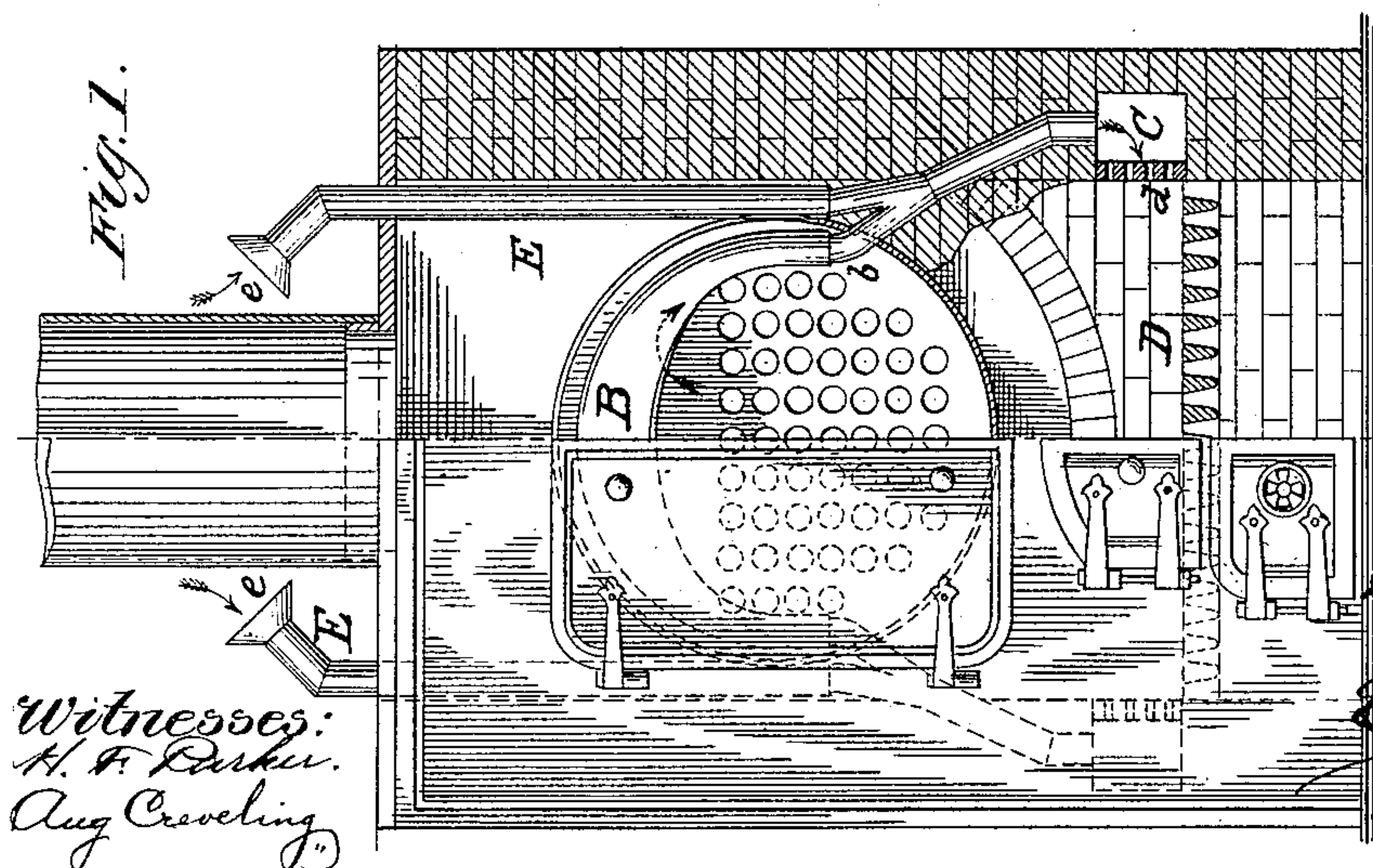
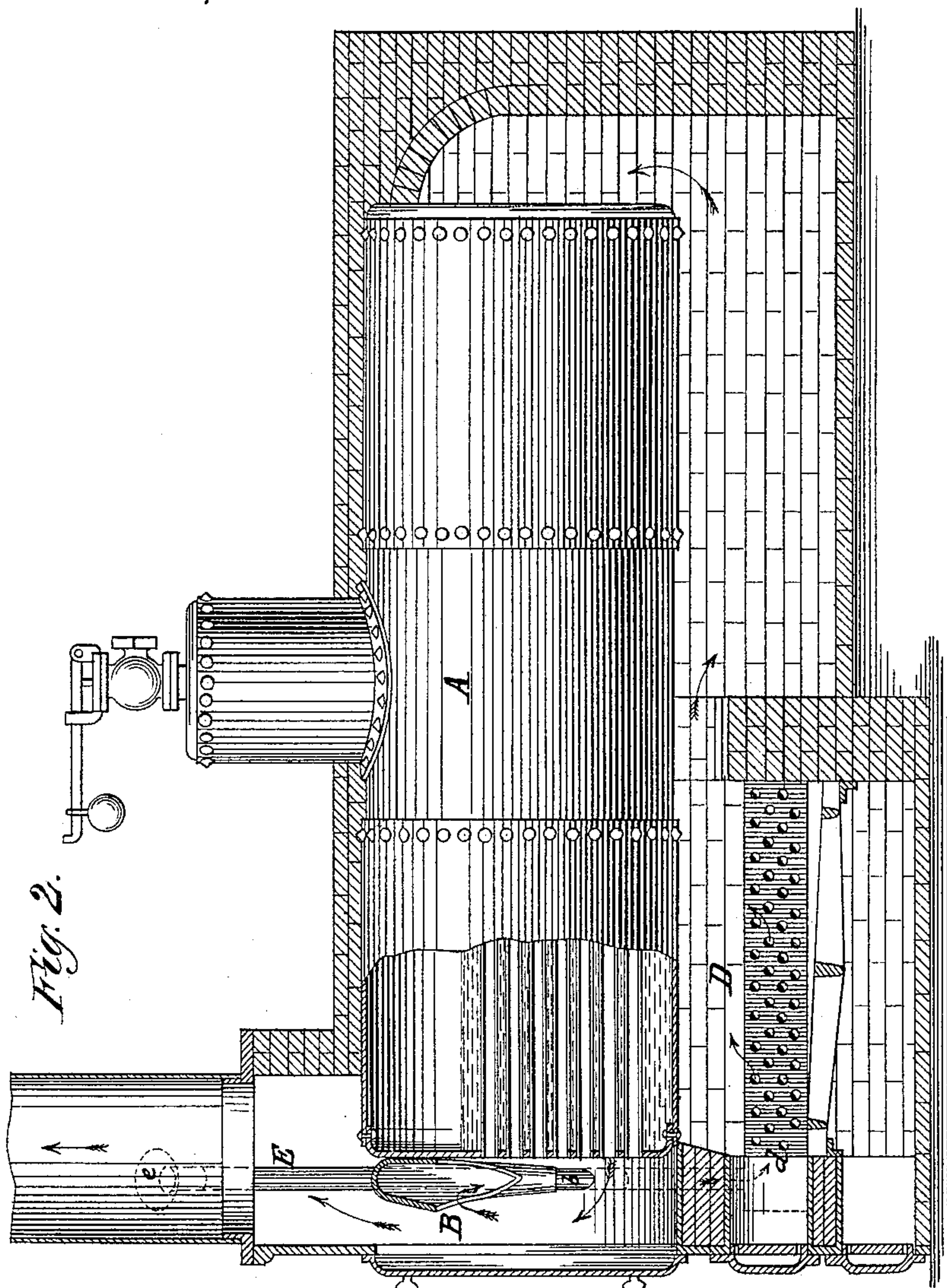


(No Model.)

W. OLIPHANT.

APPARATUS FOR PROMOTING COMBUSTION IN FURNACES.
No. 364,953.

Patented June 14, 1887.



Witnesses:
H. F. Parker.
Aug. Creveling.

Inventor.
William Oliphant
By Attorney
C. W. Forbes

UNITED STATES PATENT OFFICE.

WILLIAM OLIPHANT, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
OLIPHANT MANUFACTURING COMPANY, OF NEW YORK, N. Y.

APPARATUS FOR PROMOTING COMBUSTION IN FURNACES.

SPECIFICATION forming part of Letters Patent No. 364,953, dated June 14, 1887.

Application filed August 14, 1886. Serial No. 210,860. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM OLIPHANT, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Apparatus for Promoting Combustion in Furnaces, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents an end elevation, partly in section; and Fig. 2, a similar side view of a steam-generator embodying my invention.

It is essential that a high temperature be unintermittingly maintained in a furnace, and in practice it has been found impossible to so arrange an ordinary boiler-furnace to admit under all circumstances the desired quantity of air necessary to support combustion.

In order to maintain an even and uninterrupted temperature in the furnace and still supply the combustible gases with the necessary amount of oxygen is the object of my invention.

The invention consists in an apparatus connected with a furnace, hereinafter more particularly described, whereby the temperature of the escaping products of combustion are utilized to heat a current of atmospheric air, which is conducted to and delivered from the sides or end of the furnace through perforated tile above the burning fuel, intercepting the rising gases and combining therewith to promote more perfect combustion.

In order that others may understand and apply my invention, I will first proceed to describe the details of an apparatus embodying the same, and subsequently to point out in the claim its novel characteristics.

In the drawings, A represents a steam-generator set in brick-work, with the furnace, smoke-connections, and chimney arranged in the ordinary way. The attachment embodying my invention is shown arranged at the forward end of the generator, and consists of a hood, B, open at its under side and located outside of and slightly above the ends of the

fire-tubes to intercept the escaping gases and deflect the same downward through the connected pipe *b* and into the flue-spaces C, from whence they are delivered into the furnace D through the perforated walls or partitions *d*.

E represents branch air-conducting pipes leading from and open to the atmosphere and connected to the pipes *b* at a point above the flue-spaces C, as shown. These branch air-pipes E are fitted at their outer and open ends with a flaring mouth, *e*, which are preferably turned, as shown, toward the shell of the chimney, in order to take advantage of the atmospheric-air current induced at this point by the radiated heat of the chimney.

The operation of the apparatus will be readily understood from an inspection of the drawings, the course of the furnace-gases and the entering air being indicated by the arrows. The heated and rarefied gases passing into the pipes *b* cause the atmospheric air to be drawn into the conducting-pipes E, and a mixture takes place at the junction of the pipes and within the flue-spaces C, the combined air and gases being then delivered in a mixed state through the perforated partitions *d* into the rising products of combustion in the furnace, thus supplying the oxygen necessary to a more complete combustion uniformly and without extraction of furnace-heat.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In an apparatus for promoting combustion, a hood, B, for deflecting the escaping products of combustion, located above the exit end of the fire tubes or flues, and provided with connected pipes *b b*, leading to flue-spaces C C, arranged at the sides of and communicating with the furnace D, branch pipes E E, leading from and open to the atmosphere and connected to the pipes *b b* above the flue-spaces C C, substantially as shown and described.

WILLIAM OLIPHANT.

Witnesses:

CHAS. EDGAR MILLS,
CHAS. W. FORBES.