(No Model.)

J. E. GILL & T. M. FOLEY.

GAS BURNER.

No. 390,660. Patented Oct. 9, 1888.

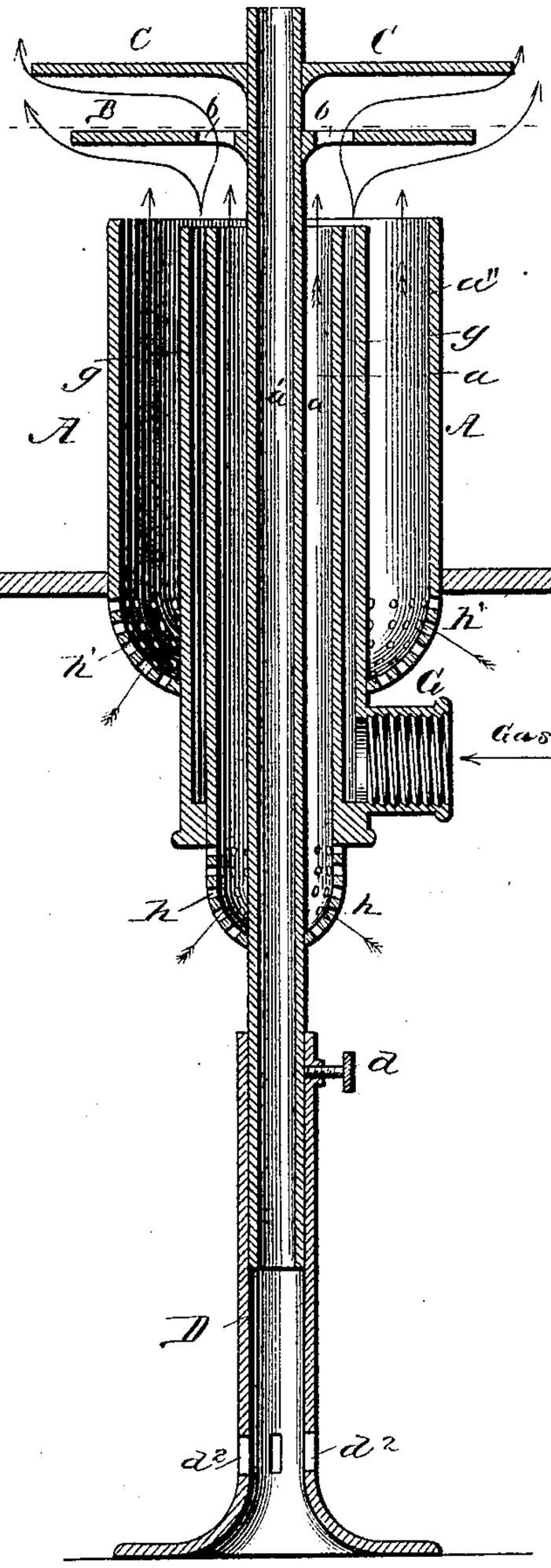
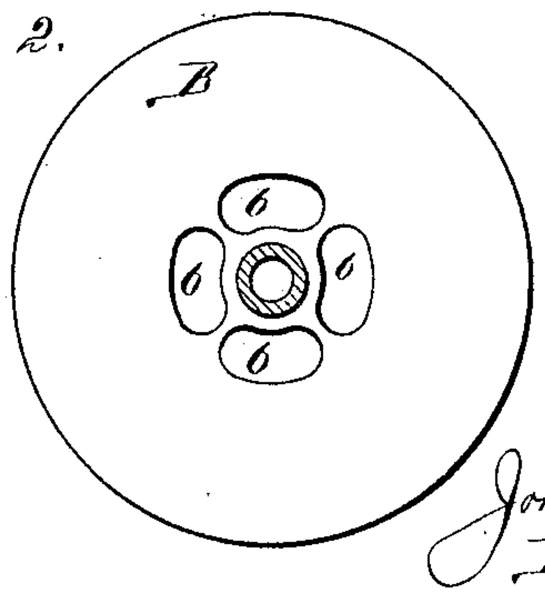


Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN E. GILL AND TIMOTHY M. FOLEY, OF FRANKLIN, PENNSYLVANIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 390,660, dated October 9, 1888.

Application filed November 5, 1887. Serial No. 251,341. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. GILL and TIMOTHY M. FOLEY, of Franklin, Venango county, Pennsylvania, have invented new and useful Improvements in Gas-Burners, of which the following is a specification.

Our invention relates especially to burners for using natural or other gas as a fuel, and has for its object the securing of as perfect combustion as possible.

Our invention consists of the combinations hereinafter described and claimed.

For the sake of illustration our invention is shown in connection with a burner made in accordance with the patent granted to us May 31, 1887, and numbered 364,101, but is applicable to any burner consuming mingled air and gas.

In the drawings, Figure 1 is a vertical section of a gas-burner made in accordance with our invention, and Fig. 2 is a top view of the lower deflector.

The general arrangement of air and gas tubes has been described in the patent above named and needs but a cursory description herein.

The burner consists, essentially, of an annular passage for gas, (marked *g* in the drawings,) on the exterior and interior of which are passages for air *a*, *a'*, and *a''*, and, in addition, the stem of the deflector C is made hollow, forming another air-passage, *a'*.

The burner illustrated herein differs from that shown in our patent before referred to in being supported on a hollow pillar, D, perforated at d^2, in which it may be adjusted and secured by the set-screw *d*. Air is thus supplied through hollow standard D and stem of the deflector C and reaches the flame above the imperforate deflector C. While, as explained in our Letters Patent No. 364,101 aforesaid, we consider the admission of air above the deflector desirable, yet it is not essential to the invention herein described and claimed. Gas is supplied through the pipe G, and the air for the passages *a a''* is supplied through the perforations *h h'* from what would be the ash-pit in a coal-burning furnace. The place usually occupied by the grate in coal-burning furnaces is herein supplied by a tight plate, so that the air reaching the flame may all be taken in through the annular passages *a a' a''*. Admission of air to the pit may of course be regulated by dampers of any usual construction, if desired. Above the termination of the air and gas passages is fixed a deflector, B, having openings *b b* through it, and above the deflector B is placed a second deflector, C, preferably of larger diameter. The distance between the deflectors B and C and their relative diameter, as well as the areas of the perforations *b*, may be varied to suit the various fuels consumed and several situations in which the burner is used.

By using two deflectors, one above the other, and perforating the lower, an important improvement in combustion is had, as the gases which pass through the perforations are reflected downward by the upper deflector into the flame made by the gas which escapes past the edge of the lower deflector. More air is also supplied through the surrounding air-passages, as the gas is not forced back so much by the perforated as by a solid deflector, and, in addition, the air and gas are more thoroughly commingled by passing through the holes of the lower deflector.

Our invention may also be carried out by using more than two deflectors, all but the topmost being perforated, the principle and mode of operation being unchanged.

If oil be used as a fuel, it must be vaporized (converted into gas) before being burned, which vaporization may be effected immediately before its exit from the passage *g* by the heat of the burner-flame or by any of the well-known means for such purposes.

We claim—

The combination of a burner having adjacent air and fuel passages, a deflector, as B, mounted above the burner and provided with perforations registering with said air and fuel passages, and an imperforate deflector, C, mounted above said perforate deflector B, whereby a portion of the flame which passes the outer edge of the perforate deflector is caused to impinge against the portion of the flame which passes through the perforate deflector and is deflected by the imperforate deflector.

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