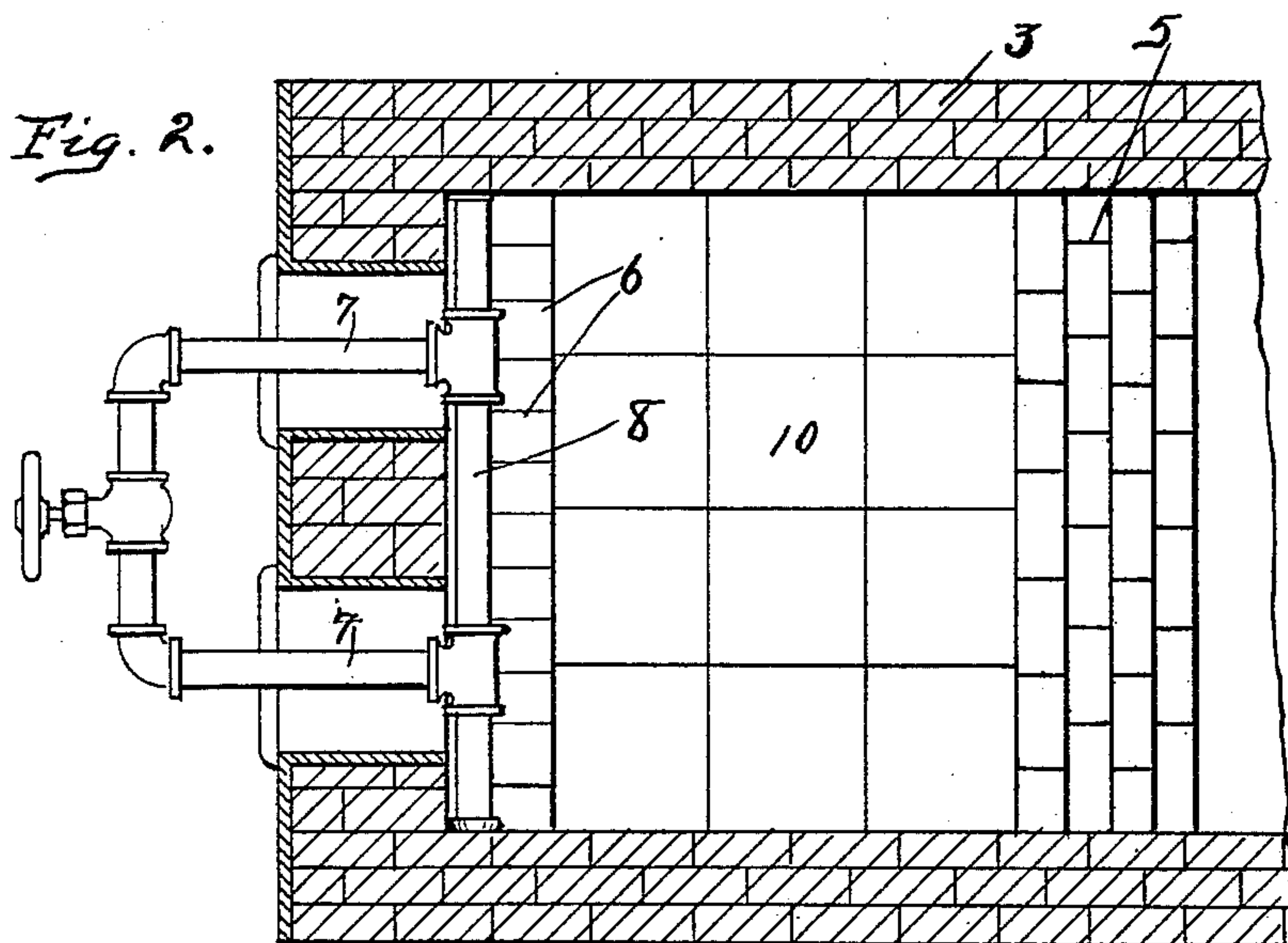
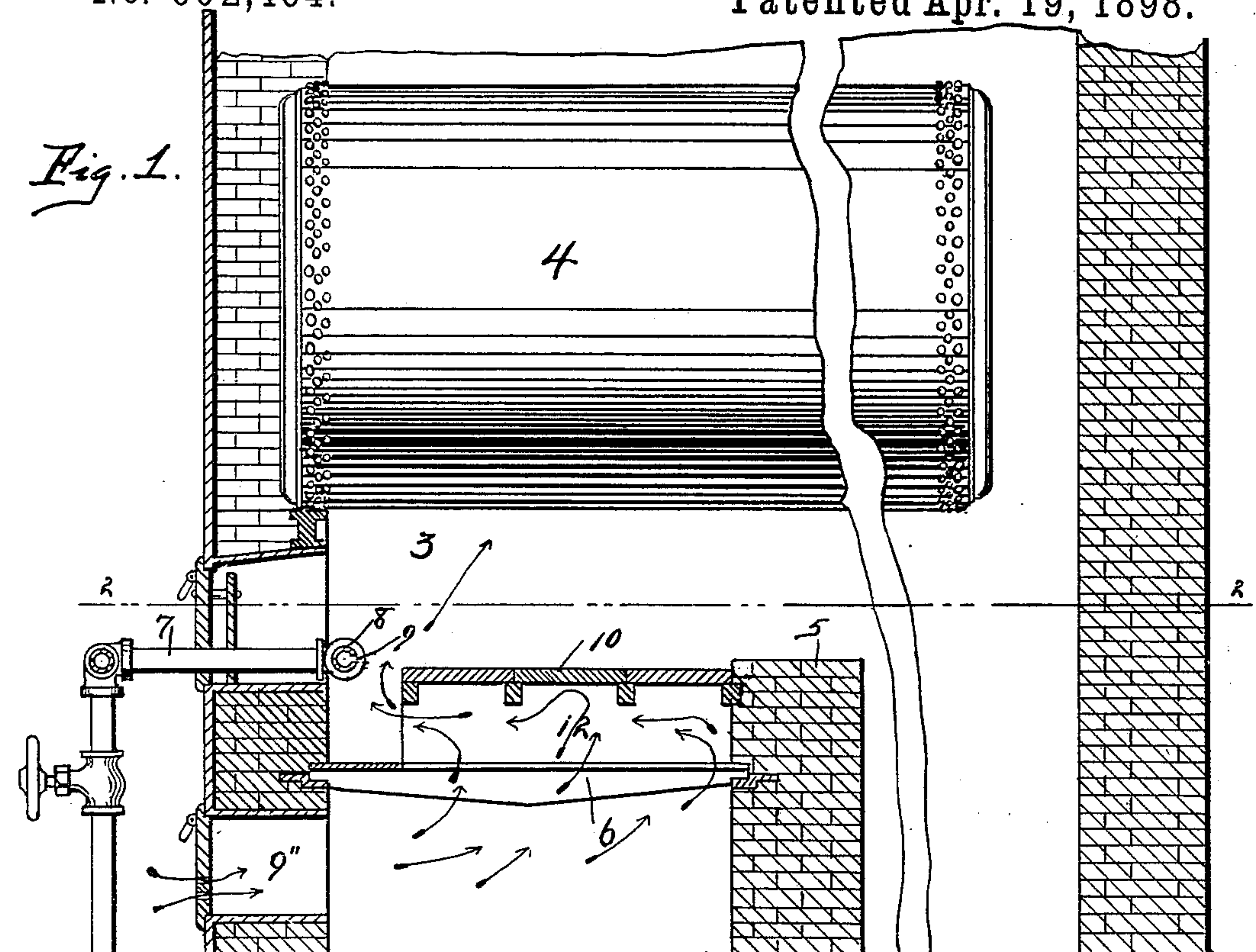


(No Model.)

F. B. McCULLOUGH & E. M. PARROTT.
FURNACE.

No. 602,464.

Patented Apr. 19, 1898.



Witnesses

Witnesses
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UNITED STATES PATENT OFFICE.

FRANK B. McCULLOUGH AND EUGENE M. PARROTT, OF INDIANAPOLIS,
INDIANA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 602,464, dated April 19, 1898.

Application filed June 11, 1897. Serial No. 640,287. (No model.)

To all whom it may concern:

Be it known that we, FRANK B. McCULLOUGH and EUGENE M. PARROTT, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Furnace, of which the following is a specification.

Our invention relates to an improvement in furnaces, especially in that class of furnaces primarily designed to burn coal, but in which it is desired at times to burn gas.

The object of our invention is to provide means whereby gas may be economically burned in any ordinary coal-burning furnace, the arrangement being such that, if desired, the said means may be easily removed or replaced, so that the furnace may be changed from a coal-burning to a gas-burning furnace, or vice versa.

The accompanying drawings illustrate our invention.

Figure 1 is a longitudinal vertical section. Fig. 2 is a horizontal section on line 2 2 of Fig. 1.

In the drawings, 3 indicates any ordinary boiler-setting, in which is mounted a boiler 4. The setting is provided with the usual front plate, and between the front and the fire-wall 5 are mounted the grate-bars 6 in the usual manner. Thus far the construction is that of the ordinary coal-burning boiler-furnace.

In order to burn natural or other gas in such a furnace, it has heretofore been customary to introduce through the fire-doors pipes 7, which connect at their inner ends with a cross-pipe or burner 8, through the sides of which is formed a series of holes 9. In the usual arrangement the air to support combustion is drawn through the ash-pit doors 9', the said air being free to pass upward through the grate-bars at any point between the front plate and the fire-wall. In such a construction the air does not properly mix with the gas, so that there is a very imperfect and wasteful combustion.

In order to overcome the many faults of previous constructions and in order to insure a perfect and sufficient supply of air at the point of combustion, a fireproof platform 10 is placed over the grate-bars and extended from the fire-wall 5 to within a short distance

of the burner 8, and the openings between the grate-bars immediately beneath the burner and as far back as the forward end of platform 10 are closed, thus forming an air-chamber 12 immediately above the grate-bars and below and in front of the burner. The upper surface of platform 10 should be slightly below the openings in the burner, so that as the gas escapes therefrom it may pass above the platform close thereto.

It has been found by experiment that the following proportions seem to be the best; but they may be departed from without departing from our invention: The distance between the platform and grate-bars, about eight inches; between the burner and the forward end of the platform, (in a horizontal line,) about four inches, with the openings in the burner about one-half inch above the upper face of the platform. The air is admitted through the ash-pit doors and passes rearwardly and upwardly through the grate-bars into chamber 12, where it is deflected by platform 10 and the fire-wall 5. In this chamber the air becomes slightly heated and passes forward and upward out of the chamber just at the point of combustion, which is a short distance in front of the burner. Owing to the force of the incoming air, the incoming stream of gas is deflected upward, so as to strike the boiler a considerable distance in front of the fire-wall, and hugs the boiler closely as it passes toward the rear. Owing to the perfect supply of air at just the point at which it is needed, we have found by actual practice that we are able to produce a greater horse-power with a smaller amount of gas than with any other arrangement now in use in this section of the country.

It will be noticed that platform 10 and the filling between the forward ends of the grate-bars may be easily removed or replaced, so that the furnace may be quickly and easily changed from a coal-burning to a gas-burning furnace, or vice versa.

We claim as our invention—

1. In a furnace, the combination with the setting, the grate-bars thereof, and a burner mounted therein over the grate-bars, of a platform mounted over the grate-bars and extending from the fire-wall to within a short

distance of and below the burner, the arrangement being such that the incoming air is discharged from beneath said platform at a point beneath and in front of the burner, substantially as described.

5 2. In a furnace, the combination with the setting and a burner mounted therein, of a platform mounted in said setting and extending forward from the fire-wall to within
10 a short distance of and slightly below the burner, and a second platform extending from the front wall beneath the burner toward the rear to a point vertically beneath the forward end of the first platform, the arrangement
15 being such that the incoming air is discharged from beneath the first-mentioned platform at a point beneath and in front of the burner, substantially as described.

20 3. In a furnace, the combination with the setting, the grate-bars thereof, and a burner

mounted in said setting above the grate-bars, of a platform mounted above the grate-bars and slightly beneath the openings in the burner and extending from the fire-wall forward to a point a short distance from the
25 burner, and a filling mounted in the openings between the forward ends of the grate-bars and extending toward the rear to a point vertically beneath the forward end of the platform, an air-passage being formed below the
30 grate-bars and between the grate-bars and the platform, all combined and arranged to cooperate substantially as and for the purpose set forth.

FRANK B. McCULLOUGH.
EUGENE M. PARROTT.

Witnesses:

A. M. HOOD,
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