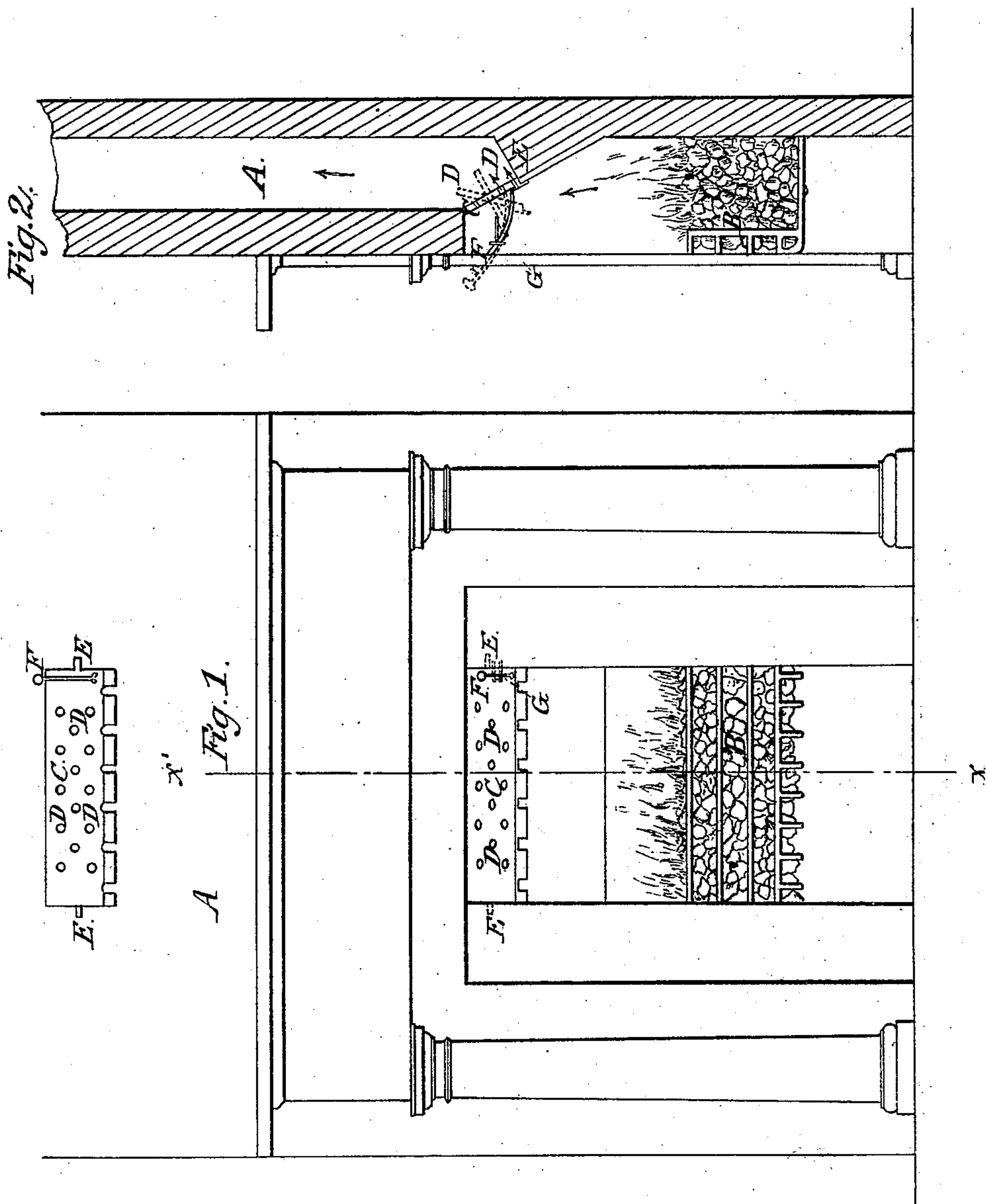


J. COHEN.  
 Damper.

No. 14,650.

Patented April 15, 1856.



# UNITED STATES PATENT OFFICE.

JACOB COHEN, OF NEW YORK, N. Y.

## ARRANGEMENT OF GRATES AND DAMPERS FOR CHIMNEYS.

Specification of Letters Patent No. 14,650, dated April 15, 1856.

*To all whom it may concern:*

Be it known that I, JACOB COHEN, of the city, county, and State of New York, have invented certain new and useful Improvements in Arrangement of Dampers and Grates in Chimneys; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which like letters refer to like parts in the different figures, and in which—

Figure 1, is a front elevation of a chimney having my invention applied to it, and Fig. 2, a vertical central section of the same through the line *x, x*, of Fig. 1.

My improvements are specially designed for the rooms of dwellings and offices where anthracite coal is the fuel used in open grates. In the use of this coal it is very well known that a large quantity of noxious gases are liberated and that it is very difficult to so construct any open grate that while sufficient space in the throat of the chimney shall be allowed for the escape of the gases in the early part of the combustion of the coal, or in other words while the coal is being ignited, that at a later period, when the fuel is fully ignited and the noxious gases liberated are less, or less likely to escape into the room, the space open to the chimney for the escape of the products of combustion may be regulated to prevent the too free escape of the heat, and at the same time provide for the purity of the air of the room.

In arranging grates for the consumption of anthracite coal the questions of economy in the use of fuel and the effects of impure air upon the human system are necessarily very studiously regarded, and in so regarding them the only improvement that has ever been made upon the point named in the former paragraph, viz: the regulating of the escape space or opening into the chimney, is that of the plain slab damper of one or two pieces resting upon the upper part of the work back of the grate, the damper sometimes being then hinged but more commonly only lying loose on its edge upon the upper surface referred to. It will readily be seen that a damper thus hinged or resting is capable only of a single degree of adjustment, that is, either of being entirely down, or entirely up, and even if so arranged that it may be held at points between these two

positions. What is of still greater moment its capacity of adjustment is limited to the lower space or area of the throat of the chimney only, the upper area or space of the throat being always that through which the products of combustion will pass, whether the damper be up or down, and the only difference therefore as to the space left for the escape of the products of combustion will be, that when the damper is up the upper edge of the damper is the lower boundary of the escape passage, and when the damper is down the upper edge of the back brick work, or back soap stone or other plate, minus the thickness of the damper, will constitute the lower boundary of the escape passage. From these statements it will readily be seen that the escape passage to the chimney has only heretofore been made adjustable or subject to temporary change upon its lower portion. No attempts have ever been made, before these made by me to so arrange the damper in relation to the grate and chimney, as to render the upper portion of the escape passage also the subject of adjustment. This arrangement which so fully and successfully fulfils all the requirements of an open grate, for burning anthracite coal are indicated in the two figures of the drawings, where—

A, represents the chimney, B, the grate, C, the damper, D, D, the perforations in the damper, E, the axis of the damper; F, the damper rod; G a pin for the holding the rod. The different positions in which the damper will ordinarily be adjusted being indicated by the colored marks, the black indicating the entire shutting of the damper; the blue the equal dividing of the space, and the red the like dividing of the space at a different angle. When the damper occupies the position shown in black, the draft will be entirely shut off, excepting through the perforations D, D, of it; when it occupies the position shown in red, the draft will be partially shut off, and when it stands as shown in blue, the full draft will be admitted to the fire.

It will be noticed on examining the drawing, that the front of the grate is in a line with the front of the chimney, that the damper is placed with its point of suspension centrally between the front part of the flue of the chimney and the upper end or edge of forward inclined back of the grate in the line of the inclined back, and that the



lower part of the flue is on a line parallel to that of the damper when it lies as indicated by the blue coloring.

5 This arrangement of the damper affords certain facilities for giving direction to the current of gases from the fuel and to the air from the room, which cannot be obtained from any other arrangement, and permits the damper to be so used that the  
10 escaping space may readily be divided, and constitute two distinct currents, the one being that of the products of combustion and the other that of the air from the room, and of so varying the one or the other of  
15 these two spaces as may be found necessary to give free vent or to obstruct the escape of the air or the products of combustion and to regulate the draft and the ventilation to that nice degree due to the varying conditions of the fuel, changes in weather, etc.,  
20 as they may arise.

I am aware that dampers are of common use, in smoke stacks to furnaces, steam boilers and stoves, suspended centrally so that

they may entirely cut off the escape passage 25 or limit that passage equally in both sides of the damper, and I do not, therefore claim the centrally suspended damper. I am also aware that dampers are in common use in chimneys where grates for burning anthra- 30 cite and other coals are used, such dampers being united however to the closing of one portion of the escape passage or diminishing only the half of that passage, and I do not, therefore, claim arranging dampers in 35 chimneys where grates are used; but

What I do claim as of my invention and desire to have secured to me by Letters Patent is—

The arrangement of the centrally sus- 40 pended damper in relation to the grate and the surfaces of the escape passage into the chimney as herein set forth.

JACOB COHEN.

Witnesses:

WICKLIFF G. BROADWELL,  
WM. H. BROWNE.