

(No Model.)

2 Sheets—Sheet 1.

W. HOLT.

BURNER FOR VAPOR STOVES, &c.

No. 283,395.

Patented Aug. 21, 1883.

Fig. 1.

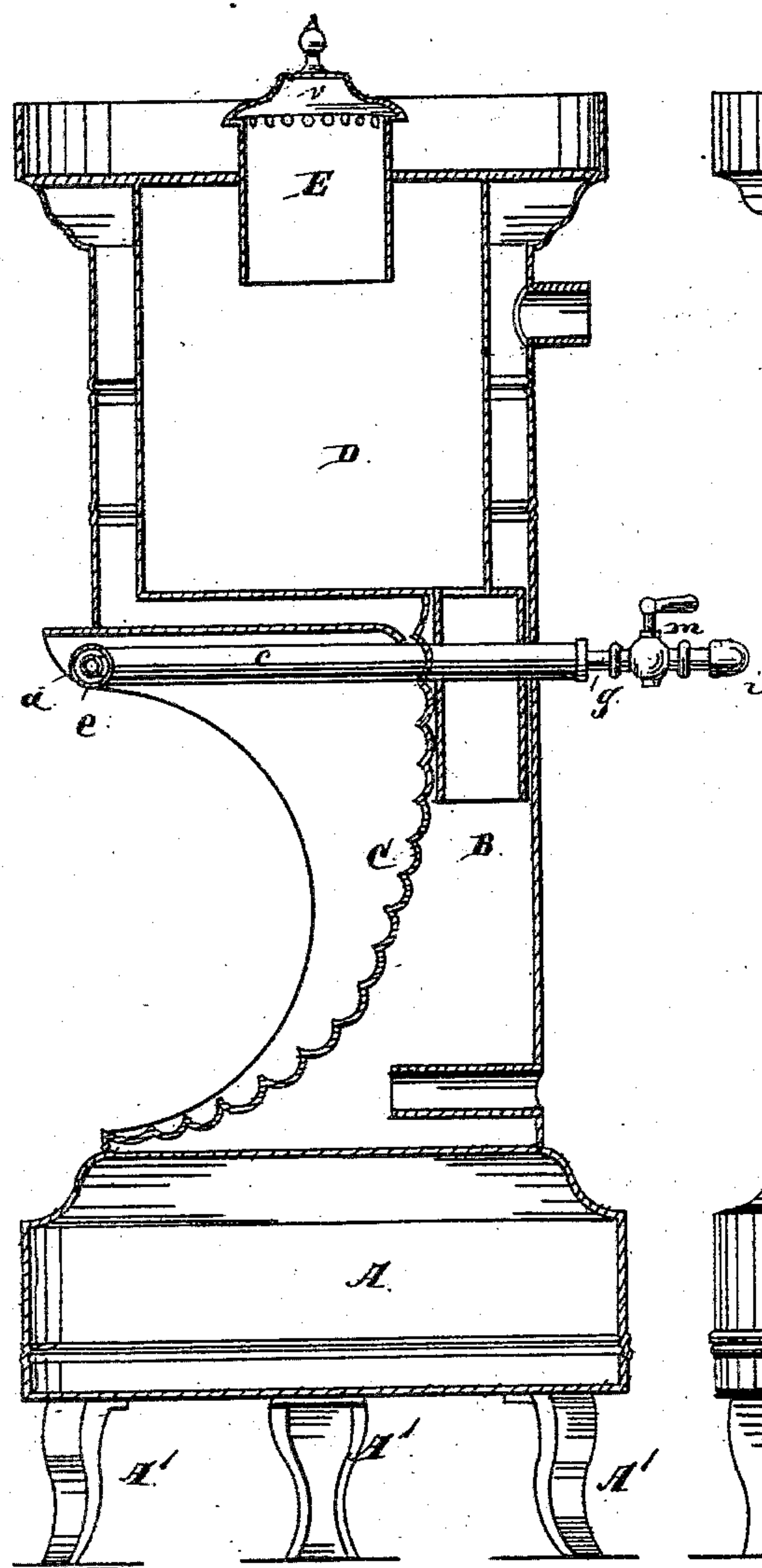
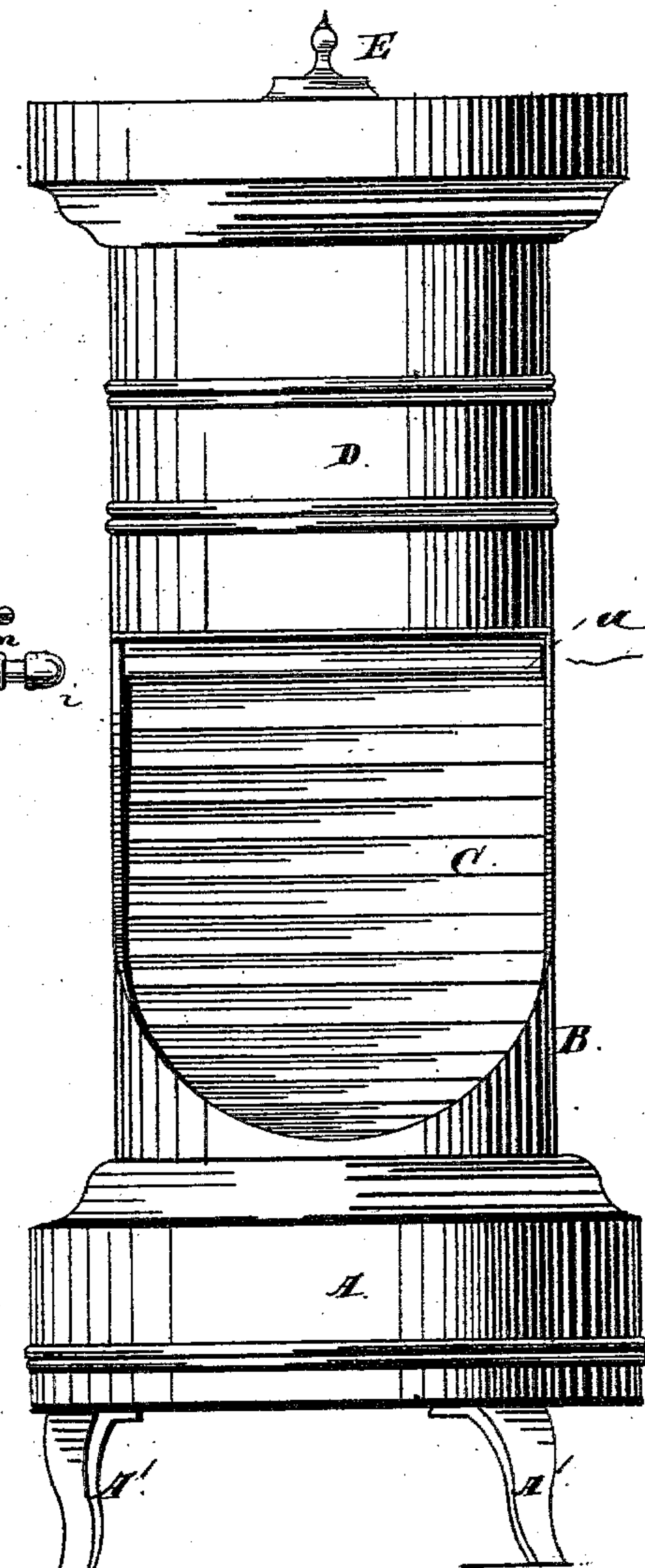


Fig. 2.



Witnesses:
Albert H. Adams.
Edgar T. Bond

Inventor:
William Holt

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Fig. 3.

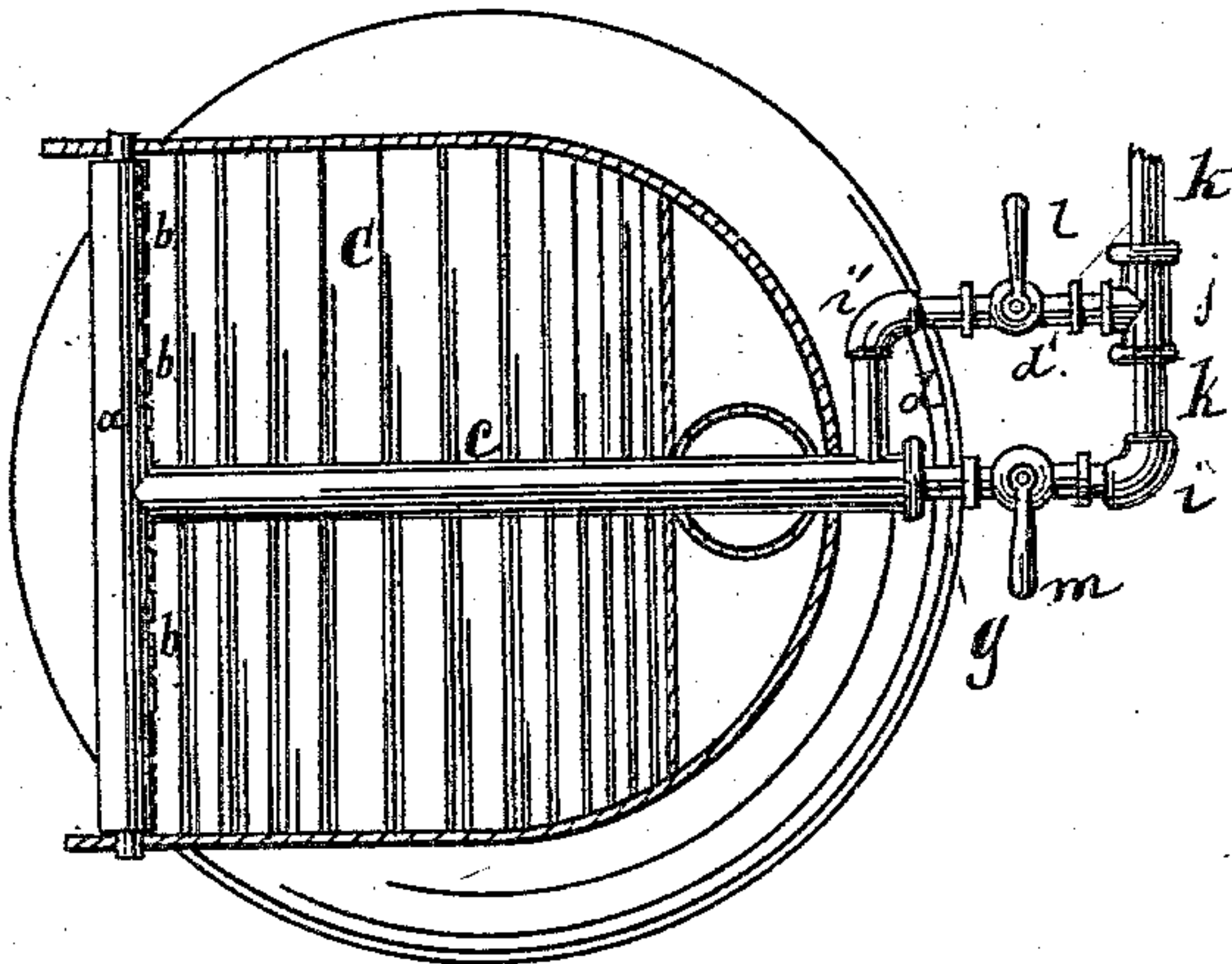
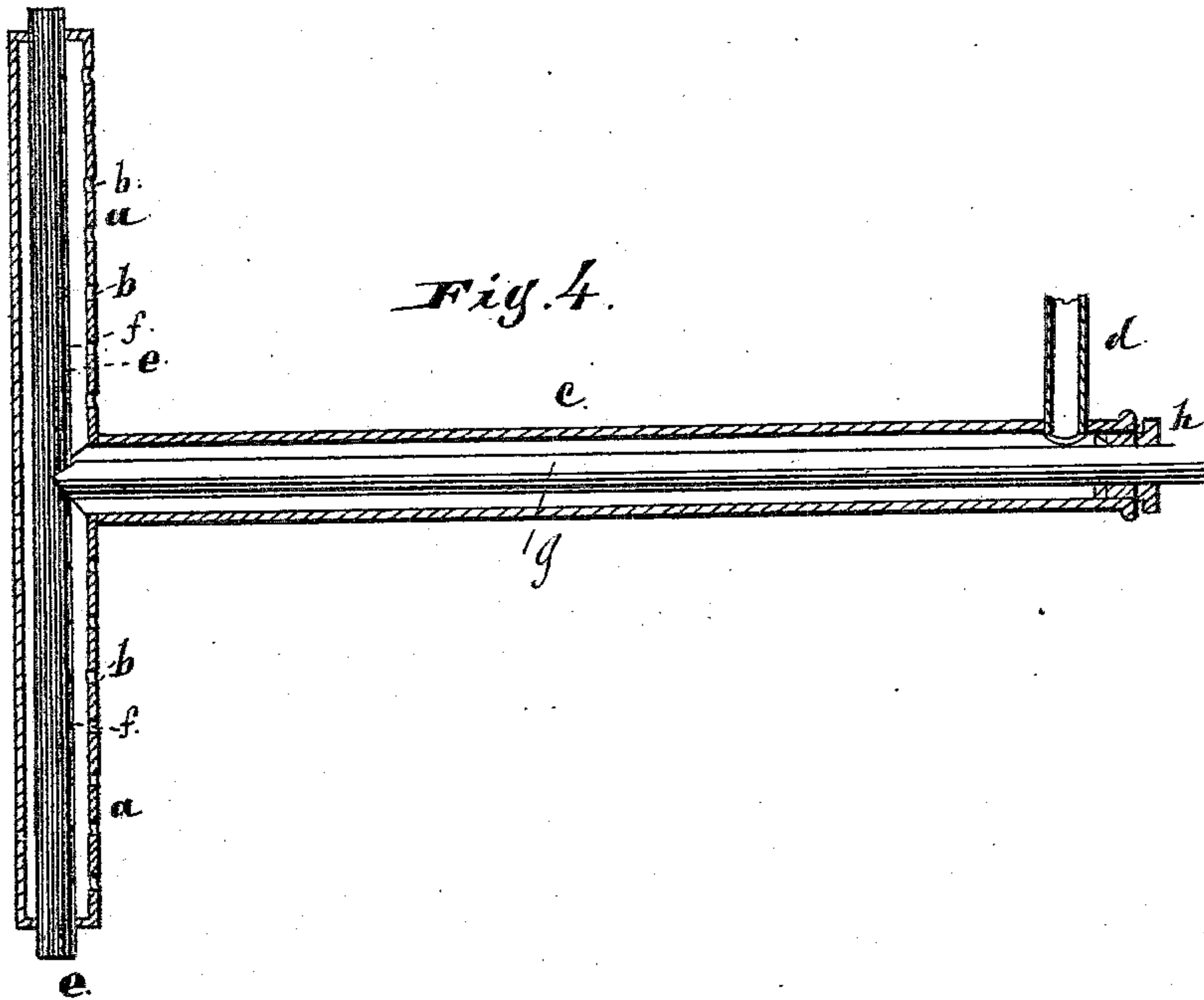


Fig. 4.



Witnesses:
Albert H. Adams,
Edgar J. Bond

Inventor:
William Holt

UNITED STATES PATENT OFFICE.

WILLIAM HOLT, OF CHICAGO, ILLINOIS.

BURNER FOR VAPOR-STOVES, &c.

SPECIFICATION forming part of Letters Patent No. 283,395, dated August 21, 1883.

Application filed June 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOLT, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Burners, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section through the stove with the supply-tubes in elevation; Fig. 2, a front elevation of the stove; Fig. 3, a cross-section, taken on a line just above the burner; and Fig. 4, an enlarged detail of the burner, showing the exterior portion with its supply-tube in section, and the interior portion with its supply-tube in elevation.

This invention relates to burners for burning gasoline, or other light inflammable material of a similar nature, and is primarily designed for use in connection with what are known or termed "gas-stoves," but can be applied to and used with other devices for other purposes; and has for its object to produce a perfect combustion, increase the volume and intensity of the flame, and overcome the difficulties and objections heretofore existing in attaining these results of perfect combustion, heat, and flame from gasoline or other vapors of a similar nature. This I accomplish by the devices hereinafter described and claimed.

In the drawings the burner is shown applied to one form of what are known or termed "gas-stoves;" but its application is not limited to use with gas-stoves, as it can be applied to and used with other devices; or it can be used simply for illuminating purposes, if so desired.

Referring to the drawings, A represents the base of the stove, having suitable legs, A', attached thereto in any of the usual and well-known methods; B, the central or fire-box portion of the stove; C, the reflector, which may be corrugated, as shown, or of some other form; D, the upper or heating portion of the stove; E, the cap or tube for closing the opening in the section D. These parts represented by the letters A B C D E may be made of sheet metal or other suitable material, as usual, and may be of the form of construction and arrangement shown, or of any other of the well-known forms and arrangements for this class of stoves, the form and arrangement of the stove forming no part of this invention.

a is the exterior casing or tube of the burner, which may be made of wrought-iron pipe or other suitable material, with an interior of sufficient dimensions to receive the interior tube or casing and leave a space or chamber for the passage of the gasoline or other vapor.

b are the openings in the face or side of the tube or casing a, fronting the stove or the reflector C. These openings are located at suitable distances apart, and are arranged, as shown, in line with each other; and the size or dimensions of these openings, as well as the size and dimensions of the tube or casing a, are to be varied to suit the requirements of the burner, and the place or location where the burner is to be used and the office which it is to perform.

c is the supply-pipe or tube for the casing or tube a. As shown, this pipe or tube c is connected with the tube or casing a at or near the center thereof, and the openings b are located on each side of the pipe or tube c; but this pipe or tube c might be connected with one end of the tube or casing a, in which case the openings b might be continuous the entire length of the tube or casing a. This tube or pipe c is to be of sufficient dimensions to supply the tube or casing a.

d d' are tubes or pipes connecting the tube or pipe c with the main supply-pipe. These pipes or tubes d d' can be varied in their arrangement and location to suit the location of the supply-pipe and tube or pipe c.

e is the interior tube or casing of the burner, also made of metal tubing or other suitable material, with an interior opening or chamber for the passage of the gasoline or other vapor. This tube or casing is of smaller diameter than the exterior tube or casing in which it is located, its dimensions being such in relation to the exterior tube or casing as to leave the necessary opening or chamber in the exterior tube or casing. As shown, the tube or casing e is somewhat longer than the tube or casing a, its ends projecting beyond the ends of a, and the ends of this tube or casing e are closed by means of a suitable cap or other device that will prevent the escape of the gas. The ends of the tube or casing a are closed by means of suitable stuffing-boxes or other device through which the tube or casing e can pass, and by means of which the ends of the tube or casing

a will be effectually closed. A closed stuffing-box having a central opening to receive the ends of the tube or casing *a* could be used, by which means the ends of both tubes could be closed by the same stuffing-box. This tube or casing *e* is provided with a row or series of perforations or fine openings, *f*, on the face or side fronting the openings *b*, which openings *f* are arranged in line with each other and also in line or nearly so with the opening *b*, so that an opening or perforation *f* will coincide with an opening or hole *b*.

g is the supply pipe or tube for *e*, made of wrought-iron pipe or other suitable material and located within the tube or pipe *c*, so as to leave an opening or passage around it of sufficient capacity to supply the tube or casing *a*. This tube or pipe *g* is connected with the tube or casing *e* at or near the center; but it could be connected, like the pipe or tube *c*, at the end, in which case the openings *f* could be made to extend the entire length of the tube or casing *e* instead of being on each side of *g*, as shown.

h is a stuffing-box through which the pipe or tube *g* passes, and by means of which the end of the tube or pipe *c* is effectually closed; but some other means could be used for this purpose.

i i' are curved elbow-couplings for connecting the pipe or tube *g*, and the sections *d d'* of the branch pipe supplying the tube or pipe *c* with the main supply-pipe.

j is a T-coupling connecting the section *d'* of the branch and the main supply-pipe.

k is the main supply-pipe running from the carburetor or other source of supply.

l is a shut-off cock for regulating the supply to the exterior chamber or passage of the burner through the pipe *c*, which cock may be located as shown in the branch section *d'*, or at such other point as may be found desirable.

m is a shut-off cock for regulating the supply to the interior passage or chamber of the burner through the pipe *g*.

The form, construction, and arrangement of the several parts just described may be varied to suit the location where the burner is to be used, or to suit the requirements which it is desired that the burner shall fulfill.

The operation is as follows: The gasoline or other vapor is admitted to the exterior chamber or passage in the tube or casing *a* through the supply pipe or tube *c* and its connections from the main supply-pipe or other source of supply, and passes out through the openings or holes *b*, and the quantity or amount, and the degree of pressure, is regulated by or through the shut-off cock *l*. Gasoline or other vapor is admitted to the interior chamber or passage in the tube or casing *e* through the supply-pipe *g* from the main supply-pipe or other source of supply, and passes out through the perforations or fine openings *f*, and the quantity or amount and the degree of pressure is regulated through the shut-off cock *m*. The openings or perforations *f* being very fine, it follows, as a matter of course, that the gasoline

or other vapor will escape or pass out with increased force, producing a strong blast, and force the gasoline or other vapor to pass through the openings *b* under increased pressure, producing a forced blast at the point of combustion, thereby insuring perfect combustion and also an increase in the volume and intensity of the flame.

Although the burner is shown as made up of straight tubes or casings, it is evident that it might be formed of semicircular tubes or casings; or such tubes or casings might be in the form of an entire circle. Gasoline at first is very light and volatile, so that it burns readily; but as it remains standing and continues to evaporate it gradually becomes less and less volatile until it, in time, becomes so heavy as not to burn readily and freely,

By using a burner such as described it will be readily seen that the burning of gasoline and other light vapors is effectually attained during all stages from the time when first placed into the carburetor until entirely exhausted.

Gasoline and other light vapors, when first supplied to a receiver or receptacle, are very light and volatile, and the gases to be burned flow readily to the point of combustion, and when the supply is fresh the inner supply-chamber or tube of the burner can be entirely or nearly shut off from the supply of the gasoline or vapor, as the gases will pass through the opening of the outer chamber or tube sufficiently for illuminating purposes; but as the gasoline stands it loses its light and volatile properties, and the vapor arising therefrom becomes too heavy to burn freely, and when this is the case, the gas or vapor is admitted to the inner chamber or tube of the burner and is forced out by the pressure thereof.

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

1. A gasoline-burner combining in its structure an exterior tube or casing, *a*, provided with a line of perforations, a supply-pipe, *c*, connecting at one end with the tube or casing and at its other end provided with a tube for connecting with a supply of gasoline, an interior tube or casing, *e*, located in the exterior tube or casing and having a line of perforations, and a supply-pipe, *g*, extending through the supply-pipe *c* and connecting at one end with the interior tube or casing and at its other end connected with the source of supply to the supply-pipe of the exterior tube or casing, substantially as described.

2. The combination of the exterior tube or casing *a*, provided with a line of perforations, *b*, and a supply-pipe, *c*, connecting with the exterior tube or casing at or near the center of its length and at its other end provided with a pipe, *d*, for connecting with a source of supply, with the interior tube or casing, *e*, having a line of perforations, *f*, and located within the exterior tube or casing, and the supply-pipe *g*, extending through the supply-pipe *c* and connecting with the interior tube or cas-

ing at or near the center of its length and at its other end provided with means to connect it with the source of supply to the pipe of the exterior tube or casing, substantially as described.

5 3. The combination of the exterior and interior tubes or casings, *a* and *e*, each having a line of perforations, the exterior and interior supply-pipes, *c* and *g*, connecting, respective-

ly, with the tubes or casings, and the pipes *h* for connecting the supply-pipes with the main supply *k*, and each provided with a cut-off valve, as at *l m*, substantially as described.

WILLIAM HOLT.

Witnesses:

ALBERT H. ADAMS,
EDGAR T. BOND.