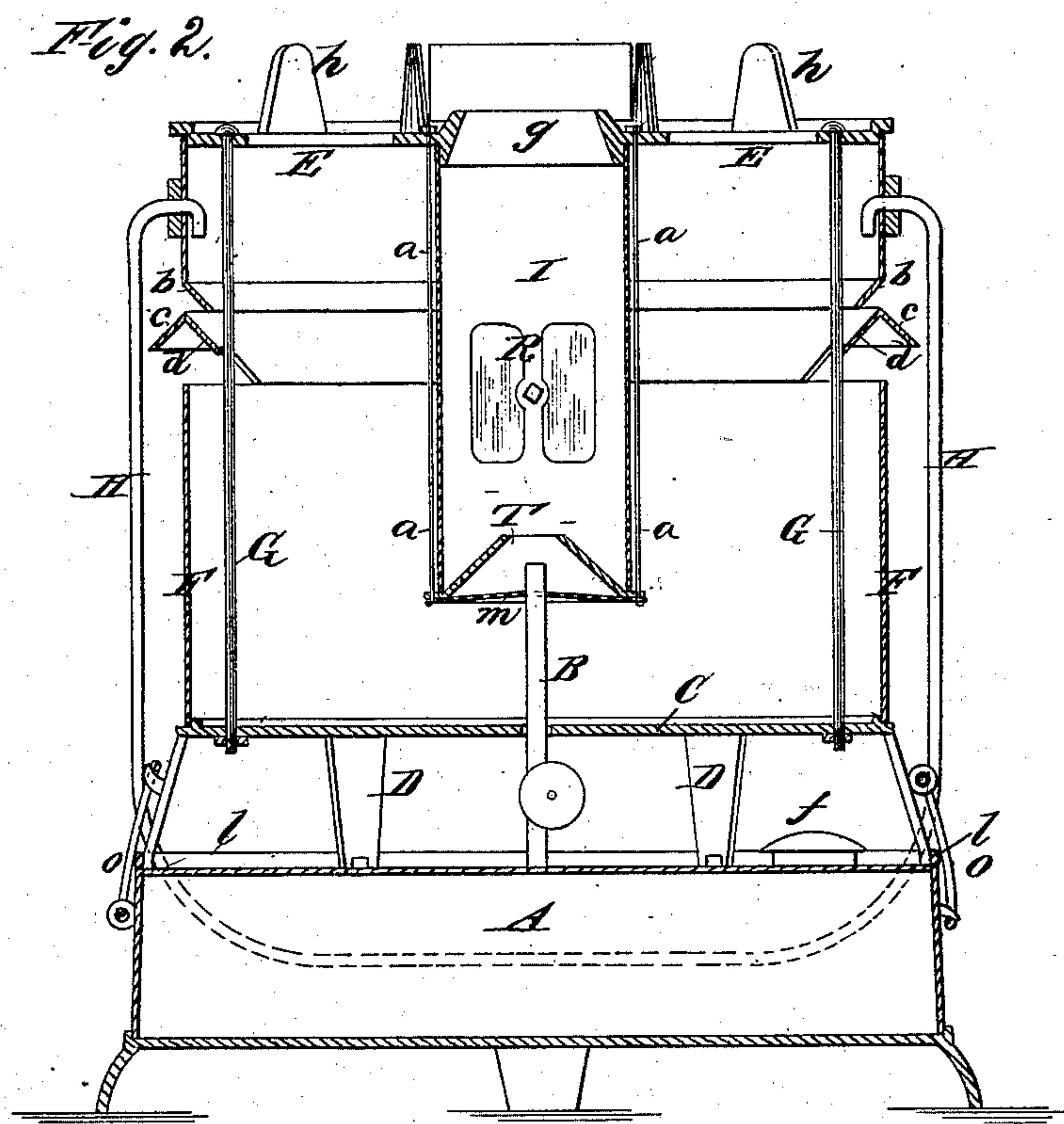
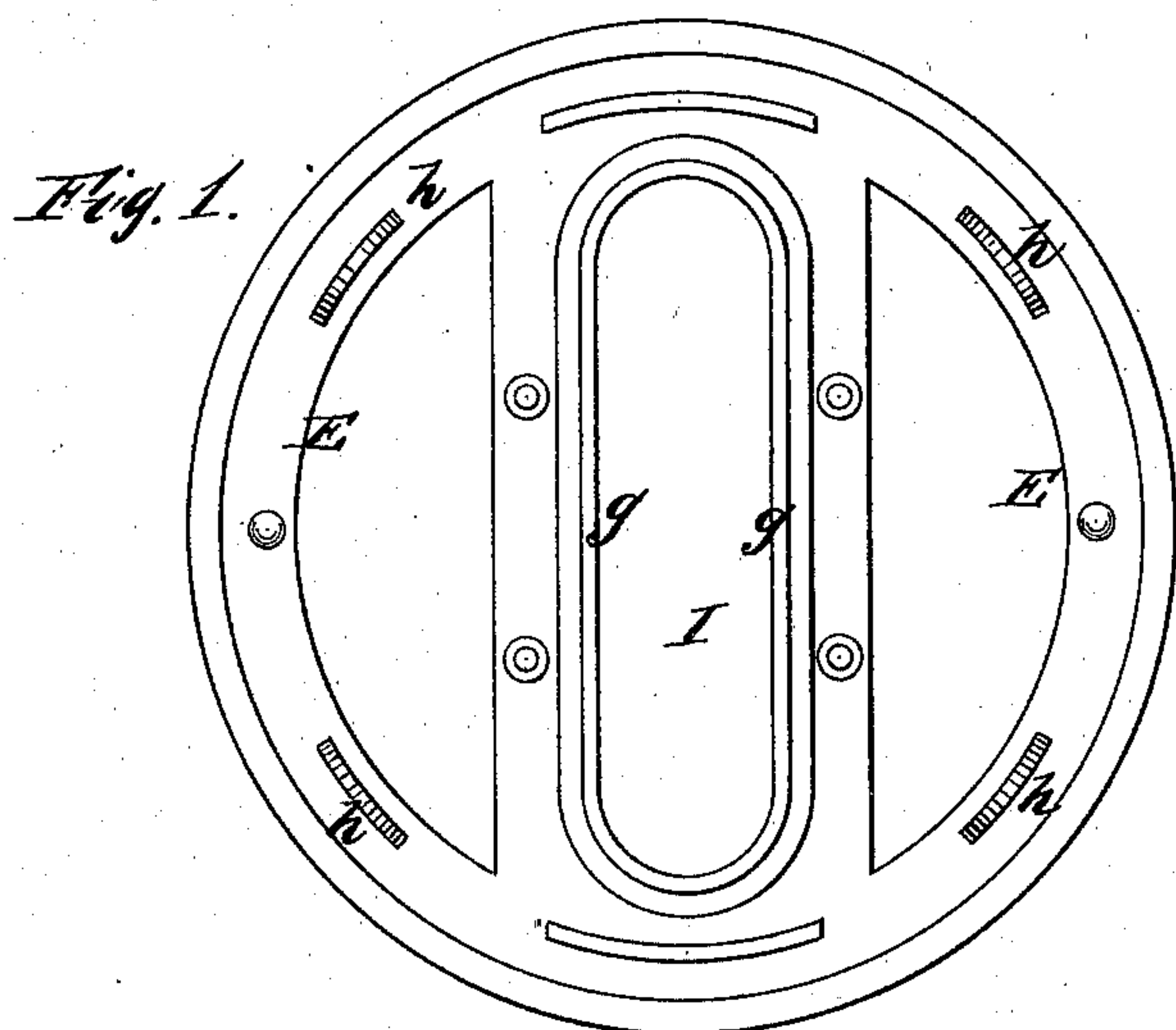


(No Model.)

L. F. BETTS.  
Stove.

No. 238,331.

Patented March 1, 1881.



*Attest:*  
*Charles R. Searle,*  
*Arthur M. Pierce.*

*L. F. Betts,*  
*Inventor:*  
*By Worth Osgood,*  
*Attorney.*



# UNITED STATES PATENT OFFICE.

LEWIS F. BETTS, OF CHICAGO, ILLINOIS.

## STOVE.

SPECIFICATION forming part of Letters Patent No. 238,331, dated March 1, 1881.

Application filed June 24, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS F. BETTS, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful  
5 Improvements in Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to that type of stoves wherein the air for the support of combustion is conducted to the burners through suitably-arranged channels or conduits, and in which the moving current of air, or air and  
15 gases, is controlled in direction in such manner as to insure an increased upward flow through the burner-plate whenever disturbances in the surrounding atmosphere take place, as when  
20 the stove is exposed to drafts or winds, or when being moved about, thus maintaining combustion, preventing any reversal of the current within the structure, and obviating smoking.

The object of this invention is to construct  
25 a small, light, cheap, and effective stove for domestic use, which shall embody all the advantages of the general class of stoves to which it relates; and to this end the invention involves certain novel and useful arrangements  
30 or combinations of parts and details of construction, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a top or plan  
35 view of a stove constructed in accordance with my improvements, and Fig. 2 is a vertical axial section thereof.

Like letters of reference, wherever they occur, indicate corresponding parts in both the fig-  
40 ures.

A is the oil-pot, having any suitable filler-orifice, *f*, and B is the wick-tube leading up from the oil-pot and connected therewith in any of the ordinary ways.

45 At a little distance above the oil-pot is supported the plate C upon standards D D, arranged at convenient intervals and suitably secured against accidental displacement or disarrangement—as, for instance, by the nar-  
50 row ledge *l*, or by use of any suitable form

of locking catch or hinge, as at *o*, or in any other convenient way.

Surrounding wick-tube B is a chimney, I, forming the flame-chamber, and provided at bottom with a slotted burner-plate, T, adapted  
55 to direct the incoming air against the flame. This chimney is made of sheet metal or other suitable material, and is suspended from the perforated top plate, E, through the medium of  
60 suitable rods, *a a*, or by equivalent means, the lower end of the chimney being located above the plate C. The chimney is flattened or wider in one direction than in the other, as indi-  
65 cated at Fig. 1, in order that the volume of air and gases passing therethrough may be more thoroughly and uniformly heated than would occur if a cylindrical chimney should be em-  
70 ployed in connection with the broad flat flame. By this construction I am enabled to utilize the heating capacity of the stove with the  
75 single wick-tube to much better advantage than can be done with the cylindrical chimney.

The top plate, E, is supported upon a cylindrical jacket, F, which, in turn, is mounted  
80 upon plate C, and all held in place by the assembling rods G G. This jacket forms with the chimney an air-conducting channel leading to the under side of the burner-plate, through which channel all the air passes for the support of combustion. At a convenient  
85 point below the top plate, E, the fresh-air inlet is formed in the jacket, and in this inlet are located air-deflecting surfaces, such as at *b c d*, so arranged as to deflect any impinging air-  
90 currents down into the space between the jacket and the chimney. These surfaces form an atmospheric injector, and in this place the particular surfaces shown stand instead of any form of injector desired to be employed in connection with the mouth of the air-feeding con-  
95 duit, or what may be called the “fresh-air inlet.” They may therefore be replaced by any equivalent form of atmospheric injector.

The conical or inclined frustum *g* is preferably cast with plate E, and serves as a bear-  
100 ing for the chimney on the under side, and also, to a certain extent, as an ejector, in connection with the chimney, and air-currents passing beneath the cooking utensil (which is supported upon suitable standards, *h h*) will



tend either to enter the fresh-air conduit through the openings in plate E, or to exhaust from the chimney upon well-known principles of pneumatics. This ejector may be replaced  
5 by any preferred equivalent form.

When the stove is organized as above explained it is clear that any currents which may strike the structure, as when exposed to winds or drafts of air, or when being carried about,  
10 will tend to increase the flow of air to feed the flame, either by causing an ejection from the discharge end of the chimney or an augmented current down through the air-feeding channel between the jacket and chimney; and  
15 it will also be observed that no air-currents or movements of the stove can cause a reversal of the air-feeding current.

Below the slotted burner-plate is a foraminated air-distributing plate, *m*, operating in the  
20 usual way, for the usual purposes of a distributor in similar positions with respect to the flame.

In the chimney is a window, as at R, and the jacket may be provided with a corresponding window or door, through which the state  
25 of the flame may be conveniently inspected. When the window is located opposite the fresh-air inlet, as shown, this inlet will afford all the requisite opening in the outside casing for this  
30 inspection.

To light or trim the burner, the entire superstructure may be lifted from off the top of the oil-pot, thus leaving only the wick-tube in place.

35 The chimney is suspended from the top or pot-hole plate, instead of being supported from beneath, as has heretofore been customary in this class of stoves, and this is a feature of considerable utility, contributing  
40 largely to the simplicity of construction in a small stove, and applicable in stoves with any number of burners.

For convenience in handling or carrying and moving the stove, it is provided with a  
45 bail or handle, H, the same being connected with the jacket or other convenient part of the stove, substantially as indicated in Fig. 2. When not employed for carrying the stove about, this bail drops down out of the way of  
50 the top, leaving the top entirely free. When being carried about, this bail is amply large to accommodate any ordinary cooking utensil beneath it upon the top of the stove, and the stove is of such construction that it may be  
55 carried or moved when lighted without danger of impeding the combustion or causing smoking, as in the ordinary forms of stoves.

Reference to the drawings will show that the diameter of the air-channel is made considerably  
60 greater than the length of the chimney or than the distance through which the fresh air is compelled to travel after entering the structure before reaching the flame, and it will also be observed that there is a wide space left be-  
65 tween the jacket and the flattened walls of the chimney. This construction affords an ex-

tended area or capacity for the fresh-air conduit, and consequently a large volume of air to feed the flame, which in passing down to the burners is not liable to become overheated  
70 by contact with the chimney. The overheating of the feed-air would tend to produce an upward current in the air-feeding channel, diminishing thereby the supply of air to support combustion and preventing the successful  
75 practical operation of the stove. The proportions of the different parts indicated bring the kettle or cooking-vessel well down upon the flame in a position best adapted to utilize the maximum effects of the heat generated  
80 within the chimney.

Having now fully described my invention, I will add that my improved arrangements are applicable to stoves burning gas or vapor, as  
85 well as to those consuming oil or liquid fuel.

Any form of burner can be readily substituted for the one shown in the drawings.

When the stove is being carried or swung by the bail, the contents of the air-feeding conduit (or of the separate tubes if more than one  
90 conduit be employed) serve to counterbalance the contents of the flame-chamber, and thus preventing any reversal of the currents within the stove.

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

1. In a stove of the character herein specified, the combination of a top plate supported upon an outer jacket and a chimney suspended from said top plate, the lower end of the chimney  
100 being provided with an air-deflecting burner-plate and a foraminated air-distributing plate, both being maintained above and free from the bottom plate of the jacket, and an enlarged air-conducting passage being left be-  
105 tween the chimney and jacket, and between the bottom and the air-deflecting burner-plate, to prevent overheating of the feed-air, as explained, substantially as and for the purposes set forth. 110

2. In a stove of the character herein specified, the combination, with the elongated burner, of a correspondingly-flattened chimney and an air-jacket surrounding the same, leaving a  
115 space between the two the diameter of which is greater than the length of the chimney, said jacket being made to direct air beneath the bottom of the chimney for the support of combustion, substantially as and for the purposes set forth. 120

3. The combination of an oil-pot, an elongated burner connected therewith, a suspended flattened chimney, an air-jacket surrounding said chimney, forming a fresh-air conduit the  
125 breadth of which is greater than the height of the chimney, and leading to the under side of the burner-plate, a bottom plate upon said jacket, and a top or pot-supporting plate, substantially as shown and described.

4. In combination with a jacket provided  
130 with an atmospheric injector, a chimney located within said jacket and supported or sus-



pendent from the top plate, which is mounted upon the jacket and the burner-plate at the lower mouth of the chimney, serving to direct air from the air-conduit between said jacket and chimney, said conduit being made broader than the length of the chimney, substantially as shown and described, and for the purposes set forth.

5. In combination with an outer jacket having an atmospheric injector applied thereto, a chimney suspended within the jacket, substantially as explained, so as to leave an enlarged air-space between the two, which space is made broader than the length of the chimney, and an atmospheric ejector applied at the discharge end of the chimney, substantially as shown and described.

6. In a stove of the character herein set forth, wherein the currents are maintained in a uniform direction by the application of atmospheric injectors or ejectors, as shown, and wherein the contents of the air-feeding conduit are prevented from becoming overheated, as explained, said conduits being made broader than the length of the chimney, the combination, with the structure, of a suitable handle or bail, by use of which the stove may be carried about, substantially as shown and described.

7. The combination of the oil-pot, the standards thereabove, the air-jacket and its bottom

plate mounted upon the standards, and a chimney suspended within the air-jacket above and free from the bottom plate thereof, the space between the chimney and jacket being made broad in proportion to its length, as explained, so as to prevent overheating of the air-feeding current, substantially as shown and set forth.

8. In a stove of the character herein set forth, the combination of a flattened chimney and surrounding jacket, the two forming an enlarged air-conducting space, made broad in proportion to its length, as set forth, so as to prevent overheating of the air-feeding current, said enlarged chamber leading to the under side of the burner-cone, and the chimney being supported from the top plate above and free from the bottom plate of the jacket, the inlet for fresh air and the outlet for products of combustion being in close proximity to each other, and each guarded by air-deflecting surfaces, and the whole arranged to operate substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

L. F. BETTS.

Witnesses:

WORTH OSGOOD,  
ARTHUR M. PIERCE.