Oct. 14, 1924. 1,511,246

G. VAN DAAM

GAS BURNER

Filed June 16, 1921

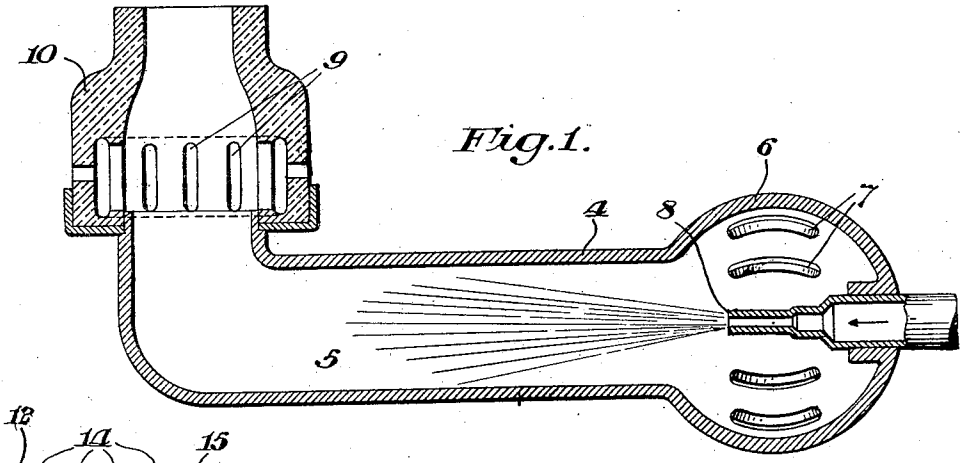


Fig. 1.

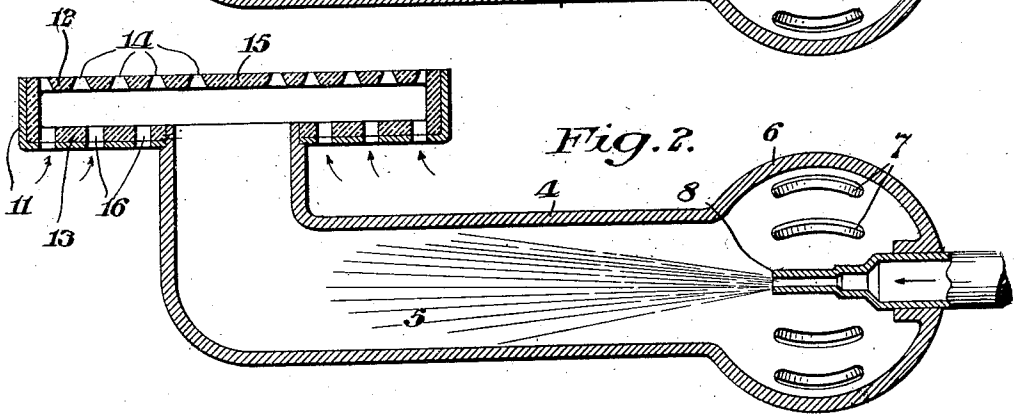


Fig. 2.

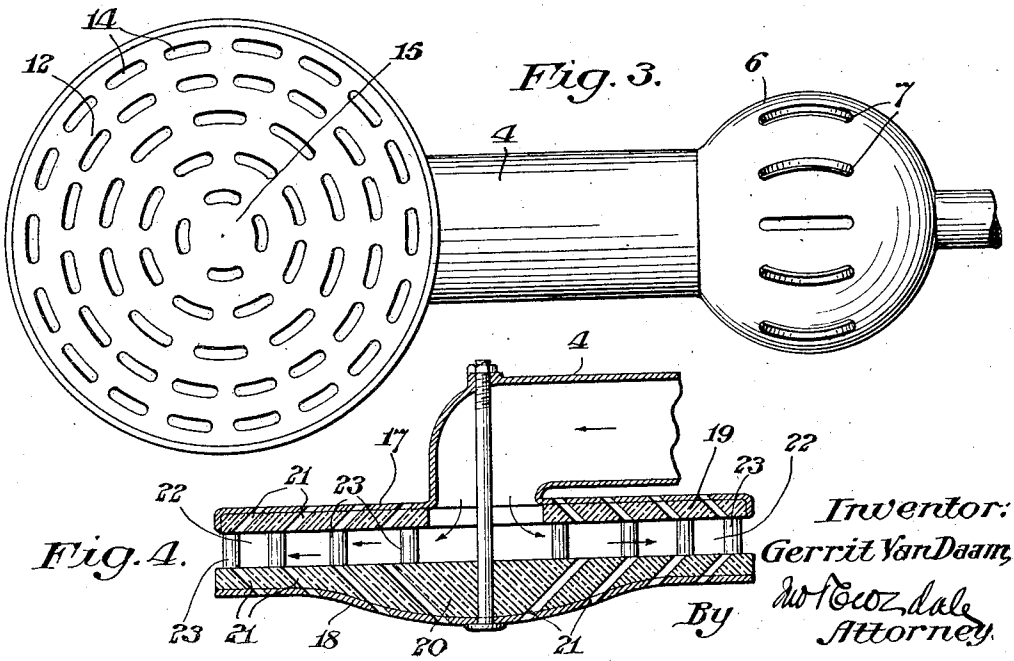


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

GERRIT VAN DAAM, OF BUFFALO, NEW YORK.

GAS BURNER.

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To all whom it may concern:

Be it known that I, GERRIT VAN DAAM, a citizen of the United States, residing at Buffalo, in the county of Erie, State of New York, have invented a new and useful Gas Burner, of which the following is a specification.

My invention relates to improvements in gas burners, the object being to produce a maximum of heat from the burning mixture of gas and air at the required point.

The invention comprises means forming a substantially closed elongated chamber into which a mixture of fluid combustible and air is introduced, and in which it is partly burned while traveling along the same.

The invention also comprises means whereby highly heated air is supplied to the burning mixture at a required point to facilitate final combustion and thereby intensify the heat at minimum expenditure of gas.

Referring to the drawings, which illustrate merely by way of example, suitable means for the embodiment of my invention:—

Fig. 1 is a longitudinal section showing one embodiment of my invention.

Fig. 2 is a section at the outlet or burner end showing a modification.

Fig. 3 is a plan view of same.

Fig. 4 is a section showing another modification.

Similar numerals refer to similar parts throughout the several views.

In accordance with the structure as shown in Fig. 1, the tubular portion marked 4, forms an enlongated chamber 5, to the left hand or front end of which is connected an enlarged chambered formation 6, provided with the air inlet slots 7. Into this chambered formation 6 projects the gas nozzle 8, which discharges the gas into the elongated chamber 5 of tube 4. This inrushing gas from nozzle 8 draws with it a limited amount of air through the slots 7; said gas and air mixing as it passes into chamber 5. The mixture is immediately ignited in any suitable way, and, being too rich for complete combustion, burns, more or less ineffectively as it moves toward the burner element 10, at the other end of formation or body 4.

This burner element 10 is provided at the lower part thereof with air inlets 9. The burner element 10 becomes highly heated by the burning mixture delivered thereto, and burning therein, and the air, passing through the inlets 9, also becomes highly heated before mingling with said burning mixture, which adds to the efficiency of the final combustion of said mixture, and consequently to the intenseness of the heat thereby developed.

The whole body of element 10 is preferably made of fire brick or other similar refractory material so as to withstand, without injury, the intense heat communicated thereto by the combustion of the mixture therein. If preferred of course this element may be formed of a shell of metal or other material, and covered or coated with fire clay or other similar refractory material.

In Fig. 2, the arrangement of the tube and of the gas and initial air-intake are similar to the construction shown in Fig. 1. The burner element 11 however is modified, and comprises two horizontal discs 12 and 13 spaced apart. The upper disc 12 is provided preferably with symmetrically arranged openings 14 for the discharge therethrough of burnt products. The portion 15 at the center serves as a baffle or spreader for the combustible mixture. The inlets 16 in the lower disc 13 are provided for the admission of additional air, which becomes highly heated in passing through said inlets, to mix with the burning mixture to increase the efficiency of the final combustion as above stated.

In the construction shown in Fig. 4, two discs are provided, spaced apart and forming an outlet around the periphery thereof for the burning mixture or the products of combustion. The air inlets are provided through the upper and lower discs, properly directed so that air will be drawn into the burning mixture as the same moves toward the peripheral exit or annular vent 22. In this structure shells are provided, as at 17 and 18, with which suitable bodies 19 and 20 of fire clay are associated. The walls of the inlet openings 21, passing through the fire clay are adapted to become very hot, thereby heating the air which is drawn in to be mixed with the burning mixture, before it discharges through the annular vent 22.

A series of pins or posts 23, made of fire clay or coated with fire clay, are arranged between the two discs 19 and 20 near the peripheral margins thereof as shown. These tend to secure a more even distribution of

the discharge of burnt products, and to contribute in maintaining the discs properly spaced, and to intensify the heat communicated to said discs from the burning mixture.

What I claim is:—

1. In a gas burner, the combination with a tube, means for delivering gas into the tube, means for mixing air with the gas in the tube, so that the mixture shall burn therein, and a burner element connected with the discharge end of the tube, comprising superimposed discs of refractory material spaced apart and forming an outlet around their peripheries for the flaming products.

2. In a gas burner, the combination with a tube, means for delivering gas into the tube, means for mixing air with the gas in the tube so that the mixture shall burn therein, and a burner element connected with the discharge end of the tube, comprising superimposed discs of refractory material spaced apart and forming an outlet at their peripheries for the flaming products, and also provided with means for introducing into the space between the discs additional heated air to mix with the burning mixture.

3. In a gas burner, the combination with a tube, means for delivering gas into the tube, means for mixing air with the gas in the tube, so that the mixture shall burn therein, and a burner element connected with the discharge end of the tube, comprising superimposed discs of refractory material spaced apart and forming an outlet at their peripheries for the flaming products, and a plurality of posts of refractory material interposed between said discs, and near the peripheries thereof.

GERRIT VAN DAAM.