

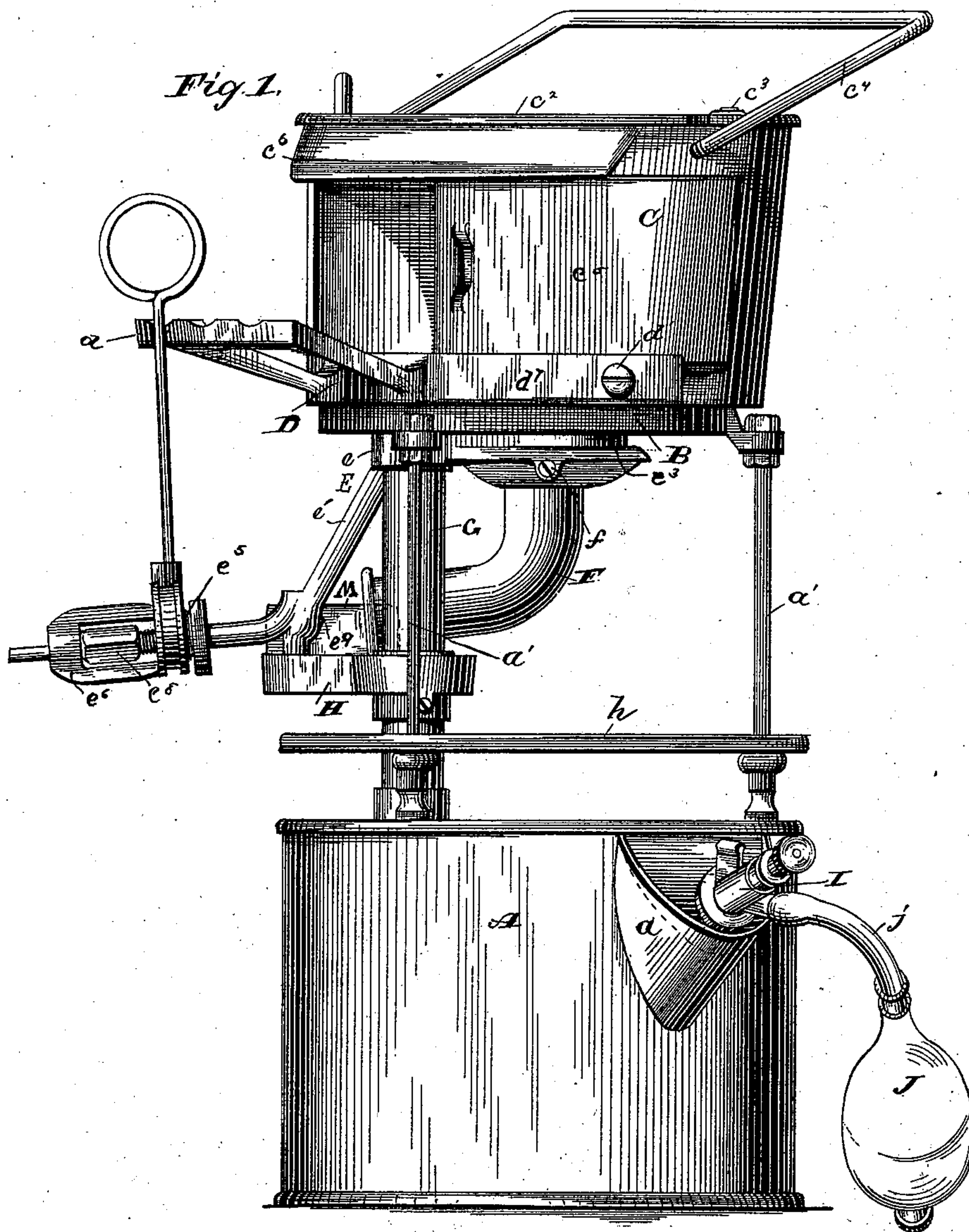
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3 Sheets—Sheet 1.

H. RUPPEL.  
PLUMBER'S FURNACE.

No. 379,986.

Patented Mar. 27, 1888.



Witnesses,  
 Ann M. Monroe,  
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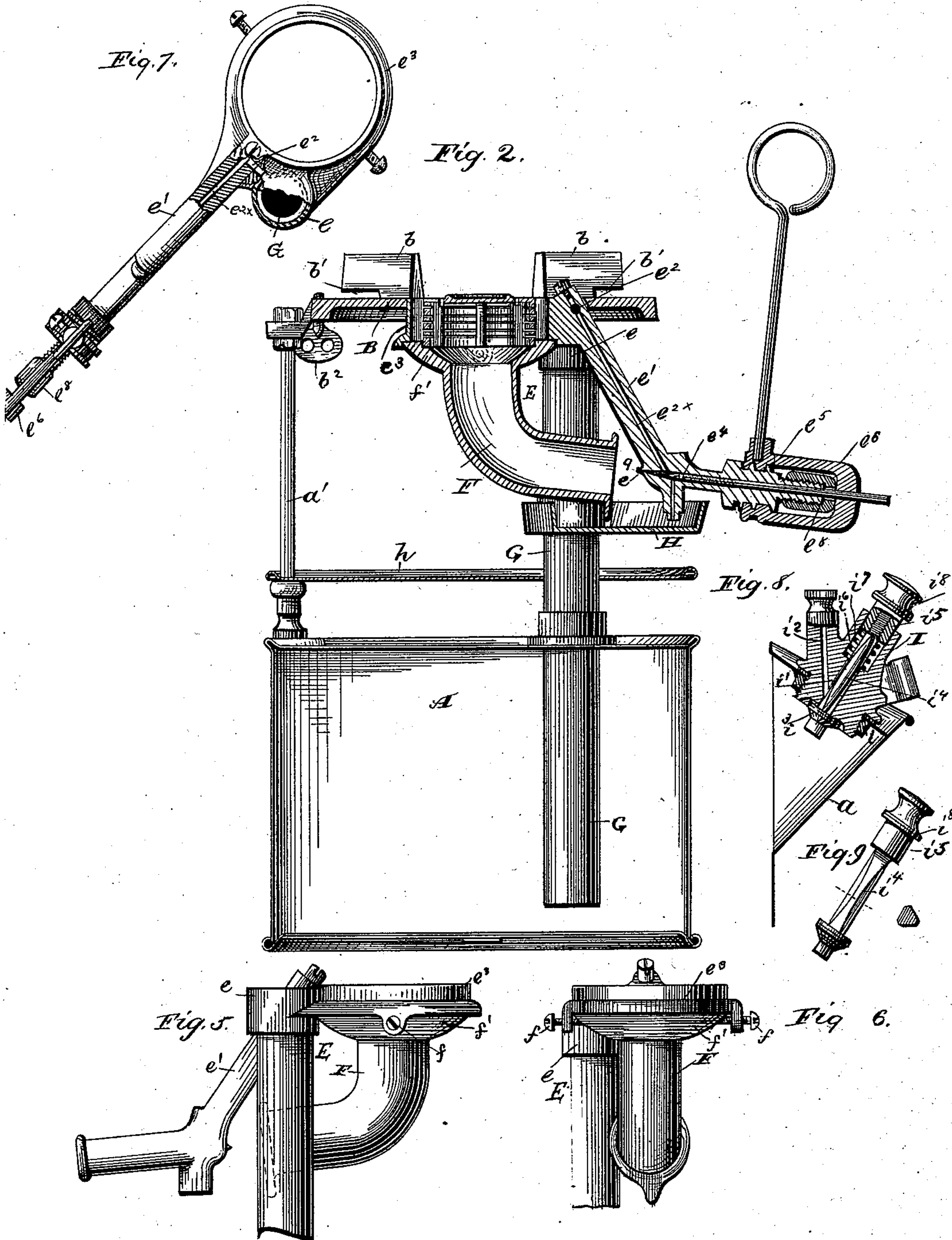
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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

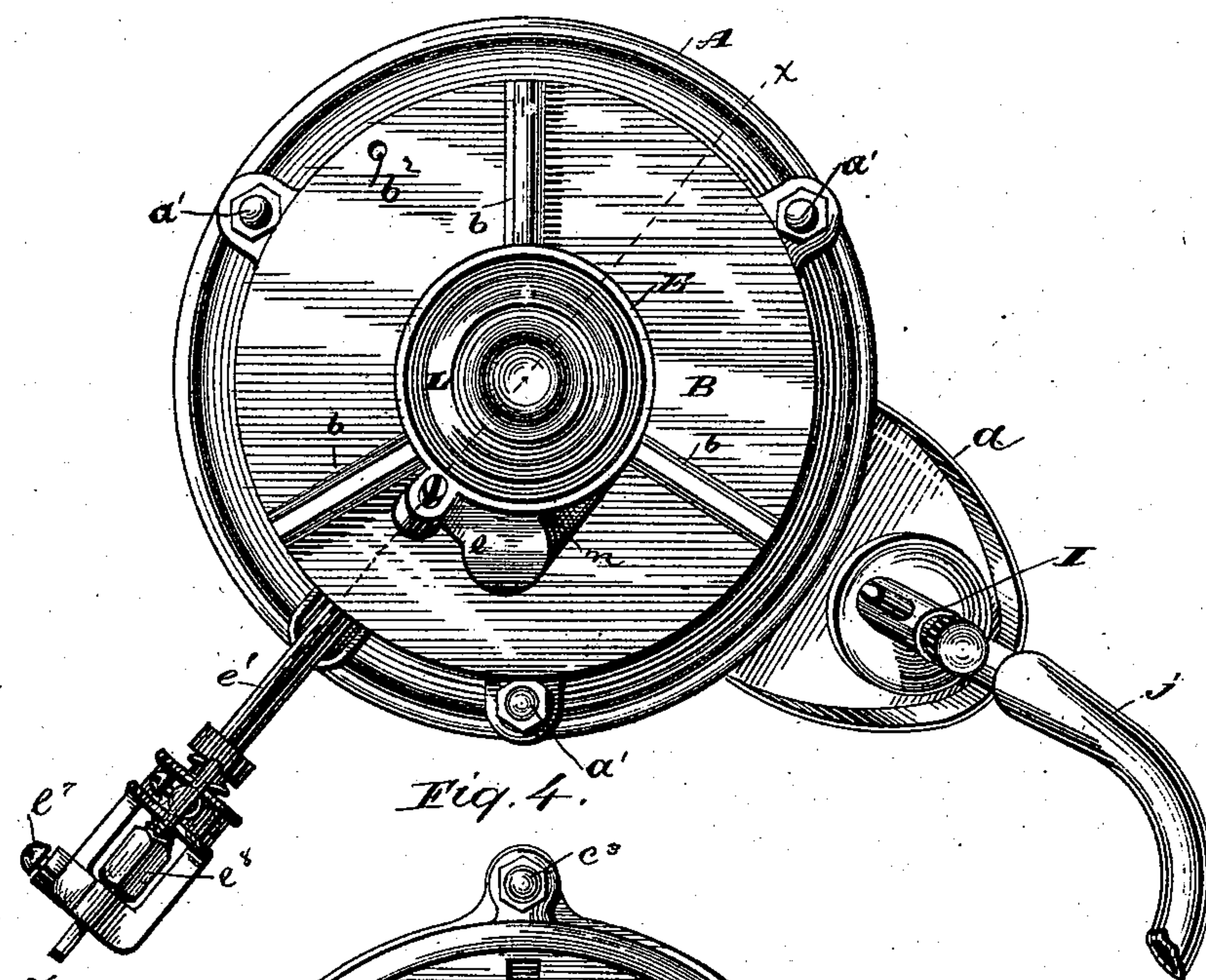
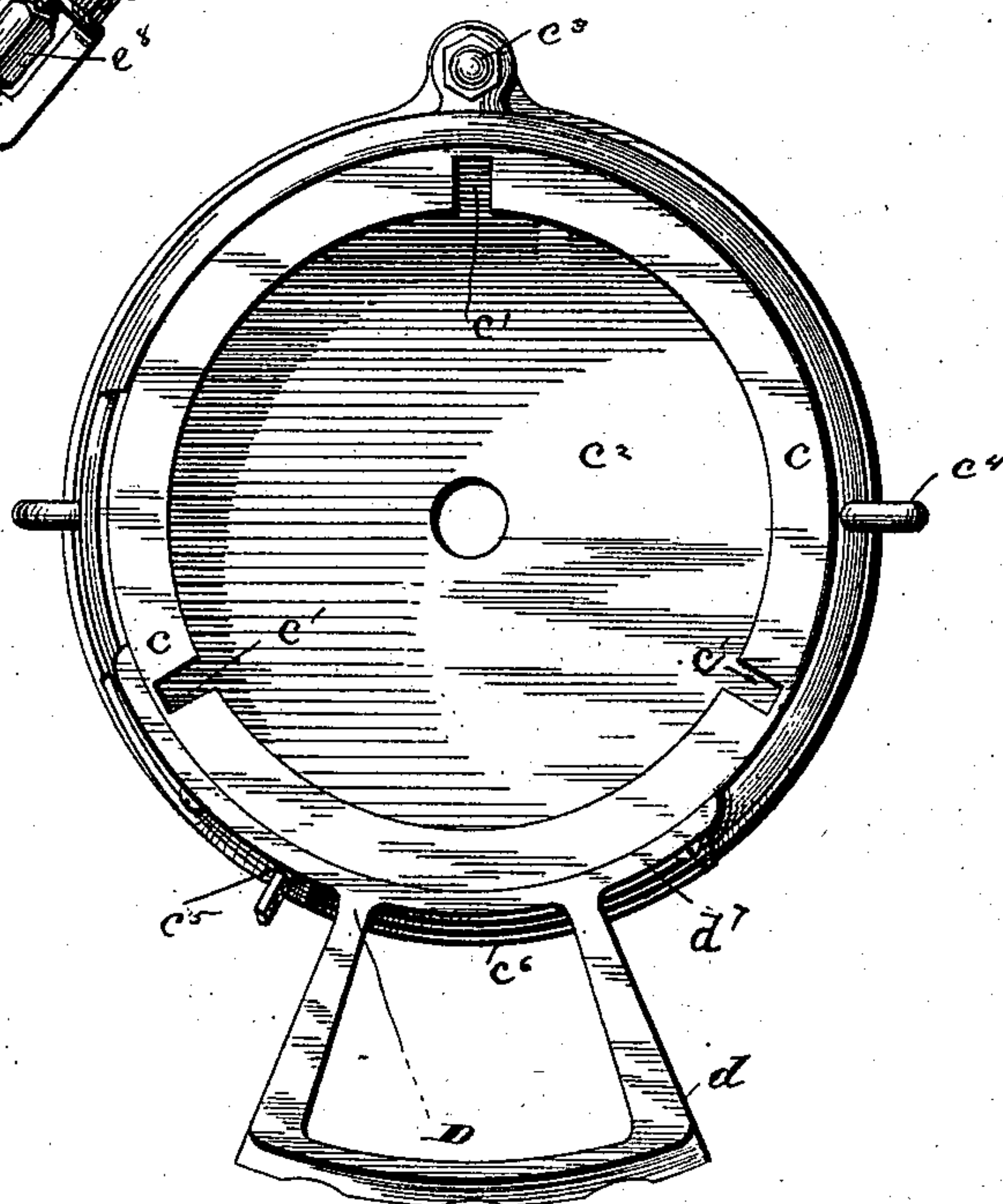


Fig. 4.



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# UNITED STATES PATENT OFFICE.

HENRY RUPPEL, OF CLEVELAND, OHIO, ASSIGNOR TO SCHNEIDER & TRENKAMP, OF SAME PLACE.

## PLUMBER'S FURNACE.

SPECIFICATION forming part of Letters Patent No. 379,986, dated March 27, 1888.

Application filed September 18, 1886. Serial No. 213,916. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY RUPPEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Plumbers' Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to plumbers' portable furnaces of the class provided with vapor burners; and it consists in the construction and arrangement of parts shown and described, and especially pointed out in the claims.

In the accompanying drawings, Figure 1 is represents a perspective elevation of my improved furnace with all the parts in operative position. Fig. 2 is an elevation thereof in section on line *xx*, Fig. 3, with the oven removed. Fig. 3 is a plan with the oven removed. Fig. 4 is a plan view with the oven from below. Figs. 5 and 6 are perspective elevations from different points of view of the burner and generating mechanism. Fig. 7 is a detail of the generating-duct shown in longitudinal section in Fig. 2. Fig. 8 is an elevation in section of the lip on the reservoir and the air-valve. Fig. 9 is a detail of the air-valve spindle.

A is the reservoir, provided with lip or spout *a* and rods *a'* for supporting the disk B. (Shown in section in Fig. 2 and in plan, Fig. 3.) The disk B has lugs *b* on its upper surface, provided with projecting ends *b'*, and the oven C has notches *c'* cut radially in its inwardly-projecting base-flange *c*, Fig. 4, corresponding to the lugs *b*, the oven being placed upon the disk B, so that the lugs *b* pass into the notches *c'*, and being turned to right or left the projections *b'* engage the flange *c*, and with the set-screw *b''* serve to hold the parts firmly together. The means of coupling the oven and disk here described need not always be followed, as obvious changes might be made therein without departing from the invention, the object and spirit of the invention, so far as this construction is concerned, being a removable oven.

It will be observed, as shown in Fig. 2, that when the oven is detached the lugs *b* form a

rest for a vessel, which could not be done were the oven not detachable.

The oven is provided with a horizontally-swinging door, *c''*, pivoted at *c''*, the bail *c''* dropping down out of the way. *c''* is a door constructed to slide beneath the overhanging lip *c'* above and the detachable piece D below. The piece D is preferably of the form shown, and is provided with a curved flange, *d'*, which fits and is screwed to the base-flange *c* of the oven by the screws *d'*, and is provided with an inclined rest, *d*, for tools while heating.

E represents the generator as an entirety, provided with an interiorly-screw-threaded cap, *e*, which, as seen in Figs. 2 and 7, communicates with duct *e''* in arm *e'* of the generator through lateral duct *e''*. A ring, *e''*, encircles the burner cap or cone and supports the whole induction-tube by means of the flange *f'*, to which it is secured by the screws *f*.

The wrist of the arm *e'*, carrying the needle-valve *e''*, has a quick screw-thread, *e''*, engaging the interior threads of a handled nut, *e''*, in which the needle-valve is adjustably secured by a set-screw, *e''*, tapped through said nut and engaging the wrist of the arm, as shown in Fig. 3. Outside of the quick screw-thread *e''* on the end of the wrist is a stuffing-box or nut, *e''*, for preventing the escape of oil or vapor about the needle-valve. By this construction a slight turn of the handled nut *e''* will carry the needle-valve considerably back in the jet-orifice *e''* and allow a free flow of gas, while a similar turn in the opposite direction will as quickly turn it off.

F represents the burner and commingling-tube on which the burner-cap is mounted. This tube is supported from above by screws *f* in ears on the ring of the generating-tube, which bear against the flange *f'* on the upper end of tube F, Fig. 6, thus locking the parts firmly together and forming a close joint between them.

G is the conducting-tube by which the oil is conveyed from the reservoir to the generating-channel. The upper end of the tube G is screwed into the cap *e*, and its lower end rests near the bottom of the reservoir. A suitable drip-pan, H, is provided for initial heating of



the generating mechanism, and a shield or plate, *h*, supported on the rods *a* to protect the reservoir from the heat.

I is the valve-plug, secured by a nut, *i*, in an opening in the reservoir within the lip *a*, which is so arranged in respect to height and cut at such an angle that when the reservoir is being filled the oil will overflow when the reservoir is about two-thirds full, thus leaving the necessary air-space in the reservoir above the oil, and affording means for telling when it is filled to the desired level. The plug I is provided with two passages, *i'* *i''*, which run together and are controlled by a common valve, *i'''*, on the stem or spindle *i''*, extending through the passage *i'*. The spindle *i''* is triangular in cross-section, so as to leave room for the air to travel along its sides, and has an enlarged head, *i'''*, which is screwed on the spindle and projects into the larger bore, *i''''*, of the passage *i'*, as shown. A spiral spring, *i'''''*, in this bore bears against the head and holds the valve *i'''* normally on its seat. Another valve, *i''''*, on the head serves when the head *i'''* is pressed in against the plug to prevent the escape of air at that point. If the valve *i'''* is slightly depressed and the valve *i''''* not seated, air will be free to escape from the reservoir through the channel thus opened, the head *i'''* fitting somewhat loosely in the bore *i''''* for this purpose.

J represents a rubber bag or bulb of a size suitable to be manipulated by hand, and is connected with air-passages *i''* by a short flexible tube, *j*.

M is a shield attached to one side of the drip-cup, opposite the jet-orifice, to operate as a guard against air-currents and facilitate the free flow of vapor into the burner-tube.

The device is operated as follows: Supposing all the parts to be in position, the needle-valve is carried back sufficiently to permit the escape of a small volume of oil. Then, by pressing the head *i'''* down till the valve or washer *i'''* is seated, and manipulating the bag J, a quantity of compressed air is speedily forced into the reservoir, which drives the oil up the tube G to the generating-channel, and thence into the drip-pan for initial heating, as is common in gasoline-burners. The generating channel or chambers being sufficiently heated to convert the oil into a vapor, the emissions from the jet-orifice are of vaporized form when such heating occurs, and the flow of vapor thereafter is kept up until the flame is extinguished by closing the valve. The ring *e'''*, cast integral with the generator, performs an important office in this connection.

A generator with strong vaporizing powers is always desirable, especially in this class of inventions, where a heavy flow of gas is demanded, and the construction here described makes the generator equal to all requirements.

More or less pressure may be maintained in the reservoir, and the amount thereof is brought within easy control. If the pressure is greater than desired, it can be quickly relieved by bearing on the head *i'''*. If not sufficient, it can be replenished by the method described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a plumber's furnace, a frame and a burner supported thereby, combined with a detachable oven, and lugs *b* on said frame forming a hold for said oven when in place and a rest for a vessel when the oven is removed, as set forth.

2. The combination, with the frame, burner, and disk B, provided with lugs *b* on its upper surface and having projecting ends *b'*, of the oven having inwardly-projecting base-flange *c*, provided with radial notches *c'*, substantially as and for the purposes specified.

3. The combination, with the frame and disk B supported thereby, of the oven, the piece D, secured to the base-flange thereof and projecting upward to form a guide for the oven-door, and the inclined rest *d*, formed integral with the piece D, substantially as shown and described.

4. An oil-reservoir having an opening in its side, in combination with a plug for said opening, with its top below the top of the reservoir, having two air-passages and a single valve below the junction of the openings, substantially as set forth.

5. In an oil-reservoir, a device for compressing air therein, a plug in the reservoir having air-passages, a single valve-stem carried by said plug, and valves for retaining and relieving the pressure in the reservoir, substantially as set forth.

6. In a vapor-burner, an arm having a wrist with a quick screw and a packing-nut thereon, in combination with a needle-valve passing through the packing-nut and secured to a hand-nut engaging the quick screw, substantially as set forth.

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