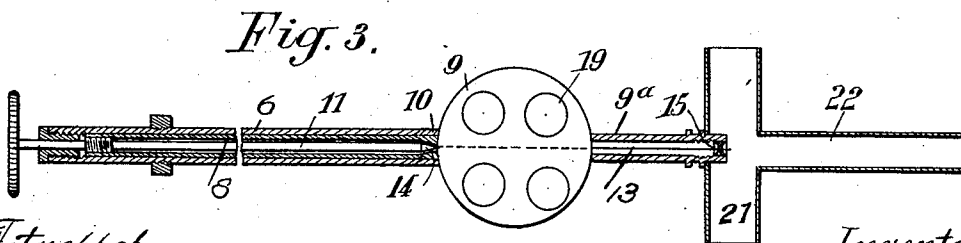
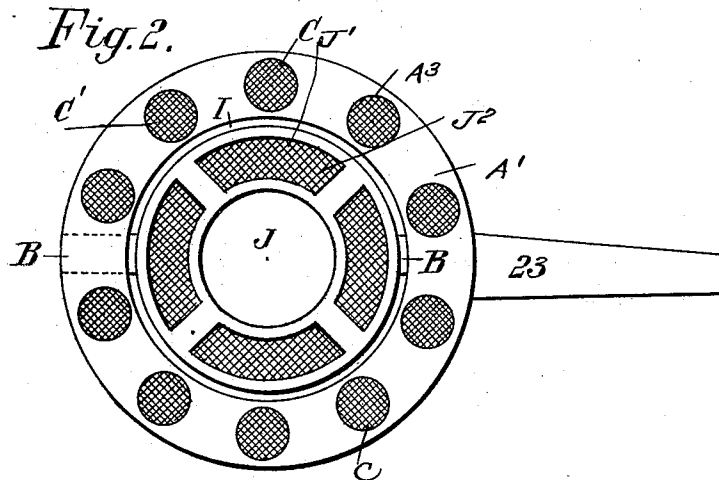
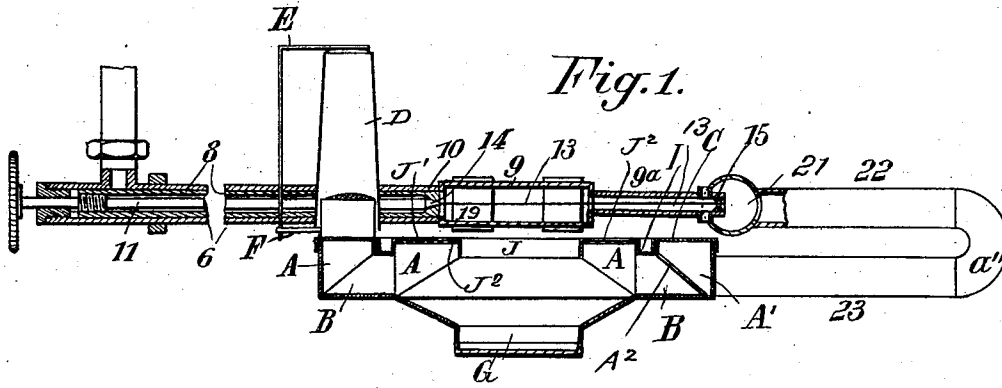


999,712.

Patented Aug. 1, 1911.

3 SHEETS-SHEET 1.



Witnesses:

J. M. Meyer.
R. A. T. Bell.

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999,712.

Patented Aug. 1, 1911.

3 SHEETS—SHEET 2.

Fig. 4.

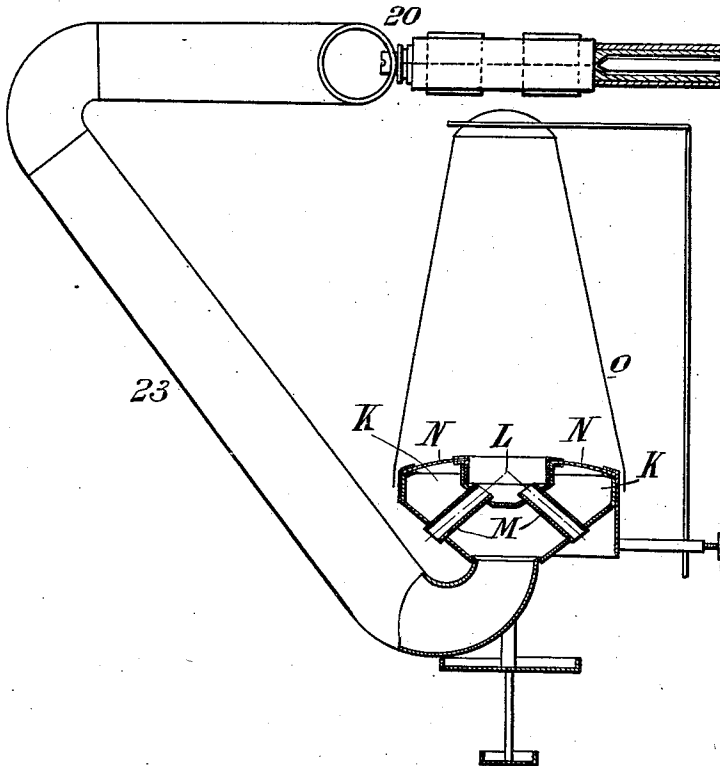
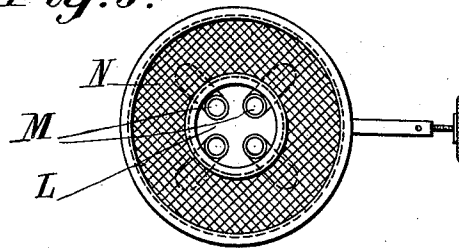


Fig. 5.



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M. A. GALVAO.
VAPOR BURNER.
APPLICATION FILED AUG. 22, 1910.

999,712.

Patented Aug. 1, 1911.
3 SHEETS—SHEET 3.

Fig. 7.

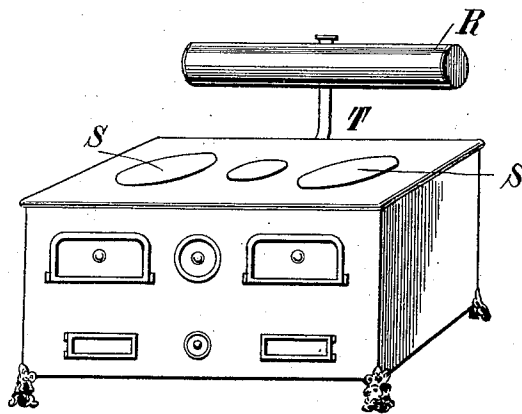


Fig. 8

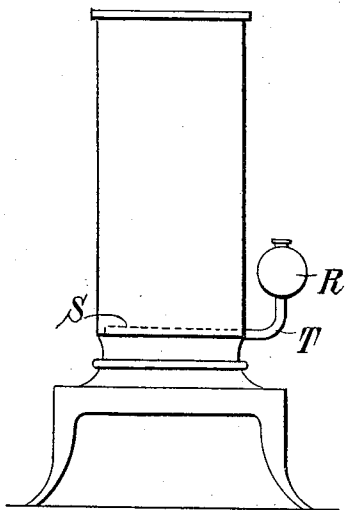
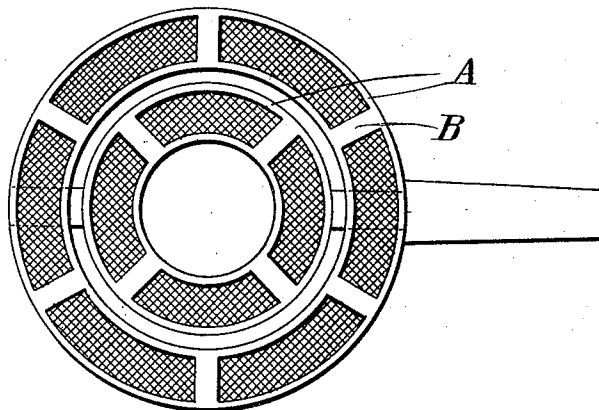


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

MANUEL ANTONIO GALVAO, OF PARIS, FRANCE.

VAPOR-BURNER.

999,712.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed August 22, 1910. Serial No. 578,444.

To all whom it may concern:

Be it known that I, MANUEL ANTONIO GALVAO, a citizen of the United States of Brazil, and resident of Paris, France, have
5 invented certain new and useful Improvements in Vapor-Burners, of which the following is a specification.

This invention relates to improvements in the construction disclosed in my prior Patent No. 953,906, dated April 5, 1910, and particularly to the means for distributing the gaseous mixture to the burners proper.

The object of the invention is to provide
15 a construction for more readily and expeditiously burning a larger volume of the gaseous mixture to increase the flame, whereby the device is adapted for various uses.

The invention also relates to the specific
20 details of construction and arrangement of parts which will be hereinafter described and particularly pointed out in the claims.

In the accompanying drawings: Figure 1 is an elevation, partly in section, and
25 illustrating the use of the invention when several mantles are employed. Fig. 2 is a top plan view of the burner. Fig. 3 is a horizontal valve section through the vaporizing and mixing chamber, the vaporizer
30 being in plan view. Fig. 4 is an elevation partly in section of a modified form of the invention. Fig. 5 is a detail plan view of the burner shown in Fig. 4. Fig. 6 is a detail plan view of a different form of burner.
35 Fig. 7 is a perspective view of a range with my invention applied thereto. Fig. 8 is an elevation of a heating stove, with the invention applied thereto.

The letter A, indicates a chamber formed
40 with a central opening J, and adjacent thereto other openings J', and over the latter are screens J². Below the opening J, is formed a cup G, to receive liquid fuel to prime the burner. Surrounding the chamber A, is an annular chamber A', having a
45 downwardly and outwardly inclined bottom A², and formed in its top with a series of opening A³, provided with screens C. The chambers A and A' are separated by a
50 slight space, indicated at I, and are connected by pipes B, B.

Located above and spaced from the opening J, and spaced from the chamber A, is a vaporizer 9, comprising a chamber formed
55 in its top and bottom with openings, for the reception of tubes 19, for the passage of the

heat when priming the burner. A tube 6, extends from the vaporizer, and within this tube is a bushing 8. This receives the stem 11, of a needle valve 14, the latter operating
60 in a tapered opening 10, in the chamber of the vaporizer. A supply pipe 2 communicates with the tube 6, and bushing 8, to supply liquid fuel to the vaporizer.

In alinement with the tube 6, and extending from the opposite side of the vaporizing chamber is a tube 9^a, which is reduced at its
65 outer end 15, the latter communicating with a mixing chamber. The mixing chamber comprises a horizontal tube 21, disposed at
70 right angles to the tube 9^a and open at both ends for the admission of air. Extending from the tube 21, and in alinement with the tube 9^a, is a pipe 22, which is curved at its
75 end A'', and communicates with a pipe 23, leading to the annular chamber A'.

Mantles, one of which is indicated at D, are supported over the screened openings A³, so that a series of heat radiating surfaces are provided. Each mantle is provided with
80 a rod E, supported on the projection F. When operating this form of the invention, liquid fuel is introduced in the cup G, which when ignited heats, the vaporizing chamber, and the chamber A, the flame passing up
85 through the opening J, and the tubes 19, and in the passage thereof, a sufficient quantity of air is mixed therewith to readily promote combustion. The valve 14 is opened, and as the liquid fuel introduced in the vaporizer
90 becomes heated it is injected through the restricted exit opening 15, of the tube 9^a. As the vapor is formed it is blown into the tube 22, and creates a partial vacuum in the tube 21, and thereby air is sucked into said tube
95 to mix with the vapor. The mixture directed by the pipes 22 and 23, into the annular chamber A', from whence it is distributed to the screened openings C, and through the pipes B, to the screened openings
100 J². The vapor may be ignited at the screened openings, or the mantles, as the case may be. Projecting from the needle valve 14, is a rod 13, which extends through the vaporizer and the restricted opening 15,
105 of the tube 9^a. When the valve is moved back and forth during the operation of the burner, the rod 13, is reciprocated through the opening 15, which serves to keep the passage clean.

For producing a large flame, I may substitute a burner such as shown in Figs. 4 and
110

5. This burner comprises a chamber K, having a central depression L, and an annular screened opening N, between the depression and the outer wall of the chamber.
- 5 Extending from the depression L, to the casing K are inclined air inlet pipes M, and communicating with the bottom of the chamber is a pipe 23. The pipe 23, extends upwardly to a point above the plane of the
- 10 top of a mantle O, fitted over the burner. The pipe communicates with a vaporizer 20 located over the mantle, as clearly shown in Fig. 4.
- In lieu of the arrangement of mantles
- 15 shown in Figs. 1 and 2, I may make the openings in the chamber A' larger, as shown in Fig. 6, to obtain a greater heating area.
- When using the improved burner for a range, the fuel tank R, is mounted on a pipe
- 20 T, as shown in Fig. 7.
- For heating stoves the burners are placed in the bottom, and the reservoir R and supply pipe extend to the outside, as shown in Fig. 8.
- 25 What I claim is:
1. In a vapor burner, the combination of a vaporizer, a valve for controlling said vaporizer, a burner arranged under the vaporizer, said burner comprising a plu-
- 30 rality of separated chambers, the bottoms of

which are inclined, the outer chamber being of annular formation, tubes connecting the chambers, and a pipe communicating with the annular chamber opposite the inclined bottom and the vaporizer.

2. In a burner, the combination of a chamber formed with a plurality of screened openings and having an inclined bottom, an annular chamber surrounding the aforesaid chamber and spaced therefrom and provided with an inclined bottom, said annular chamber having a plurality of screened openings, pipes connecting the two chambers, a vaporizer, and a tube communicating with the vaporizer and the annular chamber.

3. A burner of the class described, comprising a chamber having an inclined bottom and provided on top with a screen, means for admitting air inside the plane of the screen, a vaporizer over the burner, a pipe communicating with the vaporizer and the burner, and a valve for controlling the vaporizer.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

MANUEL ANTONIO GALVAO.

Witnesses:

C. VANBELSEN,
EMILE VON MANUELE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."