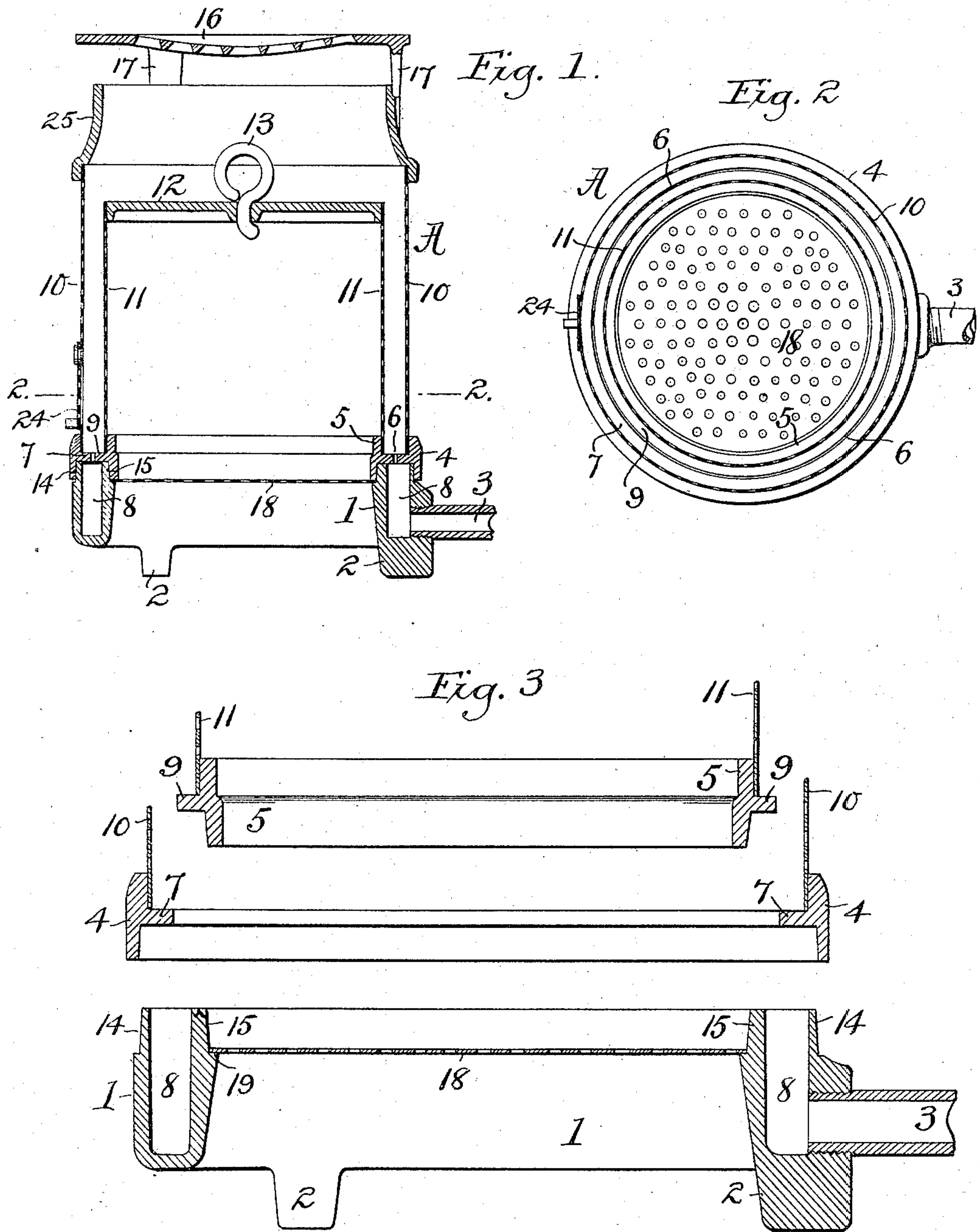


(No Model.)

F. R. FENNESSY.
GAS BURNER.

No. 558,902.

Patented Apr. 21, 1896.



WITNESSES:

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FRANK R. FENNESSY, OF NEW YORK, N. Y., ASSIGNOR TO EMMA H. FENNESSY, OF SAME PLACE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 558,902, dated April 21, 1896.

Application filed December 18, 1894. Serial No. 532,245. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. FENNESSY, a citizen of the United States of America, residing at the city, county, and State of New York, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

My invention relates to gas-burners, more particularly to that kind in which the flame is hollow in form, having a large central space void of flame or combustible gas, and in which provision is made for heating the gas and the air for supporting combustion simultaneously.

The object of my invention is to provide an efficient burner of the fewest possible separate parts capable of being readily and rapidly assembled without riveting or any other means of fastening the parts together.

It also has for its objects to prevent the lighting back of the flame, obviating the need of any air and gas mixing chamber other than the flame-chamber, and economy of gas with the greatest carrying-power of the flame.

In describing my invention reference is had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the burner, showing also the pipe for the supply of gas thereto. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1. Fig. 3 is a sectional view of the separate parts which form the burner proper.

The improved burner A consists in the main of a hollow or chambered annulus or base 1, having lugs or legs 2 cast on its bottom, one of which is enlarged, so as to serve as a head for the gas-supply pipe 3, which communicates with the chamber 8, formed in said base. The base 1 has its upper side made in a U shape, adapted to form inner and outer walls supporting two rings 4 5, which together or singly form an annular small slit or jet-opening 6, or when singly a series of jet-openings. The bottom of the outer ring 4 fits onto a circular inclined rabbet 14 on the upper outside of the annulus or base 1 and is provided with an inwardly-projecting continuous horizontal flange 7, which partly covers the chamber 8 in the hollow base 1. The inside ring 5 fits in a similar manner onto an inner circular inclined rabbet 15 of the base 1 and is also provided with a continuous horizontal

flange 9, projecting outwardly on the same plane as the flange 7, the opposing faces of the two flanges 7 and 9 being at a suitable distance apart to form together the slit or opening 6 for the passage of the gas and thereby forming the jet-piece of the burner. It will be noticed that the sides of the rabbets and their respective rings 4 and 5 are inclined in the direction of the pressure between the two joined pieces, so as to insure the prevention of the gas escaping through these joints.

In order to completely burn the combustible gas, I have provided a device which is composed, essentially, of two concentric perforated vertical cylinders 10 11, one arranged within the other. The inner cylinder 11 is very tightly fitted or attached, preferably without rivets, to the ring 5, and its upper end is closed by a circular plate 12, to which is affixed an eye 13, for convenience of handling and removal of the cylinder, and it may be of the ring 5 also, for storing, packing, or cleaning purposes. The outer cylinder 10 is attached in a similar manner to the inside of the ring 4, and has near the jet-opening 6 a swinging or other perforated door 24 which, by gravity or otherwise, is normally closed, and which may be moved aside for the entrance of a light to ignite the gas at the burner. The cylinder 10 is provided on its upper end with a tightly-fitting ring 25, which is slightly conical for the purpose of confining the flame to an upward direction in a smaller space, and therefore concentrating the heat to a smaller area.

It is seen that the burner is divided in three main component parts—namely, the hollow annulus or base 1, supporting the entire device, the cylinder 10 with its rings 4 and 25, and the cylinder 11 with its ring 5 and plate 12—each of which constitute a series of permanently-connected parts which may be readily detached from its members for any necessary cleaning or repairing or for storing or packing purposes.

In operation, as the gas rushes from the jet-opening 6 up in the space between the cylinders 10 and 11 it creates a draft of air through the perforation of both cylinders, which effects an intimate mixture of the oxygen of the air with the combustible fluid or vapor, and hence complete combustion of the gas.

18 is a perforated air-strainer or distributing plate or diaphragm, which rests on a shoulder 19 formed on the base 1.

16 is a perforated plate for supporting heating vessels, &c., situated directly over the top opening of the burner and supported by lugs 17 17, which detachably rest on shoulders formed on the conical ring 25. This perforated plate with its solid or imperforate outer edge serves also as a shield for the flame from the cold air and aids in preserving the blue flame necessary in attaining perfect combustion, and its solid outer edge forms a guard for the burner as a whole, preventing the dropping of material into the burner to clog its jet-opening and the perforations of the cylinders 10 11.

The lighting back of the flame is prevented owing to the parts of the burner becoming speedily heated on the starting of the flame and because of the more intimate mixture of the gas and air and their mixture at the same high temperature. Owing also to the rapid expansion of the gas in the chamber 8 of the base by reason of the intense heat of the parts, a given supply of gas is made to carry or the flame to extend a much greater distance than has heretofore been possible in gas-burners.

The ring 5 may be omitted and the inner cylinder 11 fit down on the rabbet 15, and the jet opening or openings 6 may be formed by a perforated ring fitting on the top of the hollow base and perform the same function as the two flanges with the slit between them.

What is claimed is—

1. A gas-burner embracing three separate parts consisting essentially of a hollow annular base made in one piece U-shaped in cross-section forming inner and outer walls, two rings providing between them a jet-slit and supported respectively on said walls, and means for supplying fuel to said base.

2. A gas-burner consisting of a hollow base having means for supplying fuel thereto and upwardly-extending outer and inner inclined rabbets 14, 15, and two rings engaging said

rabbets and forming between them a jet-opening.

3. A gas-burner consisting of a hollow base having means for supplying fuel thereto and supporting two separable rings, said rings having oppositely-projecting flanges overlying the hollow of the base and providing a jet-opening and having upwardly-extending flanges and cylinders fitting said flanges.

4. A gas-burner consisting of a hollow base having means for supplying fuel thereto, two rings supported by said base and forming between them a jet-opening, and a perforated cylinder carried by each ring.

5. A gas-burner consisting of a hollow base having means for supplying fuel thereto, two rings supported by said base and providing a jet-opening between them, a perforated inner cylinder having a top plate, and carried by the inner ring, and a perforated outer cylinder carried by the outer ring, and having at its top a conical ring extending over and guarding the space between the cylinders and protecting said jet-opening.

6. A gas-burner consisting of a hollow base having means for supplying fuel thereto, rings supported by said base and providing a jet-opening between them, perforated cylinders extending on opposite sides of the jet-openings, and an air-distributing plate held between the inner ring and said base.

7. A gas-burner consisting of a base 1 having means for supplying fuel thereto and the chamber 8, and formed with the inner and outer shoulders and inclined rabbets 14 and 15, a ring 4 having a flange 7 and fitting the outer rabbet, and a ring 5 having the flange 9 which coöperates with the flange 7 to form a burner slit or opening and fitting the inner rabbet, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two witnesses.

FRANK R. FENNESSY.

Witnesses:

GEO. H. GRAHAM,

E. L. TODD.