

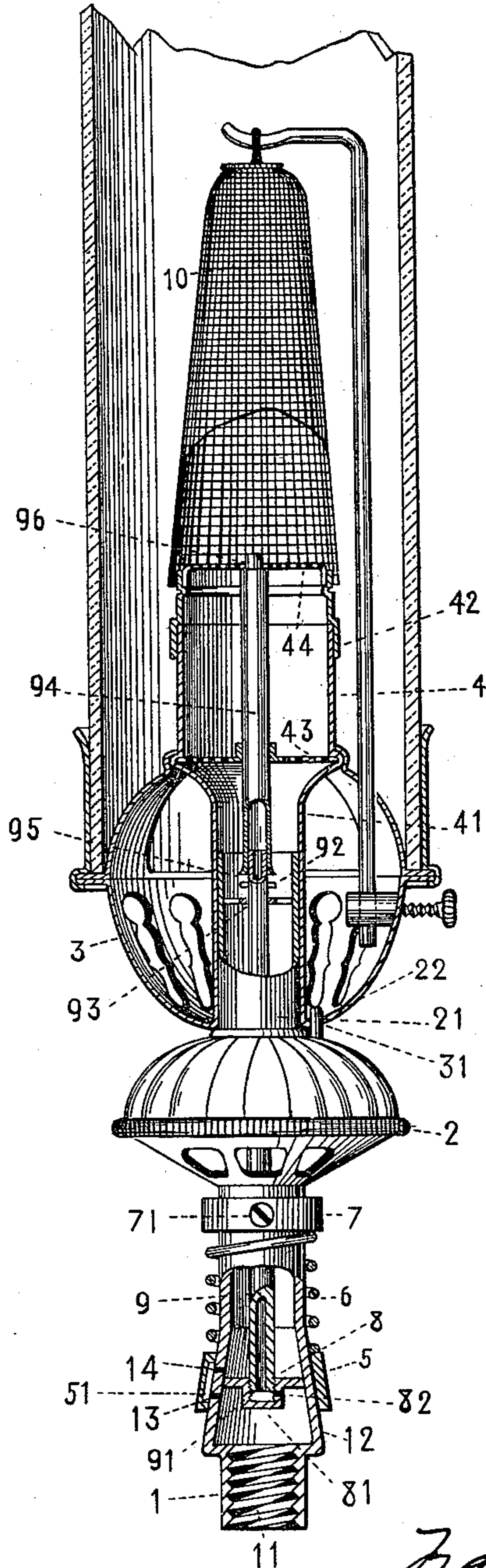
No. 610,414.

Patented Sept. 6, 1898.

F. RHIND.
GAS BURNER.

Application filed Nov. 8, 1897.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK RHIND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF
TO THE BRIDGEPORT BRASS COMPANY, OF SAME PLACE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 610,414, dated September 6, 1898.

Application filed November 6, 1897. Serial No. 657,643. (No model.)

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Bridgeport, Connecticut, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification.

My invention relates to incandescent or other Bunsen gas-burners, and is intended to provide a perpetual "pilot" or subsidiary flame adapted to light the main flame of the burner when the gas is turned on and to improve and cheapen such burners.

In the accompanying drawing, which represents, partly in elevation and partly in vertical section, an incandescent gas-burner embodying my invention, 1 designates a burner-base screw-threaded at 11 and formed with a taper portion 12, perforated at 13 and 14; 2, an air-admission chamber provided with a tubular portion 21 and pin 22; 3, a skirt pierced at 31; 4, a mixing-chamber consisting of tube 41, body 42, perforate diaphragm 43, and cap 44; 5, a collar provided with recess 51; 6, a spring; 7, a set-collar provided with set-screw 71; 8, a diaphragm formed with depression 81, pierced at 82; 9, a pilot-tube threaded at 91, provided with lug 92 and spider 93; 94, an upper pilot-tube formed with lip 95 and tip 96, and 10 a mantle.

In the example of my invention illustrated the burner-base 1 is a drawn-metal tube threaded at 11 to engage with a gas-fixture and swaged to form a taper portion 12. At the upper end of the base 1 is secured the ordinary air-admission chamber 2, the upper portion of which is a tube 21.

The burner-skirt 3, to which the chimney-gallery is attached, may be of any desired form. A pin 22 on the chamber 2 enters an aperture 31 in the skirt 3, the function of which will hereinafter appear. The skirt 3 is preferably secured to the mixing-chamber 4, which consists of a tube 41, adapted to sit over the tube 21, and an enlarged body 42. As shown, it has at the juncture of the tube and body a perforate plate 43. It is also provided with the usual foraminous cap 44. A collar 5, internally recessed at 51, is adapted to rotate on the taper portion 12 of the base 1. The collar 5 is held in position on the base 1 by a spring 6, the upper end of

which abuts against a set-collar 7, held by a set-screw 71. A diaphragm 8 is swaged or forced into the base 1, so as to prevent the flow of gas except through an aperture 82, pierced in its dished or depressed portion 81. A pilot-tube 9 is threaded at its foot 91 to engage with a corresponding screw-thread in the depression 81. The tube 9 extends axially through the base 1, chamber 2, and tubular portion 21. A lug 92 near the upper end of the tube serves as means by which it may be rotated. A spider 93 holds the tube 91 in its axial position. The upper portion 94 of the tube 91 is flared at its lower end to form a lip 95. It is secured axially in the removable mixing-chamber 4 by means of the perforate plate 43 and the cap 44, through which its free end 96 passes. A mantle 10 is supported in any desired manner above the cap 44.

The operation of my device will be readily understood from an examination of the drawing. The burner-base 1 is adapted at 11 to fit the ordinary gas-fixture. The diaphragm 8 is forced into the base 1 midway of its taper portion 12, so as to be gas-tight. The pilot-tube 9 may, by means of the lug 92, be adjusted vertically in the depressed threaded portion 81, so as to increase or diminish the flow of gas through the aperture 82 and through the pilot-tube. The lower portion of the pilot-tube extends upward only to the top of the tube 21, by which it is inclosed. It is therefore not liable to be bent or broken when the skirt 3 and mixing-chamber 4 are removed or replaced. The upper portion 94 of the pilot-tube is provided with a lip 95, which facilitates the replacement of the removable part of the burner. To prevent accidental rotation of the pilot-tube 9 by the frictional engagement therewith of the upper portion 94 during the removal or replacement of the skirt 3 and related parts, means, as a pin 22 and corresponding aperture 31, are provided to prevent other than vertical motion of the removable upper part of the burner when the parts of the pilot-tube are engaged. It will be seen that a continuous supply of gas passes through the pilot-tube and burns above the foraminous cap 44 within the mantle 10. It may be regulated to suit various

pressures and so as to produce a very small flame, which is protected from blowing out by the mantle and which is found in practice not to injure the Bunsen or main flame. The supply of gas for this Bunsen flame is regulated or cut off by the collar 5. Apertures 13 and 14 are pierced through the wall of the base 1, respectively above and below the diaphragm 8. A vertical recess 51 in the collar 5 serves to connect these apertures and form a gas-passage to the air-admission chamber 2, whence the gas and air pass to the mixing-chamber 4. It is obvious that one or more pairs of apertures 13 14 and corresponding recesses 51 may be employed.

The advantages of my device are the cheapness and accuracy with which it may be constructed, the ease and certainty with which the volume of gas supplied to the pilot-flame may be regulated and accidental interference with such regulation prevented, and the fact that the parts of the divided pilot-tube are arranged so as not to interfere with the removal or replacement of the upper part of the burner and are fully protected from injury by being entirely within their respective inclosing tubes when the parts of the burner are separated.

I am aware of a former foreign patent in which is shown a burner-base made of solid metal drilled for gas-passages and having a rotatable collar, also of cast metal. This construction is impracticable on account of the difficulty of securing requisite accuracy in drilling the numerous holes. In my construction the base is easily and cheaply made of drawn-tubing, the diaphragm being also of sheet metal forced into place, the lateral holes being pierced at little expense. By reason of the thinness of the walls of the tubular base the friction of the gas is much less than through a drilled passage.

I am also aware of a construction in which a pilot-tube axially placed in a burner extends considerably above the tubular extension of the stationary part of the burner. This is very disadvantageous. Incandescent burners are largely used in chandeliers. When the upper part of the burner has been removed, as for cleaning, it is almost impossible for the operator reaching up to replace it without bending the fragile pilot-tube and thereby rendering the burner useless. In my device this cannot occur, as both parts of the pilot-tube are protected and so guided that maladjustment is impossible.

I am aware that many mechanical alterations may be made in my device without departing from my invention.

What I claim is—

1. In a Bunsen gas-burner in combination a tubular conical burner-base, a non-integral diaphragm secured within said base, apertures pierced through the wall of said base above and below said diaphragm, a recessed collar rotatable on said base and adapted to connect or close said apertures, a mixing-

chamber above said base and a pilot-tube connected to said diaphragm and adapted to convey a continuous supply of gas to the point of ignition of mingled gas and air at the free end of said mixing-chamber, substantially as described.

2. In a Bunsen gas-burner in combination a tubular conical burner-base, a non-integral diaphragm secured within said base, apertures pierced through the walls of said base above and below said diaphragm, a recessed collar rotatable on said base and adapted to connect or close said apertures, a mixing-chamber above said base, a pilot-tube connected to said diaphragm and adapted to convey a continuous supply of gas to the point of ignition of mingled gas and air at the free end of said mixing-chamber, and means substantially as described for retaining said collar rotatably on said base.

3. In a Bunsen gas-burner in combination a tubular burner-base, a diaphragm having a laterally-pierced depression secured in said base, apertures pierced in the wall of said base above and below said diaphragm, a recessed collar rotatable on said base and adapted to connect or close said apertures, a mixing-chamber above said base, a pilot-tube adapted to convey a continuous supply of gas to the point of ignition of mingled gas and air at the free end of said mixing-chamber adjustably secured in the recess in said diaphragm and means for adjusting said tube so as to partially cover the aperture in said recess, substantially as described.

4. In a Bunsen gas-burner in combination a burner-base, a chamber above said base having a vertical tubular portion, a removable mixing-chamber detachably engaging said tubular portion and a transversely-divided pilot-tube the lower part of which is secured within said base and said tubular burner portion and the upper part of which is secured within said removable mixing-chamber, the upper end of the lower part of said pilot-tube being below or substantially at the upper end of said tubular portion whereby said pilot-tube is protected from injury during the removal or replacement of said removable chamber, substantially as described.

5. In a Bunsen gas-burner in combination a tubular burner-base, a diaphragm secured within said base, apertures pierced through the wall of said base above and below said diaphragm, a recessed collar rotatable on said base and adapted to connect or close said apertures, a chamber above and secured to said base having a vertical tubular portion, a removable mixing-chamber detachably engaging said tubular portion and a transversely-divided pilot-tube the lower part of which is secured within said base and said tubular burner portion and the upper part of which is secured within said removable mixing-chamber, the upper end of the lower part of said pilot-tube being below or substantially at the upper end of said tubular portion whereby

said pilot-tube is protected from injury during the removal or replacement of said removable chamber, substantially as described.

6. In a Bunsen gas-burner in combination
5 a tubular burner-base, a diaphragm secured within said base, apertures pierced through the wall of said base above and below said diaphragm, a recessed collar rotatable on said base and adapted to connect or close said ap-
10 ertures, a chamber above and secured to said base having a vertical tubular portion, a removable mixing-chamber detachably engaging said tubular portion, a transversely-di-

vided pilot-tube the lower part of which is rotatably secured within said base and said tubular burner portion and the upper part of which is secured within said removable mixing-chamber, and means substantially as described for preventing the rotation of said removable chamber on said tubular portion
20 while the parts of said divided pilot-tube are being engaged.

FRANK RHIND.

Witnesses:

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