J. W. AVERILL.

Gas-Burners.

No. 141,415. Patented August 5, 1873.

Fig. 1.

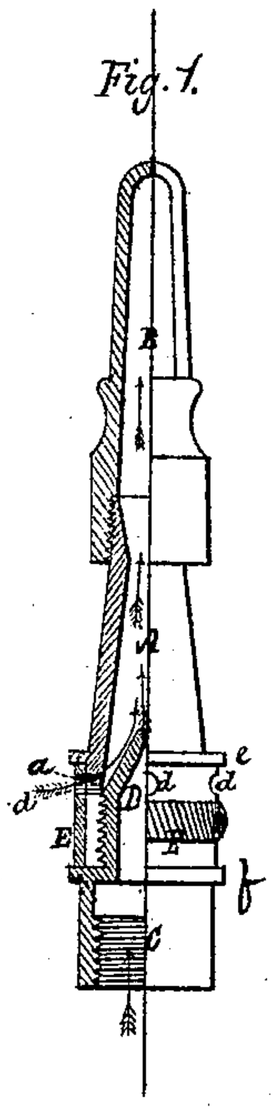


Fig. 2.

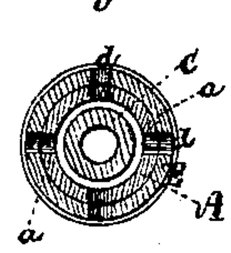


Fig. 3.

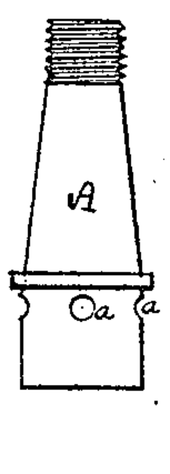
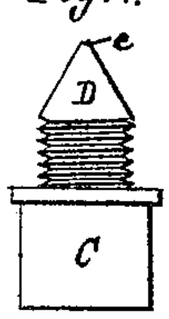


Fig. 4.



Witnesses.
F. P. Hubbard.
W. E. Boardman.

J. W. Averill.
F. Curtis. Atty.

UNITED STATES PATENT OFFICE.

JAMES W. AVERILL, OF NEWMARKET, NEW HAMPSHIRE.

IMPROVEMENT IN GAS-BURNERS.

Specification forming part of Letters Patent No. **141,415**, dated August 5, 1873; application filed April 14, 1873.

To all whom it may concern:

Be it known that I, JAMES W. AVERILL, of Newmarket, Rockingham county, New Hampshire, have invented a Mode of Aerating or Purifying Gas, of which the following is a specification:

This invention relates to means for incorporating oxygen or air with gas from coal or hydrocarbons, the purpose of the invention being not only to treat gases for illuminating purposes, by the admixture of a small amount of oxygen, to obviate smoking in such gases as are too rich in hydrocarbon, but also for heating purposes, by the use of a greater quantity of oxygen for intensifying the heat evolved from the flame.

It has been not unusual to intermingle air with gas, either coal-gas or more especially hydrocarbon vapor, and the intermingling has been effected in the gas-generator and also at the burner. My invention relates to the latter, the object being to produce a cheap, convenient, and reliable burner, adapted for the intermingling of the air and gas just before combustion.

The drawings accompanying this specification represent in Figure 1 a sectional elevation, and in Fig. 2 a horizontal section, of a gas-burner as provided with my improvement, or a means of carrying out my improvement. Fig. 3 is an elevation of the tubular mixing-chamber, and Fig. 4 a like view of the conical seat or bottom of such.

In these drawings, A denotes a truncated tube or cylinder, upon whose upper extremity a gas-burner, of any desired character, is screwed, as shown at B, though for many purposes a burner is not requisite. The lower portion of the periphery of the tube A is perforated with a horizontal range of inlet-ports *a a*, &c., through which oxygen is admitted into the interior of the tube or the mixing-chamber, which such tube creates by means of the vacuum created therein, by the heat of the flame at the upper mouth of such chamber, or of the burner B. Within the lower end of the tube or chamber A I screw a tubular plug, C, whose upper end terminates in a conical teat, D, pierced with an attenuated orifice, *c*, for passage of gas, the base of the cone D being on a level, or thereabout, with the bottom of such air-port *a*, and serving to deflect upward into immediate contact with the jet of gas issuing from the orifice *c*, a certain amount of oxygen inflowing through the said ports *a*. E in the drawings represents a cylindrical sleeve, which encompasses the lower part of the tube A, and is perforated with a series of ports, *d d*, &c., of a size and number corresponding to the ports *a a*, &c., the two series of ports being in the same horizontal plane, and the sleeve serving to increase or diminish the extent of the latter ports, or close them altogether, as the case may be.

Gas flows through the orifice *c* into the chamber A, and thence into the burner B, and is inflamed at the top of such burner, or, if the burner is dispensed with, the gas is inflamed at the upper mouth of the chamber A. The heat of the inflamed gas tends to create a vacuum in the chamber A, which induces inrushing current of oxygen or air within such chamber, which commingles with the gas therein, and aerates the same, the confluent streams thus uniting being inflamed as above stated.

For illuminating purposes a comparatively small amount of air will be admitted through the ports *a* and *d*, but for heating purposes, in which the illuminating power or properties of the gas are greatly reduced, a much larger quantity of air is admitted through said ports, the sleeve E, in either or any event, serving as a register or governor to regulate the amount of air thus admitted.

The vacuum within the chamber A serves to prevent outflow of gas through the ports *a* and *d*, while the form of the apiculated deflector prevents the collection of stagnant air or gas at the bottom of the said chamber A, and likewise tends to effect an immediate and intimate incorporation of air and gas therein.

The formation of the burner in the two parts A C is convenient, as it permits the burner to be taken apart whenever it is desired to have access to the interior, whether for cleaning out the conical gas-nozzle D or for other purposes. It also allows of a convenient arrangement of the register-sleeve E,

which fits on the cylindrical part of the piece A, and is held securely between the flange *e* on that piece and the flange *f* on the part C, at the same time that it can still be readily revolved to regulate the passage of air.

I do not claim, broadly, mixing the air with gas at and within the burner; nor do I broadly claim regulating the supply of air for this purpose.

What I do claim, and desire to secure by Letters Patent, is—

The burner described, consisting of the parts A C, the former provided with air-apertures, the latter with the conical gas-nozzle D, in combination with revolving perforated register-sleeve E, held between flanges *e f* on the said parts A C, when the latter are fitted together, as shown and set forth.

JAMES W. AVERILL.

Witnesses:

F. CURTIS,

W. E. BOARDMAN.