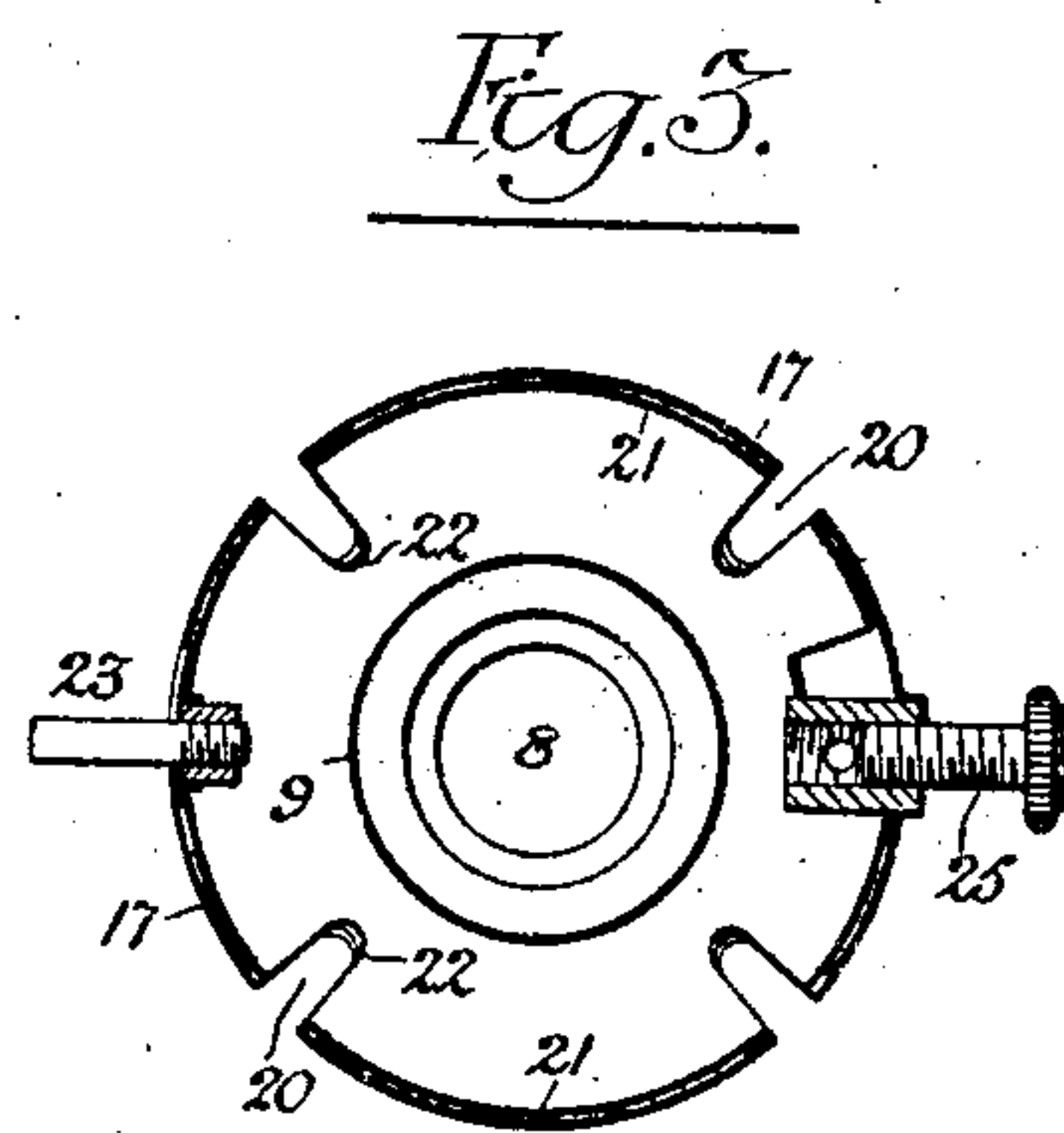
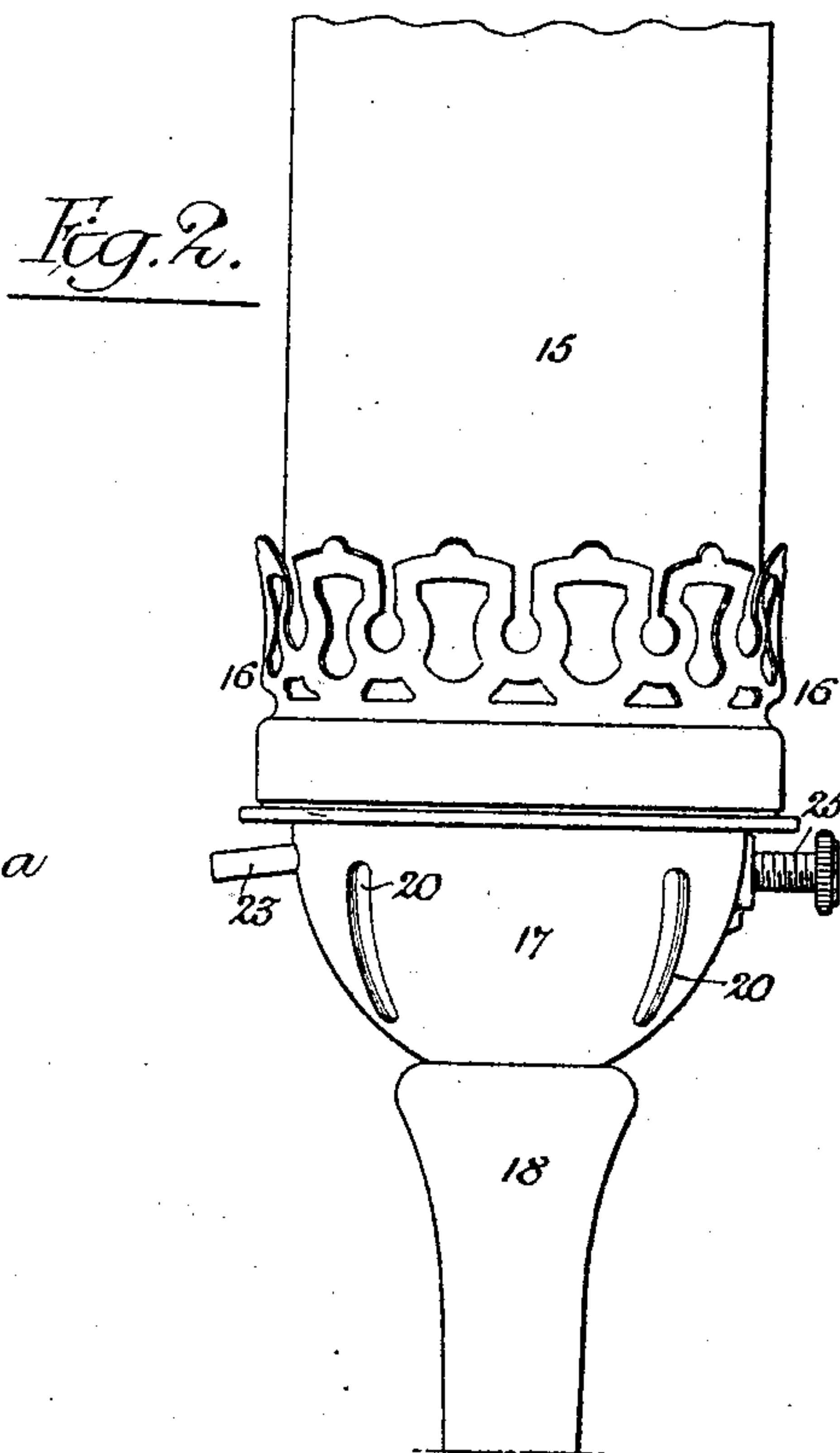
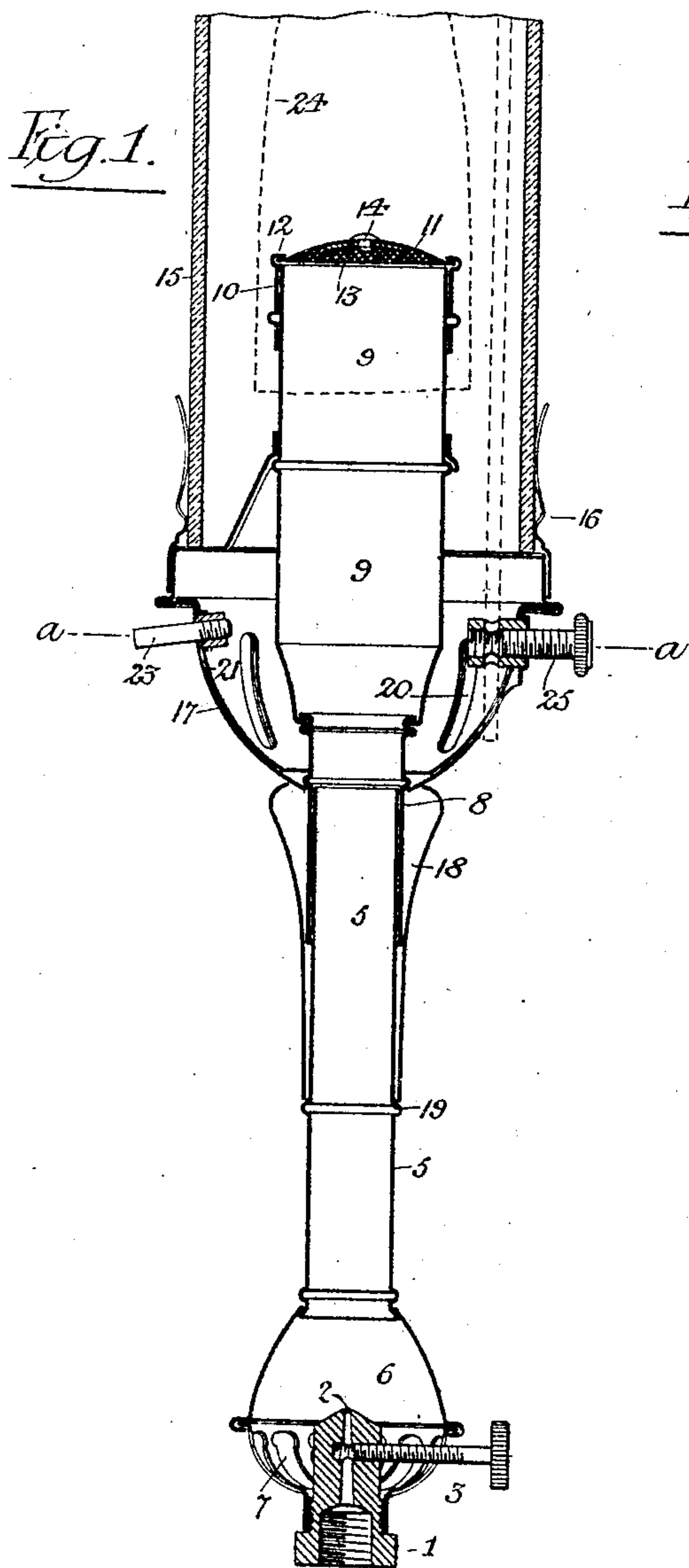


No. 835,182.

PATENTED NOV. 6, 1906.

C. O. DRYDEN.
INCANDESCENT GAS BURNER.
APPLICATION FILED FEB. 18, 1903.



Witnesses:-

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Herman E. Metrics

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UNITED STATES PATENT OFFICE.

CAELIUS O. DRYDEN, OF PHILADELPHIA, PENNSYLVANIA.

INCANDESCENT GAS-BURNER.

No. 835,182.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed February 18, 1903. Serial No. 143,921.

To all whom it may concern:

Be it known that I, CAELIUS O. DRYDEN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Incandescent Gas-Burners, of which the following is a specification.

My invention relates to that class of burners designed for use with incandescent mantles of the Welsbach type, the object of my
10 invention being to provide a burner that will increase the brilliancy of the light with a minimum supply of gas, to provide for the admission of air to the burner, and to regulate such air-supply.

15 My invention is fully shown in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a burner made in accordance with my invention. Fig.
20 2 is an elevation of a portion of the same, and Fig. 3 is a sectional plan view illustrating a detail of my invention.

My improved burner is provided with an enlarged mixing-chamber situated some distance above the gas-inlet, such mixing-chamber having a height nearly the same as the
25 length of tube between such inlet and the bottom of said chamber and a diameter approximately twice that of the tube. Adjacent to the gas-inlet this tube is provided with an enlarged portion open to the atmosphere, so that the entering gas acts as an injector and draws in a large quantity of air for admixture therewith. This structure constitutes a burner that will produce a Bunsen
30 flame of a very high intensity.

In my improved burner the normal supply of air enters at a point adjacent to the gas-inlet, as noted, and the two elements move together to the point of ignition, being partially mixed in their passage to the enlarged chamber, which has been heated by the flame, in which chamber the gas and air are thoroughly mixed before ignition. The point of entrance of the gas and air is some distance below the point of ignition, and by
45 employing a chimney that prevents admission of air at the point of ignition a draft is provided which increases the intensity of the Bunsen flame with the consequent result of increasing the incandescence of the mantle.

50 In the drawings herewith, 1 represents the gas-supply pipe, having a contracted outlet 2, and the discharge of gas at this outlet is regulated by a set-screw 3, tapped into the

pipe 1. Carried by the gas-supply pipe 1 55 and by preference threaded onto the same is a tube 5, which leads from said pipe to the mixing-chamber. This tube is provided with an enlarged portion 6 at its lower end immediately adjacent to the outlet of the gas-supply pipe 1, and this enlarged portion has a perforated lower wall 7, that is brought around said pipe, which serves to admit a large quantity of air drawn in by the flow of gas, mingling with the same in the passage to
60 the mixing-chamber. This tube projects upwardly for some distance and carries at its upper end the elongated and contracted extension 8 of a mixing-chamber 9, the top of which chamber has a cap 10 with the usual wire-gauze diaphragm 11. As ordinarily
65 made, the burner-caps have a wide flange extending over the edge of the mixing-chamber, and the effect of this is to cause the flame, particularly when emerging from the burner
70 with any pressure, to keep to the center of the burner and away from the mantle. It is obvious, however, that the nearer the flame is to the mantle the greater is the incandescence, and to provide for this the flange 12 is
75 reduced in width, so that it does not extend farther than the inner edge of the mixing-chamber wall. To further divert the flame, I provide an enlarged spreader-plate 13, which is held to the gauze by an ordinary
80 rivet 14. The parts of the burner when fitted together are preferably air-tight in their lower portion, so that the only air admitted to the burner for use at the point of ignition is that which enters the tube 5 adjacent to
85 the gas-inlet.

This burner is intended to be used with a suitable chimney of the ordinary type, as shown at 15 in Fig. 1, and this chimney fits snugly into the gallery 16 of the burner-top
90 preventing any ingress of air at this point. This gallery 16 is provided with a cup-shaped depending portion 17, arranged below the mixing-chamber and engaging the extension 8. A sleeve 18 is arranged between this
95 cup-shaped member and a rib 19 on the tube 5, which serves to keep the parts in proper relation to each other. This cup-shaped member is provided with slots 20 and incloses a similarly-shaped casing 21, also provided with
100 slots 22, which inner member is movable with respect to the outer chamber, being provided with a handle 23. When, therefore, the slots

22 are caused to coincide with the slots 20, as shown, for instance, in Fig. 3, air will be admitted to the exterior of the mixing-chamber and communicate with the mantle 24, supported above the same. (Shown by dotted lines in Fig. 1.) The burner structure is provided with the usual screw 25 to hold the rod supporting the mantle. This method of supplying air is particularly advantageous in incandescent burners of this type. For instance, by having the air admitted only at the point adjacent to the gas-inlet, which air enters in unrestricted measure, and by employing a chimney which incloses the entire lower part of the burner and prevents the ingress of air at this point the draft becomes so great that an intense Bunsen flame is created. This flame, in some instances due to imperfect gas-pressure or other causes, has a tendency to blow directly through the mantle, preventing proper combustion of the air and gas and resulting in a diminished amount of incandescence. To prevent a condition of this character, air may be admitted through the openings 20 and 22 by moving the casing 21, causing said openings to register, and the air thus admitted serves to diminish the force of the draft caused by the entrance of the air at the point 7 to the closed burner structure. This additional air, entering through the slots 20 and 22 at a point just below the mixing-chamber and on the outside of the same, has a further effect of increasing the incandescence of the mantle, as such air becomes highly heated immediately outside of the mixing-chamber, combines with the burning mixture of gas and air emerging therefrom, and burns with a great heat directly at the point most desired. As soon as the condition causing the excessive draft is overcome, however, the air-supply may be cut off at the point below the mixing-chamber and the supply of air introduced at the one point adjacent to the gas-inlet.

The structure forming the subject of my invention, as will be noted from the drawings, is much longer than the usual burners of this type, the mixing-chamber being nearly if not quite as long as the tube between said mixing-chamber and the air and gas inlet, and I find in practice that this construction enables me to use much less gas than with a structure having the burner close to the inlet of gas and air.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in a gas-fed illuminating structure employing a refractory mantle, of a burner, an elongated tubular body supporting said burner, a mantle suitably supported and inclosing said burner, a combined air and gas inlet communicating with said tubular body, a valve for regulating the inlet of gas, said tubular body being enlarged adjacent to the burner to form a mixing-chamber for said air and gas, a gallery for said burner

having a depending portion encircling the tubular body and forming a chamber, and a chimney supported by said gallery and inclosing the mantle, said gallery being substantially closed at the bottom to prevent the direct access of air around the mantle which enters only through the depending portion, said elongated tubular body and chimney serving to draw in the charge of air and gas passing to the burner under such pressure as to increase the Bunsen flame and heighten the incandescence of the mantle.

2. The combination in a gas-fed illuminating structure employing a refractory mantle, of a burner, an elongated tubular body supporting said burner, a mantle suitably supported and inclosing said burner, said elongated body being enlarged to form a mixing-chamber, a combined air and gas inlet at the bottom of said tube, a valve for regulating the inlet of gas, a gallery for said burner, a chimney fitting said gallery and inclosing the mantle, said gallery being substantially closed at the bottom to prevent the direct access of air and having a cup-shaped depending portion forming an air-chamber below the gallery and open to the space between the mantle and chimney, and means for regulating the admission of air to said chamber.

3. The combination in a gas-fed illuminating structure employing a refractory mantle, of a burner, an elongated tubular body supporting said burner, a mantle suitably supported and inclosing said burner, said elongated body being enlarged to form a mixing-chamber, a combined air and gas inlet at the bottom of said tube, a valve for regulating the inlet of gas, a gallery for said burner, a chimney fitting said gallery and inclosing the mantle, said gallery being substantially closed at the bottom to prevent the direct access of air, said elongated tube and chimney serving to draw in the charge of air and gas under such pressure as to increase the Bunsen flame and heighten the incandescence of the mantle, a cup-shaped portion depending from the gallery and forming a supplemental air-chamber open to the space between the mantle and chimney, and means for controlling the admission of air to said supplemental chamber.

4. The combination in a gas-fed illuminating structure employing a refractory mantle, of a burner, an elongated tubular body supporting said burner, a mantle suitably supported and inclosing said burner, said elongated body being enlarged to form a mixing-chamber and having a tube depending from said mixing-chamber, a combined air and gas inlet at the bottom of said tube, a valve for regulating the inlet of gas, a gallery for said burner, a chimney fitting said gallery and inclosing the mantle, said gallery being substantially closed at the bottom to prevent the direct access of air, a cup-shaped casing form-

ing a supplemental air-chamber depending
from said gallery and open to the space be-
tween the mantle and chimney, said supple-
mental chamber having a series of openings,
5 and a movable member combined therewith
and having registering openings whereby the
supply of air to said supplemental chamber
may be regulated.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

C. O. DRYDEN.

Witnesses:

MURRAY C. BOYER,
JOS. H. KLEIN.