

(No Model.)

2 Sheets—Sheet 1.

O. B. PECK.  
VAPOR BURNER.

No. 286,328.

Patented Oct. 9, 1883.

Fig. 1.

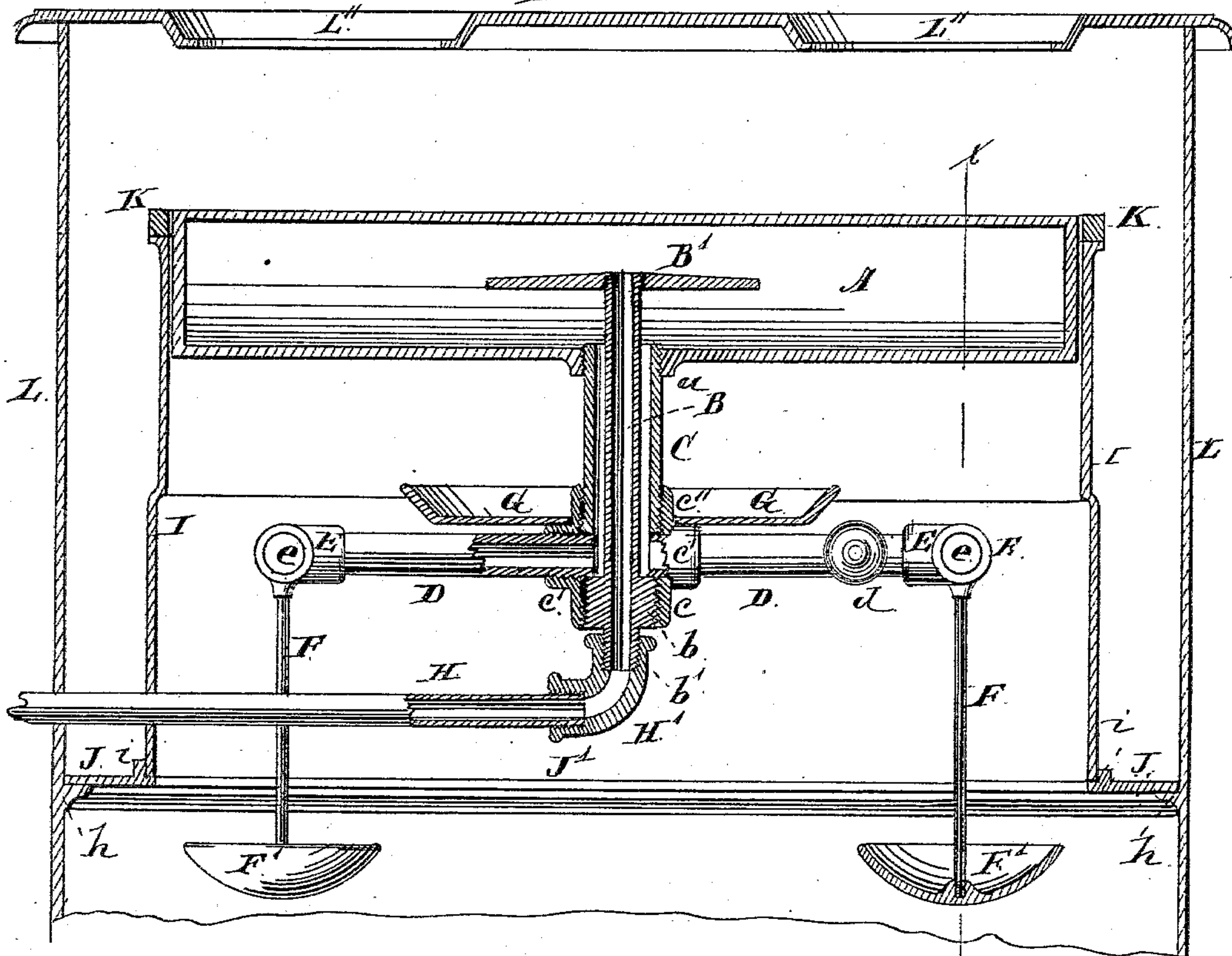
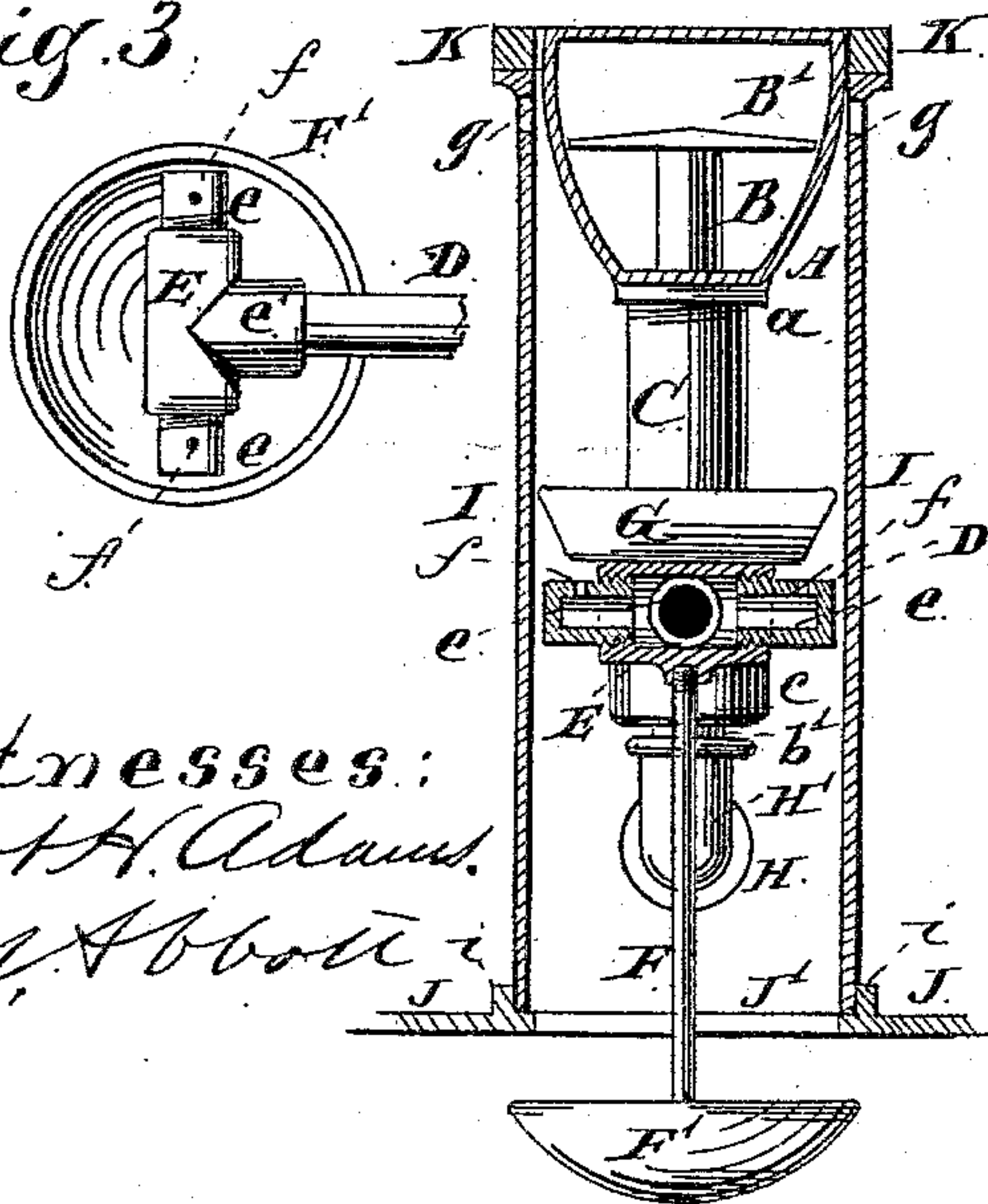


Fig. 2.

Fig. 3.



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Inventor:  
Orrin B. Peck

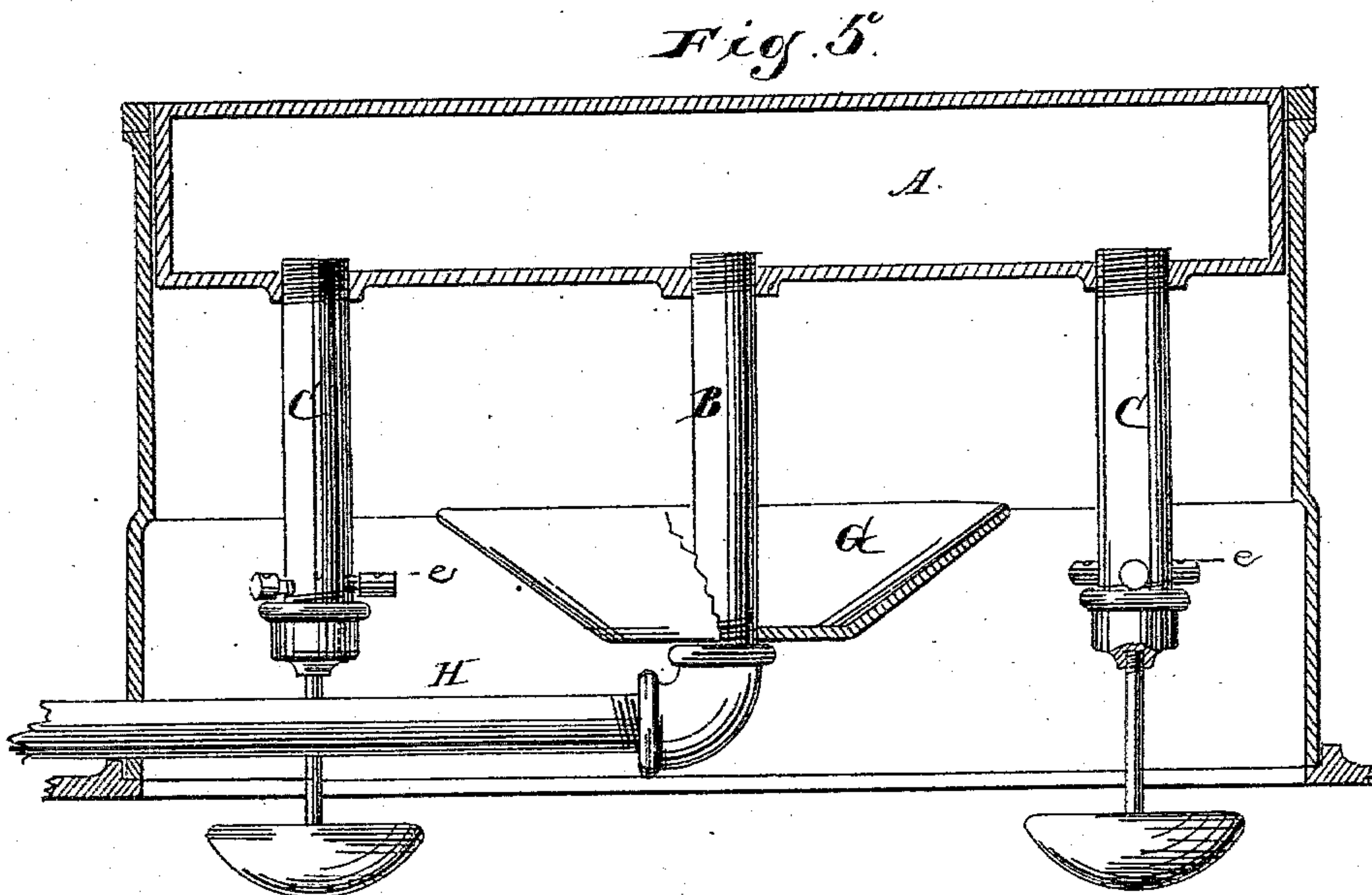
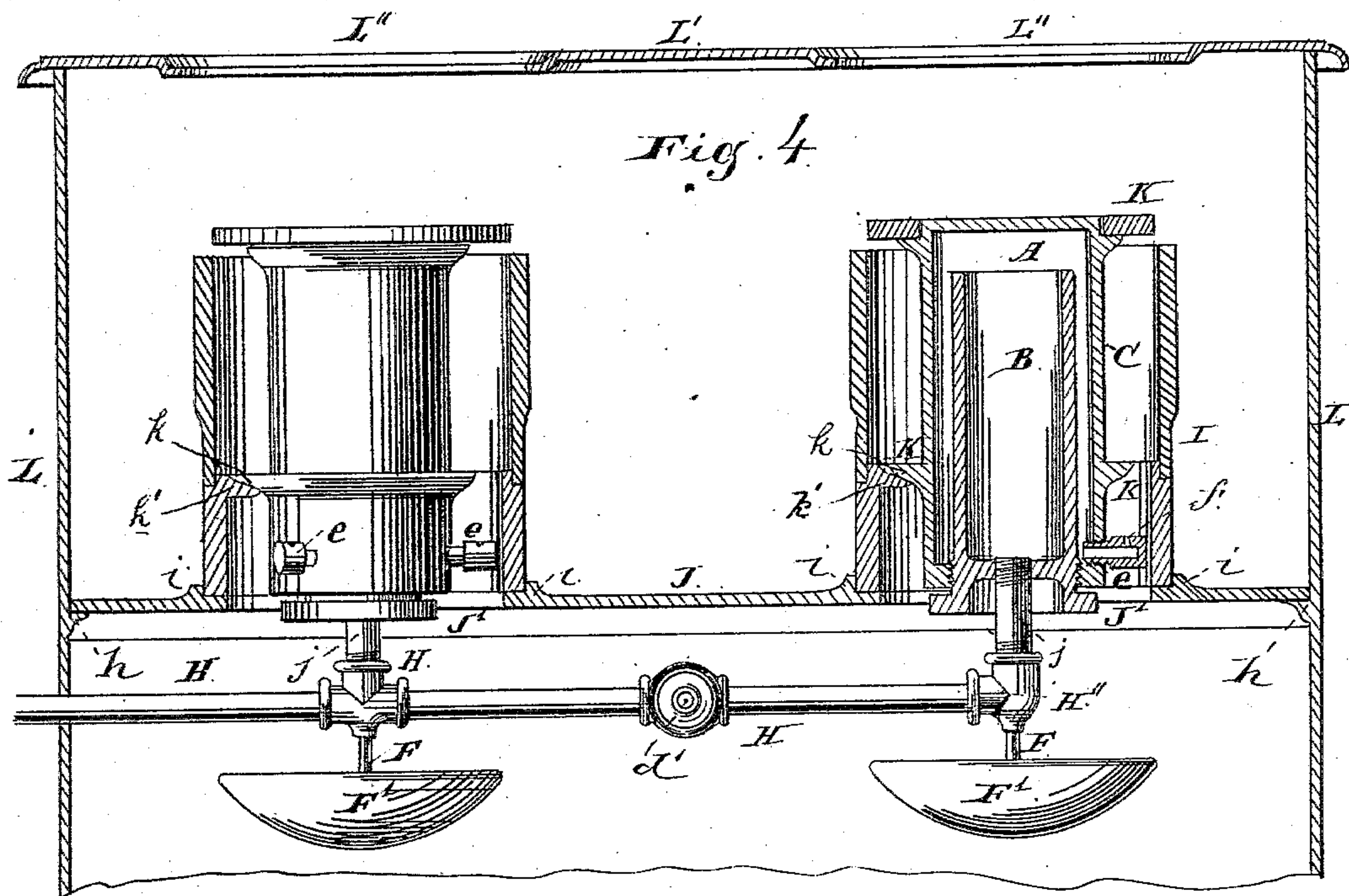
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# UNITED STATES PATENT OFFICE.

ORRIN B. PECK, OF CHICAGO, ILL., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HIMSELF, WARREN M. ABBOTT, AND JAMES D. STEVENS, ALL OF SAME PLACE.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 286,328, dated October 9, 1883.

Application filed May 24, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ORRIN B. PECK, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Petroleum-Vapor Burners, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation, showing the devices in position in a stove; Fig. 2, a section on line *xx* of Fig. 1, the stove being omitted; Fig. 3, a detail of the burner and the drip-cup; Fig. 4, a sectional elevation similar to Fig. 1, showing a modification in the arrangement of the burner; and Fig. 5, a sectional elevation showing another form of arranging the burner.

This invention relates to devices for burning the vapor of petroleum and its products, primarily, but may be used for burning other gaseous or vapor products, and has for its object to construct a device by means of which petroleum and its products and other inflammable material capable of vaporization or being rendered gaseous by heat can be vaporized or made gaseous and the vapor or gas burned by one and the same means, as hereinafter more fully described; and its nature consists in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

In the drawings, A represents the vaporizing-chamber. This chamber, as shown in Figs. 1 and 2, has a flat top and bottom, with curved sides, and closed at each end, and may be made in such form or some other suitable form. As shown, the bottom is provided, at or near its center, with a boss, *a*, having a screw-threaded opening.

B is the feed-pipe for the material to be vaporized and burned. The upper end of this pipe projects into the vaporizing-chamber A, and is provided with a cap, B', onto which the material flows from the pipe, so as to drip or fall in the form of a thin sheet on all sides of the cap. The other end of this pipe has an enlarged portion, *b*, in the form of construction shown, which is screw-threaded, to enter the end *c* of a coupling or connection,

and, as shown, this pipe B has an end continuation, *b'*, with a screw-thread on its exterior, for connection with a coupling, by which it is attached to the supply-pipe.

C is a pipe or tube having an interior of a larger diameter than the feed-pipe B, so as to leave a chamber between its interior wall and the exterior wall of the pipe B, as shown in Fig. 1. This pipe or tube C, as shown, is screw-threaded at its upper end, and enters the screw-threaded opening in the boss *a*, thus forming a communication with the chamber A, and its lower end is screw-threaded and enters the end *c''* of the coupling, so as to surround the pipe B, which passes through the coupling.

D represents pipes, two being used in the form of construction shown in Fig. 1, located on opposite sides of the feed-pipe, as shown. The inner end of each pipe D enters an end, *c'*, of the coupling, so as to have communication with the chamber between the pipes B C, and, as shown, one of these pipes D is provided with a check or shut-off valve, *d*, by means of which the supply through such pipe can be shut off, if desired.

E represents T-heads or couplings, one for each pipe D, and secured to the outer end of such pipes, the end of the pipe entering the end *c'* of the coupling or head E. The other end of the couplings or heads are each provided with a plug, *e*, having an orifice or hole, *f*, as shown in Figs. 2 and 3, which hole or orifice, when the parts are together, is on the upper side of the plug.

F represents rods, depending one from each head or coupling E, to which their upper ends are attached by screw-threads or otherwise. The lower end of each rod has attached thereto a dish or cup, F', to catch and retain any drip which may come from the coupling or from the plugs *e*.

G is a plate, the edges of which are turned upward. This plate is located on the end *c''* of the main coupling, around the tube or pipe C, and is of a rectangular shape, its sides being in line, or nearly so, with the sides of the chamber A, and its ends some distance within the space occupied by the head or coupling E, so as to leave a space or opening between its ends



and the coupling or head, as shown in Fig. 1. This plate acts as a deflector to throw the air outward or away from the tube C.

H is the supply-pipe leading from the reservoir, located at any desired point in a higher plane than the vaporizing-chamber, so as to insure the passage of the material to be vaporized into the chamber. This pipe is connected with the feed-pipe B by the return bend or coupling H', one end of which receives the end of the supply-pipe H and the other the end *b* of the feed-pipe.

I is a casing, consisting of vertical side and end pieces, arranged to form a chamber a little larger at the upper end than the dimensions of the vaporizing-chamber A. As shown in Fig. 2, the side walls of this chamber are provided with openings *g*, for supplying air to the flame around the vaporizing-chamber on the sides thereof.

J is a plate of sufficient dimensions to enter the stove with which the burner is to be used, and rests on the lugs or ledges *h*, formed on the interior of the stove-plate, as shown in Fig. 1, or supported in some other suitable manner. This plate J has on its upper face a ledge, *i*, which forms a guide and support for the lower end of the housing or wall I, which lower end rests upon the edge of the plate J inside of the ledge *i*, as shown in Figs. 1 and 2. This plate J has its center cut away, so as to leave an opening, J', of the same size, or nearly so, as the interior diameter of the housing or wall I.

K is a flame-ring on the upper end of the casing or wall I, and surrounding the vapor-chamber A, and lying flush, or nearly so, with the upper surface of such vapor-chamber. As shown, the ring K, casing or wall I, and supporting-plate J, with its opening J', are of rectangular shape in the form of construction for Fig. 1, that being the shape for the form of vaporizing-chamber shown in Fig. 1.

L represents the walls, L' the top, and L'' the holes in the top, of an ordinary stove, in the fire-box of which the burner is to be located and used, if desired.

In use the supply of fluid to be vaporized and burned passes from the reservoir through the pipe H into the feed-pipe B, and over the shed or plate B', in sheet form, to the interior of the vaporizing-chamber, and when first started some of this fluid passes down into the chamber between the feed-pipe and the tube C into the tubes D, and out through the orifices *f* in the plugs *e*, falling into the drip-cups F', and the fluid caught in the drip-cups F', when the first start is had, is set on fire, yielding sufficient heat to vaporize the fluid in the plugs *e* and couplings E, which vapor passes out through the orifices *f*, where it ignites and burns, and the heat thus produced acts on the vaporizing-chamber A, making it sufficiently hot to vaporize the fluid as it passes from the shed or plate B', and the vapor thus produced passes down between the

pipes B C, enters the tubes D, and passes to the heads or couplings E and out through the orifices *f* in the plugs *e*, keeping up a supply of vapor for combustion. The flame passes up around the vaporizing-chamber, above the top thereof, and heats any article which may be placed in the openings L''; or the flame can be utilized for heating purposes of any description. When it is desired to use both sides of the apparatus, the valve *d* is turned to allow the vapor to pass to the point of consumption on that side, and when only one side is to be used this valve is turned to shut off the supply of vapor, thus causing it to pass to the point of consumption at the end of the other tube D. When the consumption is to be stopped entirely, the supply from the reservoir through the pipe H is shut off, and ordinarily what little fluid is left in the vapor-chamber passes down into the pipes D and out through the orifices *f* in sufficient quantities to furnish the supply in the drip-cups F' for ignition to first start the apparatus to work.

Fig. 4 shows a modification in the manner of arranging the feed-pipe, its incasing-tube, and the casing or wall which surrounds these devices. The feed-pipe B in the form shown in Fig. 4 is of larger diameter than in the form shown in Fig. 1, and its lower end has a screw-thread thereon which screws into the lower end of the pipe or tube C, so that when the parts are together the tube C will surround the pipe B, leaving a space between them, as described for the construction shown in Fig. 1. The upper end of the tube C is closed and the upper end of the pipe B does not extend to the top of the tube C, leaving a space between the end of B and top of C for forming the vaporizing-chamber A. The pipes D are dispensed with and the plugs *e* are screwed directly into the tube C, so as to have direct communication with the chamber between B and C. The pipe B is provided with a bottom at its lower end, which has a screw-threaded opening to receive the end of a pipe, *j*, connecting the feed-pipe B with the supply-pipe H through an L or T coupling, H'', and the drip-cup is connected by a rod, F, with the coupling H'', and this drip-cup is located directly underneath the feed-pipe B. The supply-pipe H, between the two burners, is provided with a check or stop valve, *d'*, by means of which the supply to one burner can be shut off. The casing I, surrounding the burner in this form of construction, is circular, and, as shown, is made in two sections, the lower section resting on the plate J and the upper section resting on the lower section, and, as shown, the lower section is provided with lugs or projections *k'*, on which a ring, *k*, encircling the tube C, rests, to support the tube and hold it in position, and this ring *k* also acts as a deflector to throw the flame and air outward. The plate J, instead of having a rectangular opening, as in Fig. 1, has two circular openings, each surrounded by a circular ledge, *i*, to receive



and retain the housing or wall I, and these circular openings are arranged in line with the interior of the wall or casing I, which interior is in line, when the device is in the stove, with the holes, L". The flame-ring K is of a circular form, and rests on the upper end of the tube C, and is arranged to leave the required space between it and the upper end of the wall or casing for proper combustion. The operation is essentially the same as that described in the devices of Fig. 1. The oil or other fluid passes through the supply-pipe H into the feed-pipe B and over the top of the feed-pipe, and is vaporized in the vaporizing-chamber formed between and around the feed-pipe and its inclosing-tube C, the overflow passing into the drip-cup, and is ignited to start the combustion, as already described for the operation of Fig. 1.

Fig. 5 shows another arrangement similar, so far as the vaporizing-chamber, the feed-pipe, the supply-pipe, the deflector, the drip-cups, the casing or housing, the supporting-plate, and the flame-ring are concerned, to the corresponding devices in Fig. 1, except that the feed-pipe is not provided with the plate or shed B'. The vaporizing pipe or tube C is removed from around the feed-pipe, and, as shown, is made into two pipes, one at each end of the vaporizing-chamber, and the plugs or nipples e are screwed directly into the vaporizing-pipes C, dispensing with the use of the tubes D. The operation is the same as that described for the devices in Figs. 1 and 2. The oil or other material is supplied to the feed-pipe B from the supply-pipe H, and passes into the vaporizing-tubes C, and thence down to the point of combustion at the nipples or plugs e.

As many nipples or plugs e may be used as desired. As shown for the arrangement in Fig. 1, two nipples or plugs on each end are used. As shown in Fig. 4, three or more may be used, and as shown in Fig. 5 two or more may be used, the nipples in Fig. 5 being located at the lower end of the vaporizing-tubes C. Nipples or plugs e in reality form burners, and the number used may be increased or diminished as necessity may re-

quire, or to suit the arrangement of the devices in the stove with which the device is used. 50

The plate J could be supported on the lugs in the fire-box of the stove on which the grate rests, and the opening or openings in this plate are for the purpose of producing the required draft to cause perfect combustion to be had. 55

The apparatus is primarily designed for use in the fire-pot of a cooking-stove; but it can be used with heating-stoves, if desired, and the form of the casing I can be varied from those shown to suit the shape of the fire-box, although the rectangular shape will be found the most convenient, as fire-boxes of stoves are generally of rectangular form. 60

What I claim as new, and desire to secure by Letters Patent, is— 65

1. The combination of a vaporizing-chamber and a feed-pipe thereto for the fluid to be vaporized, with one or more vapor-conducting tubes inclosing the feed-pipe and having nipples or burners communicating therewith, substantially as and for the purpose specified. 70

2. The vaporizing-chamber A, feed-pipe B, vapor-supply tube C, inclosing the feed-pipe and having nipples or burners communicating therewith, drip-cups F', and supply-pipe H, in combination with a wall or housing and supporting-plate J, for locating the devices within the fire-pot and the stove, substantially as specified. 75

3. The vaporizing-chamber A, feed-pipe B, vapor-supply tube C, inclosing the feed-pipe and having nipples or burners communicating therewith, in combination with the drip-cups F' and supply-pipe H, all arranged and operating substantially as described. 80

4. The vaporizing-chamber A, feed-pipe B, vapor-supply pipe C, having nipples or burners communicating therewith, drip-cups F', deflector G, and supply-pipe H, in combination with the wall or housing I and plate J, substantially as and for the purposes specified. 85

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