

(No Model.)

2 Sheets—Sheet 1.

W. R. & J. BRAZIE.

SMOKE CONSUMING ATTACHMENT FOR FURNACES.

No. 567,075.

Patented Sept. 1, 1896.

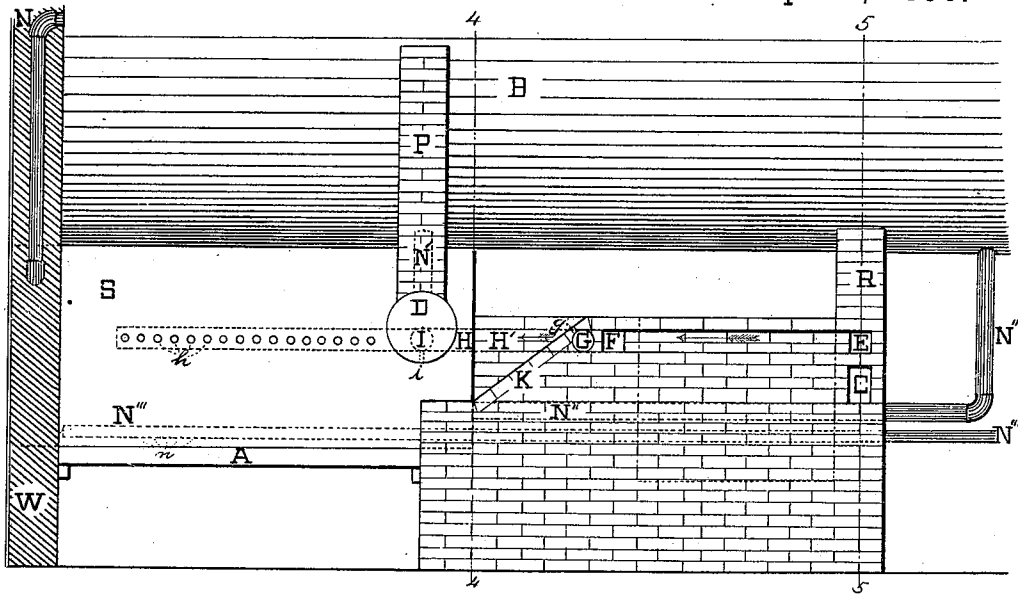


FIG. 1

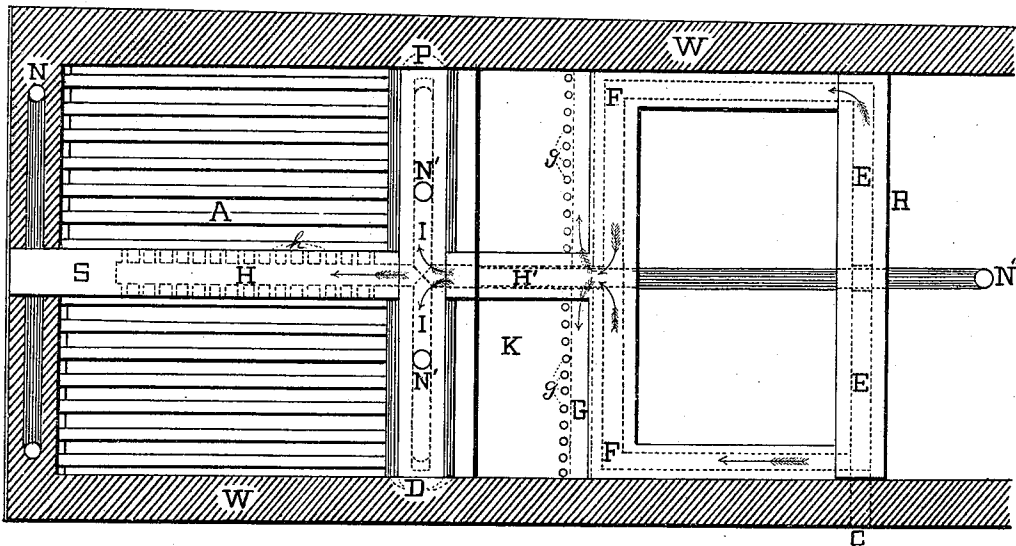


FIG. 2

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2 Sheets—Sheet 2.

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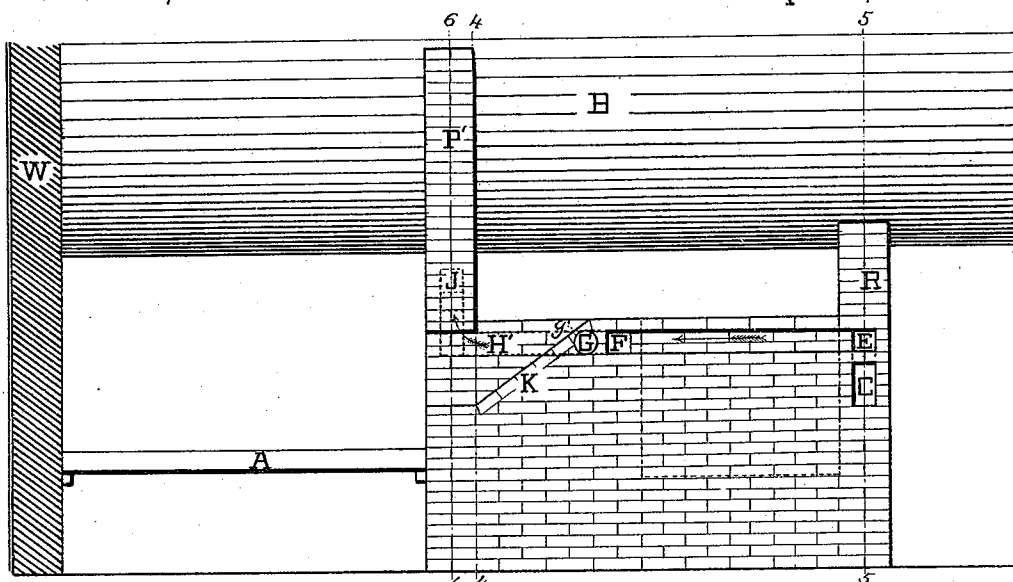


FIG. 7

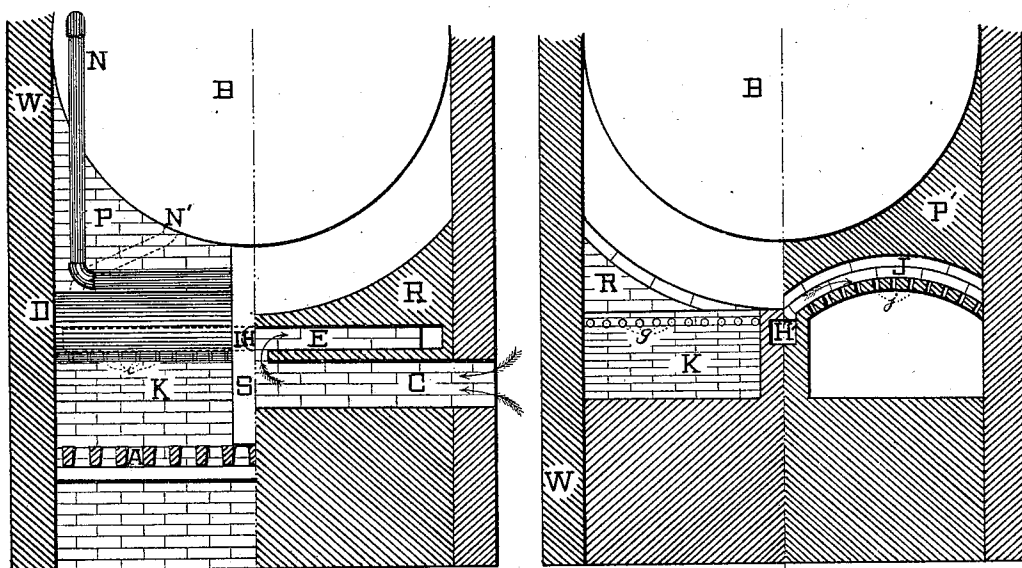


FIG. 3 FIG. 5 FIG. 4 FIG. 6

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WILLIAM R. BRAZIE AND JACOB BRAZIE, OF AMSTERDAM, NEW YORK.

SMOKE-CONSUMING ATTACHMENT FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 567,075, dated September 1, 1896.

Application filed April 28, 1896. Serial No. 589,386. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. BRAZIE and JACOB BRAZIE, citizens of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have
5 invented certain new and useful Improvements in Steam-Generators and Smoke-Consuming Attachments for Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in smoke-consuming attachments for furnaces, and also in the provision of steam-generating means in connection with the boilers; and the especial object of the invention resides in the construction of a system of flues within the furnace and its walls through which air may enter from the
15 outside atmosphere into the fire-box for the purpose of consuming gases which are generated from the use of soft coal.

Another feature of our invention resides in the provision of a tank contained within the fire-box, which tank is designed to hold water in circulation from one part of the boiler to another, thus utilizing to a better advantage the furnace-heat. Through the said tank are located the flue connections, thus superheating the air coming through the flues before it is discharged into the fire-box.

To these ends and to such others as the invention may pertain the same consists, further, in the novel construction, combination,
25 and adaptation of the parts, as will be hereinafter more fully described, and then specifically defined in the appended claims.

We clearly illustrate our invention in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which drawings similar letters of reference indicate like parts throughout the several views, in which—

Figure 1 is a side elevation of a furnace equipped with our invention with the side wall removed. Fig. 2 is a top plan view with the boiler removed. Fig. 3 is a cross-sectional view through the furnace, showing one-half of the same. Fig. 4 is a half-vertical cross-section on line 4 4 of Fig. 1. Fig. 5 is a half-vertical cross-section on line 5 5 of Fig. 1. Fig. 6 is a half cross-section on line 6 6 of

Fig. 7. Fig. 7 is a side elevation with the side wall removed.

Reference now being had to the details of the drawings by letter, B designates the boiler, supported on the walls R and W. In the rear wall R are the flues C and E, connected by a passage-way. (Seen best in Fig. 5.) The flue E connects with the longitudinally-running flues F. Located near the top of the inclined wall K of the furnace is a flue G, which has a series of openings leading therefrom, as seen at *g*, and this flue G is in communication with the flue F. A flue H' leads from the pipe G to the pipe H, which extends into the water-holding tank S. Laterally along the said pipe H, on either side, is a series of small opening-ducts *h*, through which the superheated air is discharged into the fire-box. At right angles to the tank S, and passing therethrough, is the cylindrical tank D, and above this tank D rises the wall P. Longitudinally through the tank D is supported the flue I in communication with the pipe H, and a series of small pipes *i* lead downward from the pipe I.

The tank S, which extends from the front end wall of the furnace to the foot of the incline K, has communication near its front end with the boiler through the pipes N, and also by means of the pipe N'', which is connected at one end to the rear end of the said tank and at its other end to the rear end of the boiler, as seen plainly in Fig. 1 of the drawings.

When it is desired to blow off the tank to clean the same of sediment, the pipe N''', which is located within the tank S, is used to force steam through, there being a row of small apertures *n* along the under side of the pipe, and the end of the said pipe within the tank is closed by a suitable cap.

In the baffle-wall P' is a flue J, having communication with the flue H', and a series of small ducts *j* lead from this duct J into the fire-box through the arched walls, as seen best in Fig. 6, thus allowing air to enter the fire-box at this location.

From the foregoing it will be seen that a continuous circuit of water is effected through from the boiler to the rear end of the tank S, thence to the boiler again through the pipe N, and the air coming through the ducts or

flues is heated by the water in tanks S and D before being discharged into the fire-box at the different locations described, thus consuming the gases formed from the use of soft coal, while at the same time utilizing heat which would be otherwise wasted.

Having thus described our invention, what we claim to be new, and desire to secure by Letters Patent, is—

1. In a gas-consuming furnace, the combination with the walls thereof, the flues C and E communicating with each other, of the pipe G located in the inclined wall K of the furnace and having communication with the flue E through the flues F, and the discharge-ducts g, leading from pipe G, into the fire-box, substantially as shown and described.

2. In a smoke-consuming furnace and steam-generator, the combination with the flues arranged as described, of the tank S having communication at each end with the boiler and the pipe H within said tank having communication with the flues described, and small ducts leading from pipe H, to the

outside of the tank, substantially as shown and described.

3. In a smoke-consuming furnace and steam-generator, the combination with the system of flues as described in the walls of the furnace, the boiler mounted on said walls, of the tank S, communicating pipes leading from each end of the tank to the boiler, of the cylindrical tank D mounted at right angles to and in the walls of the tank S and opening therein, of the pipes H and I located, respectively, in said tanks and having communication with the system of flues, and discharge-ducts leading into the fire-box from said pipes, substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM R. BRAZIE.
JACOB BRAZIE.

Witnesses:

ED. J. PERKINS,
RAYMOND CHRISTMAN.