

J. WEINTZ.
GAS BURNER.

APPLICATION FILED SEPT. 11, 1907.

941,437.

Patented Nov. 30, 1909.

2 SHEETS—SHEET 1.

Fig. 1

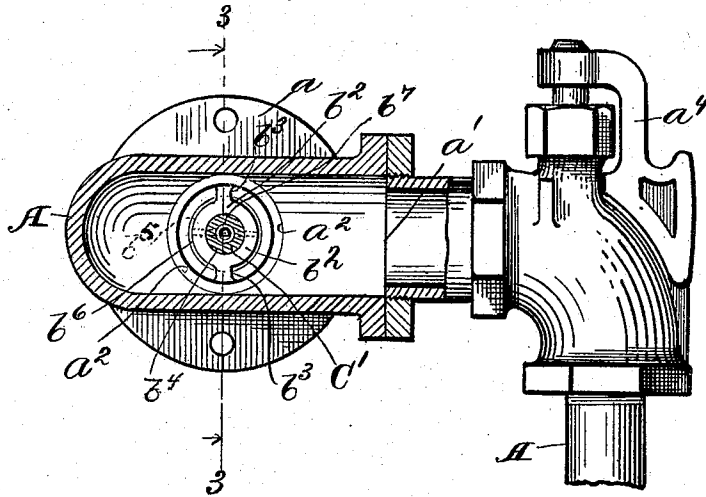
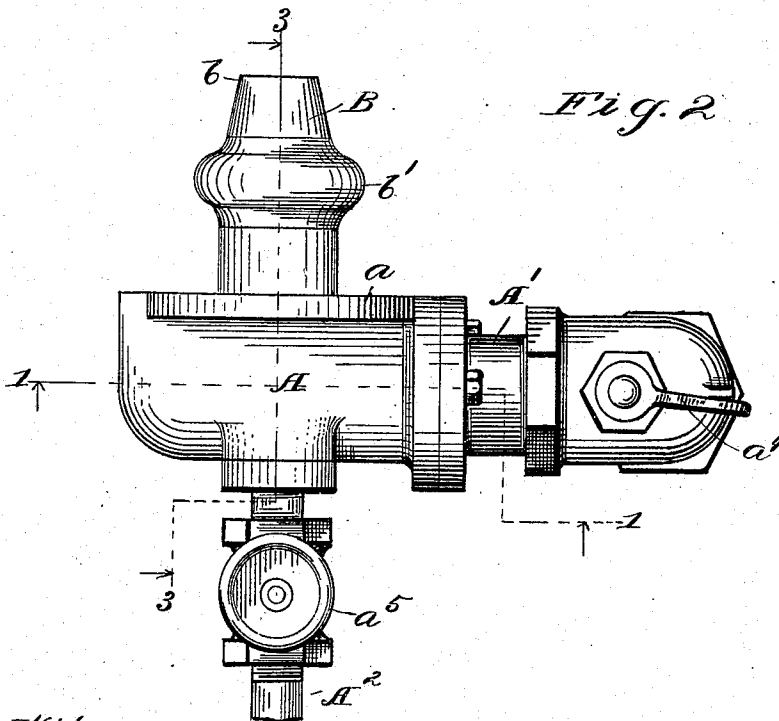


Fig. 2



Witnesses:

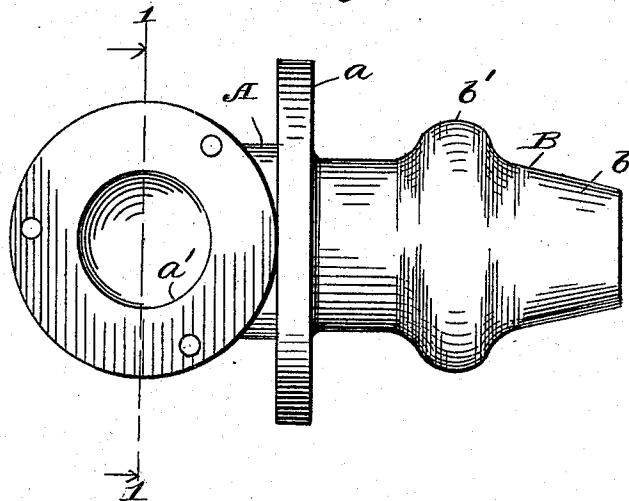
J. C. Turner
Jno. F. Oberlin

Inventor:

Jacob Weintz.
by J. B. Fay
Attorney.

APPLICATION FILED SEPT. 11, 1907.

Patented Nov. 30, 1909.
2 SHEETS—SHEET 2.



J. C. Turner
Jno. F. Oberlin

Jacob Weintz
by J. B. Fay
Attorney.

UNITED STATES PATENT OFFICE.

JACOB WEINTZ, OF CLEVELAND, OHIO.

GAS-BURNER.

941,437.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed September 11, 1907. Serial No. 392,299.

To all whom it may concern:

Be it known that I, JACOB WEINTZ, citizen of the United States, resident of Cleveland, county of Cuyahoga, State of Ohio, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My present invention relates to an improved form of gas burner and particularly to a gas burner for the production of a heating blast in melting and reheating furnaces and the like.

Said invention has as its object the provision of a gas burner of this type that will be of simple construction and economical in its consumption of fuel. The means whereby these several objects are accomplished are hereinafter fully described and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 is a rear elevation, partly in section on the line 1—1, Figs. 2 and 4, of a burner embodying my several improvements; Fig. 2 is a plan view of such burner with its connections; Fig. 3 is an axial section through the burner proper taken on the line 3—3 Figs. 1 and 2; and Fig. 4 is a side elevation of such burner.

The base of the burner consists of a chamber A formed with a flange a whereby it is adapted to be secured in the furnace wall or wherever desired to employ the burner. This chamber, consisting preferably of a single integral casting, is provided with angularly related inlet and outlet openings a' a^2 for the passage of air therethrough and with a smaller opening a^3 for the gas supply, such opening a^3 being alined with outlet opening a^2 . Any suitable connections for thus supplying air and gas under pressure to chamber A may of course be provided, those indicated consisting simply of pipes A' , A^2 suitably connected to the openings in question and provided with valves a^4 a^5 of familiar construction, for controlling the respective currents of air and gas in order to regulate the mixture within the burner.

Loosely fitted in the outlet opening a^2 of such chamber A is the burner proper consisting of a mixer B likewise preferably composed of a single integral casting, as will be described. Such mixer is of general tubular form terminating in a nozzle b and being provided intermediate between its ends with an annular enlargement b' forming an expansion chamber. Cast integral with such mixer and longitudinally disposed thereof is a core b^2 spaced from the walls of the mixer, as shown, Fig. 1, ribs b^3 serving to unite such core with the nozzle body proper and thus support the same. This core b^2 is provided with an axial bore b^4 extending its entire length; it is also provided with a rib b^5 disposed transversely of its front end, by means of which rib there is supported within the annular enlargement b' above described, a circular deflecting plate b^6 the diameter of which may be varied according to circumstances, depending particularly upon the character of the gases employed in the burner. Such circular deflecting plate is preferably a trifle dished as shown in Fig. 3, the convex face being the one disposed toward the core b^2 . The axial bore b^4 of such core is prolonged so as to intersect the walls of the rib b^5 that support the plate, forming openings b^7 . Connection between the bore and gas supply opening a^3 of chamber A is had by means of a short section of pipe or tubing C, the respective ends of which are threaded in the opening just named and the rear opening of the bore. Such tube, it will thus be seen, serves the additional function of securing the mixer B to the base member A of the burner.

The manner of operation of my improved burner should be fairly obvious from the preceding description of its construction. The current of air entering through chamber A from supply pipe A' escapes through outlet opening a^2 into the mixer B, where, by reason of the interposition of core b^2 , such air current assumes an annular cross-section, following, in other words, the outer walls of the tubular mixer. In this form it enters the annular enlargement b' of such mixer; and, as it thus enters such enlargement, the stream of gas escaping through the openings b^7 in plate-supporting rib b^5 , that form in effect the discharge opening of bore b^4 , is forcibly discharged from within outwardly into each annular air current. The air blast on entering the en-

larged portion of the mixer tends to expand and this, taken in conjunction with the manner in which the gas is discharged into the air, assures of itself a thorough mixing of the two. However, the combined stream, being compelled to contract by the narrow aperture of the nozzle *b* beyond such annular enlargement, is still more thoroughly mingled. A very thorough intermixture of the two constituents of the blast is thus effected and, by proper regulation of the supply of air and gas to provide a completely combustible mixture, the greatest heating efficiency possible is secured. Aside from the thorough mixture and consequently high operative efficiency of my burner to which attention has just been called, I should also remark the simplicity of its construction, the burner involving, as it will be noted, only three separate parts, namely, the chamber A forming the base, the mixer B and the tube C connecting the two members just named.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a gas-burner, the combination of a chamber provided with angularly related inlet and outlet openings for the passage of air therethrough and with a smaller opening alined with such outlet opening for the gas supply, a mixer of general tubular form with an annular enlargement intermediate between its ends, said mixer consisting of a single casting and including an interior,

longitudinally disposed core spaced from the outer walls of the mixer, said core extending to a point adjacent to such enlargement and provided with an axial bore extending the entire length of the core, a gas supply pipe threaded in the rear end of such bore and in the smaller opening in said chamber, whereby said mixer is secured in place, and deflecting means at the front end of said core adapted to direct the gas radially as it enters the mixer.

2. In a gas-burner, the combination of a chamber provided with angularly related inlet and outlet openings for the passage of air therethrough and with a smaller opening alined with such outlet opening for the gas supply, of a mixer of general tubular form with an annular enlargement intermediate between its ends, said mixer consisting of a single casting and including an interior longitudinally disposed core spaced from the outer walls of the mixer, said core extending to a point adjacent to such enlargement and provided with an axial bore extending the entire length of the core, a transverse rib formed upon the front end of said core, the sides of said rib being intersected by such bore, a gas supply pipe connected to the rear end of the core, and a concavo-convex deflecting plate mounted upon said rib so as to be supported within such enlarged portion of the mixer, the convex face of said deflecting plate being disposed toward said core, to direct the gas radially as it enters the mixer.

Signed by me this 31st day of August, 1907.

JACOB WEINTZ.

Attested by—

D. T. DAVIES,
JNO. F. OBERLIN.