

M. A. Cushing's

117053

PATENTED JUL 18 1871

fig. 1

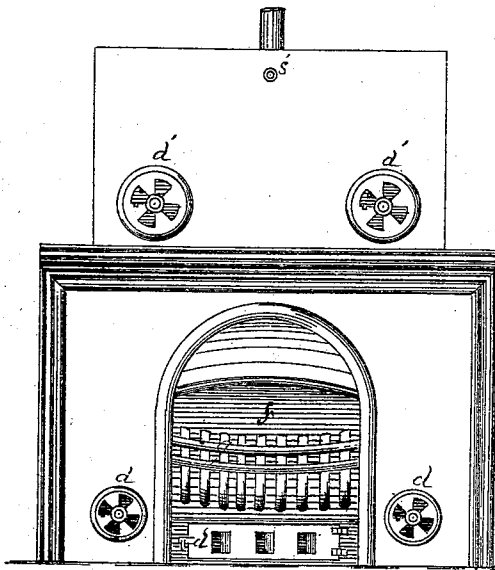


fig. 2

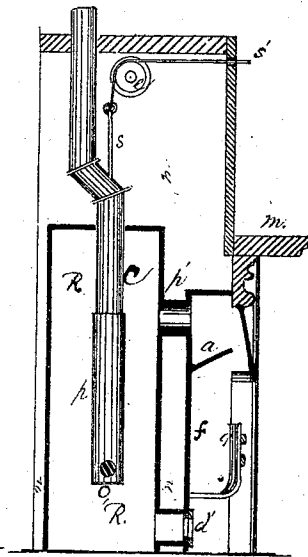
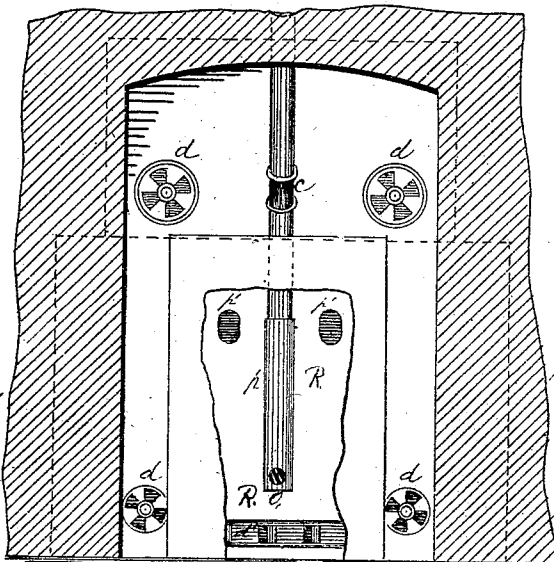


fig. 3



Witnesses:

Saml. Tiffany
Gro. W. Wilber

Inventor:

Mark Anthony Cushing

UNITED STATES PATENT OFFICE.

MARK ANTHONY CUSHING, OF AURORA, ILLINOIS.

IMPROVEMENT IN FIRE-PLACES.

Specification forming part of Letters Patent No. 117,053, dated July 18, 1871.

To all whom it may concern:

Be it known that I, MARK ANTHONY CUSHING, of Aurora, Kane county and State of Illinois, have invented a new and useful Improvement in Stoves and Open Grates for warming purposes; and I hereby declare the following to be a full and accurate description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, and forming a part of this specification, the same letters representing the same part of the improvement.

My improvement has for its object the application of the principles of my hot-air furnace as applied and patented by me on the 6th day of July, 1869, to open stoves and fire-place grates, so arranged as to combine my radiator with an open stove or grate suited to the use of bituminous and other soft coal, consuming the smoke and gases arising during the combustion of the same.

In the accompanying drawing, Figure 1 is a front view of a grate and mantel-piece, in which is included my said improvement; and Fig. 2 is a sectional view of the same, showing the several parts of the improvement. Fig. 2 is a representation of the relative position of the several elements in combination, constituting my said improvement. In said figure *g* represents the position of the front part of the grate; *f*, the fire-place or position of the fuel to be consumed; *a*, the position of the diaphragm over the incandescent coal, to reflect the heat upon the surface of the coal, thereby intensifying the same at that point, with a view of producing a more perfect combustion of the smoke and gases arising therefrom. This diaphragm also checks the otherwise rapid escape of the gases and smoke from the surface of the burning fuel, retaining them longer in contact with the burning fuel, and thus favoring their consumption by the increased heat. Fig. 2 also represents the position of my radiator *R R*, connected with the combustion-chamber above the diaphragm by means of the pipe *p'*, within which radiator is represented my adjustable escape-pipe *p*. The escape-pipe is so arranged as to slide up and down upon the pipe *C* so as to vary the point of escape *O* at pleasure. By depressing the escape-pipe *p* until the part *o*

is the bottom of the radiator, the smoke, gases, and other products of combustion can only escape through the opening at the side and near the bottom of said pipe. By elevating the pipe *p*, which is done by means of force applied to the cord, wire, or chain *s'* acting over the pulley *e*, the point of escape for the products of combustion entering the generator is brought nearer to the point of ingress, tending to produce a direct draught. In Fig. 1 the front view of the grate, mantel-piece, and chimney-breast shows the position of the dampers *d d* for admitting cold air to the chamber surrounding the radiator *n n n*, and also the position of the cord, wire, or chain for raising up or depressing the movable flue-pipe *p* and *d' d'* for letting out the heated air. Fig. 3 is a view presented by a vertical section taken longitudinally, showing a portion of the chamber of the radiator and the adjustable flue-pipe *p*, the opening therein at *o*, the registers leading into the chamber surrounding the radiator *d d* and *d' d'*, and the registers leading into the chamber within the radiator at *d''*.

The features peculiar to this improvement are the open grate or fire-place with the fixed diaphragm *a*, in combination with my radiator *R R*, containing the adjustable escape or exit-flue pipe *p*, and may be briefly described as a device for extending my improvements in hot-air furnaces, patented in 1869, to fire-places and open-grated stoves.

Having thus fully described my said improvement in open stoves and fire-place grates, I will proceed to set forth the nature and extent of my claim.

I claim—

1. The combination of my radiator and adjustable exit-flue pipe with an open-grated stove or fire-place, in the manner substantially as described, and with or without the fixed diaphragm *a*.

2. The fixed diaphragm *a*, in combination with the fire-place and radiator *R* and the adjustable exit-flue pipe *p*, substantially as described.

MARK ANTHONY CUSHING.

Witnesses:

JOEL TIFFANY,
GEO. W. WILBER.