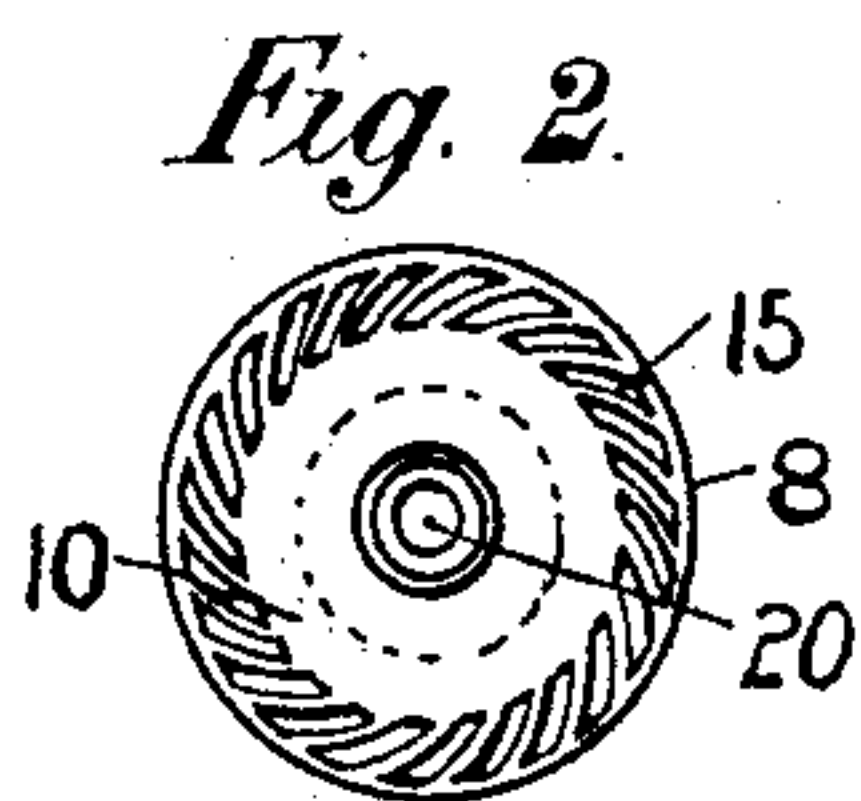
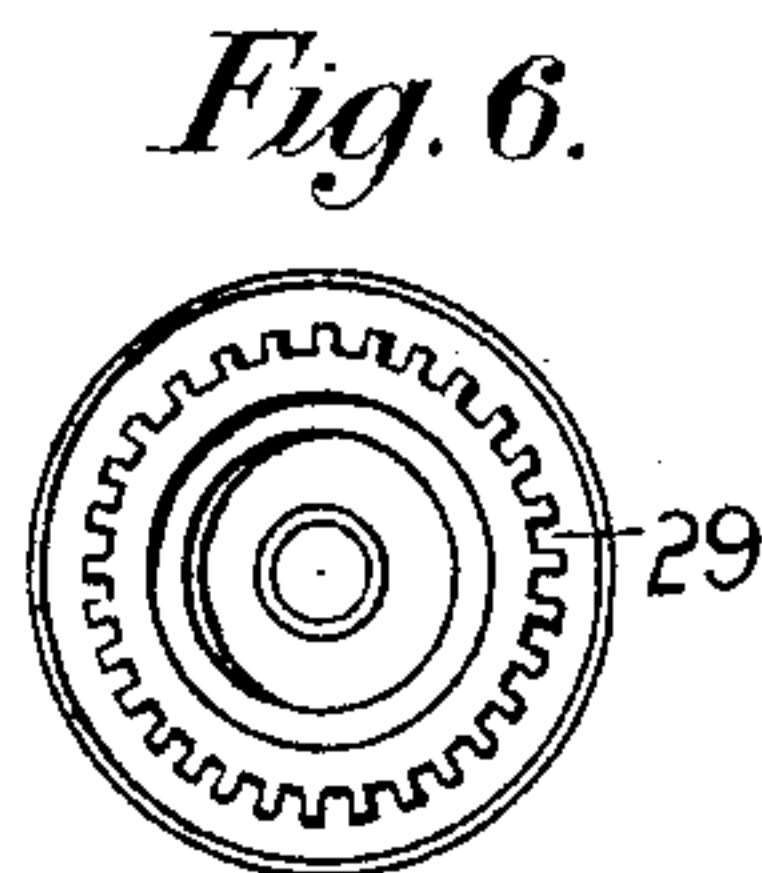
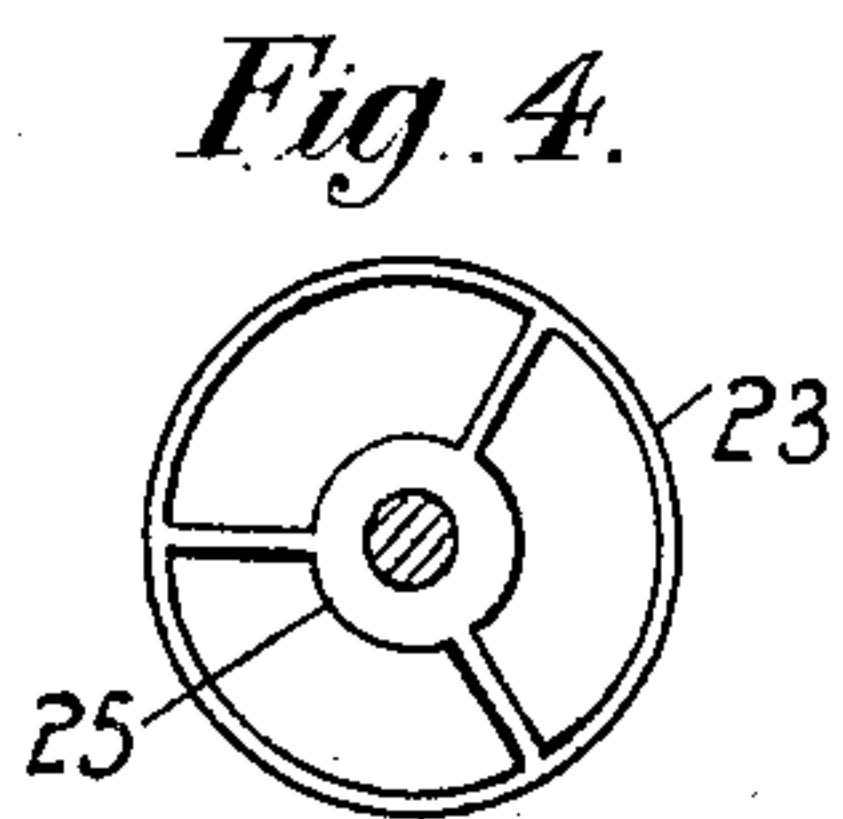
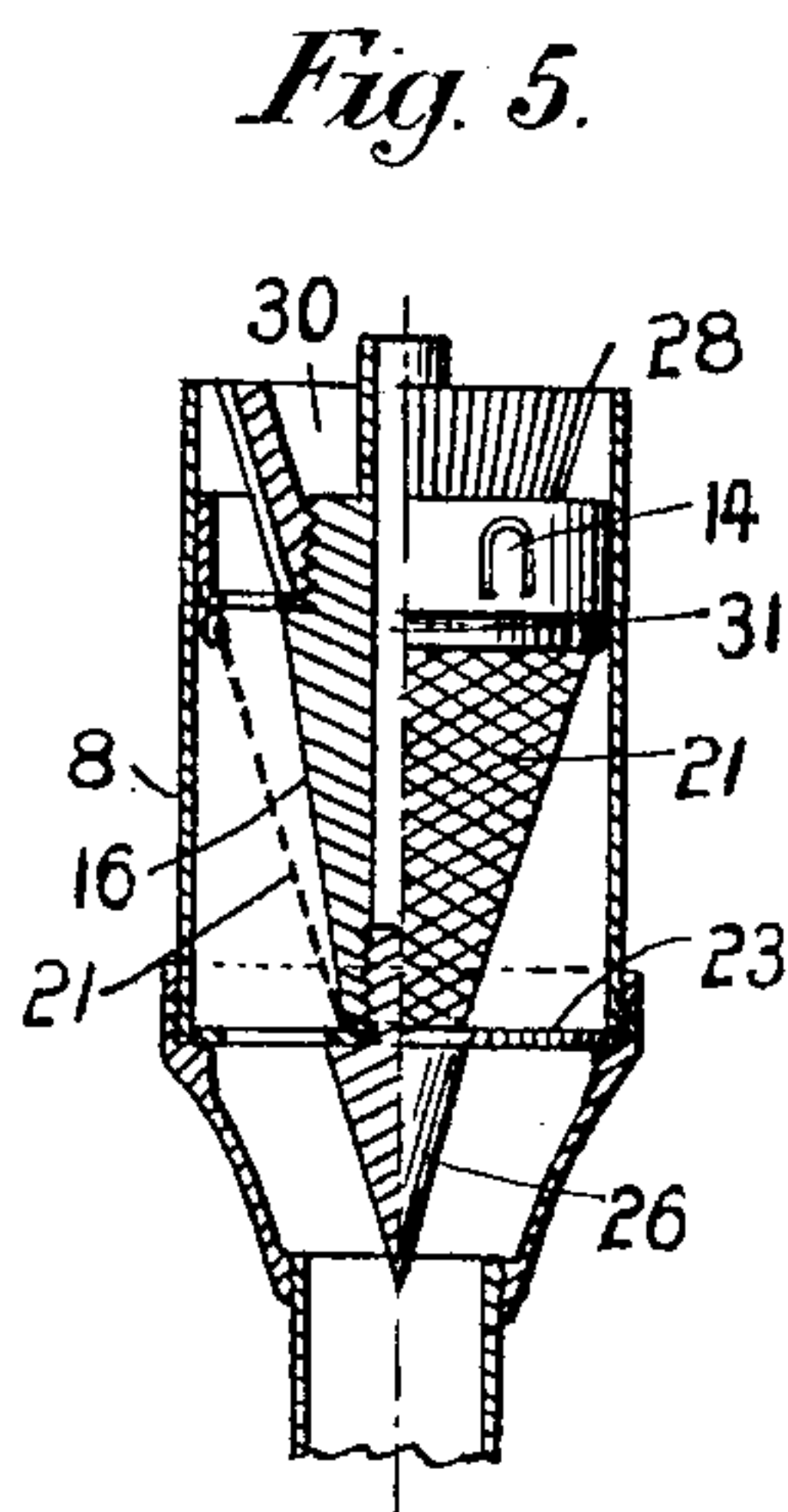
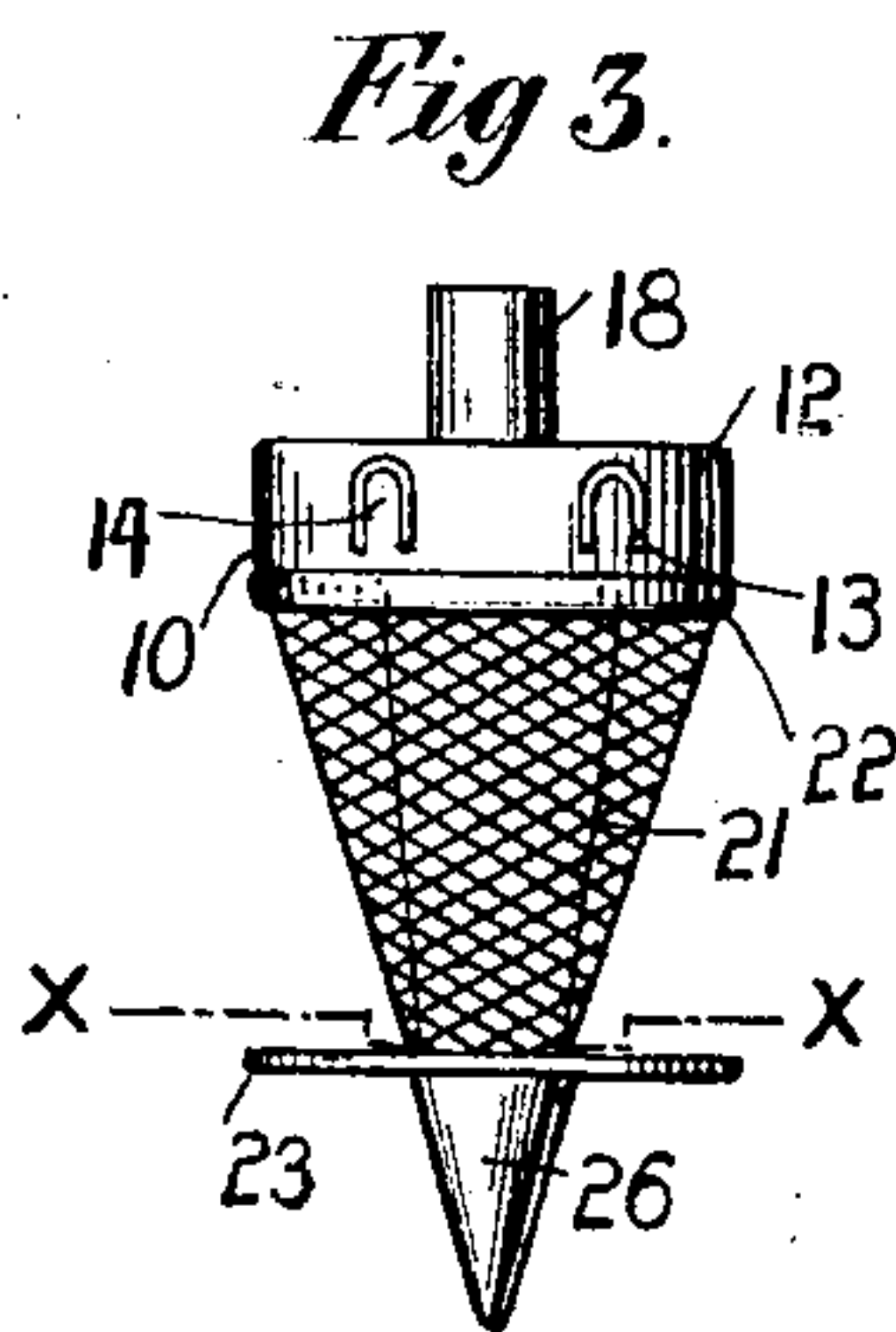
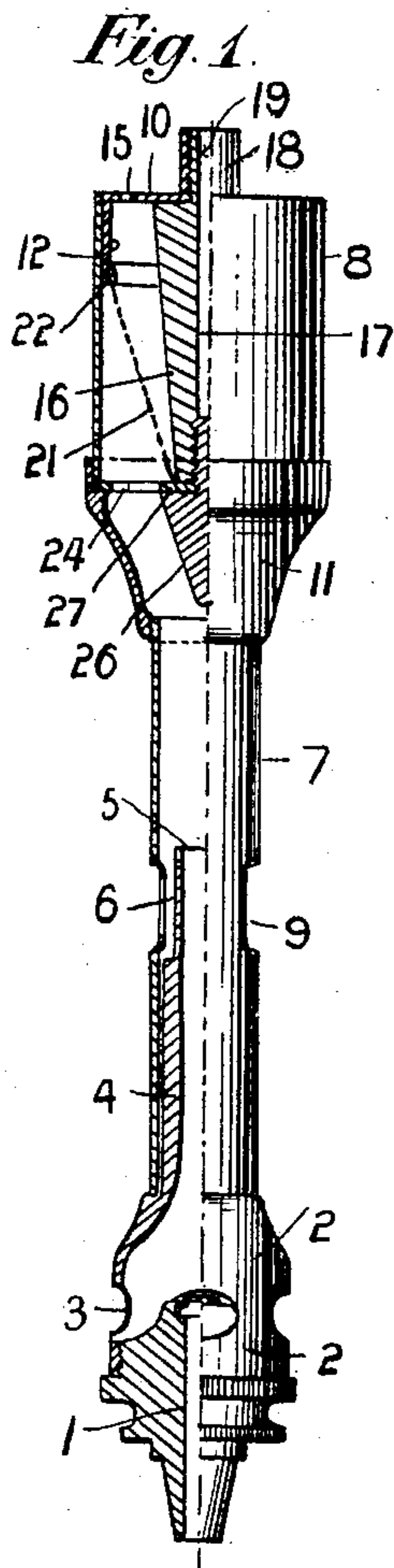


No. 803,771.

PATENTED NOV. 7, 1905.

J. MALLOL.
INCANDESCENT GAS BURNER.
APPLICATION FILED DEC. 29, 1904.



Witnesses.

H. M. Kuehne
J. P. Curran

Inventor

James Mallol

BY [Signature]
Att'y

UNITED STATES PATENT OFFICE.

JAMES MALLOL, OF BIRMINGHAM, ENGLAND.

INCANDESCENT GAS-BURNER.

No. 803,771.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed December 29, 1904. Serial No. 238,807.

To all whom it may concern:

Be it known that I, JAMES MALLOL, electro-plate manufacturer, a subject of His Majesty the King of Spain, residing at 176 Warstone Lane, in the city of Birmingham, England, have invented new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

This invention consists of the herein-described improvements in incandescent gas-burners.

In what is known as "incandescent" gas-lighting the principal object to be attained is the raising of the temperature of the mantle to the highest possible degree of incandescence. To obtain this result, several methods have been adopted in addition to the use of the chimney—such, for instance, as heating the air to be used in the burner, or compressing the gas only, or compressing the air only, or compressing both the air and gas, so as to supply the mantle rapidly with the heat it radiates, which is in proportion to the degree of temperature to which it has been raised. These methods, however, are costly and of limited application.

The object of my invention is the production of an incandescent gas-burner which of itself will heat the mixture of gas and air before arriving at the head of the burner with the waste heat of the flame after it has done its duty of heating the mantle, that will have sufficient velocity in the gaseous mixture to raise the mantle to a high temperature, and that will be accessible for cleaning, which is a condition indispensable to obtain good lighting.

To obtain the above objects, my burner is constructed as I will describe by referring to the accompanying drawings, on which—

Figure 1 is a half-sectional elevation of an incandescent gas-burner constructed in accordance with this invention. Fig. 2 is a plan of the same. Fig. 3 shows the upper part of the burner removed. Fig. 4 is a sectional plan on line X X of Fig. 3. Fig. 5 is a half-sectional elevation of a modification of my invention, and Fig. 6 is a plan of the same.

The same reference-numerals indicate the same parts in all the figures.

I will first describe the arrangement of my invention shown by Figs. 1, 2, 3, and 4.

In my improved burner the nipple 1, through which the gas issues to the nozzle 2, is of ordinary construction, and the nozzle 2 is made with ordinary air-inlet holes 3 and consists of

a stamping, to the top of which is soldered or otherwise fixed a thick tube 4 to form the nozzle of the Bunsen burner. This tube 4 is turned slightly taper inside, as shown, and for a short distance down from its upper end the outside is turned away, leaving the top part 6 of smaller diameter, and thus forming a space all around this top part 6 when fitted with the outer tube 7. In this outer tube 7, which supports the upper part or mixing-chamber 8 of the burner, there are small apertures 9, corresponding with the space formed by the smaller part 6 of the tube 4, the object of this arrangement being that the gaseous mixture as it ascends through the pipe 4 may induce a further quantity of air through the aperture 9 to mix with the gaseous mixture as it ascends to the burner-tip, thus producing a more intimate mixture of gas and air and a higher velocity of the same.

The tip of the burner is made of an inverted-cup-shaped sheet-metal stamping 10, fitting easily into the ordinary tubular part 8 of the burner, which latter is parallel inside and out and is screwed onto the usual mouthpiece 11, fixed to the top of the tube 7. This inverted-cup-shaped tip 10 has a rim 12 of suitable depth, in which are piercings 13, preferably three in number, forming spring-tongues 14, which spring outwardly very slightly, so as to grip the interior of the tube 8 with sufficient pressure as to prevent the cup-shaped tip part 10 and the parts to which it is fixed (see Fig. 3) from falling out of the tube 8 when the burner is inverted. This tip part 10 is pierced with elongated holes 15, (see Fig. 2,) which at their ends nearer to the periphery of the tip are wide and are narrowed down at their other ends, which are nearer to the center of the burner. These slots 15 are tangential to a circle of smaller diameter than the outside of the burner, so that the slots 15 overlap each other, as shown in Fig. 2, and thus the gaseous mixture as it issues through them is formed into a sort of double flame which will consume sufficient gas to fill the cavity of the mantle and yet bring the total flame as near to the mantle as possible.

The inverted-cup-shaped tip 10 of the burner is fixed to the top of the thick metal core or stem 16, which forms the interior of the removable upper part of the burner which heats the gaseous mixture to a high temperature before it issues through the slots 15. This core or stem 16 is reduced in diameter at the top, so as to form the shoulder 17, on which

the inverted-cup-shaped tip 10 fits and is secured by the nut 18, which is screwed onto a central upwardly-projecting boss part 19, formed on the top of the core or stem 16. In
 5 the core or stem 16 there is a central hole 20 to receive the usual crutch or mantle-support. The core or stem 16 is made of a gradually-increasing diameter from bottom to top, so as to direct the ascending gaseous mixture
 10 to the outlets 15. Surrounding the thick core or stem 16 there is a wire-gauze part 21, which is made of an inverted conical form, the top being furnished with a metal ring 22 of the same diameter as the rim 12 of the cup-
 15 shaped tip part 10. Below this wire-gauze part 21 there is a wheel-shaped part 23, the periphery of which is of precisely the same diameter as the cup-shaped tip 10, so as to fit properly inside the tube 8 and rest upon a
 20 shoulder 24, formed at a short distance below the top of the mouthpiece 11. The lower end of the wire-gauze part 21 fits between the boss 25 of this wheel part 23 and the bottom of the central core 16 and is there secured by the
 25 plug 26, which is screwed into the interior of the stem 16 and is made with a collar or shoulder part 27, which bears against the boss 25 of the wheel-like part 23, and thus clamps the same against the inturned bottom of the
 30 gauze part 21 and clamps the latter against the bottom of the stem or core 16. The result of this arrangement is that when the mantle is in position and the burner is alight the flame heats the cup-tip 10 and the heat is
 35 transmitted therefrom to the outer tube 8 and to the core 16 and wire-gauze 21 and lower plug 26, so that these parts heat the gaseous mixture before it issues through the openings 15 and produce a more intimate mixture of
 40 the gas and air, and thus a high degree of incandescence of the mantle is attained.

When it is desired to brush and clean the gauze part 21, this can readily be done by
 45 first holding the nut 18 between the thumb and finger and then pulling the upper part of the burner shown by Fig. 3 out of the tube 8 and which can as readily be replaced in the tube 8.

A modification of the burner above described
 50 is made by using instead of the cup-shaped tip

part 10 a toothed-wheel-like part 28, (see Figs. 5 and 6,) which is slightly tapered on its under side and has longitudinal grooves 29 at regular intervals apart around its periphery forming teeth, the periphery of the wheel at
 55 its largest diameter being a little less than the interior of the tube 8, leaving an annular space around the teeth, through which the gaseous mixture issues. The top of this toothed-wheel-like part 29 has to be exactly level with
 60 the top of the tube 8 and is screwed onto part of the central core or stem 16, which is fitted with a stamped sheet-metal cup-shaped part 31, made with spring-tongues 14, so as to fit properly inside the interior of the tube 8 and
 65 keep the toothed-wheel-like part 28 central. The core 16 in this arrangement is provided with the wire-gauze part 21 and with the lower wheel 23 and plug 26, as in the arrangement first above described. 70

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An incandescent gas-burner having an open-top parallel-sided tubular mixing-chamber the perforated inverted-cup-shaped tip fitting and held in the tubular mixing-chamber
 75 by friction, the central downwardly-projecting core fixed to said tip, the wheel-like part fixed to the bottom of the core and fitting in the tubular mixing-chamber, and the wire-
 80 gauze part 21 extending from the bottom of the core above the wheel to the lower edge of the tip, all for the purposes and substantially as described.

2. In a device of the class described, a burner-
 85 tip having a plurality of elongated slits therein arranged tangential to a circle of smaller diameter than the diameter of the tip and made to overlap one another, said slits being wide near
 90 the periphery of the tip and narrowed down at the ends near the center of the tip, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES MALLOL.

Witnesses:

CHARLES BOSWORTH KETLEY,
 THOMAS JOHN ROWE.