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J. C. KRIEG.

GAS BURNER FOR FURNACES.

APPLICATION FILED JAN. 30, 1907.

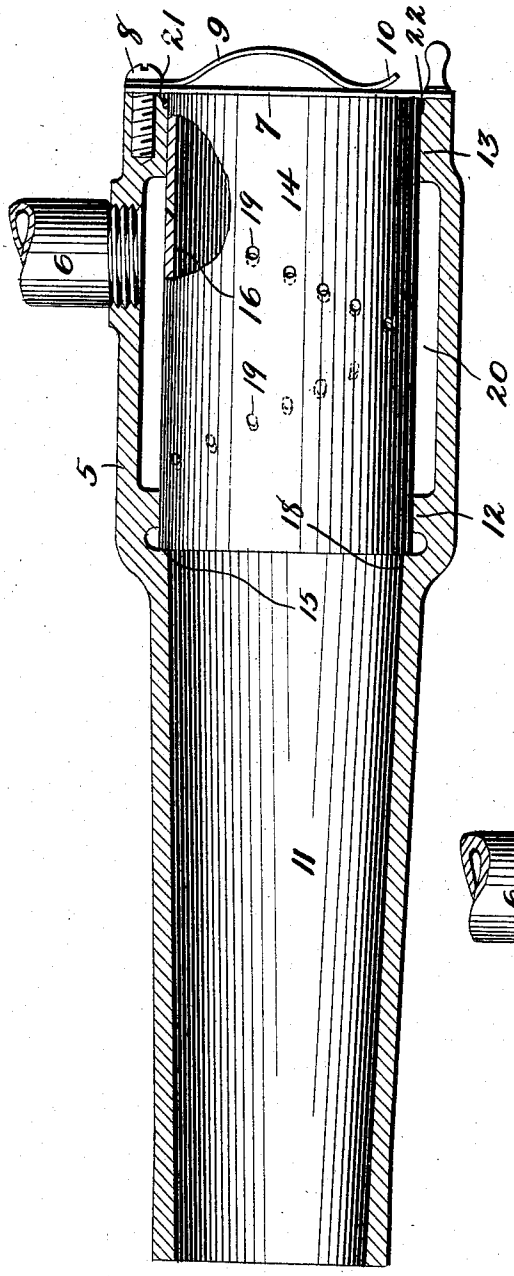


Fig. 1.

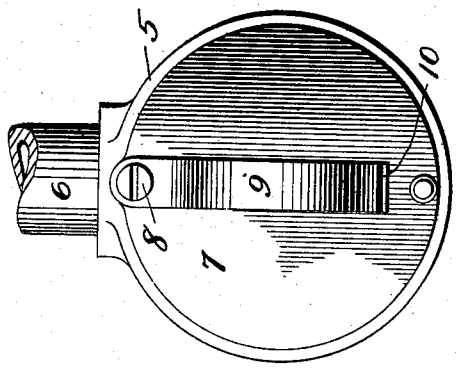


Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHN C. KRIEG, OF NEWARK, OHIO, ASSIGNOR TO THE KRIEG GAS BURNER COMPANY, OF NEWARK, OHIO, A CORPORATION OF OHIO.

GAS-BURNER FOR FURNACES.

No. 867,382. Specification of Letters Patent. Patented Oct. 1, 1907.

Application filed January 30, 1907. Serial No. 354,804.

To all whom it may concern:

Be it known that I, JOHN C. KRIEG, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Gas-Burners for Furnaces, of which the following is a specification.

My invention relates to gas burners for furnaces and has for its object the provision of a device of this character constructed in such manner as to secure an efficient mixing of the air and gas to thereby insure proper combustion.

The principal object of the invention is the provision of a gas burner adapted to accomplish the foregoing objects and constructed in such manner that it may be very cheaply made and one comprising a minimum of parts.

Further objects and advantages of the invention will be set forth in the detailed description which now follows.

In the accompanying drawing: Figure 1 is a longitudinal sectional view through the gas burner, the combustion tube being shown partly in elevation, and, Fig. 2 is a rear end elevation of the burner.

Like numerals designate corresponding parts in both of the figures of the drawing.

Referring to the drawing, the numeral 5 designates an outer shell to which gas is directed through a fuel supply pipe 6. A door 7 is hinged upon a screw 8. This screw also passes through the upper end of a flat spring 9, the free end 10 of said spring bearing against the lower portion of the door and serving to hold said door tightly against the rear end of the shell 5. A nozzle 11 is formed integral with the shell 5, said nozzle being a tapering one, as is clearly illustrated in Fig. 1. Annular flanges 12 and 13 are formed upon the inside of the body portion of the shell 5. A combustion tube 14 is driven into this shell and expanded therein. The forward edge of the combustion tube abuts against the shoulder 15 formed at the juncture of the body portion of the shell 5 with the nozzle 11. The inner periphery of the combustion tube indicated at 16 lies flush with the inner periphery of the nozzle indicated at 18, by virtue of which construction any shoulders or dead air spaces which would tend to set up eddy currents, at the forward end of the combustion tube, are obviated. The combustion tube 14 is pierced by a series of spirally arranged ports 19, said ports establishing communication between the interior of the combustion tube and the chamber 20 which is formed between said combustion tube and the outer shell 5. These ports 19 as is clearly illustrated in Fig. 1, are directed at an angle to the axial line of the tube. By virtue of this construction the gas is not only directed into the core of air which flows through the rear end of the combustion tube, at an angle, but the jets of gas from each of the ports strike into said core of air at different points along the line of flow of the air. The flow of air may be controlled by the door 7 as will be readily understood. A soft metal ring 21 such as copper is driven into an annular recess 22 at the rear end of the shell 5 and forms an efficient calking between the shell and the combustion tube at that point. An extremely accurate fit or tight joint between the forward end of the combustion tube and the flange 12 is not necessary, for if there should be a slight leakage of gas at this point, it will pass into the nozzle 11 and be consumed.

From the foregoing description, it will be seen that the present structure provides a gas burner which may be very cheaply manufactured, which is simple in construction and operation and which has no parts requiring fine adjustment or which will be likely to get out of order. By constructing the burner in such manner that the nozzle forms a part of the outer shell, the combustion tube is contained entirely within said shell and any leakage of gas between the combustion tube and the shell will be consumed. This is an important feature in devices of this character.

This invention is designed as an improvement upon the patents of Gwynn, reissue, of Dec. 6, 1904, #12293, and Kraus, #795,044, patented July 18, 1905, and it is designed to obviate the difficulty and danger arising from leakage between the outer chamber and the combustion tube of the Gwynn patent and to prevent the setting up of eddy currents which results when the nozzle is of much larger diameter than the combustion tube as in the Kraus device.

What I claim, is:

1. In a gas burner, the combination with an outer shell, of a combustion tube located within said shell and spaced therefrom to form a gas chamber between said shell and said tube, there being ports formed in the wall of the combustion tube which establish communication between said gas chamber and the interior of said tube, said ports being directed at an acute angle to the axial line of the tube in the direction of gas flow, but toward said axial line, and said ports being spirally arranged about said tube, and a nozzle projecting from the outer shell, the interior diameter of which is equal to the interior diameter of the combustion tube at their juncture, substantially as described.

2. In a gas burner, the combination with an outer shell, of a combustion tube located within said shell and spaced therefrom to form a gas chamber between said shell and said tube, there being ports formed in the wall of the combustion tube which establish communication between said gas chamber and the interior of said tube, said ports being directed at an acute angle to the axial line of the tube in the direction of gas flow, but toward said axial line, and said ports being spirally arranged about said tube, a nozzle projecting from the outer shell, the interior diameter of which is equal to the interior diameter of the com-

bustion tube at their juncture, and a door adapted to control the admission of air to the rear end of the combustion tube, substantially as described.

3. In a gas burner, the combination with an outer shell which comprises a body portion and an integral nozzle projecting from said body portion, of annular flanges formed upon the inside of the body portion, a combustion tube supported by said flanges, there being a shoulder formed upon the nozzle portion of the burner against which the forward end of said combustion tube abuts, the interior diameter of said combustion tube and the interior diameter of said nozzle portion being equal at their juncture to form a continuous and unbroken wall, a swinging door hinged to the rear end of the casing which is adapted to close the rear end of the combustion tube there being a gas chamber formed by the shell and the outer surface of the combustion tube, there being ports formed through the wall of the combustion tube which establish communication between said gas chamber and the interior of said tube, said ports being spirally arranged about said tube and directed at an acute angle to the axial line of the tube in the direction of gas flow but toward said axial line, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. KRIEG.

Witnesses:
CHARLES L. STORY,
JOHN A. CHILCOTE.