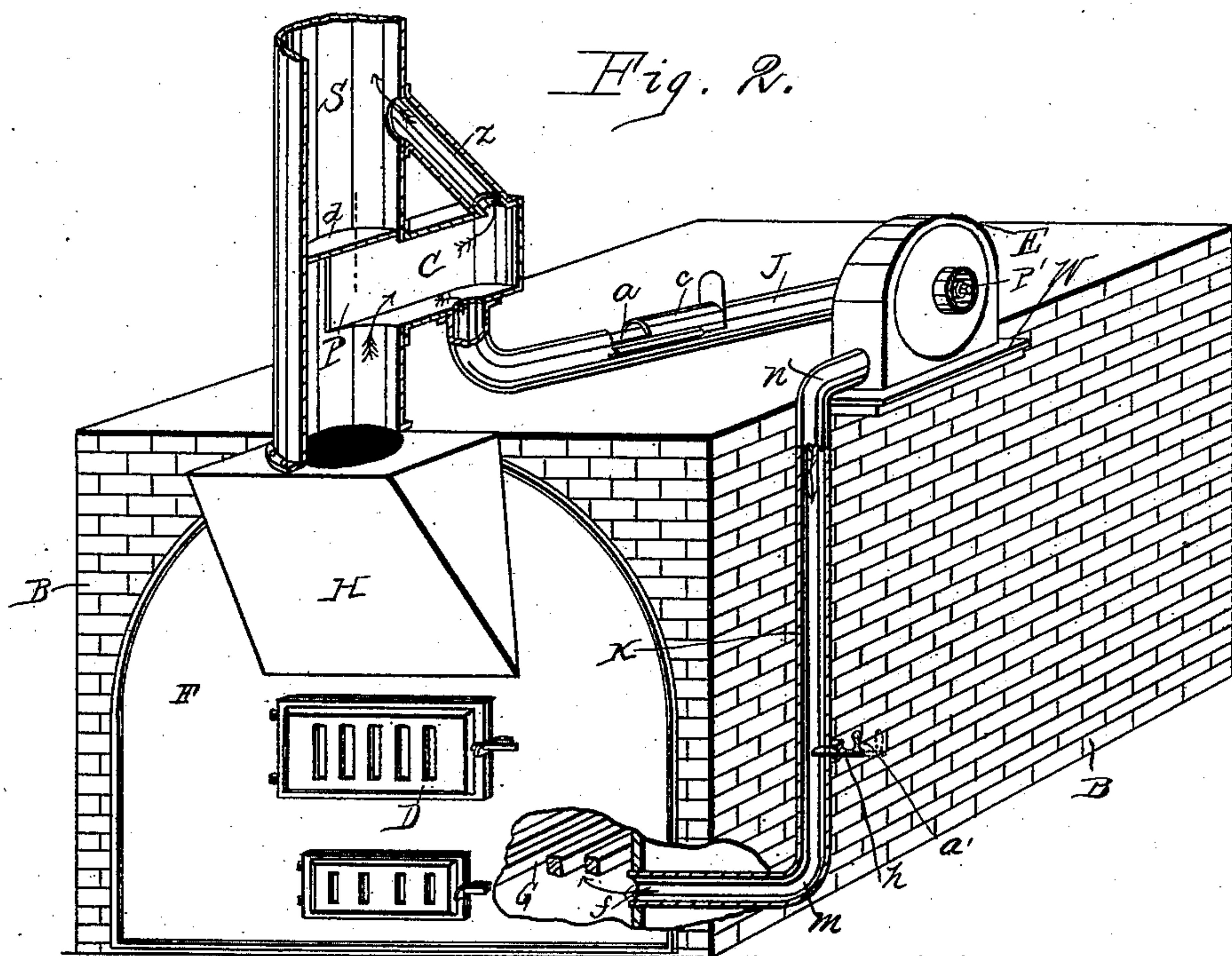
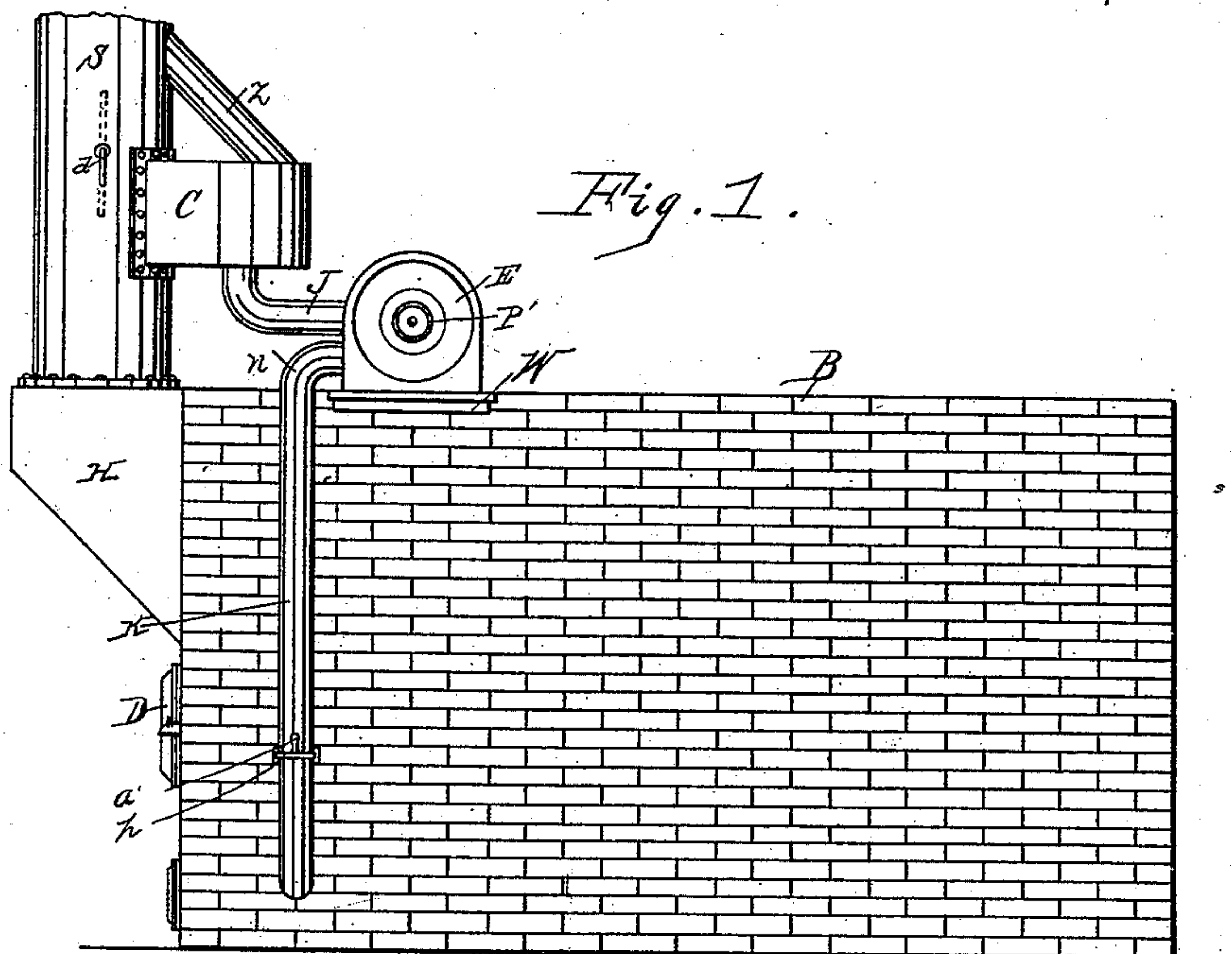


(No Model.)

H. R. WALKER.
SMOKE CONSUMER.

No. 358,135.

Patented Feb. 22, 1887.



ATTEST.
C. W. Russell.
B. P. Wheeler

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UNITED STATES PATENT OFFICE.

HUGH R. WALKER, OF DETROIT, MICHIGAN.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 358,135, dated February 22, 1887.

Application filed August 2, 1886. Serial No. 209,733. (No model.)

To all whom it may concern:

Be it known that I, HUGH R. WALKER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in a Combined Conveyer and Smoke-Consumer; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of devices known as "smoke-consumers."

The object of my invention is to overcome the smoke nuisance now common in furnaces and to save the fuel or heating qualities, a large portion of which escape in smoke.

By my device as constructed I am able to obtain a steady and uniform draft, supplying the fire of the furnace with a sufficient amount of air which has been partially heated, whereby, as it is drawn through the flames of the furnace, it readily helps to form combustion, thus increasing the heating capacity of the furnace.

My invention relates to the general arrangement of parts, as hereinafter fully set forth, and pointed out particularly in the claims.

In the drawings forming a part of this specification, Figure 1 is a side elevation of my invention attached to a stationary furnace. Fig. 2 is an enlarged view of same, having like parts broken away.

In the drawings, B represents the brick-work surrounding the boiler and furnace, S the common smoke-stack, H the usual hood covering the front end of the boiler, through which the smoke escapes from the flues of the boiler to the smoke-stack, and D the feed-door, all of which are in common use.

Near the base of the smoke-stack S, I form in the side a port-hole or discharge, P. Fitting over said discharge is a receiving-chamber, C. Joining said chamber is a horizontal pipe, J, which leads from the bottom of the chamber C, and is coupled at one end to the side opening in the exhaust-fan E. Said fan I locate on a girt or bracket, W, projecting over the side of the furnace-wall, and P' represents the pulley

on the mandrel of the fan. A belt passes over said pulley for driving said fan.

Extending from the upper wall of the chamber C and into the smoke-stack is a discharge-pipe, Z. I locate in the smoke-stack, above the port P, leading into the chamber C, a damper, *d*, which, when turned to a horizontal position, as shown in Fig. 2, conveys the gas and smoke into the receiving-chamber C, where the volatile particles escape through the discharge-pipe Z into the stack S. The heavier and more valuable products of combustion by the action of the fan are drawn from the bottom of the chamber C through the pipe J, being discharged into the furnace through the pipe K.

When the fan E is not in motion to obtain a direct draft through the smoke-stack, I turn the wings of the damper *d* to a vertical position, as shown by dotted lines of Fig. 1.

Leading from the bottom of the fan is a discharge-pipe, K. Said pipe extends downward to a point below the grates G of the furnace, having an elbow at *m*. Said pipe extends from said elbow horizontally through the side walls, B, of the furnace, its discharge *f* being within the furnace and below the grates near the front end.

In the suction-pipe J, at *a*, I provide an opening or relief-hole. Fitting over said opening is a sliding-gate, *c*. The object of said gate and opening is, in case the speed of the fan should cause too strong a suction through the port-hole P of the stack, that the gate *c* may be drawn back, as shown by dotted lines of Fig. 2, when the suction through the stack S and chamber C will be partially checked.

In the discharge-pipe K, leading from the fan to a point below the furnace-grates G, I locate a cut-off or sliding gate, *h*, having a handle, *a'*, for moving said cut-off. The object of this cut-off is to enable the regulation of the discharge into the furnace below the grates. When the gate *h* is drawn back to the dotted position of Fig. 2, I have a full and strong discharge into the furnace.

When opening the door D to replenish the furnace with coal or fuel, should the fan E be running at a high speed, the sliding gate *c* in the suction-pipe J should be drawn to cut off the suction from the chamber C, and the gate *h* should be slightly closed to decrease the vol-

ume of discharge into the furnace. This will prevent the escape of smoke from the door D while open.

Should it be desirable to draw into the fan a current of fresh air with that drawn from the smoke-stack through the chamber C, the sliding gate *c* should be moved sufficiently to allow the air to pass into the suction-pipe through the port-hole *a*.

It will be observed that by locating the sliding gate *c* in the suction-pipe and the cut-off gate *h* in the discharge-pipe I am able to readily regulate the volume and force of the discharge into the furnace according to the demand of the furnace or of the work it may be required to do.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for the purposes set forth, the combination of the furnace, the smoke-stack, the damper located therein, the port-hole, the receiving-chamber located over said port-hole, the discharge leading from said chamber into the smoke-stack, the suction-pipe leading from the chamber to the exhaust-fan, the fan, and the discharge-pipe leading from said fan down to and having its discharge into the furnace below the grate-bars, substantially as specified.

2. The combination of the furnace, the

smoke-stack, the damper, the receiving-chamber, the port-hole leading from said stack into the chamber, the discharge-pipe leading from the chamber into the smoke-stack, the suction-pipe leading from the bottom of the chamber to the fan, the sliding gate *c*, located in said pipe, the exhaust-fan, and the discharge-pipe leading from said fan to the furnace, having its discharge below the grate-bars, as and for the purposes specified.

3. In a device for the purposes specified, the combination of the furnace, the smoke-stack, the damper located in said stack over the port-hole P, the receiving-chamber leading to said port-hole, the discharge leading from said chamber into the smoke-stack, the pipe J, leading from the bottom of the chamber to the exhaust-fan and having the gate *c*, located in said pipe, the discharge-pipe leading from the fan to the furnace, having its discharge *f* below the grate-bars, and a sliding gate or valve located in said discharge-pipe, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HUGH R. WALKER.

Witnesses:

R. B. WHEELER,

B. F. WHEELER.