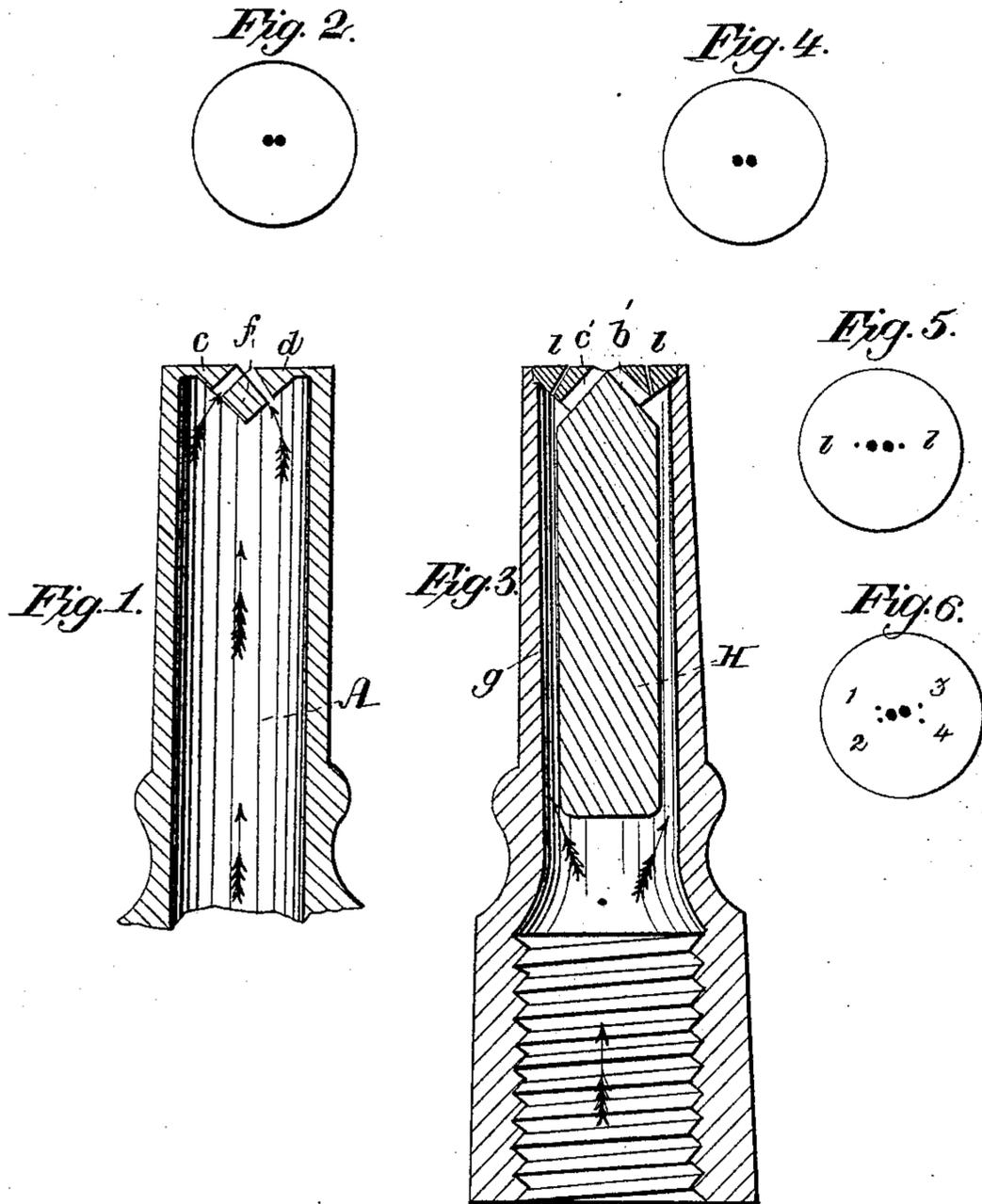


R. CORNELIUS.  
Gas Burner.

No. 20,626.

Patented June 22, 1858.



Witnesses:  
Geo. Harding  
J. H. B. Jenkins

Inventor:  
Robert Cornelius

# UNITED STATES PATENT OFFICE.

R. CORNELIUS, OF PHILADELPHIA, PENNSYLVANIA.

## GAS-BURNER.

Specification of Letters Patent No. 20,626, dated June 22, 1858.

*To all whom it may concern:*

Be it known that I, ROBERT CORNELIUS, of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Gas-Burners; and I do hereby declare the following to be a full and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, represents a vertical section of the old fish-tail burner, in which my improvement has been made. Fig. 2, a horizontal or top view of the same. Fig. 3, is a vertical section of my improved gas burner, and Fig. 4, a top view of the same. Figs. 5 and 6 represent modifications of the top corresponding to variations in the body of the burner hereinafter described.

Heretofore, "fish-tail" burners, as they are called, have been constructed as shown in Figs. 1 and 2, having the interior of the burner cylindrical, as shown at A, Fig. 1, and having a small inverted conical cap, *f*, and two holes, *c* and *d*, converging toward each other. The gas enters into the cylindrical cavity of the burner A, from below, and is discharged through *c* and *d* in two jets, which strike against each other, and produce the flame, which is the peculiarity of the "fish-tail" burner. This burner, as commonly constructed, answers well, and is economical with a low pressure of gas; but if the pressure be increased within the cylindrical cavity A, the gas rushes against the interior ends of *c* and *d*, and the directive action of the small apertures *c* and *d* is interfered with, and the two jets of gas, escaping through these apertures, instead of striking each other, as before, and producing an equable resultant flame, escape in an irregular manner, and produce a disturbed resultant flame. After numerous experiments, I have discovered the cause of this, and invented a form of interior construction of the "fish-tail" burner which overcomes this difficulty.

My improvement consists in filling up the interior of the burner A, Fig. 1, so as to leave an annular cavity or space *g, g*; Fig. 3, instead of a cylindrical cavity as at A, Fig. 1. I attain this end by inserting the

interior cylinder H, extending nearly the full length of the interior of the upper part of the burner, say about one inch in length, and filling up from one-half to seven-eighths diametrically of the interior cylindrical space A. The holes *c'* and *d'* are bored at an angle, as heretofore, through the top of the burner. Their lower extremities just intersect the upper part of the annular space, *g, g*. The effect of this is that the gas flows to and enters these small holes, *c', d'*, in lines closely approaching the line of the axis of the holes, and there is no practical disturbance in the currents of gas entering or passing through these angular apertures, and hence there are two steady jets resulting in an equable flame, even when the pressure is increased to any extent required, within the usual city pressures. My improvement also enables me to add two auxiliary holes or apertures *l, l'*, Figs. 3 and 5, without interfering with or disturbing the main jets passing through *c'* and *d'*, and producing also an increased light. So also, if desired, two more holes might be added, so that the four outside holes would occupy the position in reference to the central openings *c', d'*, as shown by the Figs. 1, 2, 3, and 4, Fig. 6.

My improvement, at the same time that it enables me thus to increase the light given by the fish-tail burner, obviates, as first stated above, the disturbance of the flame due to increased pressure, and that disagreeable blowing noise which is heard so frequently with the common fish-tail burner.

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

1. Constructing "fish-tail" gas burners with an interior annular space *g, g*, extending to the commencement of the holes of discharge, *c'* and *d'*.

2. I also claim the auxiliary holes *l, l'*, or 1, 2, 3, 4, in combination with a fish-tail burner, arranged and operating substantially as above described.

ROBERT CORNELIUS.

Witnesses:

J. H. B. JENKINS,  
CHARLES D. FREEMAN.