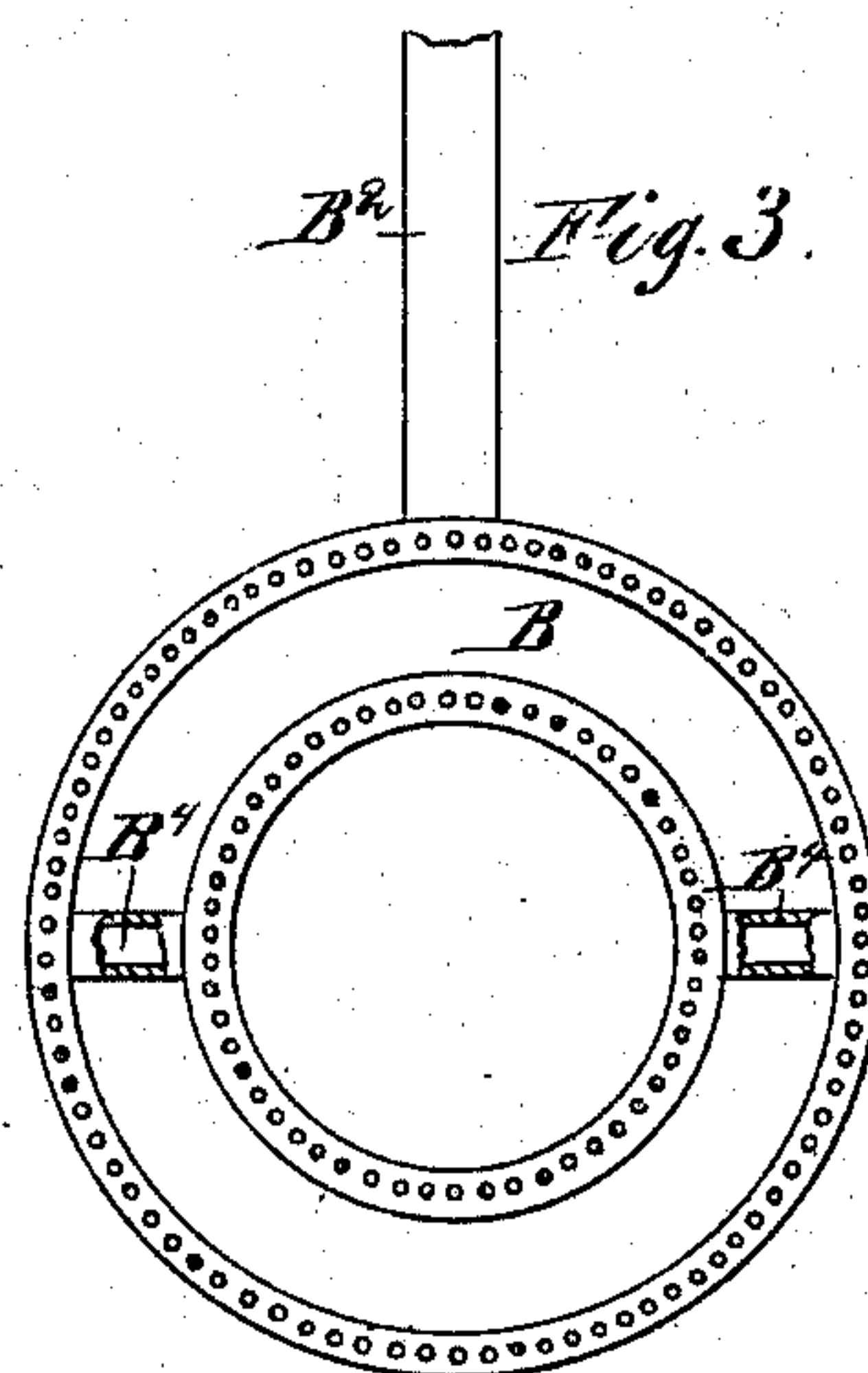
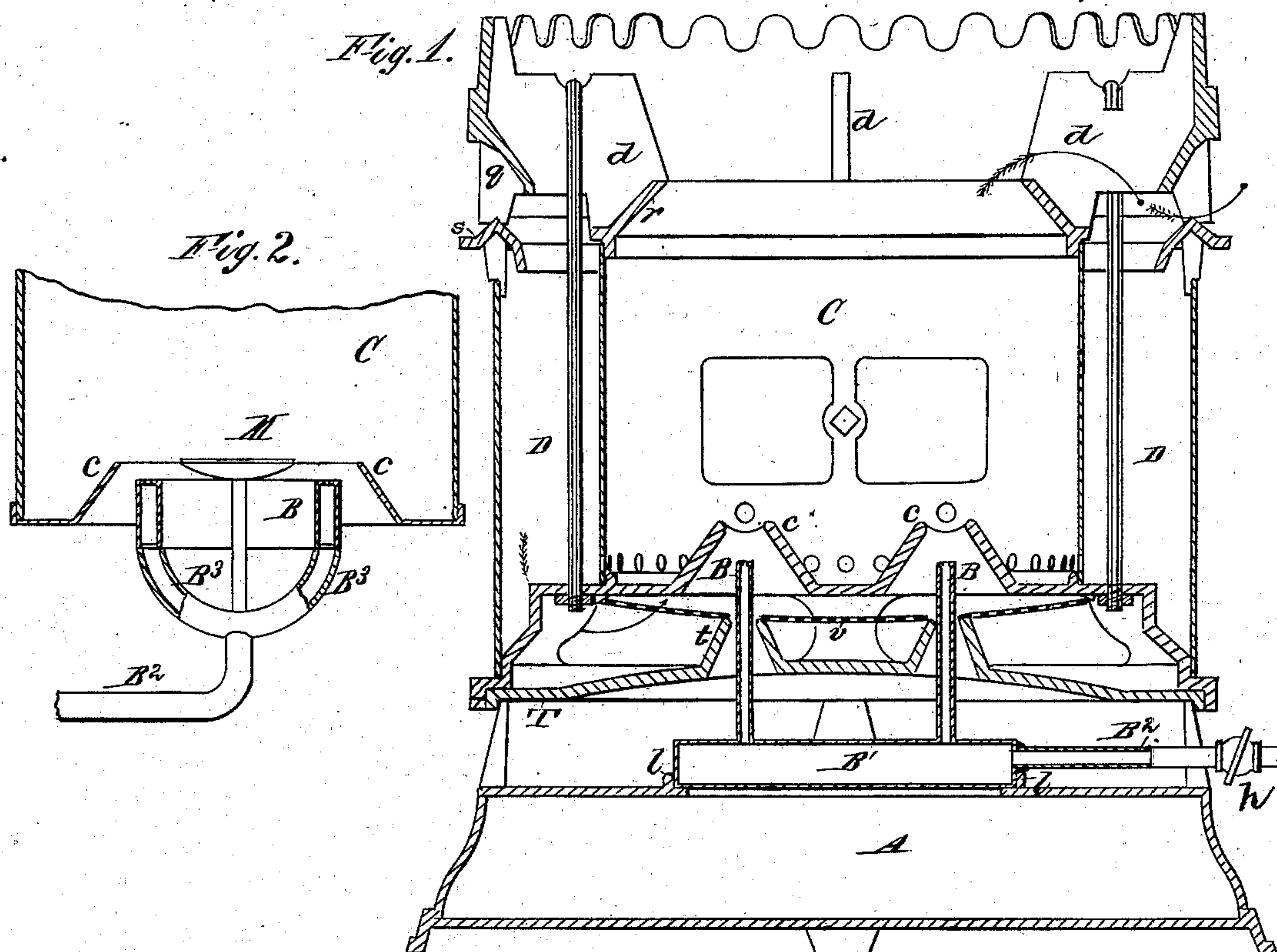


(No Model.)

J. H. IRWIN.
LAMP OR GAS STOVE.

No. 254,979.

Patented Mar. 14, 1882.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF MORTON, PENNSYLVANIA.

LAMP OR GAS STOVE.

SPECIFICATION forming part of Letters Patent No. 254,979, dated March 14, 1882.

Application filed April 21, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Morton, in the county of Delaware and State of Pennsylvania, have invented a new and useful
5 Improvement in Lamp or Gas 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, the same not having been, to my
10 knowledge, heretofore patented in any foreign country.

My present invention has relation to that type of stoves wherein the air for feeding the flame is carried down to the burners from a
15 point above them, and controlled in direction for the purpose of increasing the combustion corresponding to the increase of pressure produced by the ingoing fresh-air currents or exhausted products of combustion, as set forth
20 in previous patents and applications for patents made by me, of which the dates will be given hereinafter.

Among the objects of my present invention is the production of a gas-burning stove in
25 which the gas-burners are located in a complete, or nearly complete, air-circuit, controlled in direction so as to obviate any tendency to reversal thereof by passing currents of air or other disturbances, thus insuring at all times
30 a perfect and effective combustion, as well as a properly-directed current of heated air, and also the adaptability of the improved stove for use with the gas-burners before named, or with oil-burners, at the pleasure of the operator. To accomplish these objects the invention involves certain novel and useful combinations or arrangements of parts, all of which
35 will be hereinafter first fully described, and then pointed out in the claims.

40 In the drawings, Figure 1 is a vertical section of a stove constructed in accordance with my improvements, and showing the gas-burners as applied in connection with an annular air-feeding conduit surrounding the flame-chamber. Fig. 2 is a sectional view, showing
45 a gas-burner of the ring or Argand pattern, which may be applied in the place of the flat burners indicated at Fig. 1; and Fig. 3 is a plan of a double-ring burner, likewise capable
50 of replacing the flat burners, all of which indicate that any preferred shape of gas-burner may be employed.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

The common form of gas-stoves employ what
55 is known as the "induction-burner"—that is, one in which the escaping gas induces the flow of the feed-air, and consequently the quantity of feed-air is made to depend upon the pressure of gas employed. In these stoves there is
60 no provision for preventing passing air-currents from diminishing the flow of the air which supports combustion, and especially from turning or drawing the flame down or out
65 of its normal direction—a fault particularly noticeable in all gas-burning stoves. When the flame is drawn down through or alongside of the burner, by exhaustion or by other reversal
70 of the feed-current, the efficacy of the stove is very much impaired, although smoking will not necessarily result, as in the case of oil-burning stoves. To obviate this and other objections named, I locate the burners B (one or
75 more) within the air-circuit inclosed by the stove. The burner shown in my present device is intended for consuming gaseous fuel only, and consists of a tight conductor for the
80 gas to the burner reservoir or chamber and attached burner-tips, corresponding in number, shape, and position to the burner-cones forming a part of the stove. These burner-tips terminate below said cones a sufficient distance
85 therefrom to insure the flow of the requisite quantity of air to the burner-tips and through the cones to render combustion perfect. This
90 burner is so constructed and arranged that gaseous material can be forced into the burner-chamber, from whence it is conducted by perfectly close conduits or burner-tips to the point
95 of combustion, slightly below the top of the air-deflectors, allowing no escape for the gas before reaching said point, as would be the case in the ordinary wick-tubes employed for burning hydrocarbon oil; and the stove is constructed substantially as follows:

A is the base having suitable feet and intended to support the superstructure. The gas-burners B are intended to rest upon that
100 portion of the top plate of the base which projects beyond ledge *l* in Fig. 1.

The burners may be mounted upon a gas-chamber, B', of suitable form and size, or the gas may be conducted through any conven-

ient pipes or attachments, so as to be easily located in the stove or removed therefrom. When the enlarged chamber B' is employed a pipe, B², is connected therewith, extending to the exterior of the stove, and serving to connect the chamber with the source of supply. This pipe B² might as well connect directly with the burners, as indicated in Figs. 2 and 3. Fig. 2 shows the branching arms B³ as they are ordinarily employed, and Fig. 3 shows a double-ring burner, in which the rings are connected by the short pipes B⁴. In this latter figure the gas enters the outer ring directly from tube B², and from this outer ring communicates with the inner ring through B⁴.

At M in Fig. 2 is the ordinary central air-deflecting button, which may also be employed in connection with the double-ring burner. C is a flame-chamber, provided at bottom with any air-deflecting burner-plate, c, slotted for the passage of the flame, and to correspond with the form of burner used; and D is an air-feeding conduit communicating with the under side of this burner-plate.

The flame-chamber is made to operate as a draft-chimney, so that an increased inward flow of feed-air will be caused commensurate with the amount of heat in the flame-chamber or with the quantity of gas being consumed. However the inlet for fresh air and outlet for products of combustion be arranged, the former should be provided with injecting-surfaces of any approved pattern, as at q and s, Fig. 1, compelling any impinging air-currents to enter the feed-air conduit, and the latter should be provided with any suitable form of ejector-surfaces, as at r, Fig. 1, which operate to so deflect impinging air-currents as to cause an eduction of the products of combustion, forms of which injectors and ejectors are clearly represented and have been heretofore fully described in separate patents granted to me, and applications for patents made by me, of which the dates will be given hereinafter. Either the injector referred to or the ejector, or both together, will insure an upward flow of feed-air through the deflecting burner-plate, and this in the proper direction for the support of combustion and the maintenance of the heated column of air and gases in a uniform direction toward the point where their heat is to be employed.

Over the flame-chamber is located the supports for the cooking-utensils or heating-drums. In the stove shown in Fig. 1 the vessels or drums to be heated are to be placed upon the top rim, or preferably upon the radial strips d d, provided for the purpose.

When the stove is constructed and arranged upon the principles explained, it is clear that no passing current of wind or air or disturbances of the stove can draw the flame downwardly through the slot in the deflecting burner-plate or diminish the supply of air by exhaustion.

The burners may be adapted for use in connection with coal-gas or with air carburetors

such as shown in my Patent No. 47,256, of April 11, 1865, or other forms of carburetors, or in connection with vapor-burners of any approved construction.

The base of the stove is shown to be in the form of an ordinary reservoir, and this form affords a convenient support for the detachable gas-burners.

The burners may be readily removed and replaced by the wick tubes of the oil-burning stove, so that the one stove answers for burning either gas or oil; but for all purposes of the gas-stove alone any form of base will of course answer all the required purposes. In Fig. 1 the gas-conducting tube is shown as provided with an ordinary stop-cock, as at h.

T is the bottom plate of the air-passage leading from the annular air-feeding conduit D to the burner-cones c, and t are short cones through which the tubes B are made to pass. The perforated plate b operates to distribute the incoming air-currents.

The slotted air-deflecting burner-plate may be made in the usual form—that is, conical above the burner, as in Fig. 1—or it may be made flat, either form answering all the requirements.

Reference to the drawings, Fig. 1, will show that the diameter of the annular air-channel or air-feeding conduit D is made considerably 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 the jacket is well removed from the chimney. This construction affords an extended area or capacity for the fresh-air conduit, and consequently a larger volume of air to feed the flame, which in passing down to the burners is not liable to become overheated 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 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 within the chimney.

In previous applications for patents on stoves, filed February 14, 1880, April 15, 1880, and April 16, 1880, I have shown the general arrangements of air or air and gas conduits herein selected for illustrating the principles of this invention, and I do not desire to be understood as making any special claim herein upon such arrangements or constructions except as in the relations hereinafter particularly mentioned. Of my patents hereinbefore alluded to, I refer especially to No. 227,535, of May 11, 1880, furnaces, and No. 226,580, of April 13, 1880, stoves. In my before-mentioned application filed April 15, 1880, (of which the serial number is 7,571,) I have shown a stove, cylindrical in form, having an air-jacket

well removed from the chimney, said jacket being provided with an annular injector and the chimney having a slotted burner-plate, all (as above stated,) arranged substantially as shown in the accompanying drawings, and selected for the purpose of explaining my present invention; and I reiterate the statement that I do not propose to claim herein anything shown, described, or claimed in my said application No. 7,571, or in any other previous application.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. In a stove of the character herein specified, the burner or burners for gaseous fuel, consisting of a continuous close-walled conduit or

conduits, provided with inlet and outlet for the gas, said outlet being located below the top of the air-deflectors or burner-cones, substantially as shown and described. 20

2. In a stove of the character herein specified, the burners for gaseous fuel, constructed substantially as shown, and provided with an inlet for gas at bottom, and tight burner-tips or 25 conduits leading therefrom, terminating at a point below the top of the burner-cones or air-deflectors, substantially as shown and described.

J. H. IRWIN.

Witnesses:

WORTH OSGOOD,
ARTHUR M. PIERCE.