

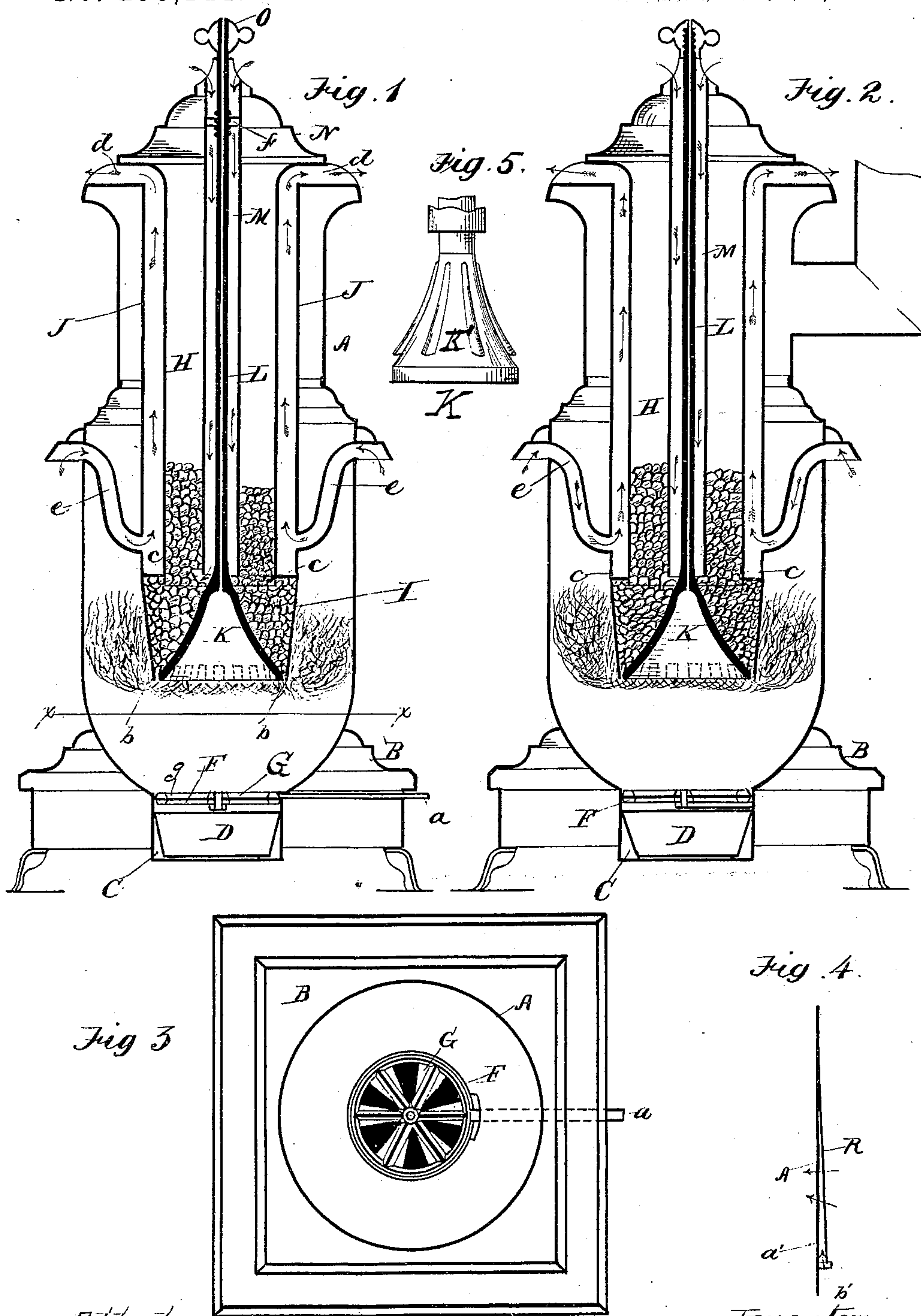
(Model.)

2 Sheets—Sheet 1.

T. WILLI.
STOVE.

No. 253,144.

Patented Jan. 31, 1882.



Attest,
W. H. Knight
W. Blackstock.

Inventor,
Theodore Willi
by Peck Ritchie
his atty.

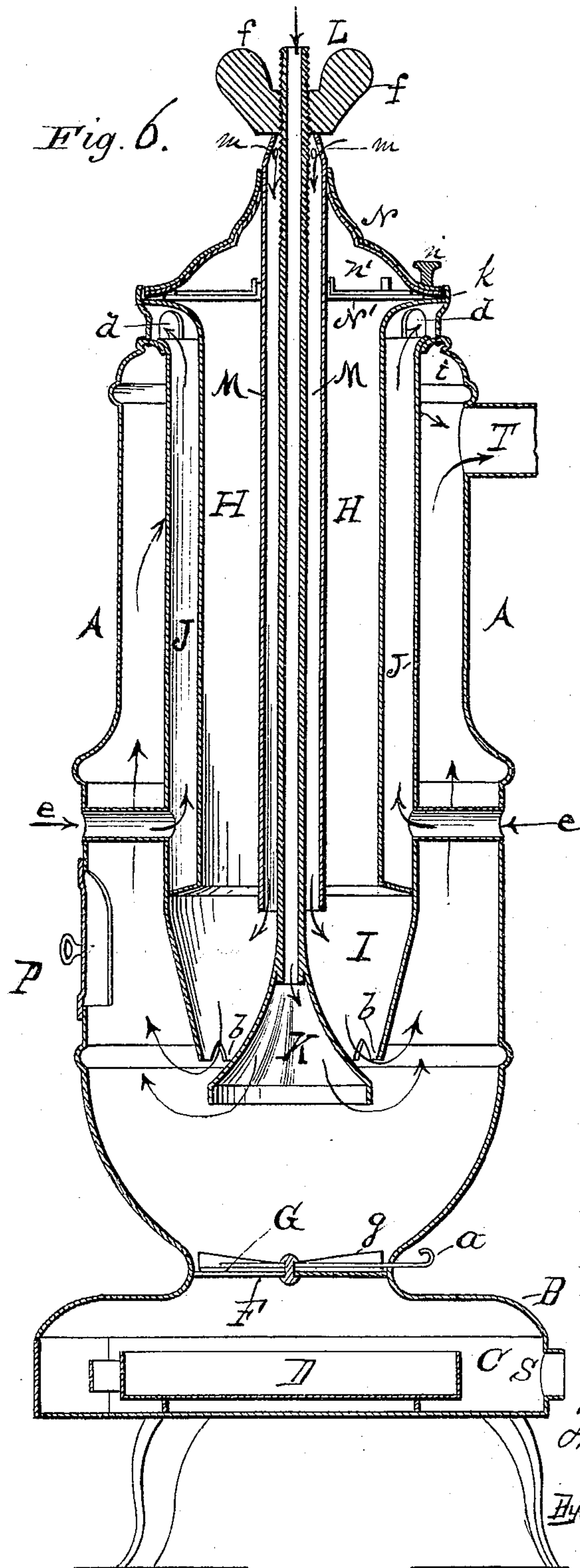
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Witnesses

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C. C. Shepherd.

Inventor:

Theodore Willi

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UNITED STATES PATENT OFFICE.

THEODORE WILLI, OF DAYTON, OHIO, ASSIGNOR OF TWO-THIRDS TO FRANK S. RICHSTEINER AND CLEMENT L. BAUMANN, BOTH OF SAME PLACE.

STOVE.

SPECIFICATION forming part of Letters Patent No. 253,144, dated January 31, 1882.

Application filed February 17, 1881. (Model.)

To all whom it may concern:

Be it known that I, THEODORE WILLI, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Stoves; and I do hereby declare the following to be a full, clear, and exact description of the same.

The object of my invention is to provide a stove or heater in which, by the use of a downward draft, there shall be the most perfect combustion, complete consumption of the fuel, and the least possible escape of unconsumed gas, and a reduced percentage of smoke.

With this object in view I have planned, arranged, and constructed the different elements of a stove or heater in the manner herein shown and described; and my invention consists in certain devices or elements and the arrangement and combination of those elements and others, as hereinafter specifically set forth in the claims.

Referring to the drawings forming a part hereof, Figure 1 is a vertical central section from side to side of a stove embodying my invention. Fig. 2 is a like section from front to back; Fig. 3, a horizontal section on line *x* of Fig. 1; Fig. 4, a detail showing an optional arrangement of the mica lights; Fig. 5, a detail view, hereinafter described; and Fig. 6, a central vertical section of a modified arrangement and construction of the principal elements of a stove or heater embodying my invention.

Like letters of reference refer to like parts in all of the figures.

The jacket or shell A of the stove may be of any shape or configuration desired, and may be supported upon any suitable base, B, provided with a chamber, C, adapted for the insertion and withdrawal of a suitable ash-pan, D, the material of all of these and the remaining elements of the stove being a matter of discretion with the constructor.

The ash-chamber C is separated from the upper portion of the stove by a partition provided with a register consisting of a radially-slotted disk, F, surmounted by a like disk, G, centrally pivoted thereto, and having *A*-ridges *g* disposed thereon between the slots, and a handle, *a*, projecting through the shell A, to

permit of the operation of the disk G from the outside of the shell.

The shell A is provided with a door, P, and exit-draft tube T, of usual construction and arrangement.

An exit-tube, S, may be provided for the ash-chamber C, which tube may be suitably connected with the draft-tube T for the purpose of establishing in the usual manner a draft to carry off the dust occasioned by the removal of the ash-pan.

In any suitable manner, preferably that shown in Fig. 6, I suspend centrally within the shell, and from or upon a flange, *i*, at the top thereof, a centrally-located cylinder, J, which extends nearly to the bottom third of the shell, and I form integrally therewith, or suitably support thereon, a flaring fire-pot, I, the lower edge of which is scalloped or notched, as shown at *b*. Transverse straight or curved pipes *e* are constructed and attached to the shell A and to the cylinder J at a point near the lower end of the latter and at desired localities in the former, as clearly shown in Figs. 1, 2, and 6.

Concentrically within cylinder J is suitably suspended the reservoir proper, H, of the stove. In Fig. 6 I have shown the preferable manner of supporting this element.

Upon the flange *i* of the shell A rests a ring, *k*, perforated at *d* and adapted to receive and retain the flaring mouth of the reservoir; or said ring may be cast integral therewith.

It will be observed that the reservoir extends a short distance below the pipes *e* and is flanged at its lower end at *c*.

Instead of constructing the fire-pot I integral with or to be supported by cylinder J, said pot I may be suspended from the flange of the reservoir. The flaring mouth of the reservoir is surmounted with a practically airtight cover, N' *n'*, the part *n'* being adapted to move upon the part N', register-like, as is common, and both parts moving about the remaining elements, which are located as hereinafter described.

The top proper of the stove consists of two parts, similar in operation and construction to those just described, the stationary part N, and a movable part provided with a handle, *n*,

by which it is operated, register-like, to open and close.

Supported preferably by the stationary part N of the cover of the stove is the central main draft flue or cylinder, M, arranged concentrically to the before-described elements, and having induction-aperture *m* at its upper end, the flue extending a trifle below the lower end of the reservoir H.

From and upon the top of flue M is supported a hollow rod, L, which extends within the fire-pot I, and has attached thereto or formed thereon a cone-shaped base, K. The rod L is screw-threaded at its top *f'*, and is provided with a nut, *f*; or, as shown at Fig. 1, the nut *f* may be fixed, and the ornamental handle O may be attached thereto. The base K is provided with ribs or corrugations K', as shown at Fig. 5, and the distance that said corrugations shall extend upon the body of the base is a matter of option, except that at the upper end of said base such form and size should be secured as will fit within the flue M.

At Fig. 4 I have shown a desirable manner of constructing the mica windows of stoves of this character, in which the mica R is slanted inwardly, as shown, leaving a slight opening, *a'*, at the sides and *b'* at the bottom, as clearly understood by reference to the figure; but I do not herein seek to secure such construction, but will reserve such for a future application.

It will be seen that the principal elements herein shown and described are essentially a fire-pot the base of which is adjustable therein and a magazine the cover of which is air-tight, the only air which can be supplied being conducted downwardly into the pot and below the source of supply of coal, for purposes set forth in the operation, as hereinafter described.

The operation of my invention is as follows: The base K having, by means of the nut *f* and rod L, been set at such a point as to prevent fuel from passing through, sufficient coal is introduced through the covers N N' into the fire-pot I, and a fire is started upon the top of the coal thus introduced. After said coal has become sufficiently ignited a full supply of coal is put within the reservoir, and it continually falls as fast as that in the fire-pot is consumed. By observing the arrows in the different figures the currents of air can be clearly traced. First and always there is a mild current entering at the top of the hollow rod L, passing downwardly therethrough, beneath the base K, thence upwardly and between the shell A and cylinder J, and finally out the chimney-flue T. This current is permanent and carries the smoke and products of combustion during a slow burning of the fire, and is designed to serve the purpose of "keeping" the fire, for at such times the upper end of base K is elevated within and closes the lower end of the main draft-flue M either completely or nearly so, depending upon the form of said upper end and the extent of the corrugations K', which may

be advantageously projected within the flue M to supply a limited quantity of air direct to the fire-pot. From this point in the operation of the stove let it be assumed that the fire is desired to be under full headway or burning for the purpose of heating. Now the base K is depressed a trifle below the fire-pot, as shown in Fig. 6, and a direct downward draft is supplied through apertures *m* at the top of flue M, and this draft is fed centrally within the body of coal in the fire-pot I, and as there is no other escape it passes between the lower edges of the pot I and the base K, carrying with it the gas formed by heating the superimposed coal and causing its complete combustion by contact with the incandescent coal below, thus greatly increasing the heat derived and diminishing the quantity of smoke. The draft, continuing, takes the course described with reference to the current entering the pipe or rod L, and with it passes out of the chimney-flue T. Outside air is excluded from contact with the fire at all other points and only enters the pipes *e* to be heated and to rise and pass out of the perforations *d* to heat the room or be conducted by pipes to other apartments. The air thus entering the pipes *e*, L, and M is cool, and it serves to keep the body of coal in the reservoir comparatively cool, so that no gas is generated therefrom except in close proximity to the fire-pot, where the descending draft quickly conveys it to be consumed. The ashes collect upon the register G. The A-ridges act to guide the ashes through the same into the pan D.

To prevent any upward draft the register is opened only to collect the ashes and is closed at all other times.

Having described my invention and its operation, what I claim as new, and wish to secure by Letters Patent, is—

1. In a stove or heater, a bottomless fire-pot connected to a magazine having an air-tight cover, said fire-pot having a centrally-supported base provided with a central downward-draft flue, in combination with the shell of the stove, provided with a chimney-flue and an air-tight base, substantially as shown and described.

2. The combination of a bottomless fire-pot, a cone-shaped base provided with an adjustable supporting-rod, and a main downward-draft flue, substantially as shown and described.

3. The combination of the air-tight shell, the suspended bottomless fire-pot, the adjustably-suspended base, the register G, and the ash-chamber C, substantially as shown and described.

4. In a reservoir-stove, the combination of the reservoir, a suspended fire-pot attached thereto, a central main downward-draft flue, and an adjustably-suspended base, substantially as shown and described.

5. In a reservoir stove or heater, the combination of a centrally-suspended downward-

draft flue, a concentrically-arranged reservoir having an air-tight cover, a fire-pot suspended from the covered magazine, and an encircling jacket provided with induction and eduction
5 air-passages, substantially as shown and described.

6. The combination, with the air-tight shell, of the base separated therefrom by a partition provided with a register, a cylinder resting
10 upon the upper flange of the shell and laterally braced by induction-pipes, a superimposed flanged reservoir resting upon said upper flange, and an air-tight top resting upon said

reservoir-flange and supporting a main downward-draft flue, which terminates within the
15 fire-pot, substantially as shown and described.

7. The combination of the flaring fire-pot I, notched at its lower edge, and the base K, conical in shape, ribbed, as shown, and adjustably suspended therein, as shown and described. 20

In testimony whereof I have hereunto set my hand.

THEODORE WILLI.

Witnesses:

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CHAS. M. PECK.