

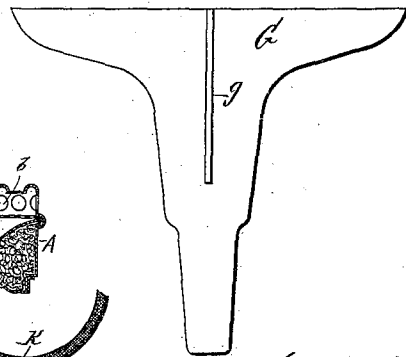
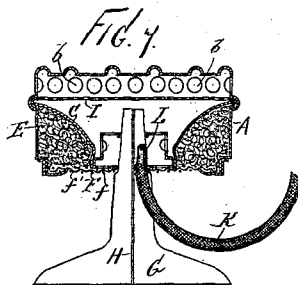
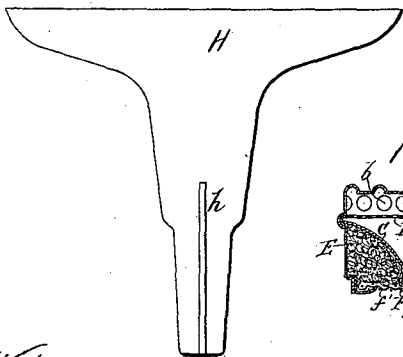
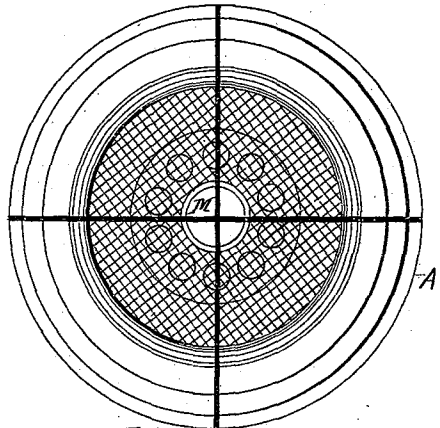
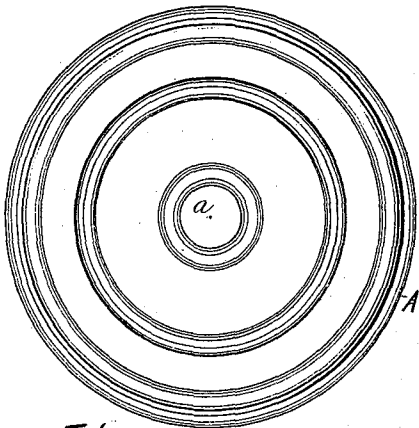
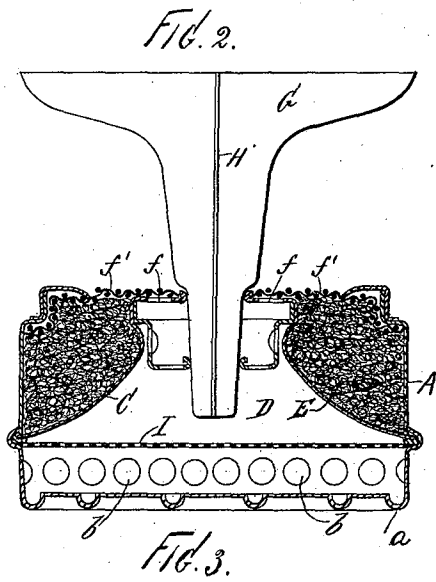
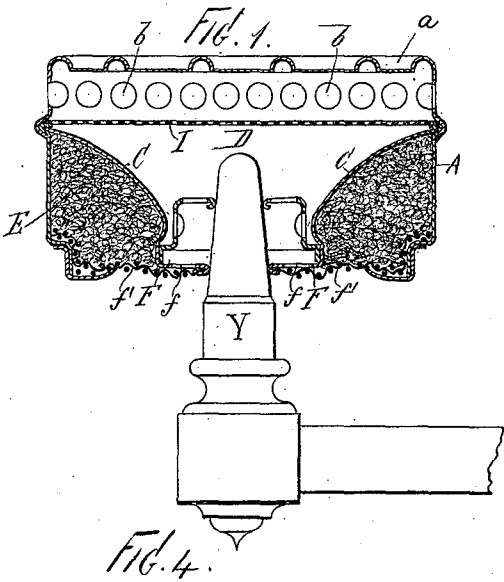
(No Model.)

W. P. HOUCHIN.

DUAL GAS AND SPIRIT STOVE.

No. 355,268.

Patented Dec. 28, 1886.



Witnesses:
 M. Maschulle
 Morris Marks

Inventor:
 W. P. Houchin
 By W. J. Townsend
 His atty.

UNITED STATES PATENT OFFICE.

WALDO P. HOUCHIN, OF NEW YORK, N. Y.

DUAL GAS AND SPIRIT STOVE.

SPECIFICATION forming part of Letters Patent No. 355,268, dated December 28, 1886.

Application filed February 1, 1886. Serial No. 190,464. (No model.)

To all whom it may concern:

Be it known that I, WALDO P. HOUCHIN, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dual Gas and Spirit Pocket-Stoves, of which the following is a specification.

My invention relates to certain improvements in pocket alcohol and gas stoves, which may be used separately or combined.

My invention is particularly adapted for use by travelers, in a sick-room, and in all cases where a portable stove, always ready for use and giving a quick and high degree of heat, is serviceable.

The device is so constructed that it may be used as a gas-stove or as a spirit-stove, as may be desired and found convenient, the base in the one case forming the top in the other case, for which reason I have named it a "dual gas and alcohol pocket-stove."

In the accompanying drawings, Figure 1 is a sectional view of my invention, showing it fitted on a gas-burner. Fig. 2 is a like view showing it inverted or as used for a spirit-stove. Fig. 3 is a top view of Fig. 2. Fig. 4 is a top view of Fig. 1, showing the top of the stove when used as a gas stove. Figs. 5 and 6 represent two flat pieces of metal with slits, to be used, when engaged, as a support to the stove when used as a gas stove and as a support to the boiler when used as an alcohol-stove. Fig. 7 represents the device when used as a gas-stove, supported upon a table by the engaging flat pieces of metal, with gas-tube connected with gas-burner.

Corresponding letters refer to similar parts in all figures.

A is an outer round casing, preferably of brass, having the top *a*, Fig. 4, of the same metal. A series of small holes, *b b*, is provided in the casing A, near the top *a*, as shown in Fig. 1. The box formed by the casing A is divided into two compartments, D and E, by the cup-shaped partition C.

F is the base of the stove when used as a gas-stove and the top when used as an alcohol-stove. The center of the bottom F is provided with a hole, M, for the gas-burner, which is surrounded by smaller holes, *f f*, through which, when used as a gas-stove, the air passes to the

compartment D, and through which, when used as an alcohol-stove, a current of air passes to the flame, as is hereinafter described.

A circular piece of wire-gauze or perforated metal, I, covers the chamber D and unites with the casing A just below the openings *b b*.

When used as a gas-stove, as illustrated in Fig. 1, the gas passes from the burner Y into the chamber D, where it is mingled with the air which passes to the same chamber through the openings *f f*. The gas and air commingled then pass through the wire-gauze I, and are then ignited at the openings *b b*.

As an alcohol-stove, as illustrated in Fig. 2, the top *a* is used for the base. The chamber E is filled with asbestos or other suitable substance. The alcohol is poured into the chamber E, through the annular opening *f'*, until the filling or packing in the chamber is saturated.

Any substance may be used for a filling or packing in the chamber E, which will act as an absorbent of the alcohol, and give off a vapor. The annular opening *f'* into the chamber E is covered with wire-gauze, which holds the absorbent filling in place, and through which the alcohol vapor passes before ignition.

An important feature of my invention, when used as an alcohol-stove, consists of the holes or passages *f f*, which permit a current of air to pass from an opening or openings in or near the base of the lamp to the flame, whereby the volume of the flame and the intensity of the heat are greatly increased.

Figs. 5 and 6 represent two flat pieces of metal, with slits *g* and *h* so arranged that the metal plates will engage with each other and form a +-shaped support, as shown in Figs. 2 and 3, and so constructed at the smaller end as to fit closely in the opening M, occupied by the gas-burner, when used as a gas-stove. This support serves to hold any vessel that may be used in connection with the stove. These same supports G and H are also used as the base or standard to support the stove when used as a gas-stove, (see Fig. 7,) and when it is more convenient to rest the gas-stove upon a table, in which case the gas is led from the burner by a suitable tube, K, terminating in a metal point, L, which is inserted in the hole M in one of the angles of the support G and H.

I do not confine myself to a support formed of the metal plates G and H; but any device

may be used which will act as a sufficient support and at the same time permit the introduction of the gas into the hole M—as, for example, a tube fitting closely into the hole M
5 and terminating above the table sufficiently high to permit the introduction of the gas into its lower end, and having three or more legs branching to the table.

I do not claim the combination of the holes
10 *b b* and *ff* and the gas-burner, as I am aware that such combination is old.

What I do claim and desire to secure is—

1. In a dual gas and alcohol stove, the combination of the casing A, partition C, top *a*,
15 provided with holes *b b*, base F, having the passages *ff* and annular opening *f'* and the central opening, M, and the absorbent filling in the chamber E, all substantially as described, and for the purposes set forth.

2. The combination of a spirit-stove provided with the central opening, M, with the supporting device consisting of metal plates G and H, having slits *g* and *h*, substantially as described, and for the purposes set forth. 20

3. The combination of a combined gas and
25 spirit stove provided with the central opening, M, with the supporting device consisting of metal plates G and H, having slits *g* and *h*, substantially as described, and for the purposes set forth. 30

Signed at city of New York, in the county of New York and State of New York, this 23d day of January, A. D. 1886.

WALDO P. HOUCHIN.

Witnesses:

HENRY H. A. RONNER,
DUBOIS B. FRISBEE.