No. 820,016. PATENTED MAY 8, 1906.

W. H. ROSTRON.

SMOKE CONSUMER.

APPLICATION FILED MAR. 29, 1905.

Fig. 1

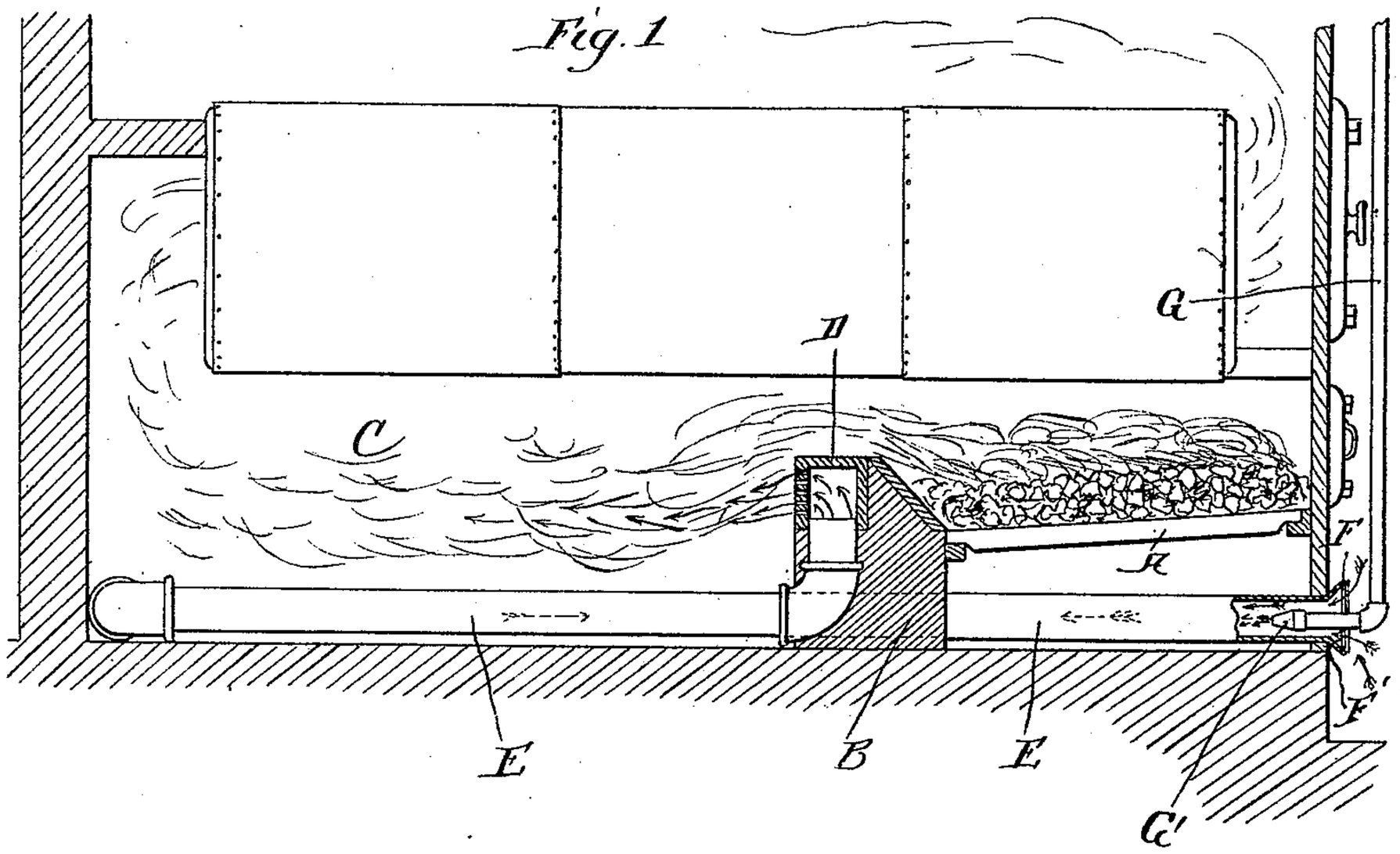


Fig. 2.

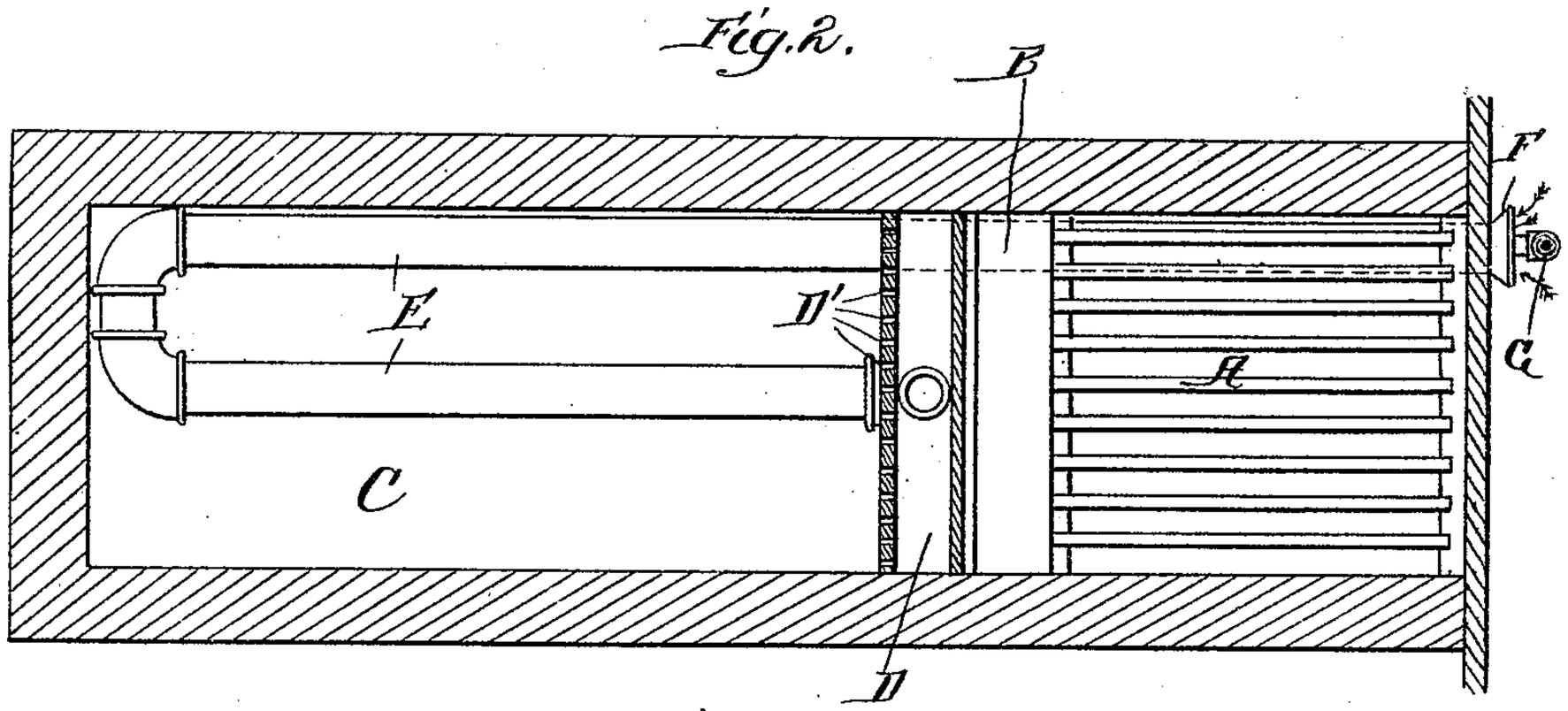
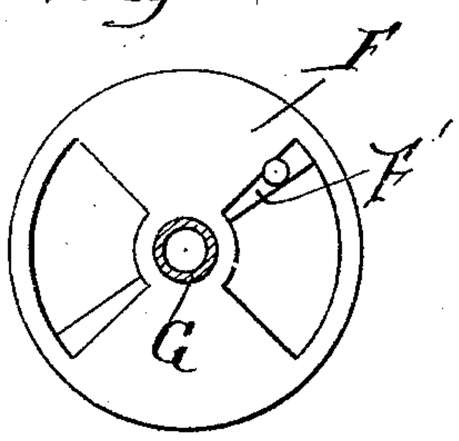


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. ROSTRON, OF GERMANTOWN, PENNSYLVANIA.

SMOKE-CONSUMER.

No. 820,016. Specification of Letters Patent. Patented May 8, 1906.

Application filed March 29, 1905. Serial No. 252,650.

To all whom it may concern:

Be it known that I, WILLIAM H. ROSTRON, a citizen of the United States, residing at Germantown, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Smoke-Consumers, of which the following is a specification.

My invention relates to a new and useful improvement in smoke-consumers, and has for its object to provide a means to supply a heated current of air and steam into the escaping products of combustion to thereby effect the consumption of carbon in the smoke and to promote the combustion of the gases to the end that fuel will be saved and more perfect combustion will be attained.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal section through a furnace equipped with my device; Fig. 2, a horizontal section taken on a line below the boiler; Fig. 3, an end view of the intake-pipe.

A represents the grate-bars, B the bridge-wall, and C the chamber behind the bridge-wall, which I will call the "combustion-chamber."

D is a hollow tile, which may be of any shape in cross-section, but preferably made square, and is set in the top of the bridge-wall at the rearward side thereof. Said tile may be closed at each end or may be left open and closed by the sides of the furnace, as shown in the drawings. The rearward face of said tile is provided, as represented at D′, with a large number of holes.

E is a pipe leading from the exterior of the furnace, either from the front or rear, preferably the former, and extending into the combustion-chamber C, extending the full length of the combustion-chamber and then turning and extending back through the combustion-chamber, then turning upward and entering the hollow tile D, preferably in the center of the same. The outer end of this intake-pipe E may be provided with a damper arrangement, as illustrated at F, whereby the supply of air can be controlled.

G is a steam-pipe leading from the exhaust of the engine and enters through the center of the outer end of the pipe E and extends into the pipe a short distance, terminating in the nozzle G′, through which the steam passes into the pipe E. Thus it will be seen that cold air and exhaust-steam will enter the outer end of the pipe E, and in passing underneath the grate-bars double the length of the combustion-chamber C will be superheated and will issue from the orifices of the tile rearwardly in this superheated form and commingle with the gases passing over the bridge-wall from the fire, and thus tend to consume the carbon and combustible gases, thus increasing the heating power and at the same time reducing the smoke. It is to be noted that the shutter F′ is mounted on the steam-pipe G.

I am aware that both steam and air have been used, ejected rearwardly from the bridge-wall, for the subjection of smoke; but in my device I use exhaust-steam, which only enters the outer end of the pipe, and the pipe extends in such a manner that this exhaust-steam and air will be superheated before issuing from the tile. By using exhaust-steam I do not draw from the boiler any of the power and only use that steam which would be otherwise allowed to escape in the atmosphere.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

In combination with a furnace having a bridge-wall, the upper rear portion of said wall being provided with a transverse shoulder, a hollow tile resting on the shoulder, and extending entirely across the wall, the upper surface of the tile being flush with the body of the bridge-wall, the rear face of the tile being provided with a series of longitudinal rows of perforations, a pipe extending from the front of the furnace to one side thereof through the ash-pit to the rear of the combustion-chamber and leading back to and communicating with the interior of the hollow tile approximately centrally thereof,

said pipe resting on the bed of the furnace and passing up vertically through the bridge-wall, a steam-pipe extending within the outer end of the first-named pipe and a damper for the outer end of the first-named pipe the shutter of the damper being mounted on the steam-pipe.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

WILLIAM H. ROSTRON.

Witnesses:

JAMES STOCKDALE,

JOHN GRAHAM.