

No. 638,344.

Patented Dec. 5, 1899.

A. LECOMTE & I. LOESER.
INCANDESCENT GAS BURNER.

(Application filed Dec. 28, 1897.)

(No Model.)

Fig. 4.

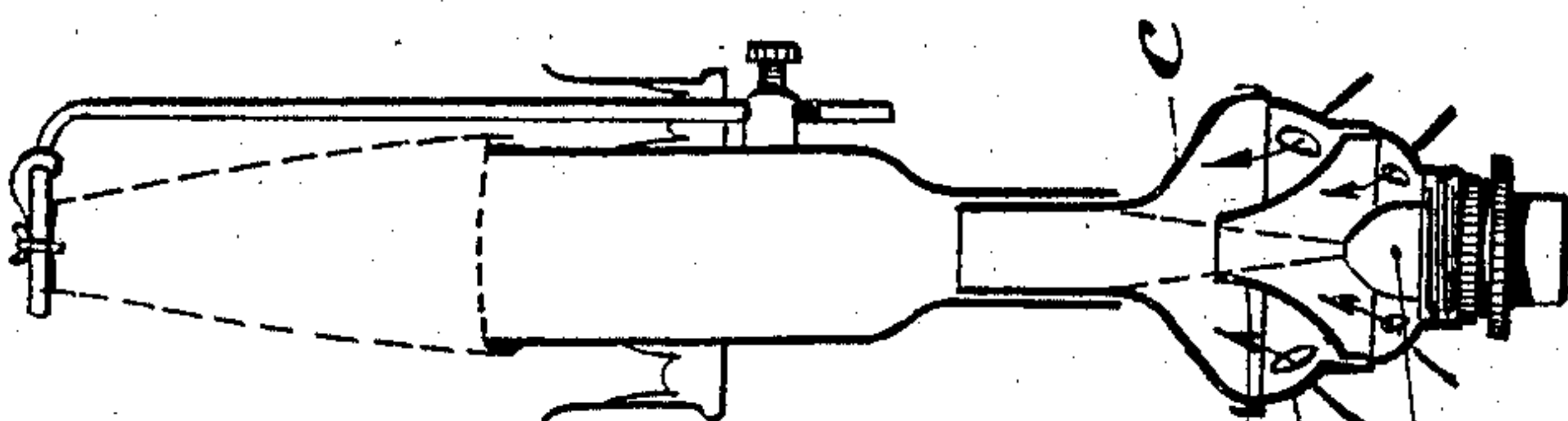


Fig. 3.

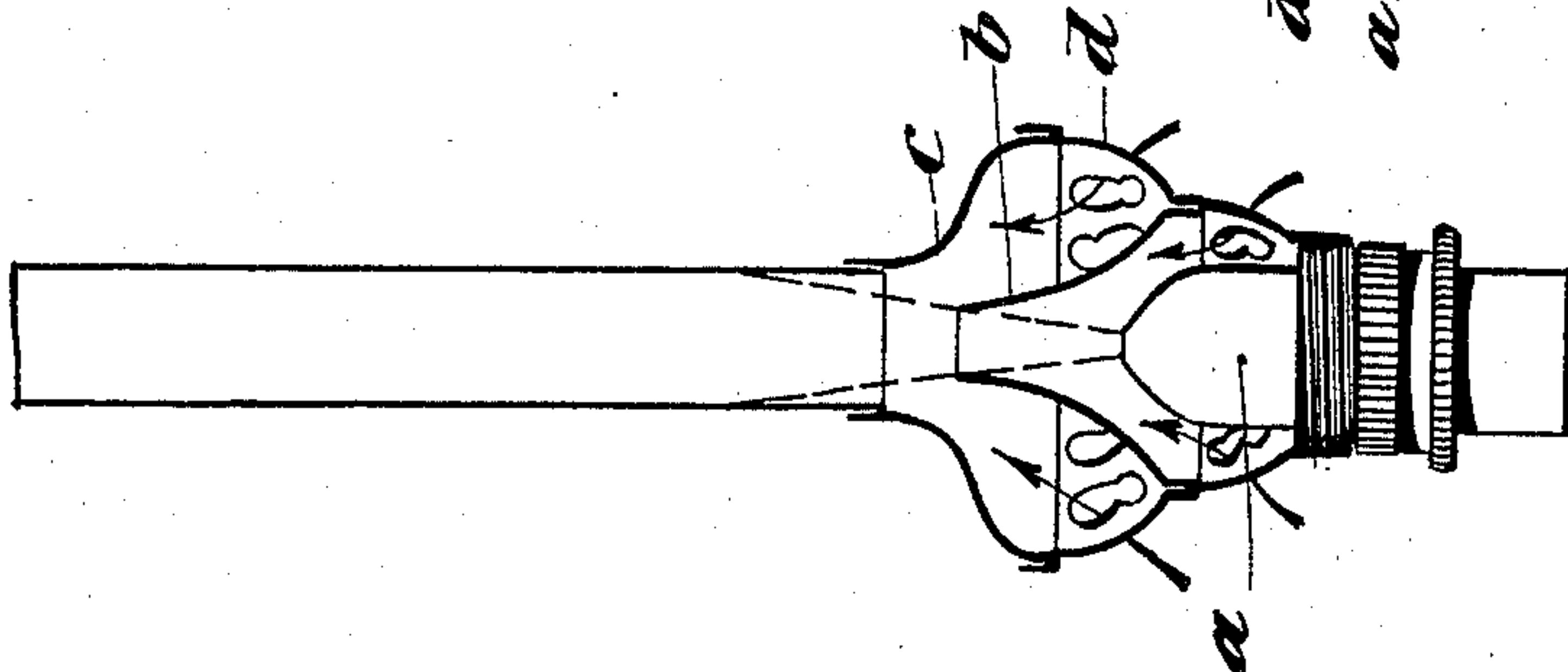


Fig. 2.

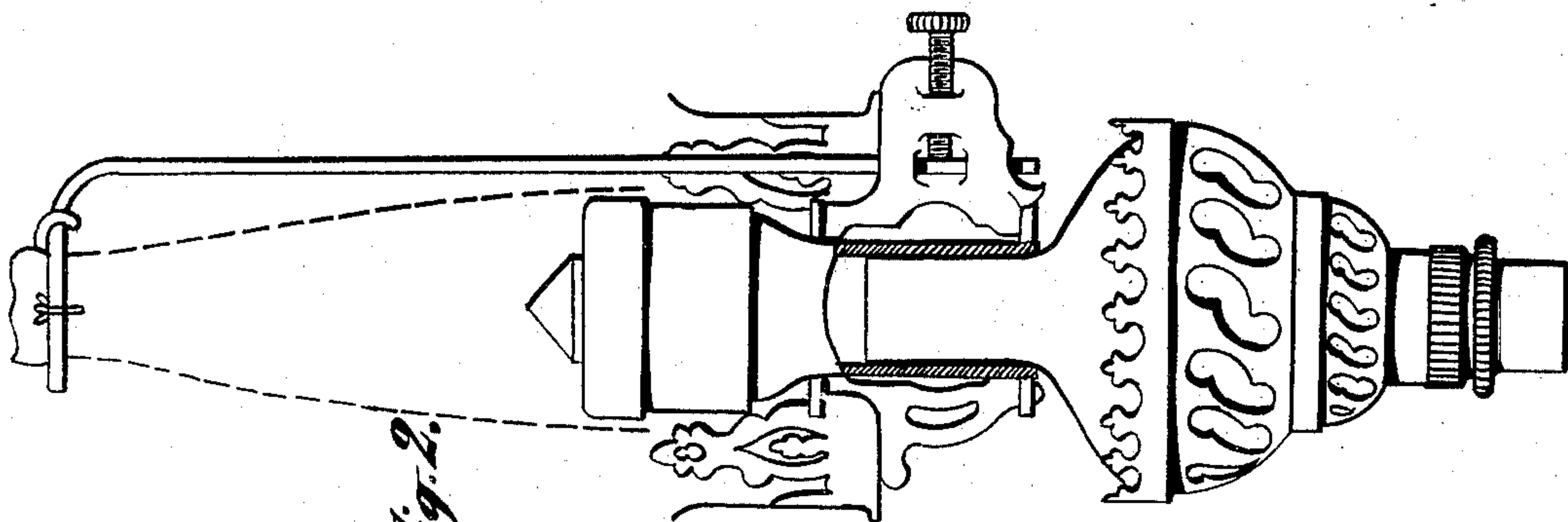
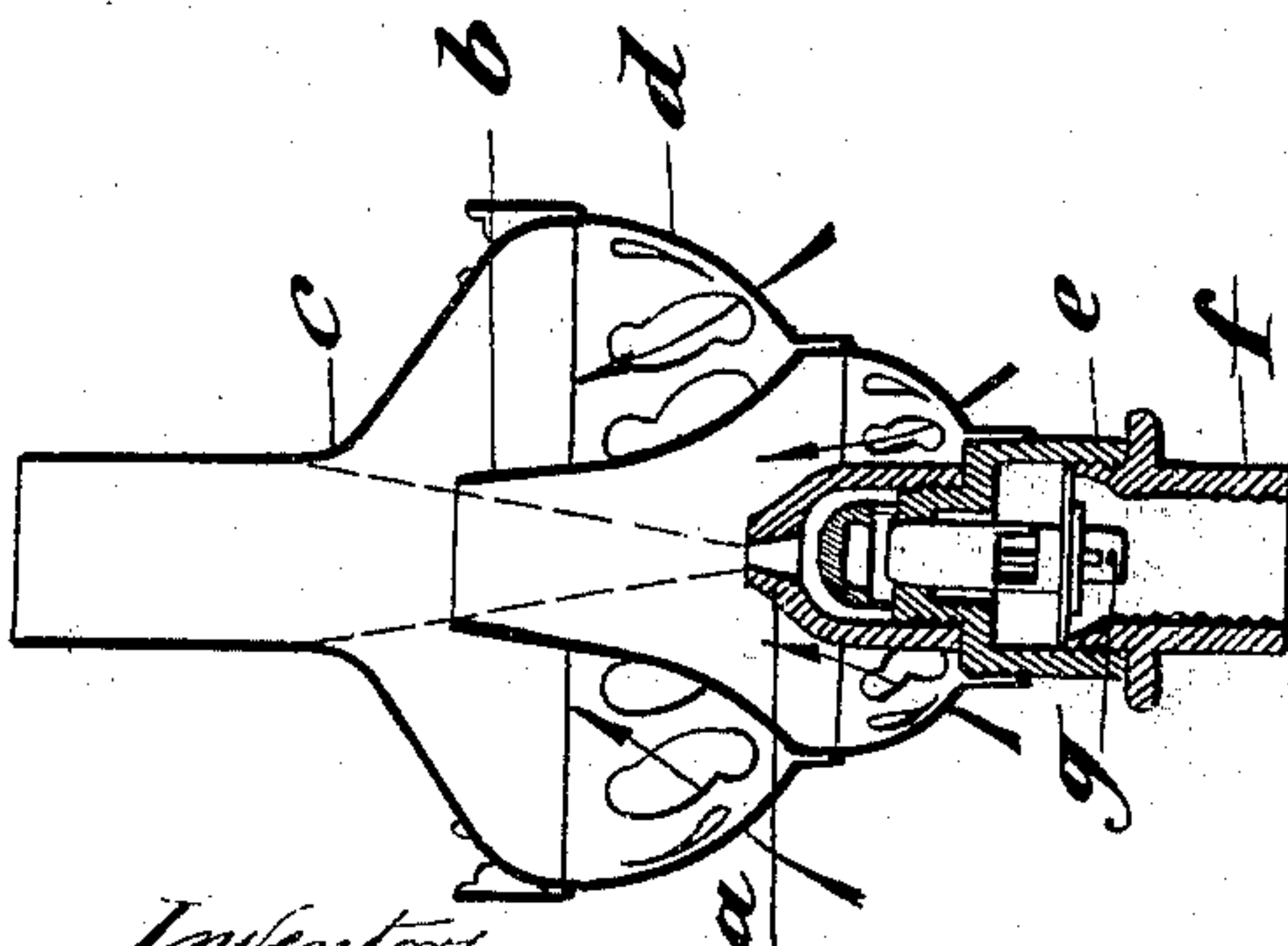


Fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

AUGUSTE LECOMTE AND ISIDORE LOESER, OF PARIS, FRANCE.

INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 638,344, dated December 5, 1899.

Application filed December 28, 1897. Serial No. 664,129. (No model.)

To all whom it may concern:

Be it known that we, AUGUSTE LECOMTE, a citizen of the Republic of France, and ISIDORE LOESER, a subject of the Emperor of Germany, both residing at Paris, France, have invented new and useful Improvements in Gas-Burners, of which the following is a specification.

The present invention concerns a system of gas-burner for very low pressure of gas, producing an economy in the consumption of gas and which can be fixed immediately under any gallery of incandescent burners. It is well known that the weaker the pressure of gas the more economical is the burner. With low-pressure burners we can also employ gas-supply regulators and make the burners suitable for all diameters of pipes even when this diameter is very small and the pressure of gas very variable. Attempts have been made to realize burners operating under these conditions, and complete burners have been combined comprising Bunsen and gallery. None of these burners work under ordinary galleries, which are generally of much too small a diameter at the base. Our system of Bunsen burner with low pressure works with a very low gas-pressure under all the galleries on the market without any modification and realizes a great economy upon the consumption, producing the same lighting intensity, or an increase of light with the same consumption.

In the annexed drawings the arrangement forming the object of our invention is shown by way of example.

In the drawings, Figure 1 is a vertical section of a burner with low pressure for an ordinary model of gallery. Fig. 2 shows the same burner fixed under an ordinary model of gallery. Fig. 3 represents also our burner with low pressure for small model of gallery. Fig. 4 represents on a smaller scale our burner fixed under a gallery with large mixing-chamber.

In the figures the same reference-letters denote the same parts.

As is shown in the drawings, *a* represents the ejector; *b*, the first convergent cone; *c*, the second convergent cone bearing the entrance-tube under the gallery; *d*, the open body of the burner; *e*, the upper part of the

supply-regulator; *f*, the lower part of this regulator, and *g* the valve.

The above-mentioned results are obtained only on the express condition that the gas-expansion angles and those of the admission of air are well observed.

In this low-pressure burner the gas expands at an angle of about fifteen degrees. This angle is regulated by the height of the first convergent cone *b*, which terminates also in an angle of about fifteen degrees. The cone *c* is placed in such a way that the expansion-angle of the gas coming from the convergent cone *b* reaches the apophysis of the cylindrical part of the second convergent cone *c*, which is open according to an angle of from seven to nine times as great as that of the cone *b*. The ejector *a* gives the best results when the exit-hole of the gas is made at an angle of about thirty degrees.

If gas is discharged through a hole in a plate, it does not form a cylindrical jet, but is contracted a short distance in front of said hole, forming the well-known *vena contracta* common to fluids. Such contraction diminishes the speed of the jet by about two-fifths. Substituting for the perforated plate a nozzle having a conoidal discharge orifice or passage corresponding in taper (about thirty degrees) to the angle of contraction of the gas will do away with the *vena contracta* and cause the jet to flare outwardly in leaving the said nozzle. The whole force of the jet is thereby retained, and there is no diminution of speed of the jet. This flaring jet enters the upper cone *C*, which has an opening larger than that of the cone *B*, a more-widely expanded body of less taper, and a nearly cylindrical neck for an outlet. The air sucked in at the sides of the second cone *C* by the gas-jet entering said cone centrally from the cone *B* has its speed increased as it rises in the tapering upper part of the former cone and moves with the same velocity as the jet of gas when it comes into contact therewith. As the gas-jet flares outward and the air, which cannot at once lose its velocity, is directed upward and inward the air penetrates into the gas to a considerable extent, making a thorough admixture, and the two are discharged together upward. When the gas escapes slowly and at low pressure, it mixes

with air and forms a wide cone. When it escapes at high pressure, it forms a narrow elongated cone.

What distinguishes our economical low-pressure burner is that it can be fixed under every gallery of incandescent burners, allowing them to burn with gas at hardly any pressure, at the same time obtaining by the arrangement of the cones of very different angles, the largest being placed above, a very good mixture of air and gas, which produces under every burner the same light with a consumption of gas very much weaker, or with incandescent caps rather high, seven to eight centimeters, a light very much stronger with the ordinary consumption of gas. Our burner may be employed with or without supply-regulators.

Under the small model gallery the burner in Fig. 3 is employed, which is constructed on the same principle, but of smaller dimensions.

The burner in Fig. 1 fixed under a gallery with large mixing-chamber, as shown in Fig. 4, allows us to obtain lights of great intensities by increasing the flow of gas proportion-

ally, but always with comparatively weak pressure of gas.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

In a gas-burner for low gas-pressure the combination of an ejector, fitted to the gas-supply, having a single central hole, of a conical form and forming an angle of about thirty degrees, two convergent cones arranged one above the other and having different angles, the lower cone having an angle nearly equal to that at which the jet leaves and the upper cone having an angle seven to nine times greater than that of the lower cone as and for the purpose set forth.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 30th day of November, 1897.

AUGUSTE LECOMTE.
ISIDORE LOESER.

Witnesses:

EDWARD P. MACLEAN,
JOHN S. ABERCROMBIE.