

L. B. HAMILTON.

GAS HEATER.

No. 102,258.

Patented Apr. 26, 1870.

Fig. 1

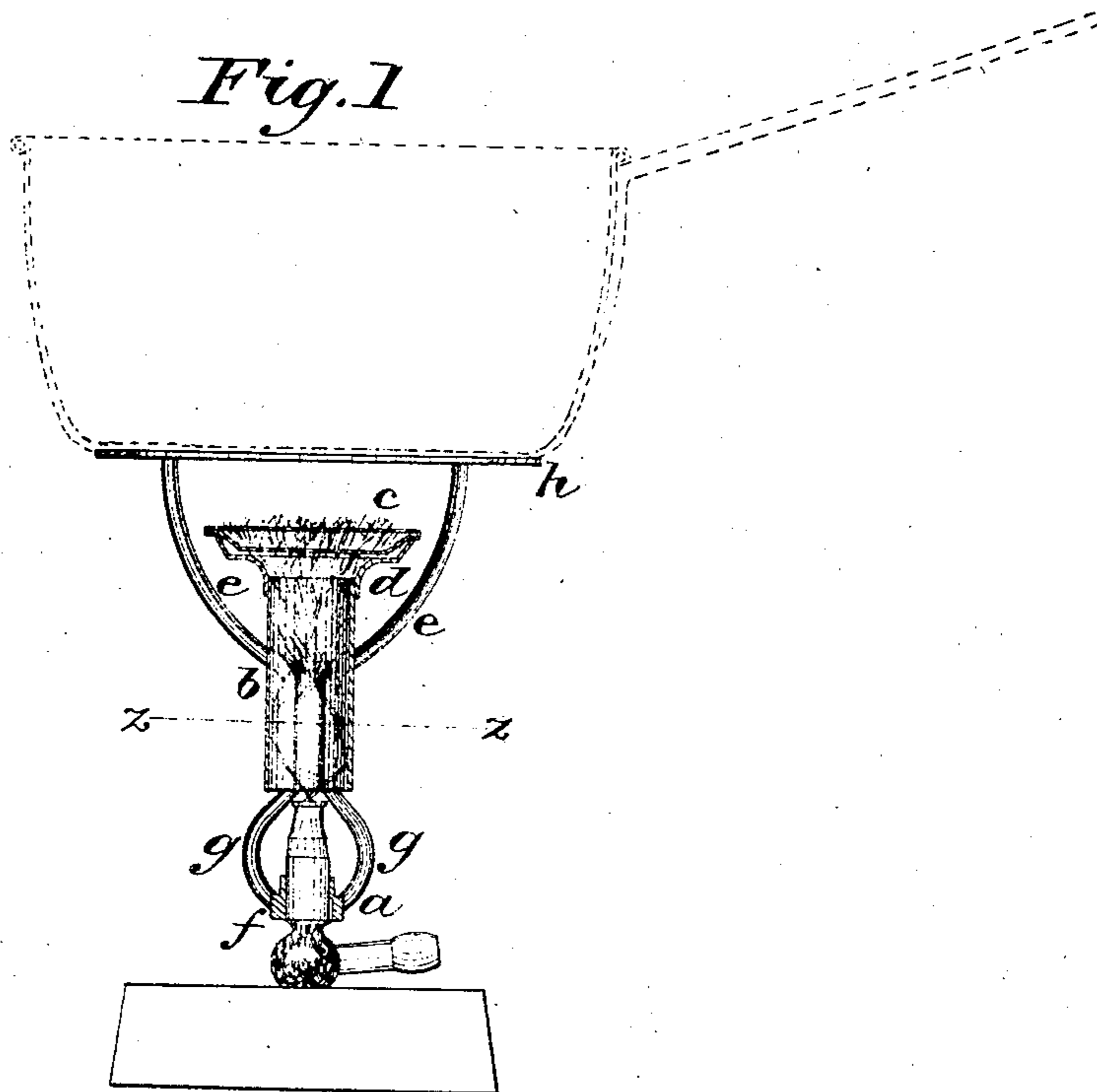
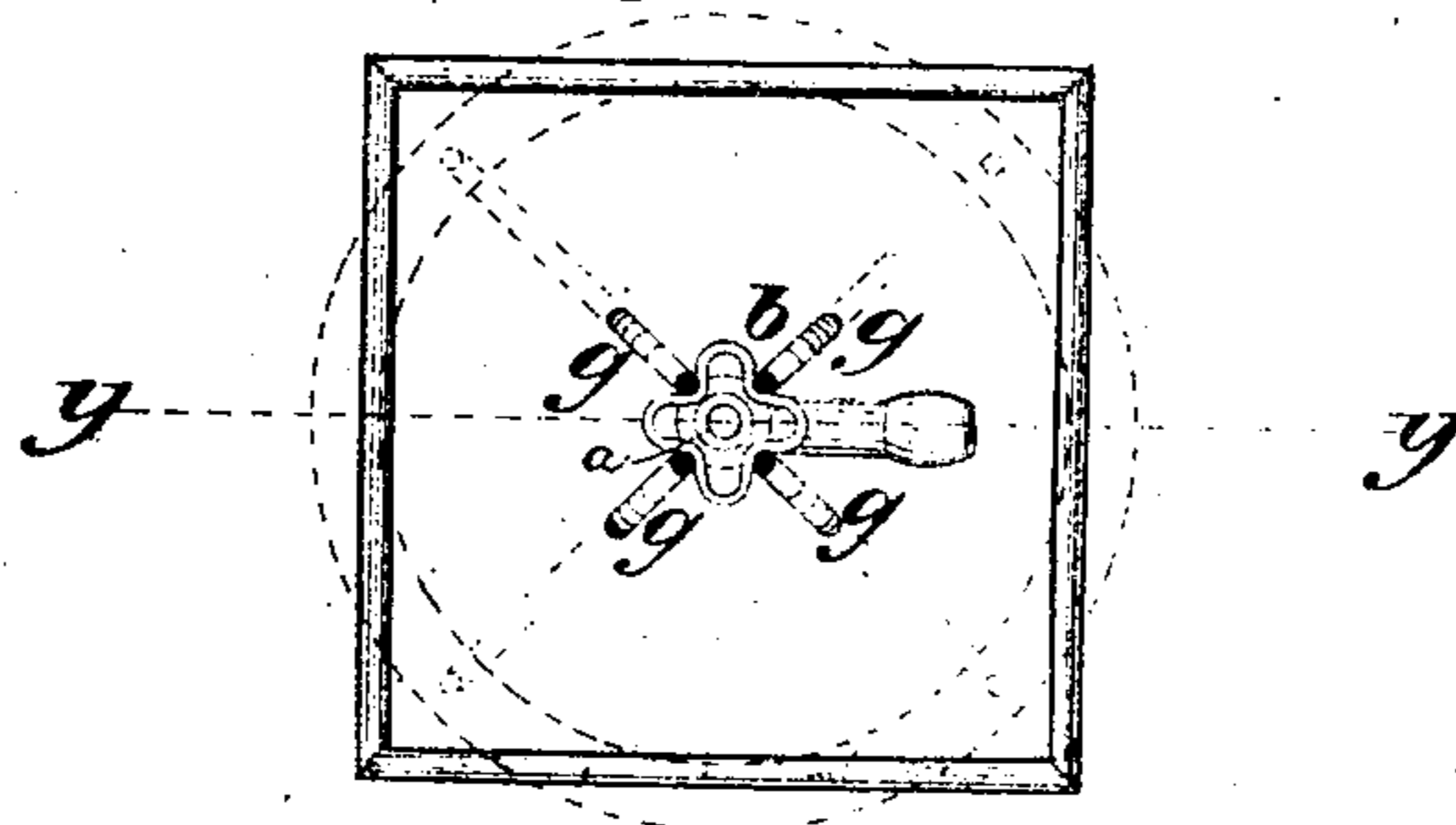


Fig. 2.



Witnesses:

M. W. Frothingham,
L. H. Latimer,

Inventor:

Lavinias B. Hamilton
By his attys.

Crosby, Halsted & Gould

United States Patent Office.

LAVINAS BUSH HAMILTON, OF BOSTON, ASSIGNOR TO EDWIN A. EATON,
OF WINCHESTER, MASSACHUSETTS.

Letters Patent No. 102,258, dated April 26, 1870.

IMPROVEMENT IN GAS-HEATERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LAVINAS BUSH HAMILTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Gas-burning Apparatus; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to that class of gas-burning apparatus in which gas is mingled with atmospheric air, and the mixture burned with a blue flame, producing great heat, and but little, if any, light.

And my invention consists in the arrangement, with reference to a burner capable of producing a wide, flat, thin flame, or of throwing jets of gas laterally, of a tube, one end of which is open, and placed about on a level with, or slightly above, the orifice from which the gas escapes from the burner, the tube being located, also, with its axis in the axial line of the burner, and being expanded at its upper end, and provided there with a perforated plate, beneath which, and within the tube, is a wire-gauze, or other finely perforated diaphragm, and the tube having, also, at its lower end, a less diameter or width than the normal width of the flame produced by ignition of the gas directly at the burner.

In this arrangement the gas escaping from the burner strikes within the tube against its opposite sides, and is deflected and shoots upward within the tube, the gas current producing an upward draught in the tube which draws air into it through its lower open end, the draught being intensified by the rarefaction of the air, produced by combustion above the upper perforated plate of the mingled gas and air current, which, mingling, is assisted by the impact against, and reaction of the gas from the walls of the tube.

All the air which is mingled with the gas enters the tube at its lower end, which affords ample area for that purpose, and is heated increasingly as it passes up the tube to the plane of ignition. The character and quality of the flame are modified by slight vertical adjustments of the lower open end of the tube with reference to the adjacent end of the burner, and also by regulating, by means of the gas-cock, the amount of gas admitted to the tube.

In the drawings—

Figure 1 represents my invention in sectional elevation, and

Figure 2 is a sectional plan, the section being taken in the plane of the line *z z*, fig. 1.

a is a common gas-burner capable of throwing a thin, flat flame, or jets of gas, laterally, in the plane of the line *y y*, seen in fig. 2, which is the plane of the section seen in fig. 1.

Over this burner is fixed, in any convenient way, a tube, *b*, the lower end of which is open, and is at about the same level or plane with the end of the burner, or slightly above it, and is preferably arranged so that it may be adjusted relatively to the upper end of burner *a*.

The upper end of the tube *b* is made flaring, and is closed by a plate, *c*, having numerous perforations of considerable area, while beneath and near said plate, within the tube, is a wire-gauze diaphragm or plate, *d*, pierced with numerous fine holes, the purpose of said diaphragm being to prevent the combustion from following down the tube and igniting the gas at the burner.

For convenience in holding the tube *b* I make its lower end cruciform in cross-section, so that it will fit and slide upon four wires, *e*, which are attached to a ring, *f*, which surrounds the lower part of the burner *a*, said wires and the tube *b* being prevented from turning by a projection, *g*, fixed in the burner *a*, there being in said ring a slot which embraces said projection.

The wires *e* also serve conveniently to support a ring, *h*, on which may be placed any object to be submitted to the action of the flame.

With the apparatus constructed and arranged substantially as described, the maximum heating effect that can be produced from consumption of a given quantity of gas is obtained, the mixture of the air with the gas is perfect, no disagreeable odor proceeds from the combustion, and no smoke is evolved, so that the apparatus is admirably adapted for domestic use, and for employment in the laboratory and workshop.

By the cruciform-shape of the tube at its lower end, I diminish its area where the entering currents of gas and air are comparatively cool, and keep the walls of the tube substantially vertical, against which the laterally-directed gas impinges, and, as the mingled current rises in the tube and becomes heated and expanded, the area of the tube is enlarged as the cruciform shape blends into the cylindrical.

I claim—

In combination with a burner *a*, capable of delivering gas in a wide, thin jet, or in laterally-directed jets, the employment of a tube *b* constructed at its upper end substantially as described, and with an open lower end arranged as set forth, relatively to the gas-delivery orifice of the said burner, for the purpose specified.

LAVINAS BUSH HAMILTON.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.