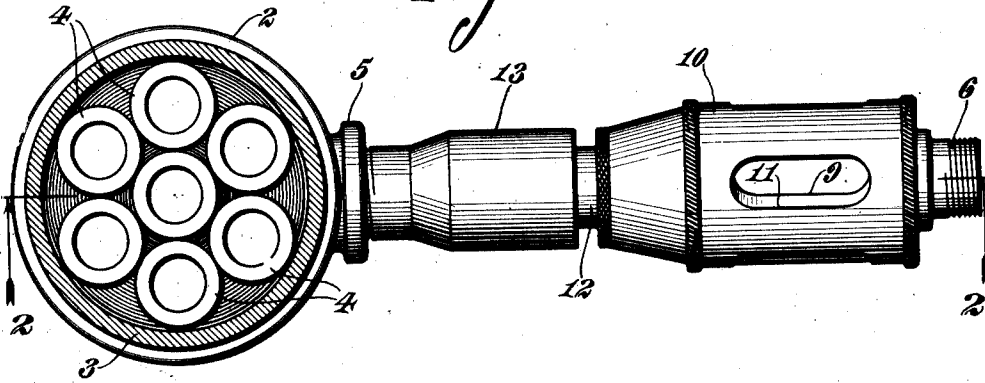


H. V. DEEMAR.  
 GAS BURNING APPARATUS.  
 APPLICATION FILED SEPT. 4, 1917.

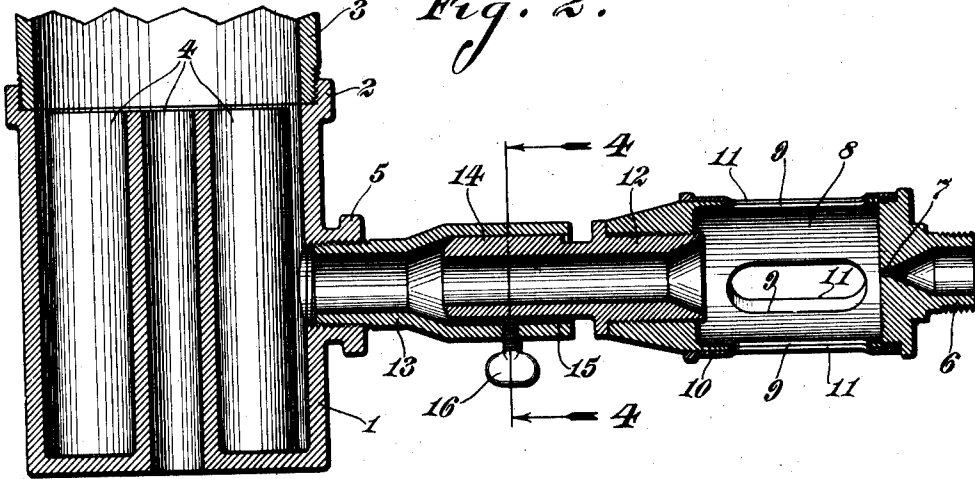
1,341,266.

Patented May 25, 1920.

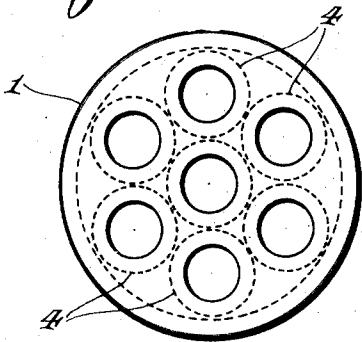
*Fig. 1.*



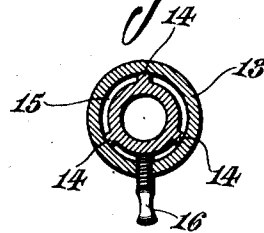
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Inventor:  
 HENRY V. DEEMAR,  
 By John N. Brunning,  
 His Attorney.

# UNITED STATES PATENT OFFICE.

HENRY V. DEEMAR, OF ST. LOUIS, MISSOURI.

## GAS-BURNING APPARATUS.

1,341,266.

Specification of Letters Patent.

Patented May 25, 1920.

Application filed September 4, 1917. Serial No. 189,688.

*To all whom it may concern:*

Be it known that I, HENRY V. DEEMAR, a citizen of the United States, and residing at St. Louis, Missouri, have invented the new and useful Improvement in Gas-Burning Apparatus, of which the following is a specification.

This invention relates to gas burning apparatus.

In certain applications of gas burners, it is necessary to discharge a flame into confined spaces. This is, for instance, the case where a flame must be discharged into the flue of a hot water heating furnace, or into the flue of a hot water heater. In such a case, it is difficult to obtain complete combustion, especially where the tube is long.

One of the objects of this invention, therefore, is to provide a gas burning apparatus in which there is a secondary admission of air in such a manner as to complete the combustion of the flame so that this flame can travel along and through long tubes.

Further objects will appear from the detail description taken in connection with the accompanying drawing, in which,

Figure 1 is a plan, partly in section, of a gas burner apparatus embodying this invention;

Fig. 2 is a section on the line 2—2, Fig. 1; Fig. 3 is a bottom view of the burner; and, Fig. 4 is a section on the line 4—4, Fig. 2.

Referring to the accompanying drawing, 1 designates a casing open at the top having a screw thread 2, adapting it for connection with a tube 3, such as the lower end of a flue in a hot water furnace or a hot water heater. This casing is provided with a series of pipes 4, arranged in spaced relation within the casing, and forming a series of open ended ducts open at the bottom to the outside air and terminating at the top at the terminus or mouth of the casing. The casing has a connection 5, adapted to receive a pipe by which a gas and air mixture is supplied to the gas chamber within the casing surrounding the pipes 4. The casing with its ducts may be formed in any suitable manner, as by casting, or the pipes 4 may be formed separately and secured in position inside of the casing.

The mixer may be of any suitable construction, and comprises a connection 6 adapted to be attached to a source of gas supply. The gas issues through a small

aperture 7 into a chamber 8 which is provided with openings 9 and surrounded by a removable sleeve 10, having openings 11, whereby the supply of air to the chamber 8 may be controlled. The chamber 8 is connected by a pipe 12 with a pipe 13 screwed into the connection 5. The pipe 12 has lugs 14 forming air spaces 15, and this pipe is secured in position by a wing nut 16.

Gas entering through this restricted aperture 7 will be mixed with air in the chamber 8, and this mixture will be further mixed in the pipe 13, with air entering through the passages 15. There is thus discharged into the gas chamber formed in the casing 1, a carbureted mixture, and this carbureted mixture surrounds the pipes 4 and issues at the terminus or open mouth of the casing and at the terminus of the pipes. When the gas is ignited, it forms a flame at the terminus or mouth of the casing, and on account of the heat generated, strong columns of air will pass through the air ducts and will be discharged into the flame, so as to form cones. This will complete the combustion of the gas in the combustion chamber formed above the gas chamber and in the flue 3, and on account of the unrestricted flow from the gas chamber, the gas will burn with great rapidity producing an almost explosive combustion which will give a strong flame of great length, but which will not have a blow-pipe effect, in that it will not cut the walls of the combustion chamber. This elimination of the blow-pipe effect is caused by the large area of the flame. However, the combustion will be complete, and the flame will, as stated, be of great length, so as to be utilized with its greatest efficiency in long flues.

It is obvious that various changes may be made in the details of construction without departing from the spirit of this invention. It is, therefore, to be understood that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention, what is claimed is:

1. A gas burning apparatus, comprising, a casing forming an open mouthed gas chamber, adapted to permit unrestricted discharge of gas at its mouth, an air duct passing through said gas chamber and adapted to discharge a column of air into the flame at its origin, means for discharging a mixture of air and gas into said gas chamber and

around said duct, and a long narrow tube at and directly connected to the mouth of said casing, adapted to receive the flame, whereby the flame formed at the mouth of said casing is carried into and along said tube.

2. A gas burning apparatus, comprising, a casing forming an open mouthed gas chamber, an air duct passing through said gas chamber and adapted to discharge a column of air into the flame at its origin,

means for discharging a mixture of air and gas into said gas chamber and around said duct, and a long, narrow tube at and directly connected to the mouth of said casing, adapted to receive the flame, whereby the flame formed at the mouth of said casing is carried into and along said tube.

In testimony whereof I affix my signature this 18th day of January, 1917.

HENRY V. DEEMAR.