

E. G. VAN ZANDT.

GAS BURNER.

APPLICATION FILED NOV. 8, 1909. RENEWED JULY 5, 1912.

1,045,470.

Patented Nov. 26, 1912.

Fig. 1.

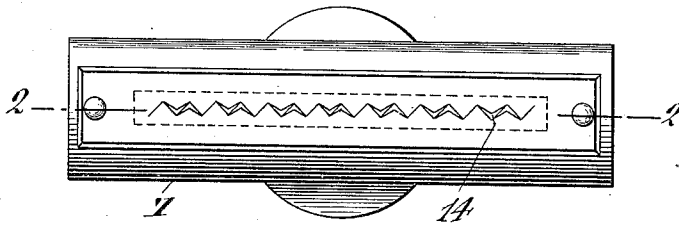


Fig. 2.

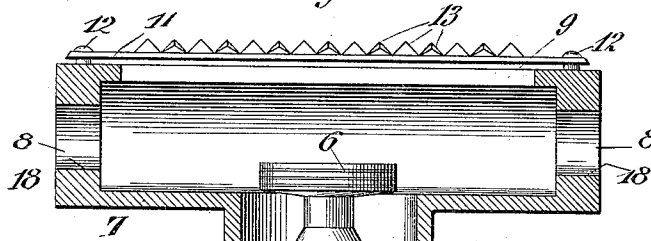


Fig. 4.

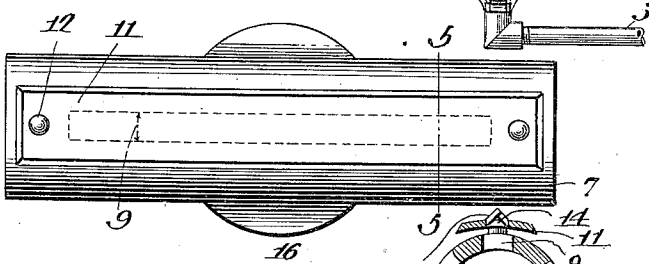


Fig. 3.

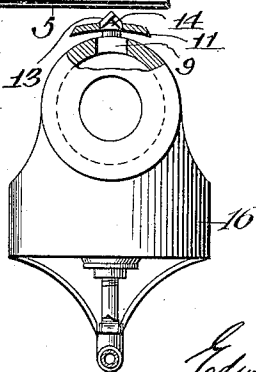
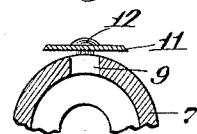


Fig. 5.



Witnesses:
James Fish
John Murtagh

Edwin J. Van Zandt, Inventor
By his Attorney Cooper & Cooper.

UNITED STATES PATENT OFFICE.

EDWIN G. VAN ZANDT, OF ST. LOUIS, MISSOURI, ASSIGNOR TO VAN ZANDT GAS APPLIANCE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

GAS-BURNER.

1,045,470.

Specification of Letters Patent.

Patented Nov. 26, 1912.

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To all whom it may concern:

Be it known that I, EDWIN G. VAN ZANDT, a citizen of the United States, and resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to gas-burners and more particularly to improvements to the structure such as shown in the United States Letters Patent No. 838,596, granted to me December 18, 1906, and Letters Patent No. 876,507, granted to me January 14, 1908; and this invention relates more particularly to means whereby the combustion of gases of an initial burner are rendered more complete.

The object of this invention is to provide such means to bring about the combustion of gases of an initial burner to such an extent that all combustible gases, as also all poisonous gas, unburned by the initial burner and collected, are subjected to a second burning, so that thereby complete or almost complete combustion results in that an obstruction is presented to the products of combustion during their burning.

In the accompanying drawings, Figure 1 is a plan-view of one embodiment of my invention, Fig. 2 is a vertical longitudinal section taken on line 2—2 of Fig. 1, Fig. 3 is an end-view of the embodiment shown in Fig. 1, part being shown in vertical section, Fig. 4 is a plan-view of another embodiment of my invention, and Fig. 5 is a vertical partial section of Fig. 4 taken on line 5—5.

Similar reference characters indicate corresponding parts throughout the several views.

Referring to the drawings, the pipe 5 is connected with some suitable gas-reservoir (not shown), to which pipe a burner 6, of approved form, with air-mixer 4, is attached, which burner is preferably of the Bunsen type. Surrounding the burner is a shell or container 7, provided at its ends with openings 8, and at the top with an opening 9. The shell or container has a downwardly-projecting flange 16 resting on struts 17 supported by the pipe 5. The openings 8 are somewhat smaller in diameter than the bore of the shell or container, being made so by internal flanges 18, and the object of this is to provide a restricted passage for the products of combustion resulting from the com-

bustion of gas of the initial burner 6 so as to bring about as nearly complete combustion of the gas and also of the combustible portions of the products of combustion, within the shell, as possible. The object of the vent-opening 9 at the top of the shell or container is to provide means for the outflow of the combustible products of the flame of the burner 6, the combustible portions of which burn at the exterior thereof in the form of a flame of blue color. The vent-opening 9 at the top of the shell does not extend the full length of the shell, but may be made to do so, if found desirable.

The structure as far as described is similar to that described in United States Letters Patent No. 876,507, herein above referred to, but differs from the same in the opening at the top of the shell or container. The opening 9 at the top of the shell or container has parallel walls, of some distance apart. In order to retard the flow of gases from the interior of the shell or container to the outside of the same, an obstructing or deflecting plate 11 is provided, which is secured at its ends to the shell or container 7 by means of suitable screws 12 in such a manner as to be raised slightly above the shell or container. The plate 11 is wider than the vent-opening 9. By the impedance thus produced the products of combustion are retarded to such an extent that they are first heated in the shell or container before they emit from the shell or container, and by reason of the plate are deflected or spread in their heated condition, so that when ignited they are completely or almost entirely burned. The plate 11 acts in the nature of a deflector or spreader, and the superheated products of combustion pass in their ignited state over the edges of the deflector-plate. This plate is slightly curved in Fig. 3, while in Fig. 5 it is shown flat.

To still further increase the spreading of the gases and so subject them to as complete combustion as possible, the plate is further provided with angular incisions and the serrations formed by the remaining material are raised from the main body thereof, so as to form projections 13, as shown in Figs. 2 and 3. In this case also an obstruction to the current of the products of combustion is produced, and the gases caused to be heated, whereby the gas passing out of the shell is burned, and the gases are in their ignited

state caused to pass over the edges of the plate, through the openings 14 and past the projections 13.

The bottom of the shell or container 5 shown in Fig. 2 is entirely open at the bottom, but may also be provided with restricted openings, as shown in the patents referred to. This opening, as will be readily understood, as also the openings 8 and 9, 10 must be determined by considerations depending on the size of burner, heat to be supplied, etc.

My invention consists further in the arrangement of a horizontal cylindrical shell 15 having a vent opening along the uppermost part of it and a vent opening at each end and a plate disposed over said first named vent opening, which plate is of such a distance from the shell as to cause the burning 20 of the products of combustion passing between the shell and plate. And further in providing the plate with openings for burning the gases passing therebetween at the exterior of the plate, and lastly in providing 25 the plate with projecting portions partly covering the openings of the plate.

The combustion of the burner is very nearly perfect as is shown by the fact that the flame at the vent-opening 9 on the top of 30 the shell or container passing over the plate or deflector 11 in the form illustrated by Figs. 4 and 5 or over the perforated plate 11 with projections 13 in the other form, is very thin and almost transparent, and has 35 very little heat, inasmuch as the hand can be placed in it for a considerable time without injury.

I have shown several embodiments of my invention, but do not wish to limit myself to 40 the details of the same, since changes may be made therein without departing from the spirit of my invention.

I claim as new:

1. In a gas-burner, the combination of a 45 shell having a vent-opening therein, a plate disposed over said vent-opening, said plate having vent-openings therein and project-

ing portions thereon extending partly over the vent-openings of the plate, and an initial burner within said shell.

2. In a gas-burner, the combination of a 50 shell or container having a longitudinal vent-opening at the top-part thereof, an initial burner within said shell, and a plate arranged over said vent-opening, said plate 55 being provided with openings therein and projections thereon, said projections extending partly over the openings of the plate, and the openings of the plate being disposed over the opening of the shell.

3. In a gas-burner, the combination of a horizontally disposed cylindrical shell provided with an air-inlet opening and restricted end-vents and, at the top, with a longitudinal vent-opening, an initial burner with- 65 in said shell, and a plate having vent-openings disposed over said longitudinal vent-opening.

4. In a gas-burner, a horizontal cylindrical shell having a vent-opening along the upper- 70 most part of it and a vent-opening at each end, and a plate disposed over said first-named vent-opening, said plate being of such a distance from the shell as to cause the burning of the products of combustion pass- 75 ing between the shell and plate.

5. In a gas-burner, the combination of a shell having an opening therein, and having restricted end vents, an initial burner within said shell, and a plate having vent openings 80 disposed over said opening of the shell, said openings being restricted to prevent the passage therethrough of the flame of the initial burner and to cause the burning at the exterior of the plate at the opening of the 85 products of combustion passing through the openings.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

EDWIN G. VAN ZANDT.

Witnesses:

FANNIE FISK,
C. P. GOEPEL.