and thence rises vertically to the top of the building, forming a large rectangular flue of uniform size and shape. At the lower edge of the radiating-plate the space between it and the inclined back wall should be two or three inches, on a horizontal line. The throat of the flue should be the full width of the fire-place, but as thin or shallow as practicable, consistently with a good draft, so as to bring all the ascending heat as near as possible to the absorbing and radiating plate, it being a well-known law that the power or capacity of any body to absorb heat is in the inverse ratio of the square of the distances from the source. Hence the plate C will absorb four times as much heat at the distance of one inch from the ascending current as at the distance of two inches, and nine times as much as at the

distance of three inches, and so on. By extending the legs *c c* of said absorbing and radiating plate down on each side of the fire-place, and connecting them with the grate, they will absorb some portion of the heat generated there and radiate the same into the room, and at the same time relieve the grate in some degree of excessive heat, which tends to burn it out. I prefer sometimes to use in connection with said absorbing and radiating plate, a tripartite mantel, the central portion of which is made of metal, and comes in contact with said absorbing and radiating plate, while the end portions are of wood, marble, or some other material which does not readily absorb heat, and does not come in contact with said plate. These end portions may be slightly separated from the central portion, or some non-conducting substance may be interposed between them. In cold weather, when a brisk fire is kept up in the grate, the central part of the mantel may thus be kept so hot that dishes of food set thereon will be kept at a suitable temperature for the table, while the end portions will remain comparatively cool.

I am aware that surfaces with numerous projecting points have been used for radiating heat imparted by hot water and steam, and I do not claim my absorbing and radiating plate in any such connection or combination; but

What I do claim, and desire to secure by Letters Patent, is—

1. In combination with a fire-place, stove, or furnace, an absorbing and radiating plate, roughened by indentations and pointed projections, as described, for absorbing and radiating into a room the rays of heat emanating directly from combustion, substantially as set forth.

2. In combination with an absorbing and radiating plate, roughened by indentations and pointed projections and placed above a fire-place, as described, legs of the same material and construction, extending down to the grate and connecting therewith, substantially as and for the purpose described.

3. Said absorbing and radiating plate, roughened by indentations and pointed projections, as described, in combination with the peculiarly-constructed chimney-throat, herein described, arranged therewith, substantially as set forth.

4. In combination with said roughened absorbing and radiating plate, located above a fire-place and in front of the throat of the flue, as described, a tripartite mantel, the central part being made of metal and the end portions of wood or marble, or some other material which does not as readily absorb heat, substantially as described.

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