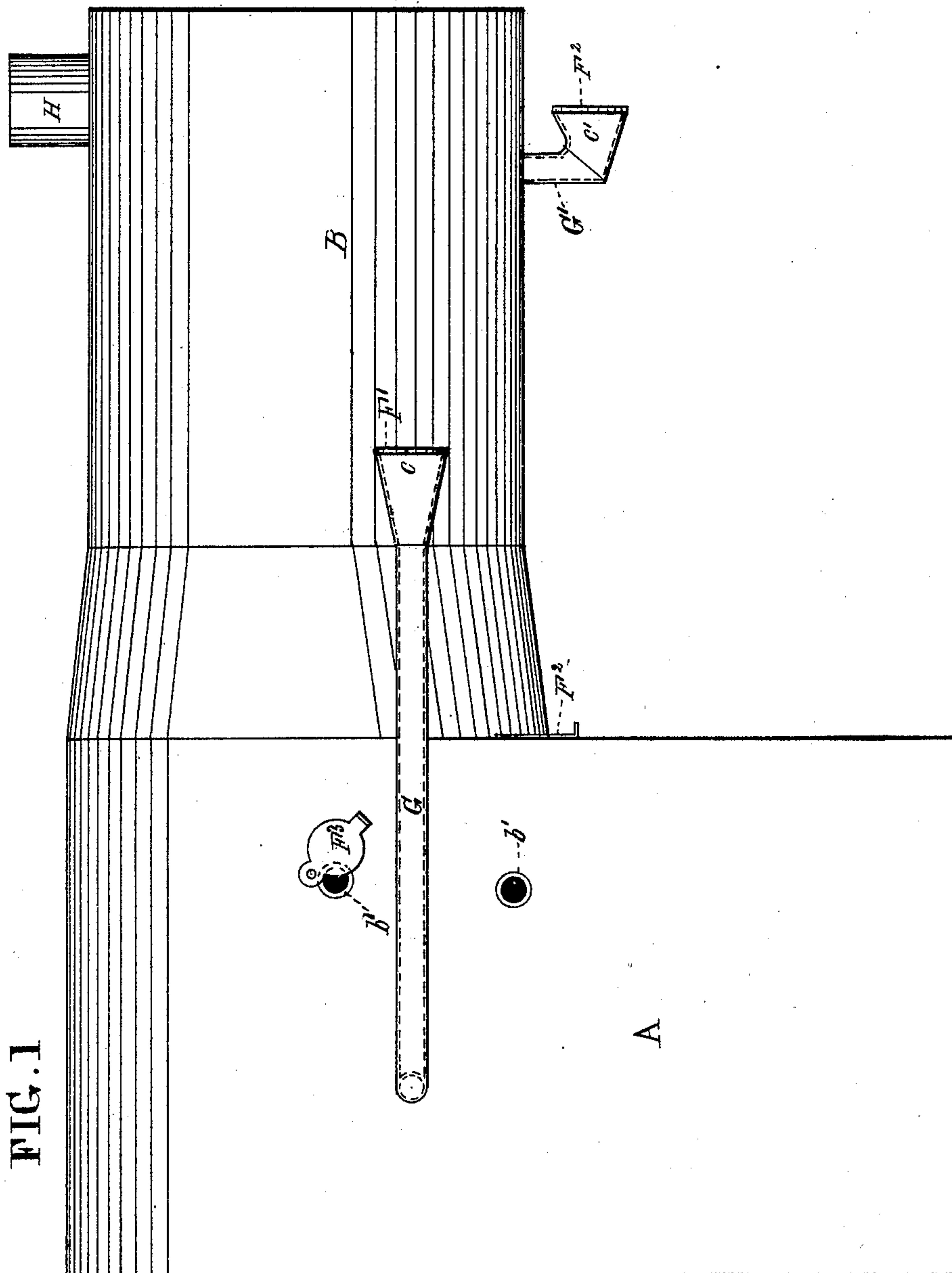


J. RICHARDS & J. MEEHL.

## ATTACHMENT FOR SUPPLYING AIR TO FIRE BOXES.

No. 176,061.

Patented April 11, 1876.



Witnesses  
Thomas J. Bewley.  
Joseph S. Chahoon

Inventors  
Jackson Richards  
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By Stephen Ustick Attorney

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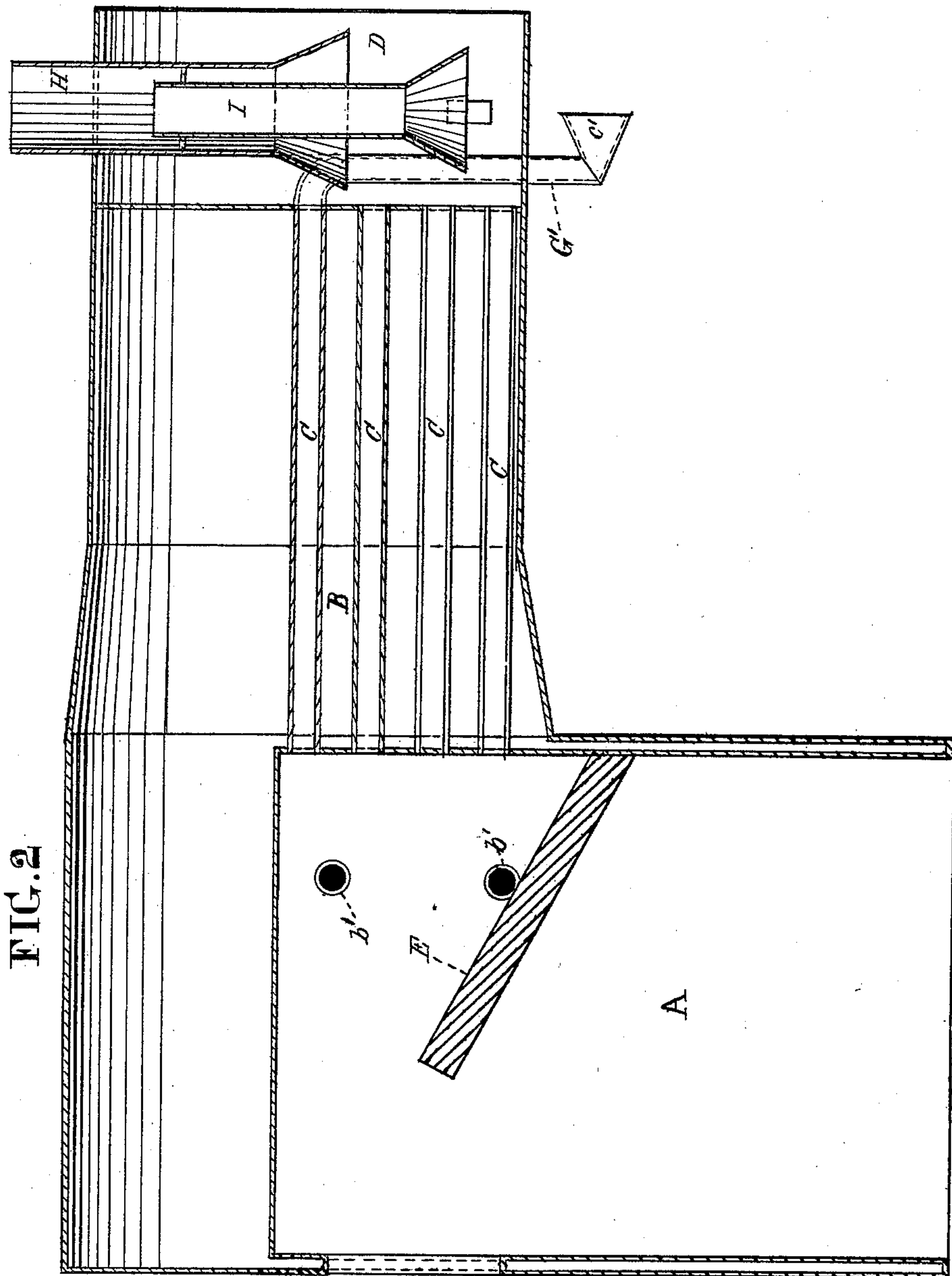


FIG. 2

Witnesses

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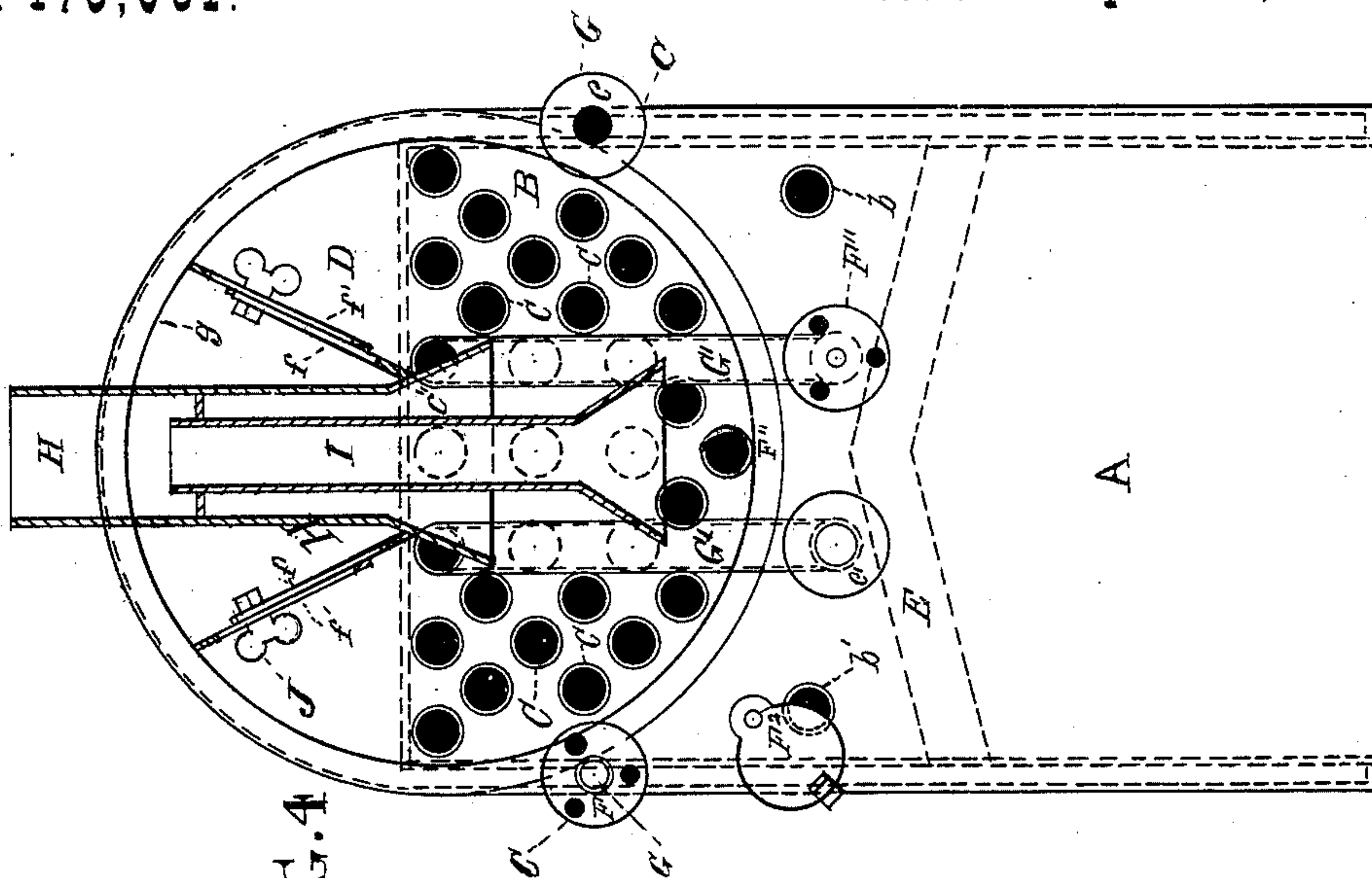


FIG. 4

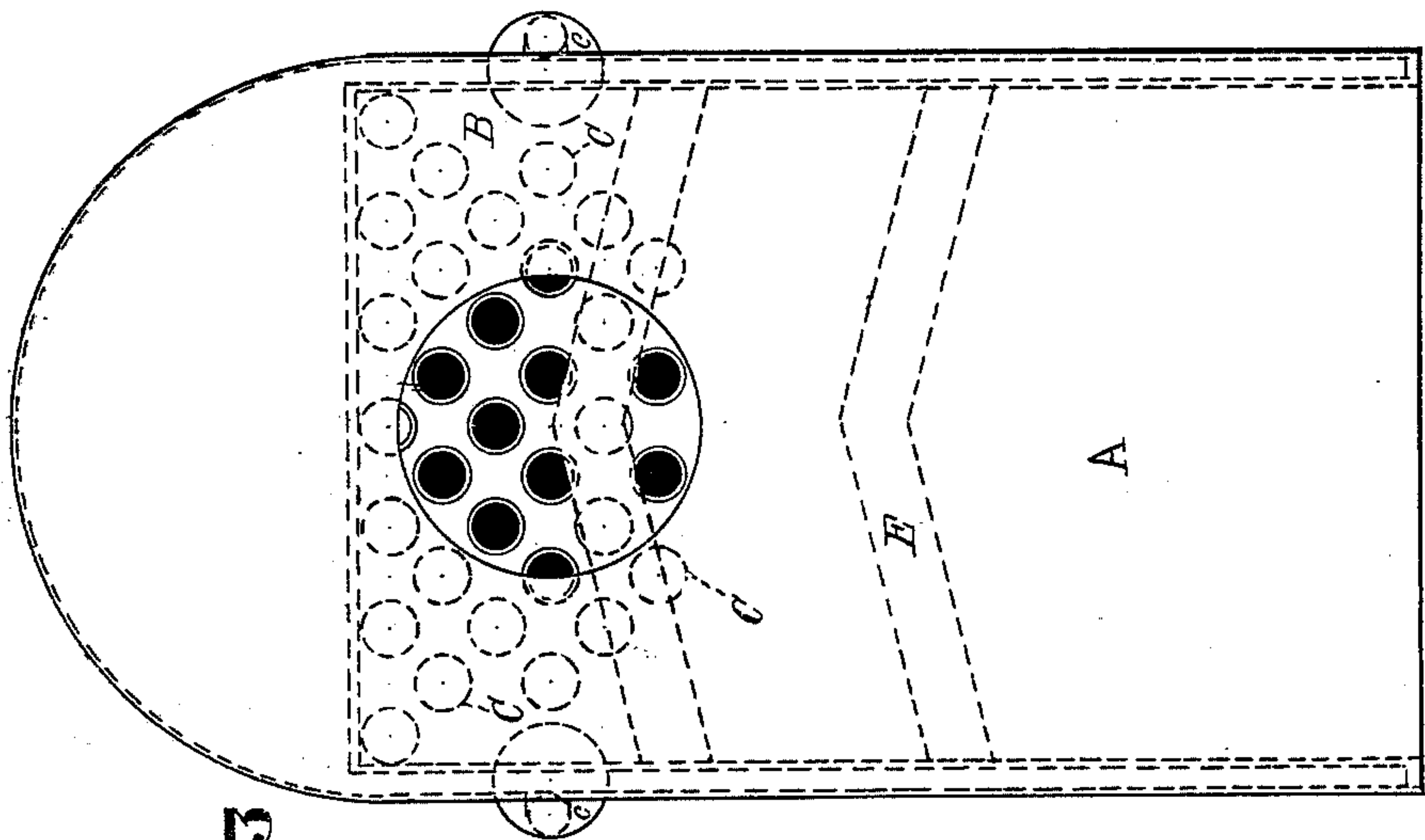


FIG. 3

Witnesses.

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Joseph S. Mahoney

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# UNITED STATES PATENT OFFICE.

JACKSON RICHARDS AND JACOB MEEHL, OF PHILADELPHIA, PA.

## IMPROVEMENT IN ATTACHMENTS FOR SUPPLYING AIR TO FIRE-BOXES.

Specification forming part of Letters Patent No. **176,061**, dated April 11, 1876; application filed June 23, 1875.

*To all whom it may concern:*

Be it known that we, JACKSON RICHARDS and JACOB MEEHL, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Burning Gas and Smoke of Steam-Generators, of which the following is a specification:

Our invention relates to the following particulars: We arrange pipes at the sides of the fire-box to convey cold air to that part of the fire-chamber immediately above the rear end of the fire-arch, to mix with the smoke and gas to consume it in its passage to the flues of the steam-generator. The pipes are arranged longitudinally with the fire-box, and have funnel-shaped mouths, into which the air rushes and passes rapidly to the rear ends of the pipes, thence into the fire-box. The rapidity of the currents of air is caused by their natural draft, combined with forward speed of the engine; consequently a much greater amount of air is conveyed into the fire-box than would be by any other arrangement of the pipes; and the amount is automatically varied according to the speed of the engine and consequent consumption of the fuel, thereby making the supply of air suited to the demand for it at all times. The funnel-shaped mouths of the pipes are provided with valves for a more complete regulation of the draft of air.

In the accompanying drawings, Figure 1 is a side elevation of the fire box, having our improvements in connection therewith. Fig. 2, Sheet No. 2, is a vertical longitudinal section through the middle of the same. Fig. 3, Sheet No. 3, is a rear elevation. Fig. 4 is a front elevation, partly in section.

Like letters of reference in all the figures indicate the same parts.

A is the fire-box; B, the water-chamber, having flue C, in the usual manner; D, the smoke-chamber, and E the fire-arch. There are pipes G, arranged longitudinally at the sides of the fire-box, for the passage of cold air to the rear end of the fire-arch for the consumption of the gas and smoke with which it commingles as they pass over the arch on their way to the flues. These pipes have funnel-shaped mouths *c* on their front ends, into which the air rushes and passes rapidly into the upper part of the fire-chamber, as above stated.

The mouths are provided with valves  $F^2$ , for regulating the draft. Any desirable number of the flues C are provided with air-pipes  $G^1$ , (two of which are represented in the drawings,) for conveying air through the flues to ignite any gas and smoke which may meet the air at the rear ends of the flues. The lower ends of these pipes have funnel-shaped mouths  $c^1$ , which are situated below the smoke-arch for the rapid entrance of cold air in the forward motion of the engine. The mouths are provided with funnel-shaped valves  $F^1$  for regulating the draft. There are air-passages also through the ferrules *b* at the front of the fire-box, for the passage of cold air above the fire-arch, to assist in igniting the gas and smoke before they enter the flues. These openings also serve for the purpose of cleaning out the cinders which collect on the fire-arch. They are provided with valves  $F^2$  for regulating the draft, or cutting it off when desired. There are also openings through ferrules  $b'$ , for the passage of cold air at the sides of the fire-box into the fire-chamber, to assist in igniting the gas and smoke. These openings are provided with valves  $F^3$ , for regulating the draft.

H is a pipe which surrounds the petticoat I. It is adjustable by means of the slotted straps *f f* at its side and the slotted straps  $f' f'$ , which project downward from the upper side of the smoke-arch *g* and the confining-screws J J, seen in Fig. 4. The pipe has a funnel-shaped mouth,  $c^2$ , for the collection of a large amount of air. By the adjustment of the pipe the air is controlled for regulating the cutting or working of the fire to cause it to burn evenly all over.

We claim as our invention—

The combination of the longitudinal pipes G G, having funnel-shaped mouths *c* at their front ends, with the sides of the fire-box, for conveying air into the fire-box, above the arch, to ignite the smoke and gas before they enter the flues, substantially as set forth.

JACKSON RICHARDS.  
JACOB MEEHL.

Witnesses:

THOMAS J. BEWLEY,  
STEPHEN USTICK.