

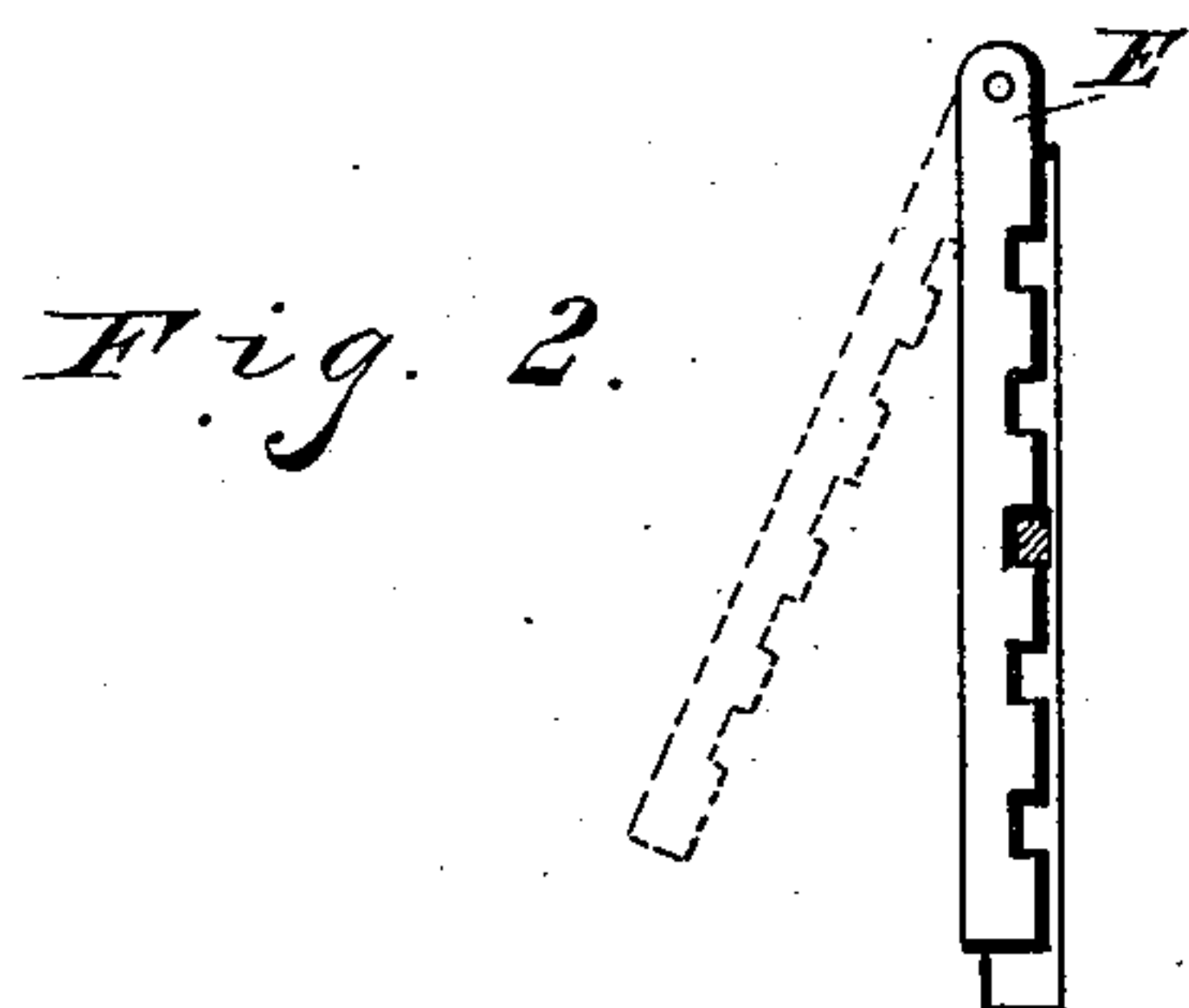
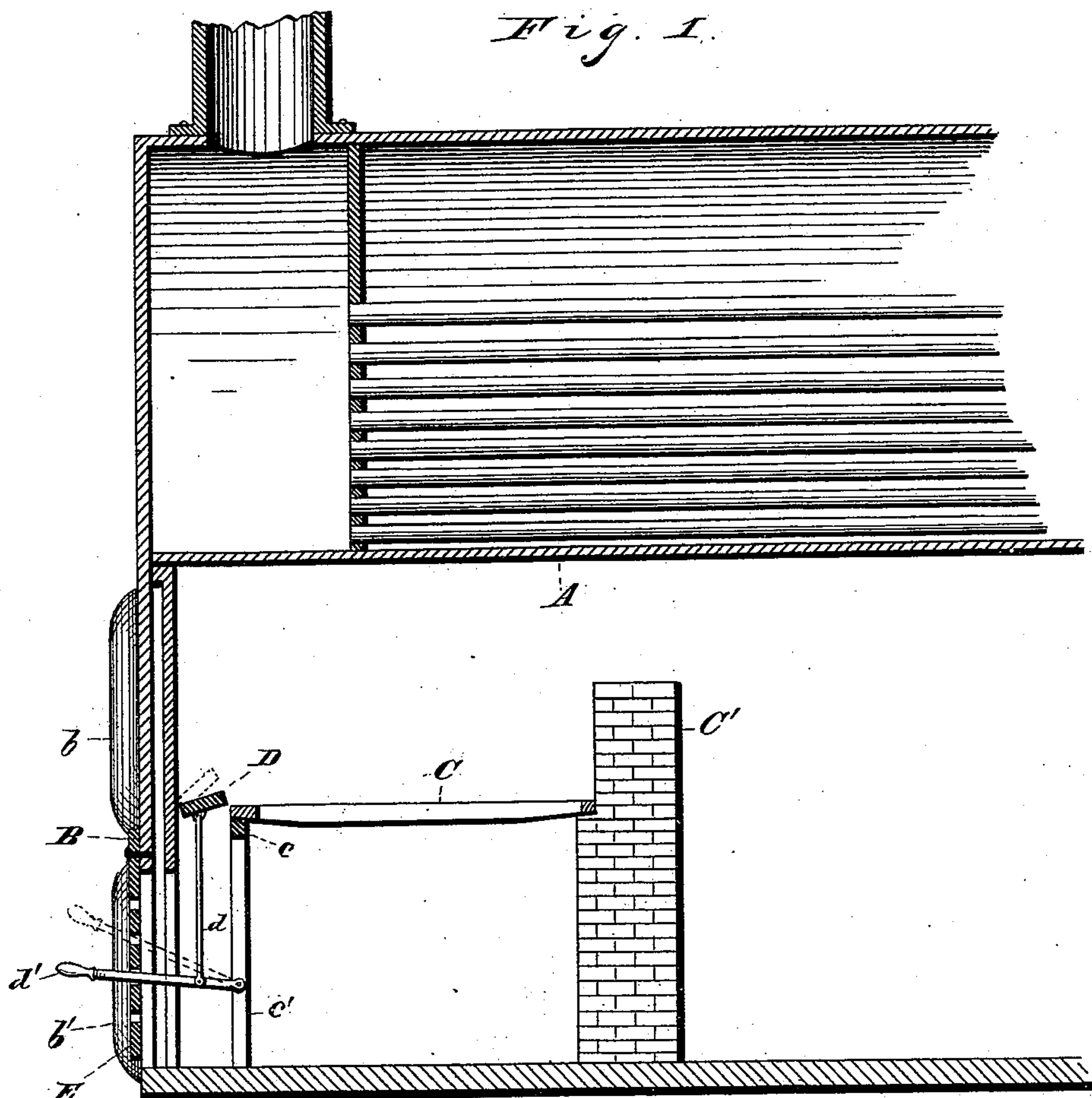
(No Model.)

F. WHITEHEAD.

# DAMPER FOR SMOKE CONSUMING FURNACES.

No. 308,224.

Patented Nov. 18, 1884.



WITNESSES

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FREDERICK WHITEHEAD, OF CLEVELAND, OHIO.

## DAMPER FOR SMOKE-CONSUMING FURNACES.

SPECIFICATION forming part of Letters Patent No. 308,224, dated November 18, 1884.

Application filed October 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK WHITEHEAD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Dampers for Smoke-Consuming Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to smoke-consumers, and more especially to improvements in mechanism for admitting air into a furnace, so that it will pass over the fire and unite with the escaping gases and render them combustible; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claim.

It is well known that when bituminous coal is used in furnaces the smoke that passes off so freely into the air and is so objectionable in cities is an important part of the fuel, and when combined with a suitable quantity of air the mixture becomes highly combustible and the combustion thereof produces intense heat.

My invention consists in the arrangement of a damper or plate in front of the furnace-grate and mechanism for operating the same, whereby a current of air and in the desired quantity may be passed over the fire and united with the escaping gases, so that the commingled air and gases will be burned.

In the drawings, Figure 1 is a side elevation, partly in section, of a steam-boiler, furnace-grates, and setting, and shows also an end view of my improved damper and the mechanism for operating the same. Fig. 2 is an elevation, in detail, of a pivoted and notched bar, that secures in the desired position the lever that actuates the damper.

A represents a steam-boiler; B, the furnace-front, provided with the furnace-door *b* and the ash-pit door *b'* in the usual manner.

C represents the furnace-grates, and C' the bridge-wall, and *c* a cross-bar supporting the front end of the grates.

D is the damper, preferably hinged to the fire-front and operated from below by the rod *d*, that is attached, as shown, to the lever *d'*. This lever is pivoted to the part C', preferably

by a post supporting the cross-bar *c*, and extends through a vertical slot in the furnace-front. Above this slot is pivotally attached to the furnace-front the bar E, that is provided with notches for engaging the lever *d'* and holding it in the desired position. This bar E may be swung back on its pivotal point, as shown in dotted lines in Fig. 2, so as to disengage the lever *d'*, and when in this position the said lever may be raised or lowered, as may be required, to open or close the damper D.

When the bar E is allowed to return to its vertical position and engage the lever with one of its notches, the lever and attachments will be securely held until another adjustment is required.

By this arrangement of parts the damper or plate D may be controlled at the pleasure of the operator, and so as to admit the proper quantity of air that, by mingling with the escaping gases, will render them combustible; also, the manner in which the damper or plate D is made to open, by raising the back edge, guides the current of air in the proper direction to pass over the fire and commingle with the escaping gases.

In operating the furnace the coals that are fully ignited should be pushed to the back part of the grate and the fresh coals laid on the front part and allowed to coke. By this means the gases escaping from the coal in the process of coking are commingled with the air admitted through the damper D, as aforesaid, and passing over hot fire behind may be entirely consumed.

The damper D may be opened wide, forming a convenient passage-way, through which to discharge the clinkers into the ash-pit.

I do not limit myself to the construction here shown, as the parts might be modified in many ways to accomplish the same end. For instance, the damper might be pivoted on the ends instead of hinged to the front, and the attachments for actuating the damper might be modified in various ways, as may be necessary, to accommodate the other fixtures of the furnace.

What I claim is—

In combination with a suitable furnace and a damper situated between the grate and fur-



nace-front, and adapted to open upward for the purpose of directing the air over the burning fuel, of a rod depending from the damper, a lever connected to the lower end of the rod, and the notched bar pivoted to the furnace-front and adapted to hold the lever in its several adjustments, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 18th day of October, 1883.

FREDERICK WHITEHEAD.

Witnesses:

CHAS. H. DORER,  
ALBERT E. LYNCH.