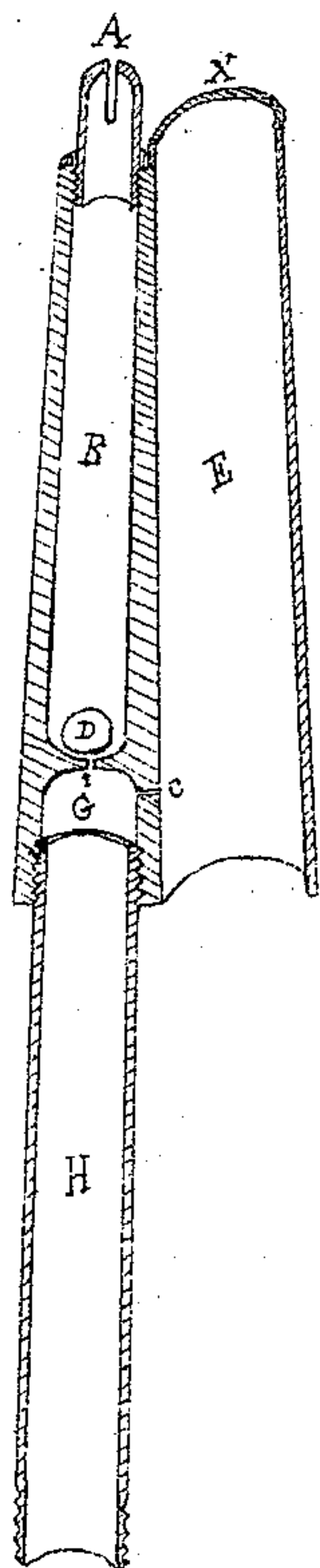


Nº 93698

*Improvement in Vapor Burners.*



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AUG 17 1869

*Witnesses.*  
*Geo Cole.*  
*Chas W Ross*

*Thos B Gates*  
*W H Fitchey.*  
*Inventors.*  
*Columbus, Ohio.*

# UNITED STATES PATENT OFFICE.

THOMAS S. GATES AND A. H. FRITCHEY, OF COLUMBUS, OHIO.

## IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. 93,698, dated August 17, 1869.

*To all whom it may concern:*

Be it known that we, THOMAS S. GATES and A. H. FRITCHEY, both of Columbus, in the State of Ohio, have invented an Improvement in Vapor-Burners; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

This invention is an improvement upon that for which we obtained Letters Patent June 1, 1869, and numbered 90,659, and in which a supplemental burner or orifice from the chamber of the main burner formed a communication or passage from it to a vertical tube attached to the side of such main burner, the supplemental burner serving to facilitate and hasten the generation of gas from the fluid in the supply-pipe, fed from a vessel or fount, sufficiently elevated, in a manner well known. In that patent the auxiliary burner or orifice formed a direct communication or passage from the main burner or gas-chamber, (marked B in the accompanying sectional drawing, forming part of this specification,) to the vertical tube, marked E, and at a point above the generating-chamber G.

While that novel construction has been found to be a successful and important improvement, and to answer admirably all the purpose for which it was devised, we find, upon further experience and study, that we gain many decided advantages by dispensing with any opening between the parts B and E, and, instead thereof, making the opening from E directly into the generating-chamber G.

Incidentally to this change in the construction, we also make the small pin-hole or communication F between the generating-chamber G and the gas-chamber B smaller than heretofore, and also the opening C smaller than the opening between B and E in the above-named patent.

The other parts, A, D, and H, are substantially the same in construction as in said patent, A being the ordinary slit for the exit of the gas for illuminating; D, the opening to admit air into the gas-chamber of the burner; and H, the tube, to be filled with cotton or

other appropriate packing to regulate the flow of the liquid from the reservoir.

The hole C we prefer to make about the size of a No. 14 needle, and, notwithstanding this diminution in size, we find it is not liable to be choked up, inasmuch as the force of the gas, coming as it does direct from the generating-chamber, proves always sufficient to keep it open and clear.

The following advantages result from the above-described improved construction: First, the auxiliary jet C being nearer the first chamber supplied from tube H than it was in our former construction, and this chamber G being a much smaller one than B, and being more nearly inclosed, and having no large air-hole like D, such jet, as above stated, can be made very small, and yet give all the heat required to generate a sufficiency of gas for the illuminating-burner. Second, there is no possibility of smoke from this heating-jet, both because of its minuteness, and of its distance from the top of tube E. Third, the flame of the heating-jet cannot rise high enough to be visible above the top of tube E, and consequently cannot interfere with the illuminating-flame, as to direction or otherwise. Fourth, it allows full force to the illuminating-flame, and does not cause any waste by imperfect combustion, thereby affording a fuller flame and yielding more light, even with the same sized pin-hole at F.

The reservoir should be about six inches above the level of the top of the burner, and should preferably be supplied with benzine or petroleum fluid of about 70 gravity.

We claim—

In a vapor-burner provided with an auxiliary vertical tube open at both ends, and with an orifice, serving as an auxiliary jet for heating, the making of such orifice so as to communicate directly from the generating-chamber G to the vertical tube, as and for the purpose described.

THOS. S. GATES.

ALEXANDER H. FRITCHEY.

Witnesses:

GEO. COLE,

C. W. ROSS.