

C. DODGE.
Fireplace.

No. 14,447.

Patented March 18, 1856.

Fig. 2.

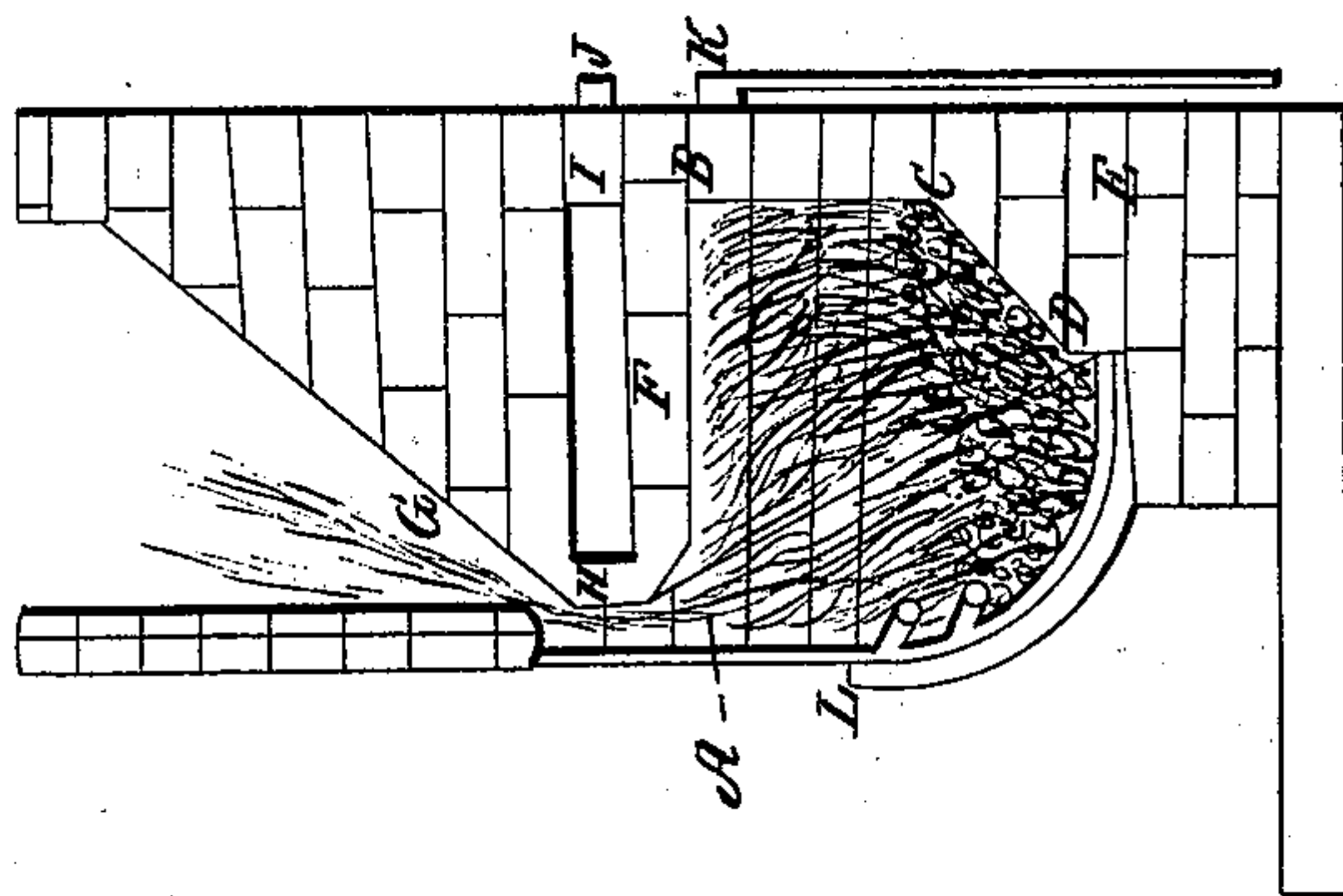
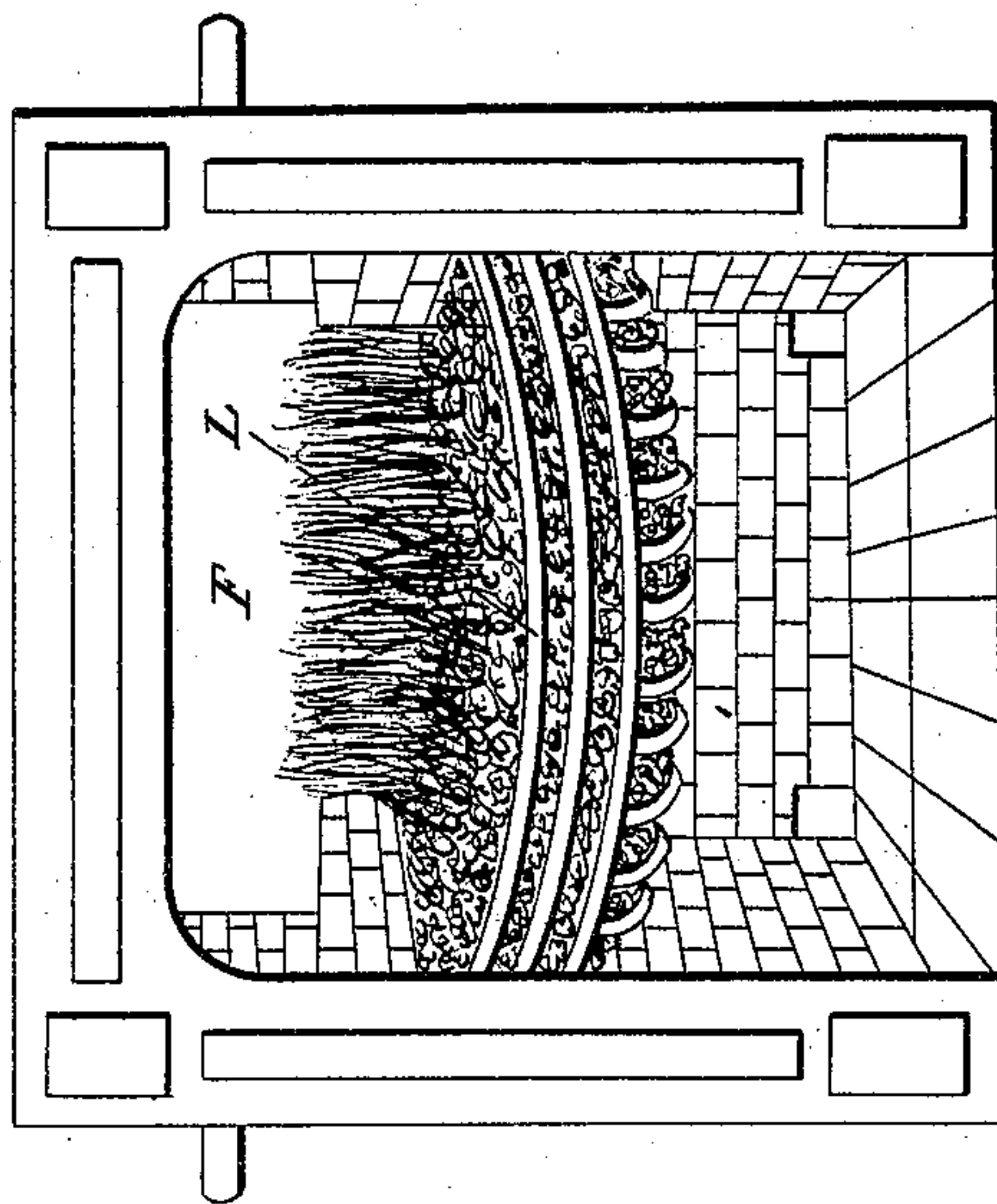


Fig. 1.



UNITED STATES PATENT OFFICE.

CALVIN DODGE, OF PITTSBURGH, PENNSYLVANIA.

FIREPLACE.

Specification forming part of Letters Patent No. 14,447, dated March 18, 1856; Reissued July 23, 1867, No. 2,698.

To all whom it may concern:

Be it known that I, CALVIN DODGE, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Mode of Constructing Open Fireplaces; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing, forming part of this specification, in which—

Figure 1, is a front view of a fire place constructed according to my improved plan. Fig. 2, is a transverse sectional elevation thereof.

In open fire places as ordinarily constructed, a great waste of heat, and consequently of fuel, arises from the fact that a large proportion of the heat of the fire passes up the chimney and is lost, and that the smoke and gas which contain a large proportion of the combustible portion of the coal, instead of being burned and emitting a great amount of heat, also passes up the chimney. In addition to this waste the ordinary construction of fire places creates a great draft or current of cold air through the room toward the fire and up the chimney, so that the radiation of heat into the room is in a great measure checked. My invention is designed to remedy all these evils by suppressing the draft of cold air through the room, consuming a great portion of the smoke and gas, thus producing large bodies of flame, and by deflecting into the room a great quantity of heat, which instead of being drawn back again by meeting a current of cold air, is diffused through the apartment.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

My improvement may be applied to open fire places of any usual shape not requiring any alteration in the grate itself.

In the drawing, Fig. 2, L is the basket of the grate.

D is the base of the back wall as ordinarily constructed.

G is the throat of the chimney.

The line A—D, represents the face of the back wall of a fire place, built on the Rumford principle, as now generally in use, only that the throat G, being narrower the slope is rather greater than usually adopted. Instead of sloping the wall thus from D to A, I slope it backward from D, to a point

nearly level with L, the top of the fire basket or carry it back horizontally on a level a little above the bottom of the ordinary fire basket of the grate, making the recess extend from 6 to 18 inches back from the point A. This recess or fire chamber is not formed by an extension of the bars of the fire basket backward, as it is important that no air should enter this recess from below, which would create a draft and produce too rapid a combustion of the fuel. From C to B, the back wall is perpendicular, the point B being so little above the fire basket L, that the flames and smoke of the fire will play against the covering F, which may be of fire brick or iron, (the former being preferred). This covering F, projects horizontally, or arched over the recess and fire basket, to within from two to three inches of the outer line of the throat of the chimney, and is made of any shape which will catch the flame and smoke and give it a downward tendency; the wall is then built perpendicularly, or slightly inclining forward, until the throat of the chimney is confined to a width at G of from $\frac{3}{4}$ inch to 3 inches as the natural draft of the flue may require, this perpendicular wall presenting a considerable blank surface below the throat of the chimney, and within a few inches of the front of the grate, before which the flame must pass on its way to the chimney. If desired a flue for heated air may be placed above the covering F, at I, which may be conducted by pipes into the same or an adjoining room, but this I do not claim as new, and it does not form a necessary part of my invention. An aperture K, in the back wall just below the level of the covering F, may be made to admit a current of oxygen to aid in the combustion of the smoke and gas generated in the fire recess, but is not necessary. This is in its simplest form my improvement, and it is found in experience fully to accomplish the ends sought to be attained.

When there is fire in the grate, and it is desired to add more fuel, the coal in the recess which is in a great measure converted into coke, is drawn forward into the basket of the grate, and the fresh coal or slack thrown back into the recess. The gas, smoke and flame emitted by this fresh coal, strikes against the covering F, which is very hot, and reverberating against it is thrown forward and in a great measure consumed by

the hot fire in front. The fuel in the recess being entirely out of the reach of the draft consumes slowly but as there is no chimney immediately above it to carry off all the heat, that passes forward and is deflected by the covering F, downward into the room. The flame having no other exit passes slowly forward and then is carried up the chimney, as near as possible to the front of the fire place, so as to throw the greatest possible portion of its heat into the room. Care must be taken to have the covering F, low enough for the flame to reverberate against it, as it covers the fire, and the flame plays against it; it should therefore be raised from 4 to 7 inches above the top bar of the fire basket L.

The practical test of this mode of construction has proved it, in all the many instances in which it has been tried, to be extremely advantageous, and to accomplish all that I have stated. In its construction it is entirely independent of the shape, size or kind of grate used in any open fire place, and may be applied to any open fire place without altering or removing the grate or mantel. It is also entirely dissimilar in its construction and operation from any arrangement of dampers or curves such as

heretofore been attempted to be used for suppressing the draft at the expense of deadening the fire and often causing the chimney to smoke.

I do not claim the contracting the vent or throat of the chimney, as that is well known as a device, but

What I do claim as my invention and desire to secure by Letters Patent is—

The use of a deep recess or fire chamber, placed back of the fire basket of the grate, and out of the reach of the draft, in combination with the horizontal covering over the recess and fire basket, extending down below the mouth of the chimney, constructed and arranged substantially as hereinbefore described; for the purpose of consuming the smoke, and causing the ignition of the gas which would otherwise be lost, and thus increasing the amount of heat thrown into the room, and, by the slow combustion of the fire, effecting a great saving of fuel.

In testimony whereof I have hereunto set my hand this nineteenth day of February A. D. 1856.

CALVIN DODGE.

Witnesses:

WM. N. HOWARD,
BENJ. P. BAKEWELL.