

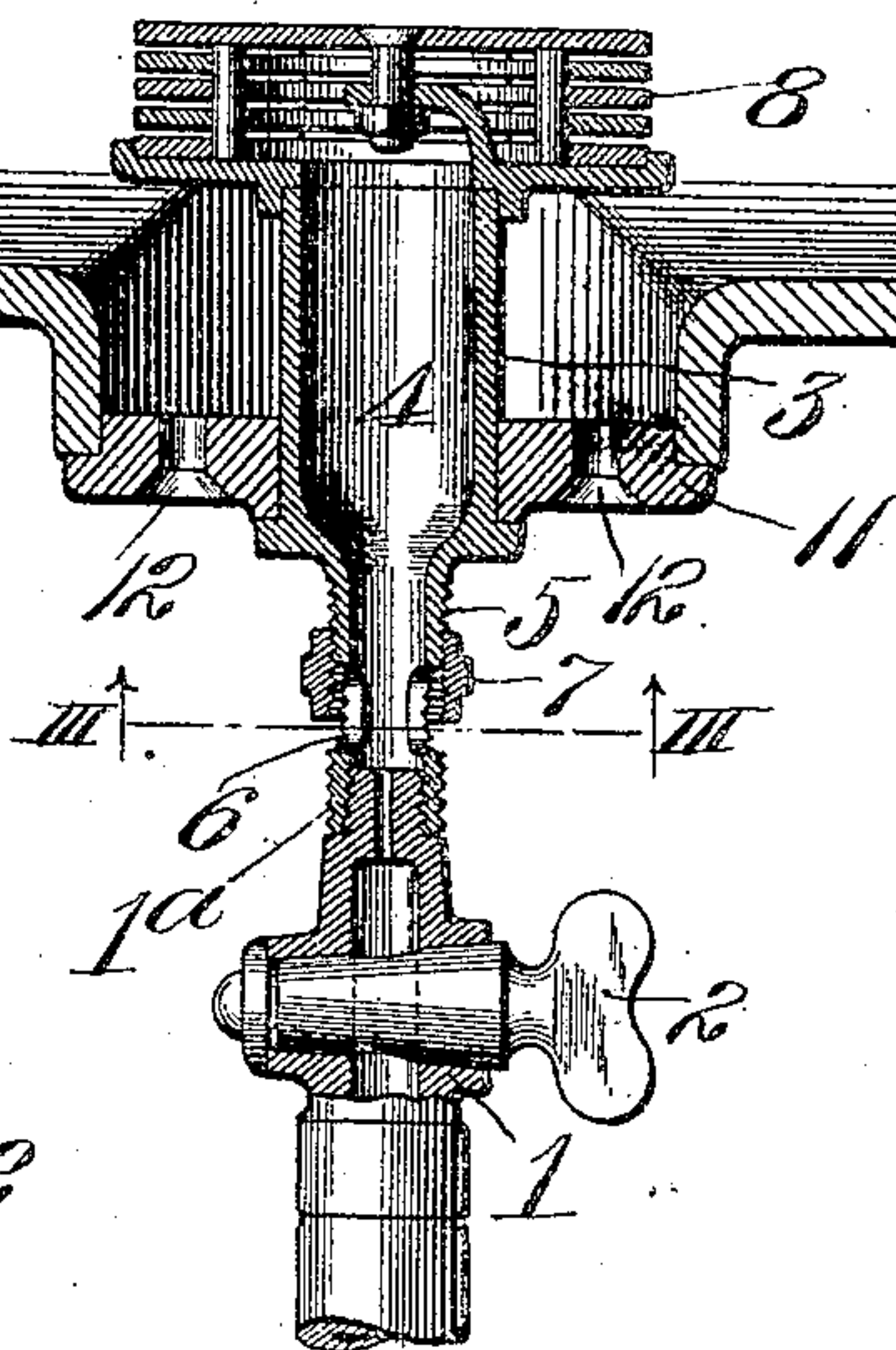
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PATENTED DEC. 18, 1906.

E. G. VAN ZANDT.

GAS HEATER.

APPLICATION FILED JULY 26, 1905.



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UNITED STATES PATENT OFFICE.

EDWIN G. VAN ZANDT, OF ST. LOUIS, MISSOURI.

GAS-HEATER.

No. 838,596.

Specification of Letters Patent.

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Application filed July 26, 1905. Serial No. 271,270.

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, in the State of Missouri, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a gas-heater; and the invention has for its object to produce a heater of this kind in which in its use there is absolute, or approximately absolute, combustion of the gas, or, in other words, a heater in which the carbon oxid of the gas, which is a poison given off from all gas-flames, is burned and destroyed. In order to do this, I burn the gas while issuing from a suitable burner located inside of a shell open at both of its ends and having a vent at its upper side, through which the carbon oxid escapes from the shell to be burned at the exterior thereof, due to the shell when heated causing ignition of the carbon oxid. The shell should be of a material which will retain sufficient heat to gain the desired result. The construction of the heater providing for the destruction of the carbon oxid obviates the danger of death to persons breathing it, so common with open gas-flames, and also provides for the destruction of all odors commonly present in burning gas in the types of gas-heaters heretofore in use.

Figure I is a perspective view of my gas-heater, shown located within a gas-heater housing. Fig. II is an enlarged longitudinal section taken through the heater. Fig. III is a horizontal cross-section taken on line III III, Fig. II, looking in the direction of the arrows crossing said line and showing in bottom view the air-inlet chamber of the heater above said line. Fig. IV is an enlarged view of the air-admission-regulating valve.

1 designates a gas-pipe-cock nipple, and 2 a controlling-cock seated in said nipple. The nipple 1 is provided with a neck 1^a, having a duct therein, through which the gas escapes after passing the cock 2.

3 designates a cup that contains a mixing-chamber 4 and which has a threaded neck 5, that is fitted to the neck of the gas-pipe-cock nipple. In the neck of the cup 3 are air-inlets 6, that are controlled by a valve-ring 7, fitted to said neck.

8 is a burner fitted to the upper end of the cup 3 and through which gas with air mingled therewith escapes to burn after the mixture of the gas and air has taken place in the mixing-chamber 4.

9 designates the main shell of my heater, within which the burner 8 is positioned, so that the flame burning from said burner will be inclosed within said shell. The main shell is tubular, both of its ends being open for the purpose of permitting ingress of air into the shell from each end. The shell is arranged in a horizontal position in order that the channel therein extends horizontally. In the wall of the shell is any desired number of vent-openings 10, which are preferably disposed at the top of the shell.

11 is an air-inlet member surrounding the mixing-chamber cup 3 and centrally disposed at the lower side of the main shell 9. This air-inlet member is provided with air-admission ducts 12, which extend vertically through the member and are flared at their lower ends in order that the air passing therethrough may find the most ready ingress to the interior of the main shell and enter the shell with increased force over that which would be attainable if the air-ducts were made straight from end to end.

In the practical use of my heater the burner 8 is first put in service by igniting gas escaping therefrom, and during the initial burning of the gas escaping from said burner the main shell 9 becomes highly heated, so that in the continued use of the entire heater there will be occasioned a beneficial action upon the gas, which will be presently stated. After the burner has been in operation a length of time sufficient to thoroughly heat the main shell around it said shell serves to give off heat to the gas, as a consequence of which the gas becomes superheated and thoroughly dried and the air surrounding the main shell is drawn therein through its open ends, thereby occasioning a draft into the main shell at its ends and upwardly through the vent-openings 10, with the result that the gas passes therethrough and burns at the outer side of the main shell. This draft also creates a constant circulation of air around the burner 8, which acts to maintain said burner at a low temperature.

I have found by experiments that the kind of burner used in my heater is unimportant; but it is essential to the satisfactory opera-

tion of the heater that the shell around the burner must occupy a horizontal position, or a position that provides for the channel through the shell being a horizontal one instead of a vertical one, thereby providing for a horizontal draft through the shell for the purpose of preventing the burner therein from becoming heated to too high a degree. If the shell is placed in an upright position, so that the channel therein is vertical, the burner in the shell becomes heated to too high a degree or heated to a red heat, and the flame will not continue to burn within the shell, but will become extinguished by "back-firing," and therefore a heater so made is impracticable if constructed in other respects in accordance with my invention. I have also discovered that if my heater is made in accordance with my invention, with the exception of the air-inlets in the bottom of the casing, the flame burning from the burner becomes exhausted or dead, and for this reason the most perfect results are not gained.

In Fig. 1, I have shown my burner located within a housing such as it may be used in connection with; but I wish it understood that I do not restrict my self to the use of the heater in this or in any other form of housing. The housing illustrated consists of a base 13, provided with air-openings 14, passing vertically therethrough, and housing-walls 15, having air-holes 16. I have found it of advantage to incase my heater in a housing of this character, for the reason that the draft in the heater-shell is increased and the heat

is in a measure confined and issues from the housing with better effect. At the top of the walls of the heater-housing is a deflector 17, which serves to direct the heat from the heater in a downward direction toward the floor on which the housing is seated.

I claim—

1. A gas-heater comprising a burner, a shell surrounding said burner, and having a channel extending horizontally therethrough, and an air-inlet member in said shell beneath said burner and through which air is supplied to the interior of said shell; said air-inlet member being provided with ducts having flaring lower ends, substantially as set forth.

2. A gas-heater comprising a burner, a shell surrounding said burner, and having a channel extending horizontally therethrough, and an air-inlet member beneath said burner and through which air is supplied to the interior of said shell; said shell having a vent at the top thereof, substantially as set forth.

3. A gas-heater comprising a burner, a shell surrounding said burner, and having a channel extending horizontally therethrough, and an air-inlet member in said shell beneath said burner and through which air is supplied to the interior of said shell; said shell having a vent at the top thereof, and said air-inlet member being provided with ducts having flaring lower ends, substantially as set forth.

EDWIN G. VAN ZANDT.

In presence of—

NELLIE V. ALEXANDER,
BLANCHE HOGAN.