(No Model.) 2 Sheets—Sheet 1.

C. HAFFCKE.

BURNER.

No. 606,136. Patented June 21, 1898.

Fig 1.

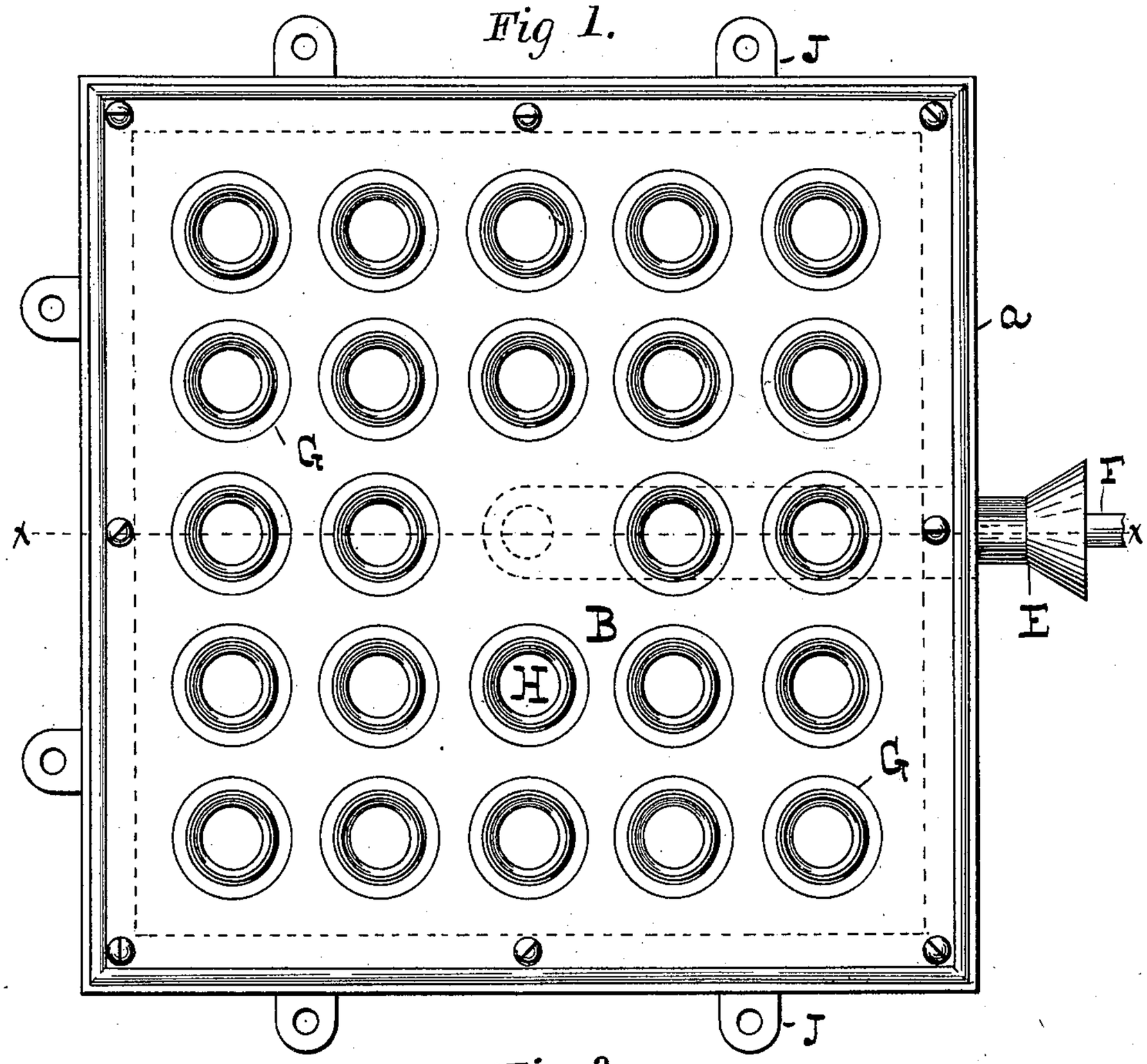


Fig 2.

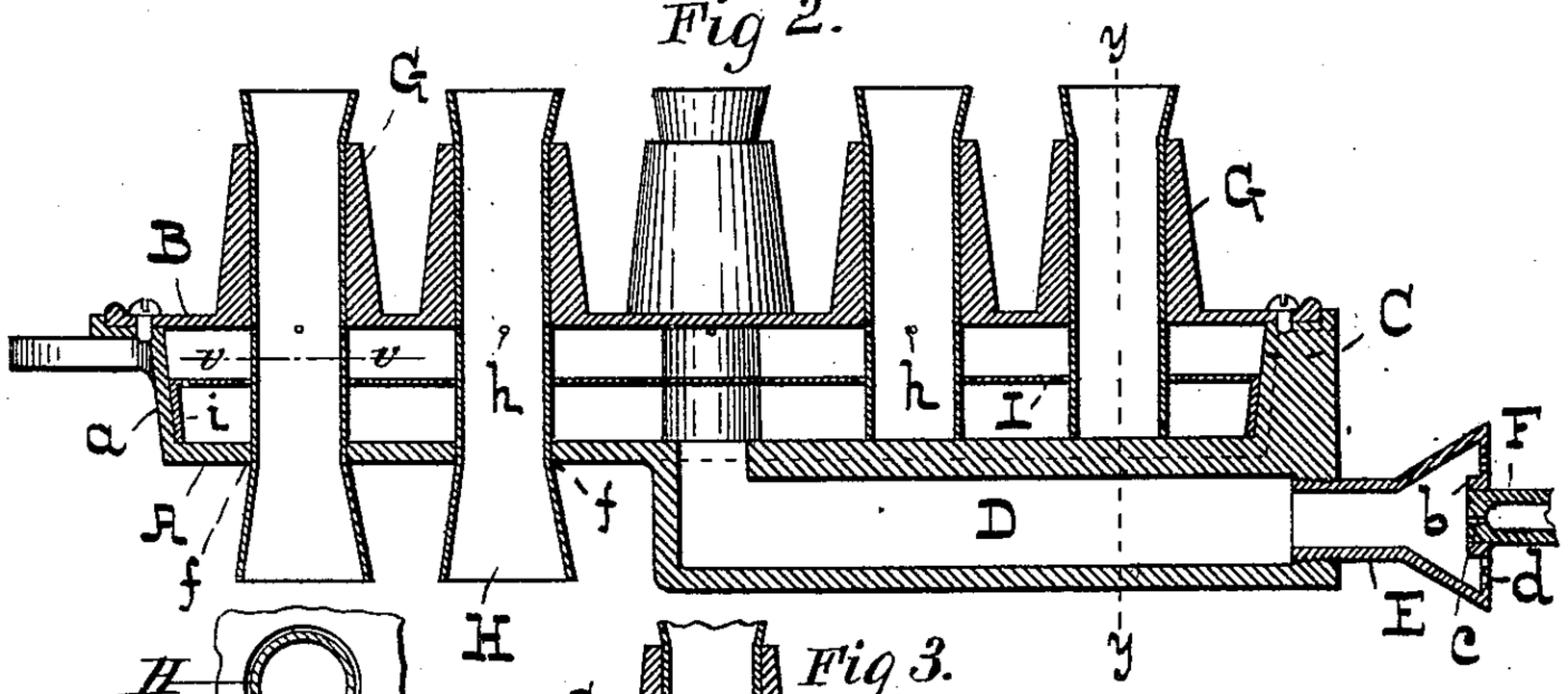


Fig 3.

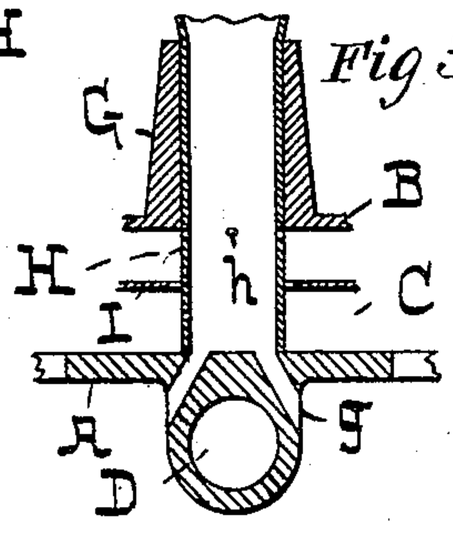
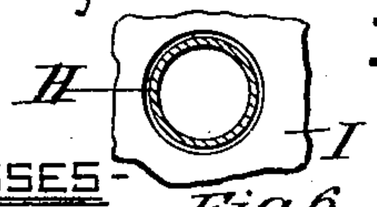


Fig. 6.



-WITNESSES-

Dan'l Fisher

H. Constantine.

-INVENTOR-

Charles Haffcke,

by G.H. & W.T. Dwight,

Atty.

(No Model.) 2 Sheets—Sheet 2.

C. HAFFCKE.

BURNER.

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Fig 4.

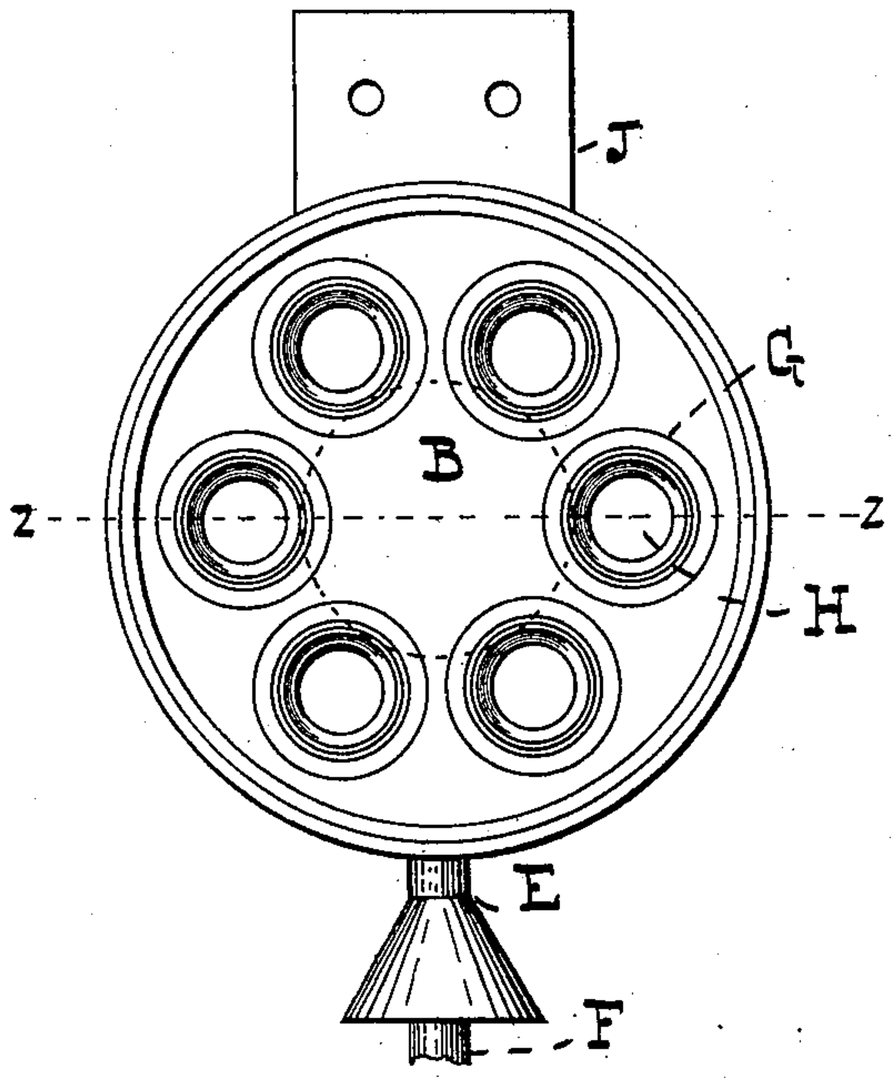
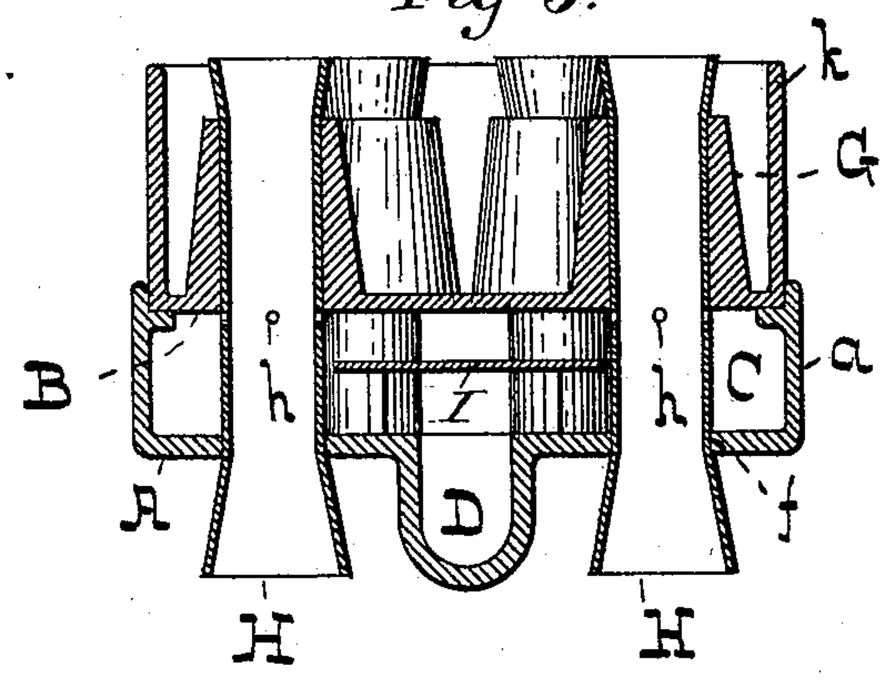


Fig 5.



-WITNESSES-

Dan'l Fisher

H. Constantine,

-INVENTOR-

Charles Haffcke,

by Wm. W. T. Howard,

Atty.

UNITED STATES PATENT OFFICE.

CHARLES HAFFCKE, OF BALTIMORE, MARYLAND.

BURNER.

SPECIFICATION forming part of Letters Patent No. 606,136, dated June 21, 1898.

Application filed May 15, 1897. Serial No. 636,663. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HAFFCKE, of the city of Baltimore and State of Maryland, have invented certain Improvements in Burners, of which the following is a specification.

This invention relates to burners which are adapted for the combustion of gas intermingled with atmospheric air, as will hereinafter fully appear.

In the description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a top view of the improved burner. Fig. 2 is a section of Fig. 1, taken on the dotted line *x x*. Fig. 3 is a section of Fig. 2, taken on the dotted line *y y*. Fig. 4 is a top view of the burner, showing the same as somewhat modified in construction. Fig. 5 is a section of Fig. 4, taken on the dotted line *z z*. Fig. 6 is an enlarged section taken on the dotted line *v v*.

Referring now to the drawings, A is a base-plate, shown as square, having raised sides *a* and a covering-plate B, which together form a receptacle C for intermingled gas and air introduced thereto through a duct D. At the outer end of the duct D is inserted a funnel-shaped pipe E, having a boss *b* at the center, into which is screwed the gas-cock F or a pipe leading from a cock. The opening *c* in the inner end of the cock F is contracted, so that only a small supply of gas is admitted to the duct D. The portion of the head *d* around the boss *b* is perforated for the admission of air to the duct. Consequently the air and gas intermingle in the duct and the mixture passes into the receptacle C.

The base-plate A has a number of holes *f*, and the covering-plate B is provided with the same number of nozzles G, which are directly over the holes *f*.

H H are tubes of some comparatively soft metal, such as copper or wrought-iron, which are passed through the holes *f* and the nozzles G and fastened at their ends, which project above the nozzles and below the base-plate by means of any suitable expanding tool. The nozzles G are frusto-conical, to give them strength.

The tubes H, which are over the duct D, cannot pass through the base-plate A, as do the others, and they consequently rest on the upper surface of the plate A. They are open to the outer air, however, through the medium of passages *g*. (Shown only in Fig. 3.)

Each tube H is perforated immediately below the covering-plate B, the holes or apertures being denoted by *h*. These apertures are for the purpose of admitting the mixture of gas and air to the interior of the tubes H.

To equally distribute the mixture of gas and air to the tubes H, I place in the receptacle C a plate I, having a flange *i* to support it. The holes in this deflecting-plate through which the tubes H pass are slightly larger than the tubes. The mixture of gas and air therefore has to pass around the tubes to get to the apertures *h* in the same.

The base-plate A has a series of lugs J, whereby the burner may be secured in a stove of suitable description.

Combustion of the mixture of air and gas takes place at the upper ends of the tubes H, and as the said tubes become heated a strong upward current of air is established in the tubes, which has the effect of increasing the velocity of the gaseous mixture from the receptacle C above the deflecting-plate I to the said tubes through the apertures *h*. The upward current of air in the tubes H also serves to provide for any deficiency in the volume of air first admitted to the duct D through the perforated end or head of the funnel E and effects complete combustion of the gas supplied. In other words, with the secondary introduction of air effected as described complete combustion of the gas takes place.

Referring now to Figs. 4 and 5, it will be seen that the receptacle for the mixed gas and air is circular instead of square, and the deflecting-plate I, which is also circular, is wholly within the central space between the tubes H. The covering-plate B has an upwardly-extending flange *k*, which forms a tray for water, which is gradually evaporated by the heat from the burner. The vapor thus generated commingles with the air driven off in a heated condition from the burner, and as this burner is especially designed as a heating one the unpleasant effect of dry heat is avoided. In other respects the burner is practically the same as the one before described.

I claim as my invention—

1. In a gas-burner, the following elements in combination, viz., a base-plate having a series of holes and raised sides and a covering-plate with nozzles which register with the said holes in the base-plate, a duct to convey gas and air to the said receptacle, and tubes which pass through the nozzles and the holes in the base-plate and are fastened therein, the said tubes having apertures in their walls for the admission of the mixture of gas and air to the interior of the said tubes, substantially as specified.

2. In a gas-burner, a base-plate having a series of holes therein and raised sides, and a covering-plate with nozzles, which rests on the said raised sides to form with the base-plate a receptacle for air and gas, the said nozzles registering with the holes in the base-plate, combined with perforated tubes which pass through the said holes and nozzles and are secured therein, and a deflecting-plate in the said receptacle with annular spaces around the tubes to distribute the mixture of air and gas equally to the various tubes, substantially as specified.

CHARLES HAFFCKE.

Witnesses:
DANL. FISHER,
JOHN L. HEBB.