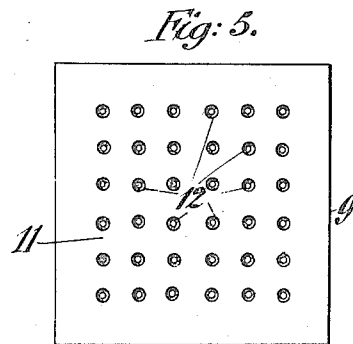
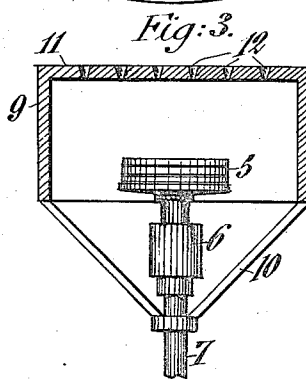
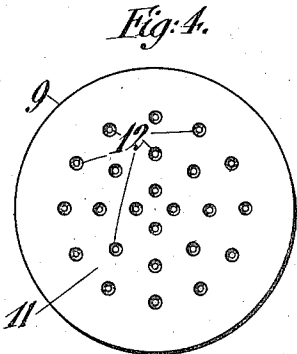
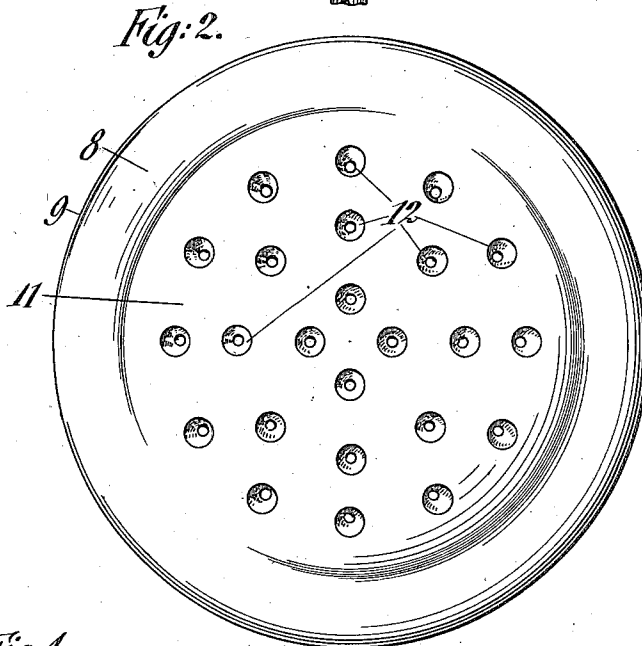
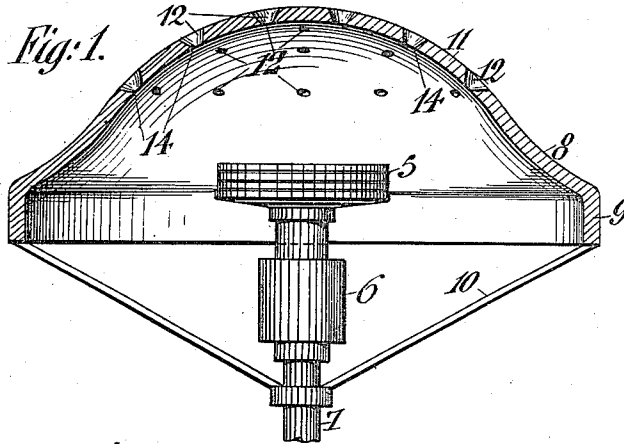


E. G. VAN ZANDT.  
GAS BURNER.

APPLICATION FILED DEC. 14, 1909. RENEWED APR. 19, 1912.

1,045,469.

Patented Nov. 26, 1912.



Witnesses:  
John Murtagh  
J. A. Cook

Edwin G. Van Landt  
By his Attorneys  
Loepel & Loepel.

# 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.

1,045,469.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed December 14, 1909, Serial No. 533,056. Renewed April 19, 1912. Serial No. 691,833.

*To all whom it may concern:*

Be it known that I, EDWIN G. VAN ZANDT, a citizen of the United States, residing in 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 of the kind in which, after the initial burning, the products of an initial burning are re-treated to cause a more complete combustion.

The object of this invention is to provide a burner which will gather the products of the initial burning and pass them successively through various conditions of temperature and air supply, whereby the various constituents of the initial burning are each at some time subjected to the proper conditions for complete and efficient burning. To this end I have provided a burner in which a suitably shaped inverted shell having properly disposed perforations in the top is placed over a suitable initial burner.

In the accompanying drawing, Figure 1 is a central vertical sectional view of the improved burner. Fig. 2 is a plan of the same. Fig. 3 is a central vertical sectional view of a modification of the invention, and Figs. 4 and 5 are plans of alternate forms of the embodiment shown in Fig. 3.

Similar characters of reference indicate corresponding parts.

Referring more particularly to the drawings, the improved burner is shown provided with an initial burner 5 having a mixer 6 and the feed-pipe 7, all of which are well known.

In order to cause the products of combustion from this initial burner to be treated to the varying conditions hereinbefore described, an inverted shell or container 8 having a downwardly projecting annular flange 9, is placed over the initial burner; and this shell 8 is provided with supporting struts 10 connecting it to the pipe 7, or with any other suitable or desired supporting means. The shell is also provided, at or near the top 11, with suitably arranged outwardly flaring, or sectionally V-shaped, openings or perforations 12, having sharp inwardly projecting annular edges 14. The top part 11 of the shell 8, carrying the perforations 12 may have the approximate shape of a seg-

ment of a sphere, as shown in Figs. 1 and 2; or this part may be flat as shown in Figs. 3 to 5. Furthermore the shell 8 may have various shapes, as viewed from the top. For instance, the top of the shell shown in Fig. 3 may be round as shown in Fig. 4, or square, as shown in Fig. 5.

The action of the gas during combustion is as follows: The illuminating or other gas used, passing up the pipe 7, is supplied in the mixer 6 with the proper proportion of air and then passes out at the openings in the burner 5. Here it is ignited and the products of the combustion, including partially burned and unburned gases, if any, pass upwardly within the shell 8 and finally out at the perforations 12 and at the lower edge of the flange 9, where they burn with an almost colorless transparent flame which indicates substantially complete combustion. The burning of the gas causes the shell 8 to be very highly heated, and the disposition of the shell and the initial burner, and the configuration of the burner cause the gas or gases to pass radially from the initial burner and to be spread and intimately mixed with oxygen from the air. From the time the gas is ignited until the time that the combustible portions or the products of combustion are completely consumed, they are subjected to many different changes of temperature and air supply. At some time the best condition for complete combustion is supplied for each and every gas within the shell. In this manner complete combustion and highest efficiency is attained.

I claim as new:

1. In a gas-burner, a container entirely open at the bottom and having at the top perforations of V-shaped axial section, and an initial burner within the container.

2. In a gas-burner, a container entirely open at the bottom and having at the top perforations of V-shaped vertical section and an initial burner within the container, said container having its lower edge lower than said burner.

3. In a gas burner, a container entirely open at the bottom, having a plurality of perforations closely adjacent each other, and of substantially the same size, said perforations being outwardly flaring and having sharp inner edges, and an initial burner within the container.

4. In a gas-burner, the combination of a

wide open bottomed shell, comprising a top part consisting of an upwardly curved perforated plate, and side walls consisting of a downwardly extending narrow cylindrical flange, and an initial burner within the shell, said container having its flange extending lower than said initial burner, the diameter of said flange being great relative to its height.

10 5. In a gas burner, an initial burner and a shell or container entirely open at the bottom for retaining the combustible gases about said initial burner, said shell being provided with a plurality of restricted perforations at the top of the shell of substan-

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tially the same size and closely adjacent each other, each of such size as to permit the gradual egress of gases from said burner but to so retard the flow thereof that the gases are caused to burn at the exterior of the shell, said initial burner being within the shell or container.

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:

JOS. B. WIDEN,  
HERRICK J. GRAY.