

(No Model.)

5 Sheets—Sheet 1.

W. A. GREENE.
OIL OR GAS STOVE.

No. 314,929.

Patented Mar. 31, 1885.

Fig. 5.

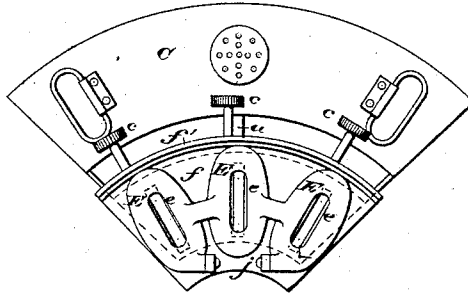


Fig. 1.

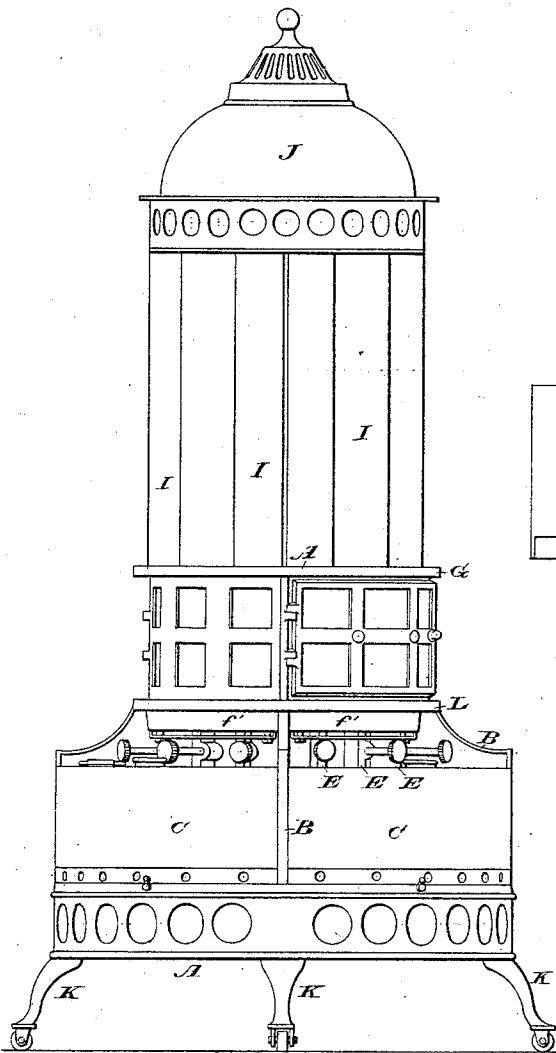


Fig. 6.

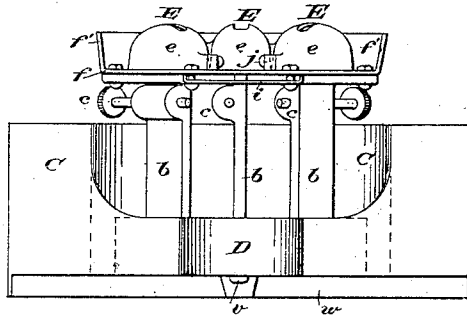
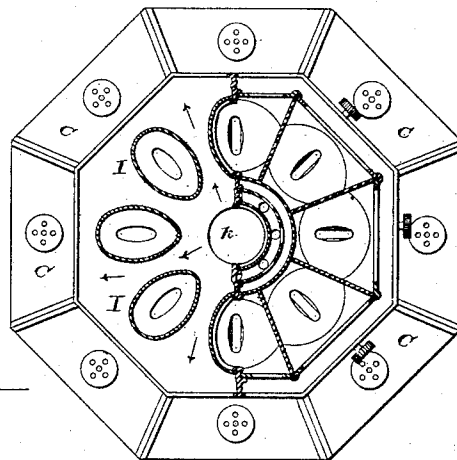


Fig. 7.



WITNESSES:

Geo. H. Fraser

E. B. Bolton

INVENTOR:

William A. Greene

By his Attorneys,

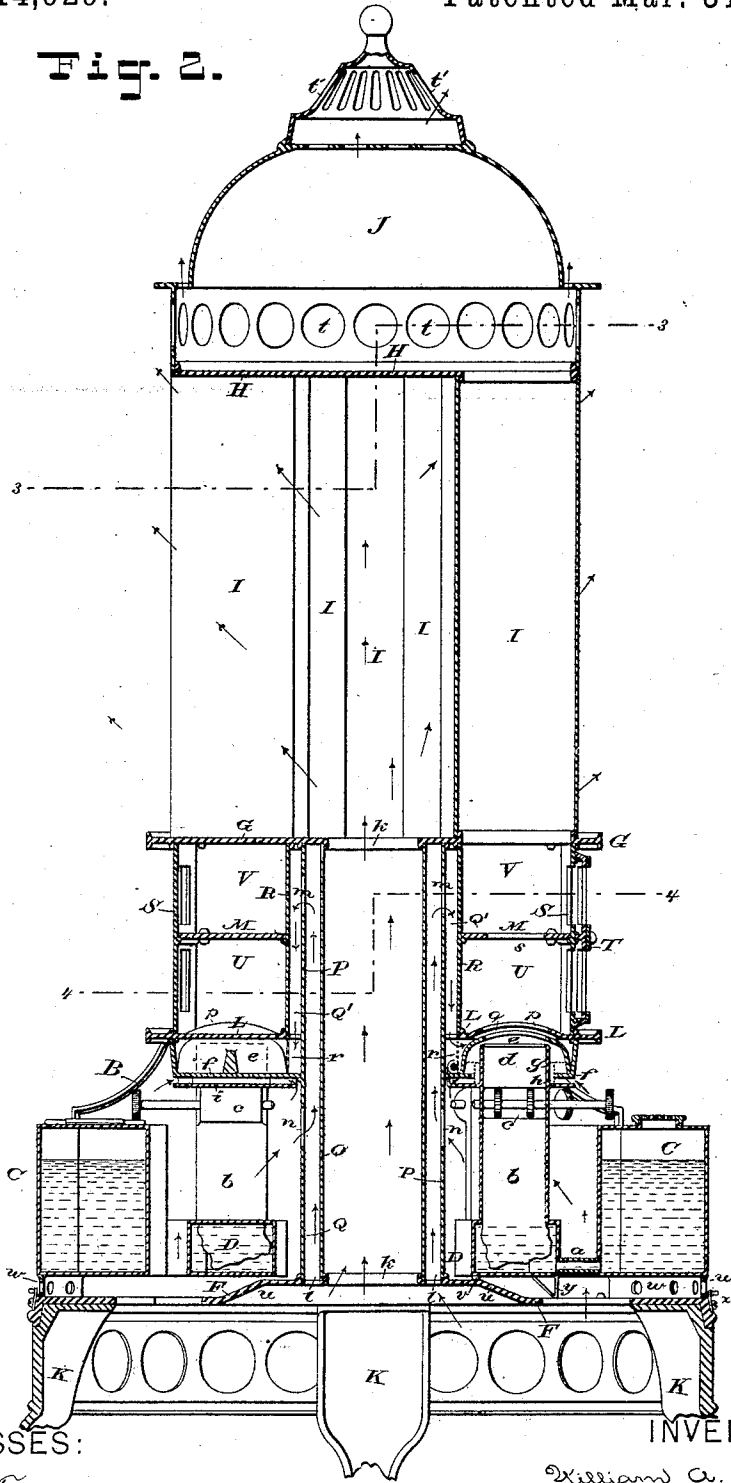
Bunker Fraser Bennett

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Fig. 2.



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Fig. 3.

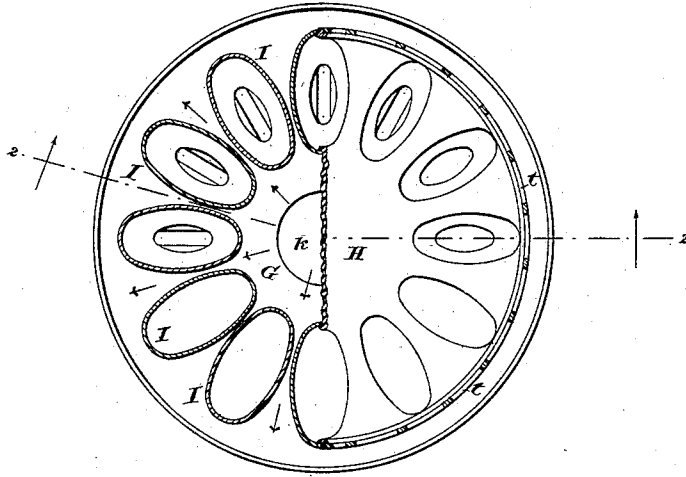
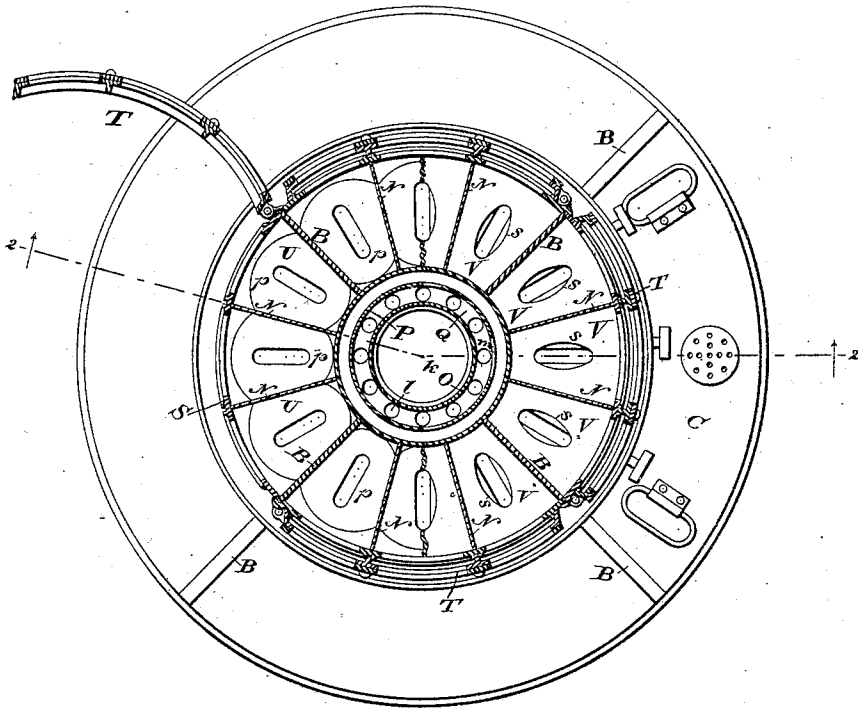


Fig. 4.



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Fig. 8.

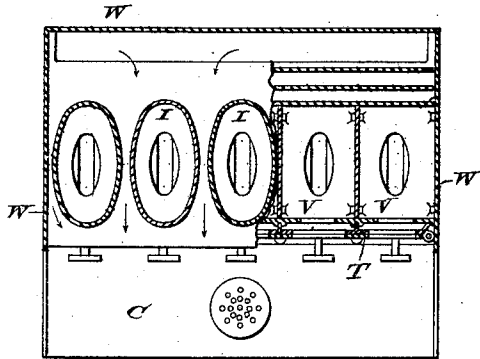
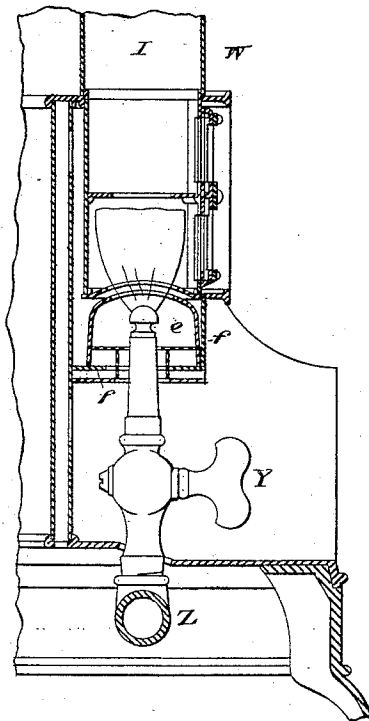


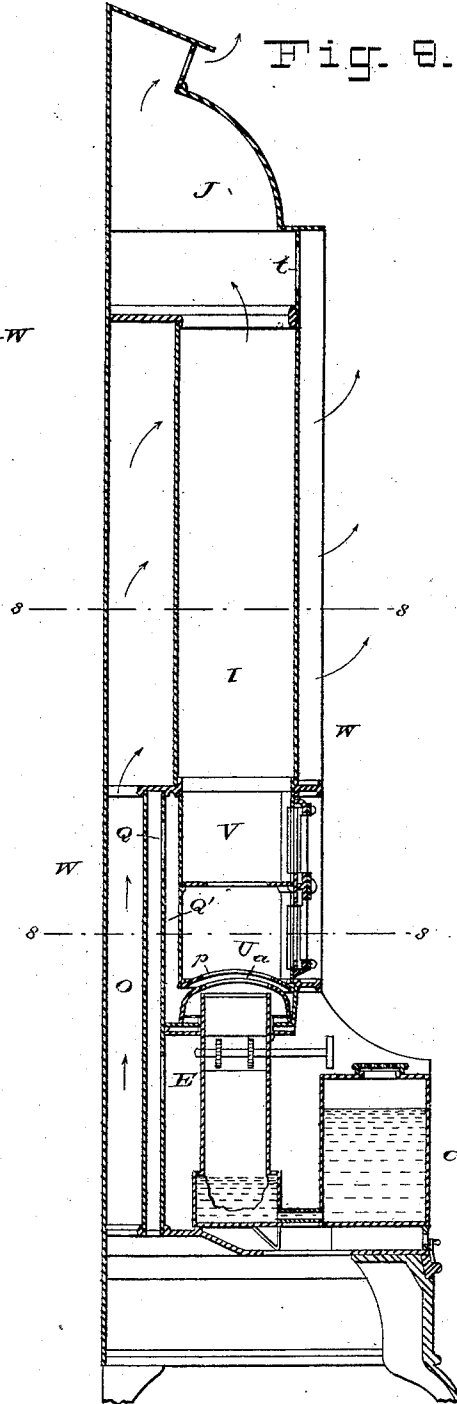
Fig. 10.



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Fig. 9.



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Fig. 11.

Fig. 13.

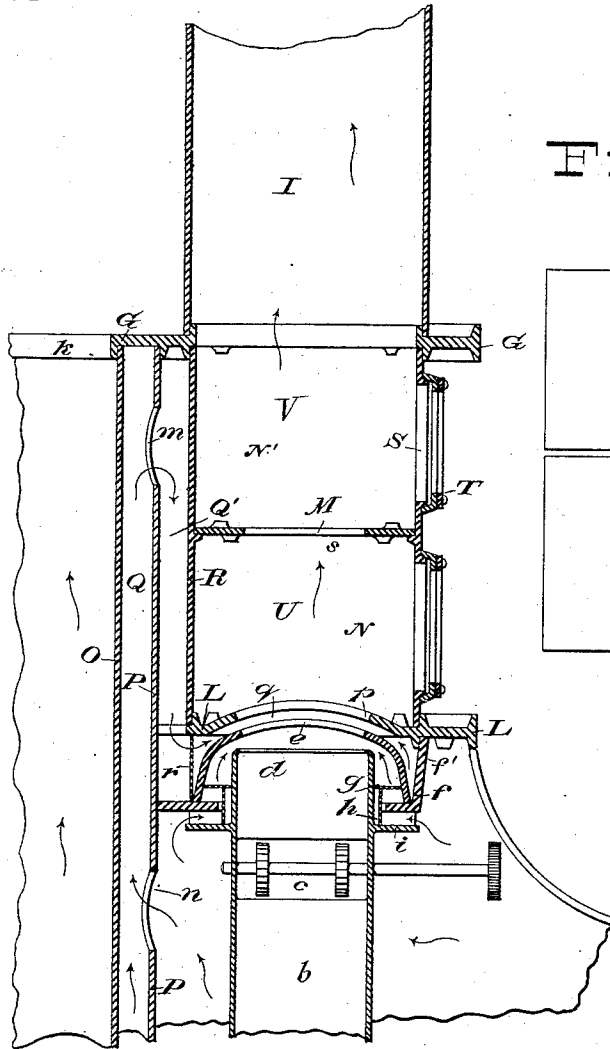
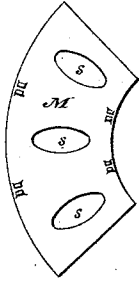
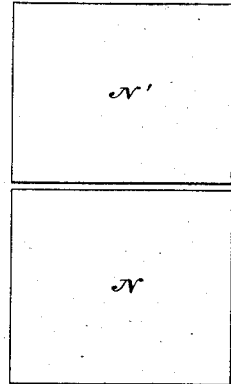


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM A. GREENE, OF BROOKLYN, NEW YORK.

OIL OR GAS STOVE.

SPECIFICATION forming part of Letters Patent No. 314,929, dated March 31, 1885.

Application filed February 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. GREENE, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Oil or Gas Stoves, of which the following is a specification.

My invention relates principally to oil-stoves, although it is in part applicable to gas-stoves.

My improved stove relates to that class of portable heating-stoves which are designed for burning kerosene or other oil or illuminating-gas and are unconnected with the chimney-flue. Oil-stoves of this character are constructed on the same principle as kerosene-lamps for illuminating, having an oil-vessel, a wick, a wick-tube, with wick-adjusting device, a cone beneath the flame, and a chimney for supplying the necessary draft.

My present invention contemplates employing a series of wicks with a separate draft-chimney for each wick, these chimneys being distinct and independent for a portion of their length, so that each constitutes a separate heat-radiator and having intervening spaces, through which cool air may circulate and become heated.

My improved stove consists of twelve (more or less) distinct kerosene-lamps, each having its own wick-tube, wick, wick-adjuster, cone, and chimney, these several lamps being arranged in a circular or polygonal group, and being all connected together by the general frame-work of the stove. The oil-vessels are preferably of less number than the lamps, each vessel serving for two or more lamps, and the burners of these lamps being connected to the vessel and removable with it from the stove.

Figures 1 to 6 and Figs. 11, 12, and 13 of the accompanying drawings illustrate an oil-stove constructed according to my invention in its preferred form. Fig. 1 is an elevation of my improved oil-stove. Fig. 2 is a vertical mid-section thereof, cut in the planes of the lines 2 2 in Figs. 3 and 4. Fig. 3 is a transverse section cut along the line 3 3 in Fig. 2. Fig. 4 is a horizontal section and partial plan, the section being cut along the line 4 4 in Fig. 2. Fig. 5 is a plan view of one oil-vessel removed, with its attached burner; and Fig. 6 is a rear elevation of the reservoir and

burners. Fig. 7 is a horizontal section of a modification. Fig. 8 is a horizontal section of another modification, and Fig. 9 is a vertical section of Fig. 8. Fig. 10 is a vertical section showing a gas-stove constructed according to my invention. Fig. 11 is a fragmentary section, being a portion of Fig. 2 enlarged. Fig. 12 shows two of the partition-plates removed, and Fig. 13 shows one quarter-section of one of the horizontal plates removed.

As shown in Fig. 1, my improved stove is erect, stands high, and is mounted on casters, so as to be readily moved. Fig. 3 shows the twelve chimneys grouped in one circular row with a central space or hole. Fig. 4 shows the radial arrangement of the lower portion of the stove with the four oil-vessels.

Referring to Figs. 1 to 4, letter A designates generally, the frame or casing of the stove, which is built up of several pieces, as will be presently explained. This frame includes four vertical and radial partitions, B B, arranged ninety degrees apart, Fig. 4, and dividing the lower portion of the stove into four equal parts. Into each of these parts fits an oil-vessel, C, of which there are four, one being shown in plan in Fig. 5 removed.

To each oil-vessel C an oil-well or secondary vessel, D, is rigidly connected, a tube, *a*, serving to convey the oil from the vessel C to the oil-well D. Three burners, E E E, are mounted on the oil-well D. Each consists of a wick-tube, *b*, having ratchet *c* or other device for adjusting the wick, burner-tip *d*, cone *e*, surrounding the latter, partition-plate *f* beneath the cone and through which the wick-tube passes, and perforated diaphragms *g* and *h*, Fig. 11, for distributing the air which enters the cone *e*. In short, each burner E is complete in all the parts essential to a lamp-burner, and which are so common and well known as to require no description here. The partition-plate *f*, which is preferably made of cast-iron, is common to all three burners, and its front edge is turned upward, forming a flange or wall, *f'*, Figs. 2, 6, and 11.

Beneath the plate *f* is fastened a thin plate, *i*, of sheet metal, which serves to deflect the entering air and cause it to pass close beneath the plate *f*, and consequently to absorb heat therefrom, and which also serves as a shield or screen to protect the oil-well below from the

heat. The three cones *e e e* are preferably made of cast-iron and cast all in one piece. This piece may be fastened to the plate *f* by a hinge, *j*, so that the cones may be turned back 5 when it is necessary to trim the wicks.

The quarter-section comprising oil-vessel C, well D, and three burners, *E E E*, is separable from the stove, is portable, and is or may be provided with handles by which to lift it.

10 I will now describe the fixed portions of the stove, it being assumed that these four quarter-sections have been removed therefrom.

As before stated, the frame A is partly composed of four vertical radial partitions, B B. 15 These rise from a disk-shaped horizontal plate, F, to a ring-shaped horizontal plate, G, Fig. 2.

Above the plate G, and between it and a higher plate, H, are arranged the twelve vertical chimneys I I, Figs. 2 and 3.

20 On top of the plate H is fitted a dome or hood, J, which is preferably removable. Beneath the plate F are four legs, K K, which rest on the floor, being preferably provided with casters.

25 About midway between the plates F and G is arranged an annular horizontal plate, L. Beneath this plate the stove is divided into but four parts; but above it and from it to the plate H the stove is divided into twelve parts.

30 Between the plate L and the plate G is another horizontal annular plate, M, composed of four sections, (one of which is shown in Fig. 13,) fitting between the vertical walls B B. Each section is formed with three elliptical 35 holes, *s s*. Vertical radial partitions N N and N' N', Fig. 4, are also arranged between the plates L and G, dividing each quarter-section between the walls B B into three parts, and thus forming, as stated, twelve divisions above 40 the plate L. The plates N N extend from the plate L to M, and the plates N' N' extend from M to G. These plates are shown detached in Fig. 12.

The plates F and G have flanged central openings, *k k*, between which extends a pipe, O, Figs. 2 and 4, and around this is another pipe, P, forming an annular flue, Q, between. The flue Q is closed at the top, but is open to the outer air at the bottom through a row of 50 holes, *l l*, in the plate F.

Around pipe P is another pipe, R, which extends from plate G down only to plate L, the space between it and pipe P forming a flue, Q', which communicates with the upper part of flue Q through holes *m m* in pipe P. 55 Holes *n n* are also formed in pipe P below the burners.

The plate L is formed with twelve convex or upwardly-bulging projections or arches, *p p*, 60 which have slots in them, and which correspond in arrangement with the cones *e e* of the twelve burners. These arches *p p* are slightly larger than and above the cones when the burners are in place in the stove, as shown in Fig. 2, 65 thus forming an intervening narrow space, *q*. This space communicates with the flue Q', a

perforated plate, *r*, being interposed. An outer cylindrical wall, S, is arranged between the plates G and L, and outside of it are arranged four hinged doors, T T, one of which 70 is shown open in Fig. 4.

The partitions, plates, &c., described form, when united, twelve flame-chambers, U U, beneath the plate M, and twelve draft-chambers, V V, above that plate. These commu- 75 nicate with each other through openings *s s* in the plate M. (Shown on the right in Fig. 4.) Openings are formed through the outer wall, S, into each of the chambers U U V V, and the doors T T have mica windows coin- 80 ciding therewith, through which the flames may be seen, thus giving the stove a cheerful appearance when in use. The chambers V V form, in fact, part of the chimneys I I, the only purpose in making them distinct being to form. 85 the windows in them covered by the doors T T. If light is not desired, they could be omitted, and the chimneys might extend up directly from the plate M. In that case light could be obtained by putting a separate mica 90 window in the lower part of each chimney.

Assuming the oil-vessels and burners to be in place in the stove, the operation is as follows: The lamps are lighted by opening the doors T T and inserting a match into the cham- 95 bers U U successively, and then closing the doors tight. Air to support combustion enters between plates *f* and *i* and passes through perforated diaphragms *h* and *g* into cone *e*, and thence to the flame. Cool air is also drawn 100 into the flue Q through the holes *l n*, that which enters at *n n* flowing over the oil-reservoirs and between the wick-tubes, thus keeping these parts cool. The air ascends through the flue Q, passes through the holes 105 *m m* into the flue Q', in which it becomes highly heated by the proximity of this flue to the chambers U U V V, flows down the flue Q', and passes through the perforated metal plate *r* into the four chambers containing the 110 cones *e e*, and formed by the plates *f f'*, walls B B, pipe P, and plate L. Thence the heated air flows into the tubular spaces *q q* over the cones, and joins the flame as the latter rises through the arches *p p* into the chambers U U. 115 These chambers serve the same purpose as the lower enlarged portion of the chimney of a common Argand lamp, and the plate M, with its reduced opening *s*, serves to direct the surrounding air into contact with the flame. The 120 flames rise through the chambers U V, losing their brightness before they reach the chimneys I, and the gases of combustion ascend through the separate chimneys I I, and all enter together the dome J, whence they es- 125 cape, highly heated, through apertures *t t* and *t' t'*. The function of this dome is to equalize the draft in all the chimneys, to prevent the lamps being affected by extraneous air-currents, and also to serve as a heat-radiator. It 130 may be taken off after the stove has been burning long enough to become thoroughly

heated, but is better left on. The chimneys I I are highly heated by the passage of the hot gases through them and serve as radiators. Cool air is drawn from beneath the stove, near the floor, passes up through the pipe O, and into the space within the series of chimneys, whence its only escape is by flowing out between them, as denoted by the arrows in Fig. 2, in doing which it absorbs heat from the chimneys.

It will be obvious from an inspection of Fig. 2 that the projection of the cones *e e* up into the arches *p p* of the plate L will preclude the possibility of the removal of the oil-vessels C and burners E E from the stove in horizontal direction.

I form the plate F with an inclined plane, *u*, Fig. 2, and the quarter-section, including vessels C and D and the burners, has at the back only a single short leg or resting-point, *v*, Figs. 2 and 6. On the front it rests on a circular rim or flange, *w*, and is held back in place by a turn button, *x*, or other suitable fastening.

To remove the quarter-section, it is drawn forward a short distance and tilted until the leg *v* is on the incline *u*. It is then slid down this incline, keeping the section tilted enough to keep the cones in the arches *p p*, and when the leg *v* reaches the bottom of the incline the cones are low enough to pass out under the plate L, and the section may readily be lifted out by the handles. A leg, *y*, is provided to keep the section erect when placed upon the floor.

The perforated plates *r r* may be either fixed to the stove or removable with the cones. These plates have an important function in restricting the indraft of heated air. Without them the wicks are liable to smoke, and unless all the wicks are lighted some will burn imperfectly; but when these plates are added any number of wicks may be lighted, according to the amount of heat desired, and the flames are all white, steady, and smokeless, if the wicks are only properly adjusted.

My improved construction of stove, by reason of the means provided for heating the air supplied to the flames, insures a practically complete combustion, thus avoiding the generation of unpleasant odors and the discharge of deleterious gases into the room.

The construction of the chimneys and air-heating flues is such that an extensive radiating-surface is provided, and a considerable quantity of external air is heated by passing out between the chimneys.

It must not be inferred from the minute and detailed description hereinabove given that my invention is in any wise limited to the details of construction referred to. On the contrary, it is susceptible of considerable modification without departing from its essential features. Instead of twelve lamps grouped together, any other number of lamps may be used.

I contemplate constructing stoves with four, six, eight, or fifteen lamps, and with either circular or polygonal arrangement.

Fig. 7 shows a stove of octagonal form, there being eight divisions or chambers, with one burner in each and a separate oil-vessel to each burner. The radial partitions all extend down to the lower horizontal plate, like the partitions B B in the preferred construction.

Figs. 8 and 9 show a modification in which the arrangement in a circular or polygonal group is altogether departed from. This construction employs five lamps arranged in a straight line, and all five burners connected to the same oil-reservoir and removable with it. The construction is substantially the same as that already described, except that the cold-air flue formed in the first-described stove by the pipe O is here formed by a casing, W, which forms the back and sides of the stove, its front being left open. The air which rises through the space thus formed back of the burners must flow forward between the chimneys I I before it can escape into the room. The radiating-chamber above the chimneys is here an elongated drum, instead of a dome. A stove of this construction is best adapted to stand back against the wall. If desired to stand out in the room, two rows of lamps may be arranged back to back, the casing W being omitted, except at the sides of the stove.

I have thus far described my invention as applied only to an oil-stove; but it is in part applicable to a gas-stove, as shown in Fig. 10, which is a fragmentary view corresponding to Fig. 2. Here the oil-lamp burners are omitted and in their stead are gas-burners, which are each provided with a cone, *e*, perforated diaphragms *g* and *h*, plate *f*, and arch *p*. The burner is provided with the stop-cock or key Y, common to gas-burners, and all the burners are branches from a supply-pipe, Z, which may be connected with the fixed gas-pipes of the house by a flexible hose. The action will be in nearly all respects the same as with the oil-stove hereinbefore described, except in so far as the oil-vessels and wicks are concerned.

When my invention is applied to a gas-stove, the word "lamps" as used herein must be understood to mean the gas-burners and the flame-chambers and chimneys connected with them.

I claim as my invention—

1. An oil or gas heating-stove consisting of the combination of two or more lamps in one frame or casing, each having a separate chimney, with an air-passage extending upward from the bottom of the stove and terminating in an inclosed space, the only escape from which is between and around said chimney, whereby cool air ascending through said passage is heated by the chimneys on its escape from said space, substantially as set forth.

2. An oil or gas heating-stove consisting of the combination of two or more lamps in one

frame or casing, each having a separate chimney, with one common radiating dome or chamber, into which all the chimneys discharge, and with an air-heating flue terminating in a space beneath said chamber, the only escape from which is through the spaces between said chimneys, substantially as set forth.

3. An oil or gas stove consisting of the combination of a series of distinct lamps, all arranged in one frame or casing in a circular or polygonal group, each lamp having a separate chimney, with an air-passage extending up from the bottom of the stove through the center thereof and surrounded by the group of lamps, and terminating in an inclosed chamber bounded by the annular series of chimneys, the only escape from which chamber is through the spaces between said chimneys, substantially as set forth, whereby air is drawn up through said passage, is heated, and is discharged in all directions from the stove.

4. An oil-stove consisting of two or more lamps in one frame or casing, each lamp having a separate chimney, *I*, and flame-chamber *U*, all the chimneys *I I* being fixed to said casing, and all the chambers *U U* being formed by horizontal and vertical partitions forming part of said casing, and the burners *E E* and their attached oil-vessels arranged removably in said casing beneath and in operative connection with their respective chambers *U* and chimneys *I*, all combined and arranged to operate substantially as set forth.

5. An oil-stove consisting of the combination of a frame or casing, a series of lamp-chimneys fixed therein, a series of flame-chambers below and in communication with said chimneys, and a plate forming the bottom of said chambers and having an arch or convex upward projection beneath each chamber, with a series of lamp-burners having

their respective cones fixed to them, and the oil vessel or vessels bearing said burners and removable from said casing, substantially as set forth, whereby when the burners are in place in the casing their cones come beneath and coincide with said arches.

6. An oil or gas stove consisting of the combination of a casing, a series of lamps arranged therein, a series of flame-chambers for said lamps, an air-heating flue passing by said flame-chambers, and a hot-air space or conduit leading over the cone of each lamp in communication with said flue, whereby the air heated by flowing through said flue is conducted to the flames of the lamps to complete and perfect their combustion, substantially as set forth.

7. In an oil-stove, the combination, with the casing of a chimney, *I*, flame-chamber *U*, plate *L*, having arch *p*, and plate *F*, having incline *u*, all forming parts of said casing, of oil-vessel *C* and burner *E*, connected therewith, said burner having a cone, *e*, entering said arch *p*, and resting on a leg or point, *v*, at the top of said incline *u*, substantially as set forth, whereby the removal and replacement of the oil-vessel and burner are facilitated.

8. In an oil or gas stove, the combination, with air-heating flue *Q Q'*, burner *E*, having cone *e*, flame-chamber *U*, having bottom plate, *L*, formed with arch *p*, conforming to the cone *e*, and forming intervening space *g*, of perforated diaphragm *r*, interposed between said flue *Q'* and the air-space *g*, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM A. GREENE.

Witnesses:

ARTHUR C. FRASER,
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