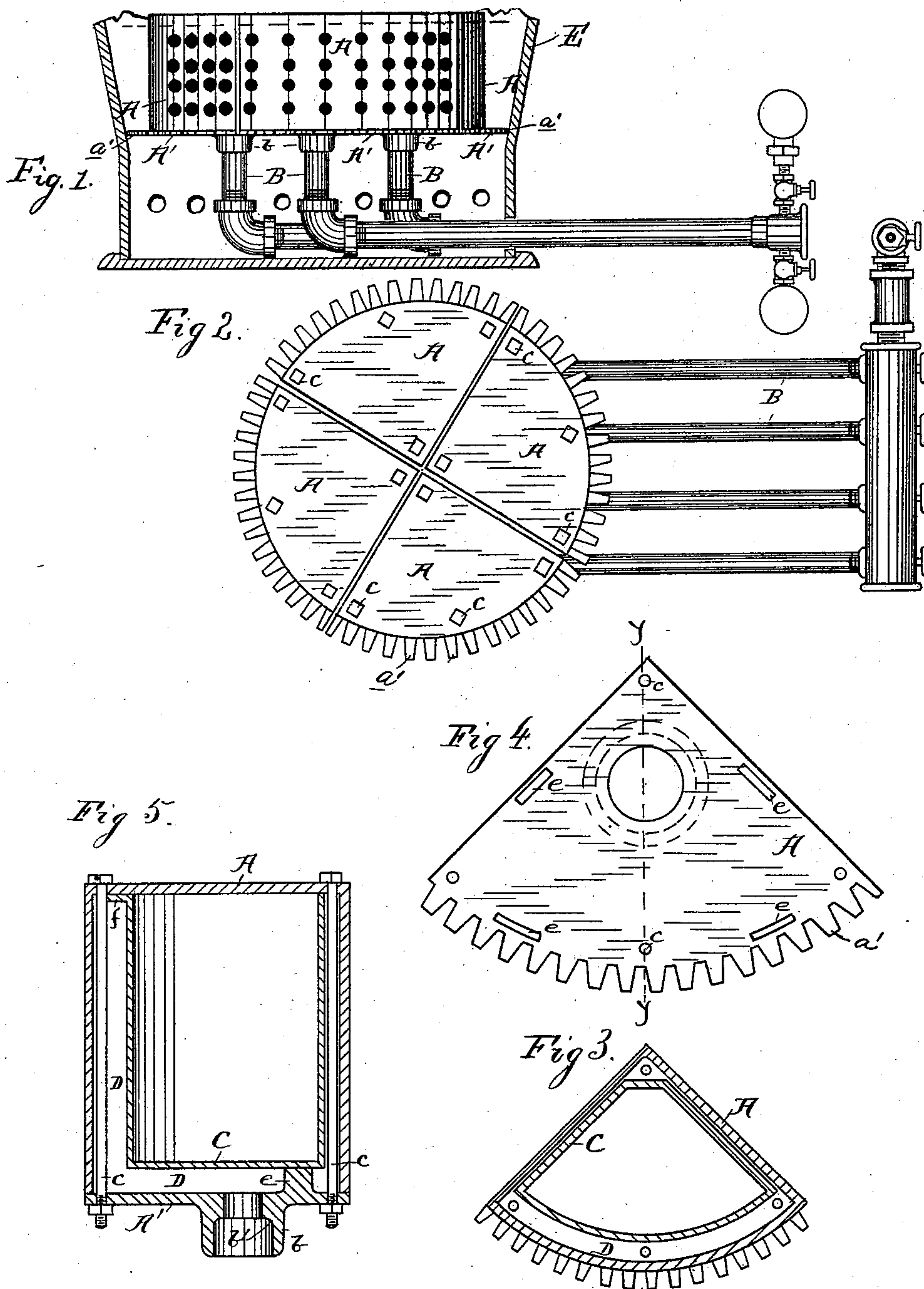


(No Model.)

D. MITCHELL & E. D. ABBOTT.
FUEL GAS BURNER.

No. 533,074.

Patented Jan. 29, 1895.



WITNESSES:

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FUEL-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 533,074, dated January 29, 1895.

Application filed April 14, 1894. Serial No. 507,510. (No model.)

To all whom it may concern:

Be it known that we, DAVID MITCHELL and ELMER DORICK ABBOTT, of Dayton, county of Montgomery, State of Ohio, have invented a new and useful Improvement in Fuel-Gas Burners; and we 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 of reference marked thereon, which form a part of this specification.

Our invention relates to new and useful improvements in fuel gas burners, and is adapted for use in furnaces, stoves, and the like.

The object of the invention is to provide a burner of the class named, consisting of a number of segmental parts each of which is a separate burner of itself, and all of which are adapted to be placed in the fire bowl of the furnace to form a complete circular burner. Each of said segments so placed is independently mounted on its respective inlet pipe, and has no attachment with the adjacent segments.

A further object is to provide a burner with a circular gas chamber of such dimensions that afford a complete radiation and circulation of the gas, uniformly throughout the circumferential arc of the fire bowl, and a thorough transmission or distribution of the heat against the surface of said fire bowl.

A further object is to provide a burner of this type, having but one joint, and that at a point below the point where the gas enters said segments, so that the efficiency of the burner is materially enhanced, and the possibility of leakage prevented.

To these ends our invention has reference to means that will be fully described in the specification, and pointed out in the claim.

Referring to the annexed drawings, Figure 1, is a side elevation of our improved burner, showing the same in the fire bowl of a furnace which appears in section, and broken away; Fig. 2, a top plan view of the burner removed from the furnace; Fig. 3, a section of one of the segments on the line $x-x$ of Fig. 1; Fig. 4, a detached, detail view of the

inner face of one of the detachable bottom plates; Fig. 5, a vertical section through the center of one of the segments.

In the drawings similar letters of reference indicate corresponding parts.

(A) designates a hollow casting of segmental form, four of which complete a circle, and are preferable in constructing the burner, but it will be understood, these segmental parts may be increased or decreased in number without departing from the circular form of the burner.

(A') is the bottom plate for each segment, and forms the only joint therein which is made air tight by the application of cement.

The castings (A) and (A') are preferably constructed of heavy cast iron, and the former is provided with a depth substantially as shown in Fig. 5, and is provided in its radiating or outer curved side with jet perforations (a) extending throughout said curved side. The bottom plate of each segment has a nozzle (b) with an inner annular shoulder (b') that forms a socket for the gas pipe (B) which abuts with said shoulder. By means of these nozzles, each segment of the burner is independently supported on its respective inlet pipe.

(c) designates bolts by which the plates (A') are made secure to the segments, in addition to the cement by which said plates are sealed. The outer or curved edge of the plates (A') are each provided with projections or teeth (a') as shown in Fig. 2, which project laterally beyond the outer or curved sides of the segments. The object of these teeth is to assist in maintaining each segment firmly in position on its inlet pipe.

The projections (a') come in contact with the inner surface of the fire bowl of the furnace, E, as shown in Fig. 1, and there is preferably a space of about one and a half inches between the inner surface of the fire bowl and the radiating surface of the burner. By constructing these projections in the form of teeth, as seen in Fig. 2, the air is permitted to freely pass up as it enters the draft door, and circulate around the burner.

(C) designates a deflector or inner metallic shell, constructed preferably of galvanized

iron, and conforming in shape to the shape of the segment (A), and which is adapted to fit in said segment. This shell, of which there is one for each segment, rests upon lugs (e) 5 that project upwardly from the inner face of the plate (A'), and has a flange (f) extending outwardly from the upper edge of its outer or curved side, and that abuts with the upper curved portion of the casting (A), so 10 that it is maintained in position shown in Figs. 3 and 5. The object of the shell is to obtain the space or gas chamber (D) which extends throughout the bottom, and curved sides of each segment, and wherein the gas is 15 thoroughly and rapidly circulated through the jet openings. The gas pipes enter as shown in Fig. 1, and each one runs to its respective segment as hereinbefore described.

Where the burner is used in the ordinary 20 furnace or stove, the pipes (B) can be introduced through the ash pit door, and in either event, the air that enters through the lower door causes an upward current which has the effect of keeping the bottom plates (A') com- 25 paratively cool. This prevents any material

warpage of said plate, and a consequent leakage of the gas.

We are aware that we are not the first to construct a segmental burner. A burner of this character, in which the segments are connected together after their insertion into the 30 furnace, has been constructed. Therefore we do not claim such construction, but

What we claim is—

The combination with a furnace or stove, 35 of a plurality of segmental burners, each of which is supported on its respective inlet pipe to form a complete circular burner; bottom plates for said segments provided with radial teeth or projections adapted to come 40 in contact with the inner surface of the fire bowl to maintain said segments in a uniform and firm position, substantially as described.

In testimony whereof we have hereunto set our hands this 17th day of March, 1894.

DAVID MITCHELL.

ELMER DORICK ABBOTT.

Witnesses:

R. J. McCARTY,

S. A. DICKSON.