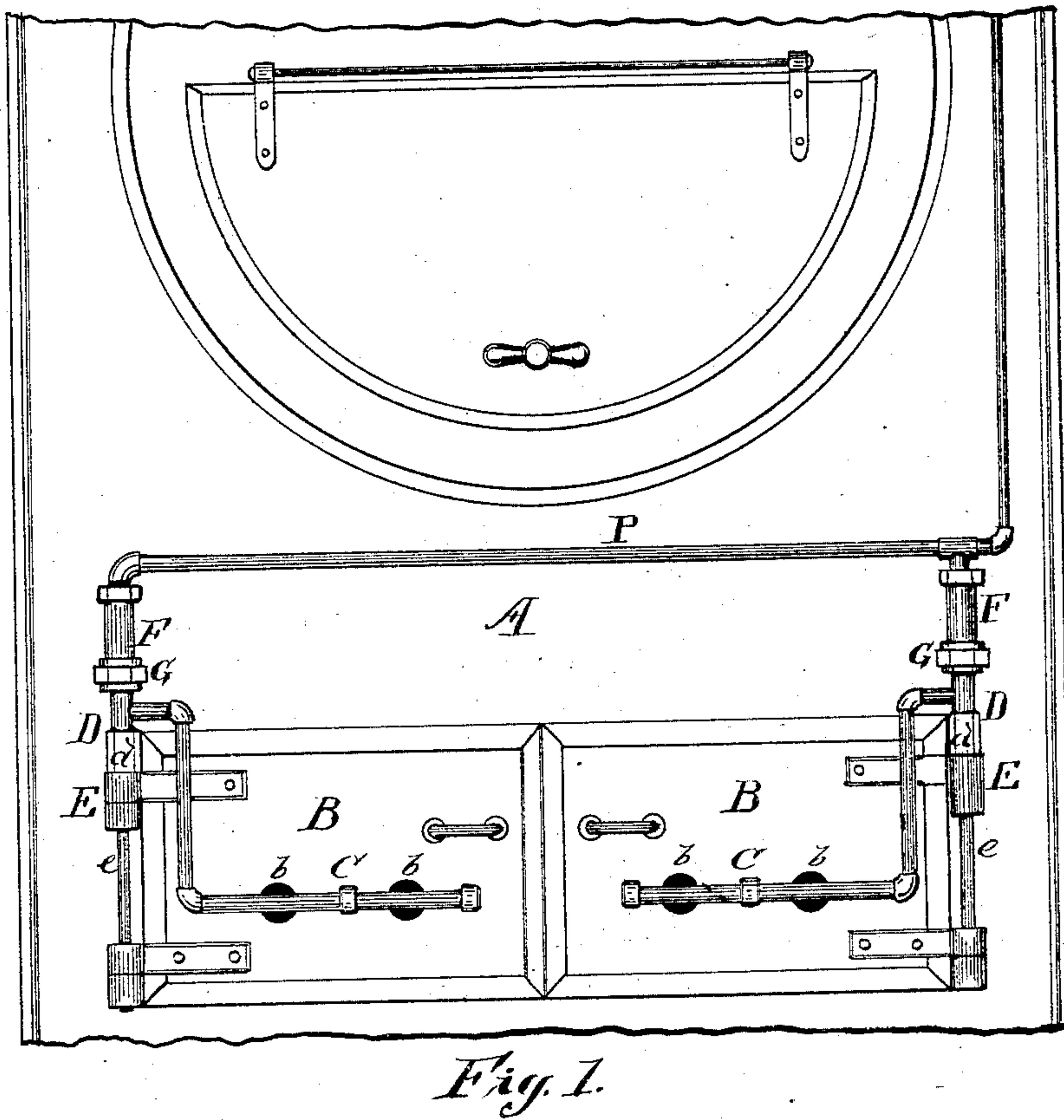
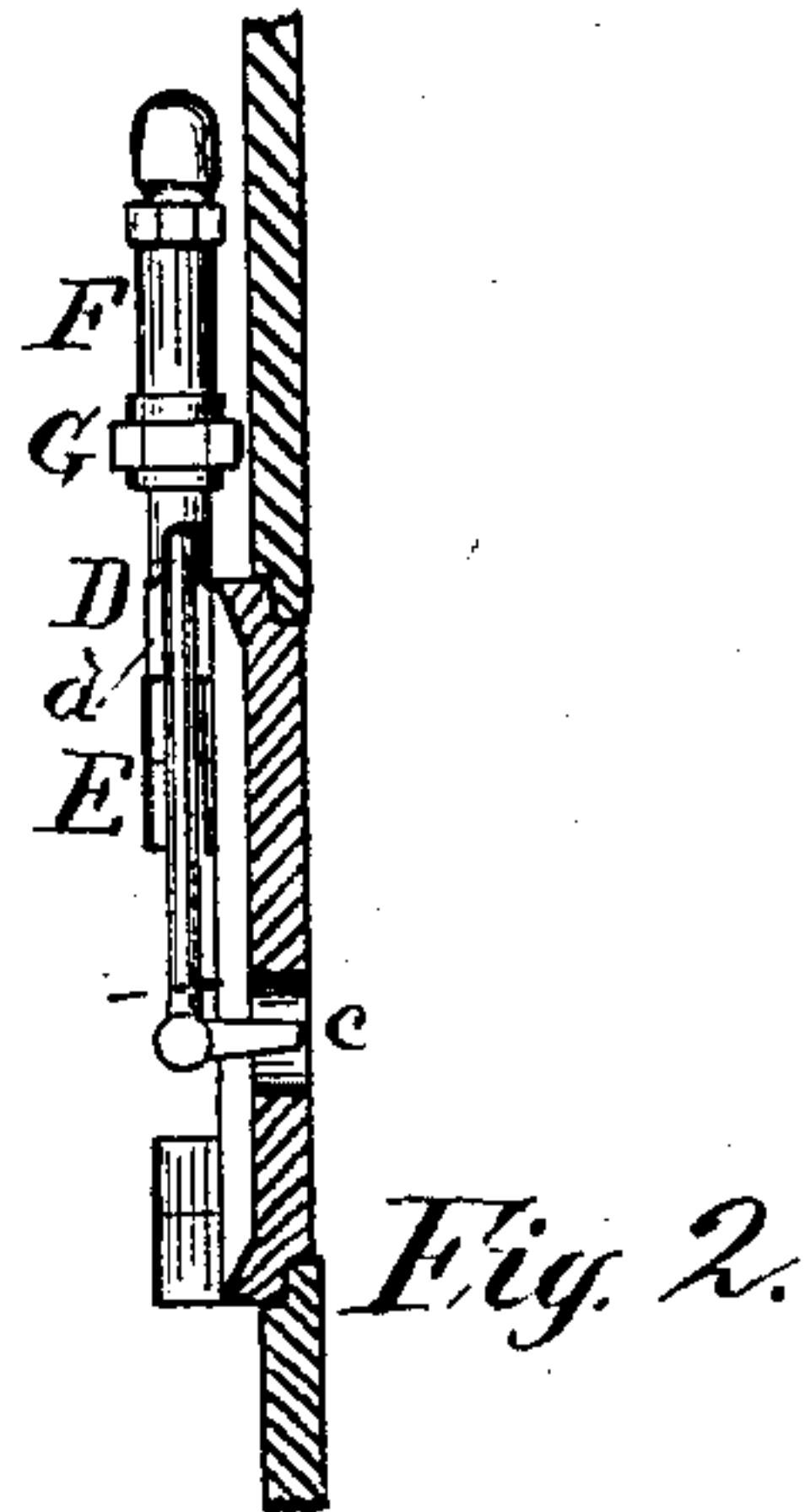
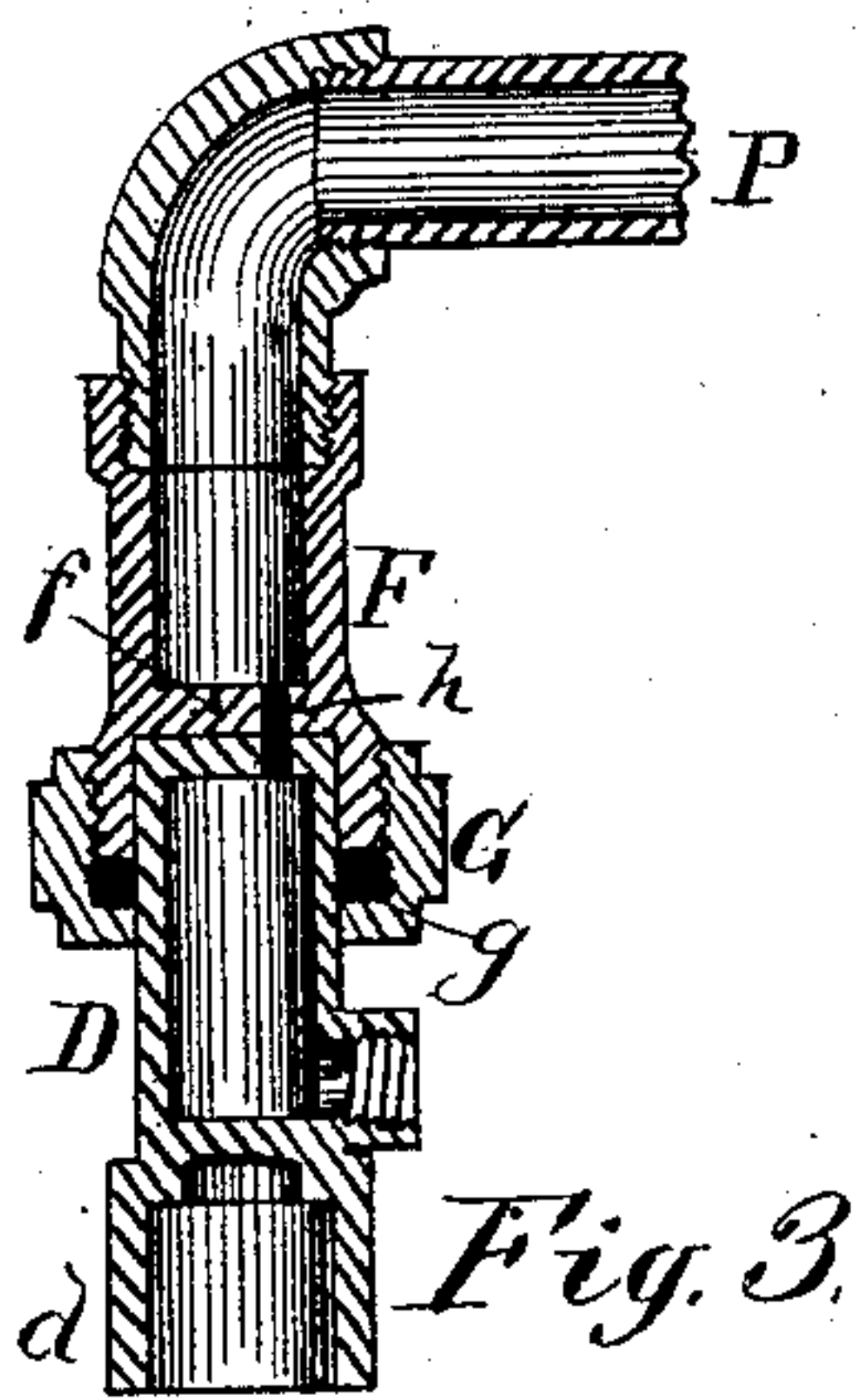


(No Model.)

A. T. KINNEY.
SMOKE CONSUMING FURNACE.

No. 315,145.

Patented Apr. 7, 1885.



WITNESSES:

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ADELBERT T. KINNEY, OF CLEVELAND, OHIO.

SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 315,145, dated April 7, 1885.

Application filed November 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT T. KINNEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Smoke-Consuming Furnaces, of which the following is a specification.

This invention has for its object to consume all the products of combustion in fuel-burning furnaces by the proper and judicious introduction of atmospheric air into the furnace. This I accomplish with steam-jets through holes or openings in the doors in such a manner that the air mingles with the smoke and gases at the very point where said gases are first generated.

My invention consists of pipes having steam-jet nipples, in combination with holes made in the furnace-doors, so arranged that the air is injected into the fire in the lower forward part of the smoke and gases as they are eliminated from the burning fuel. Said pipes are secured to the doors, so that they may turn with them as said doors are opened for the purpose of putting in fuel or otherwise. The connection of said pipes at the hinge-joints of the doors with the steam-pipe leading from the boiler is of peculiar construction, being such that whenever the doors are thrown open the steam is shut off, and then when the doors are again closed the steam is again turned on, so that when the doors are open there shall be no escaping steam to go to waste or endanger the fireman. This said joint-connection is located in line with the door-hinges, and operates in conjunction therewith.

In the accompanying drawings, Figure 1 is a front elevation of a steam-boiler furnace having my invention attached. Fig. 2 is a vertical section of a furnace-door, showing the said pipes with their nipples and the said hinge-joint in their relative position. Fig. 3 is a vertical section of the said pipe-joint, on an enlarged scale, showing its interior construction, and how the steam-passage through it is opened and closed by the movements of the doors.

A represents the front of a steam-boiler furnace.

B B are the furnace-doors, which are constructed and hung in the usual manner. Through said doors are made holes *b b*, located about one-fourth distance from their bottom edge.

C C are pipes secured to the front side of said doors and in front of said holes, and are provided with holes *c c*, which are opposite the said holes *b*. Said pipes C C extend upward, and are connected to a steam-supply pipe, P, leading from the boiler above by the aforesaid cut-off joint.

D is a hollow plug, to which the pipe C is attached by an elbow-connection.

d is a socket on the lower end of said plug, which sets over the end of the pintle *e* of the door-hinges E, and turns with the doors on said pintle.

F is a tube which sets down over the said hollow plug, and a cross-partition, *f*, which rests on the top of the plug, and turns thereon as the said plug turns.

Through the top of the plug and the said partition, at one side of the center, is a hole, *h*, which, when the tube is in the position on the plug shown in Fig. 3, makes communication between them for the steam to pass; but when the plug is turned the communication is closed or cut off by the hole in the top of the plug passing or turning away from the one in the partition.

G is a packing-box screwed onto the lower end of the tube F, holding a packing-ring, *g*, to make close joint and prevent the leaking of steam.

The supply-pipe P is connected to the tubes F by T and elbow connections.

From the foregoing the operation of this invention will be seen to be as follows: When the doors are shut, as seen in Fig. 1, the communication is open and steam is allowed to flow, and it issues out of holes *c c*, injecting air through the holes *b b* in the doors for feeding air to the furnace, as hereinbefore stated, and when the doors are opened said communication is shut and the passage of steam is cut off.

Having described my invention, I claim—

In smoke-consuming furnaces, the combination, with the furnace-doors having holes

b b, of the steam-pipes *C C*, provided with
holes *c c* opposite said holes *b b*, said pipes
being connected with supply-pipe *P* from
boiler by means of swivel-joint, consisting
5 of hollow plug *D*, tube *F*, fitted and turning
on said plug, each having hole *h* arranged to
open and close communication between said

pipe and plug as the doors are opened and
closed, substantially as specified.

ADELBERT T. KINNEY.

Witnesses:

GEO. W. TIBBITTS,
M. G. NORTON.