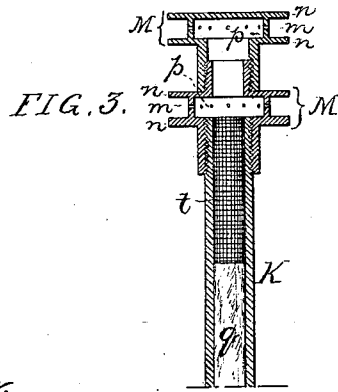
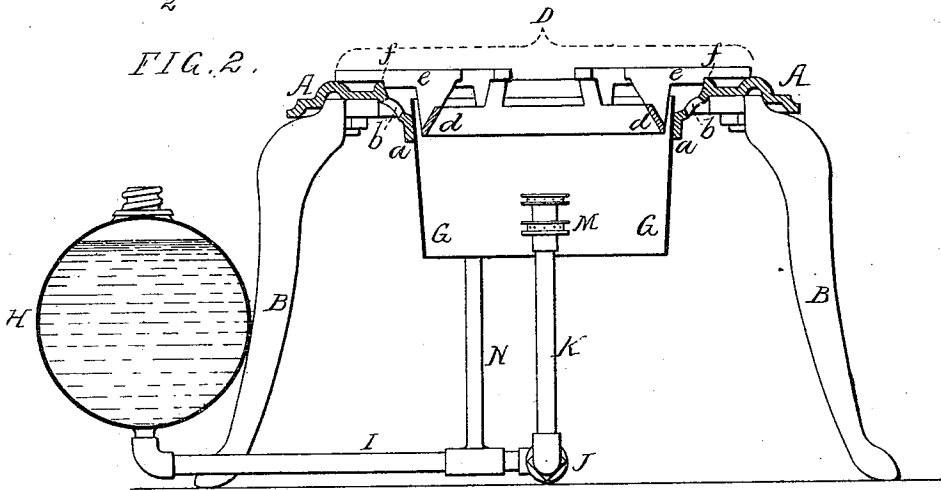
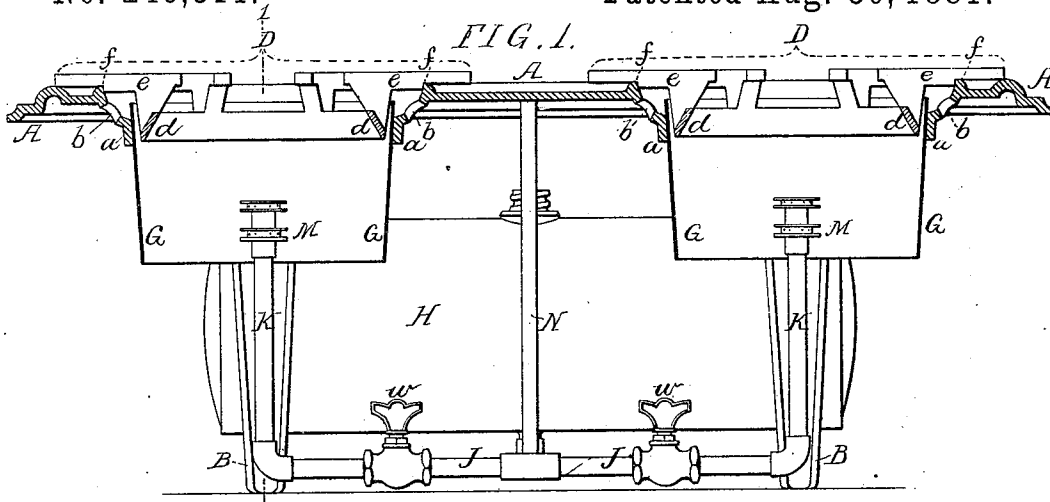


J. P. HAYES.  
VAPOR BURNING STOVE.

No. 246,311.

Patented Aug. 30, 1881.



WITNESSES

*J. M. Deemer.*  
*Henry Howson, Jr.*

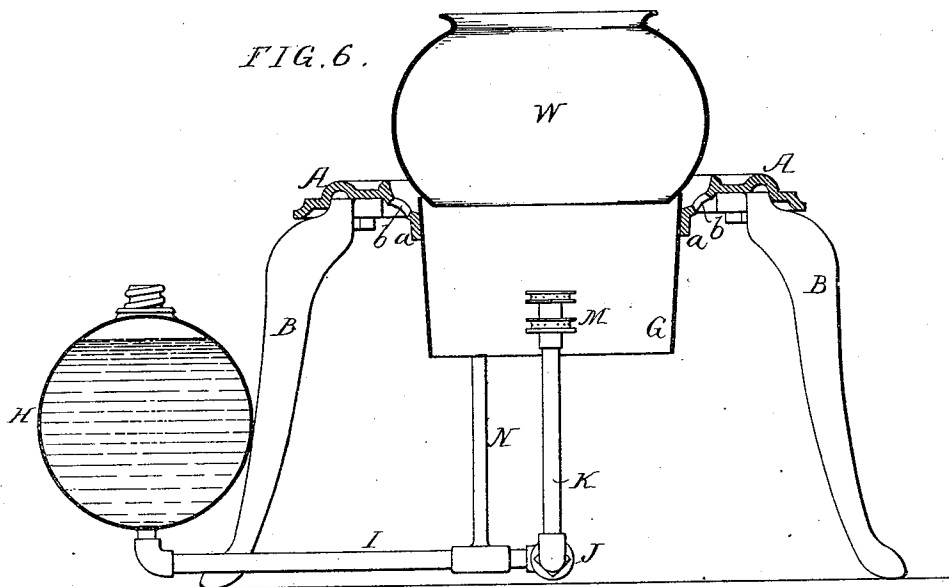
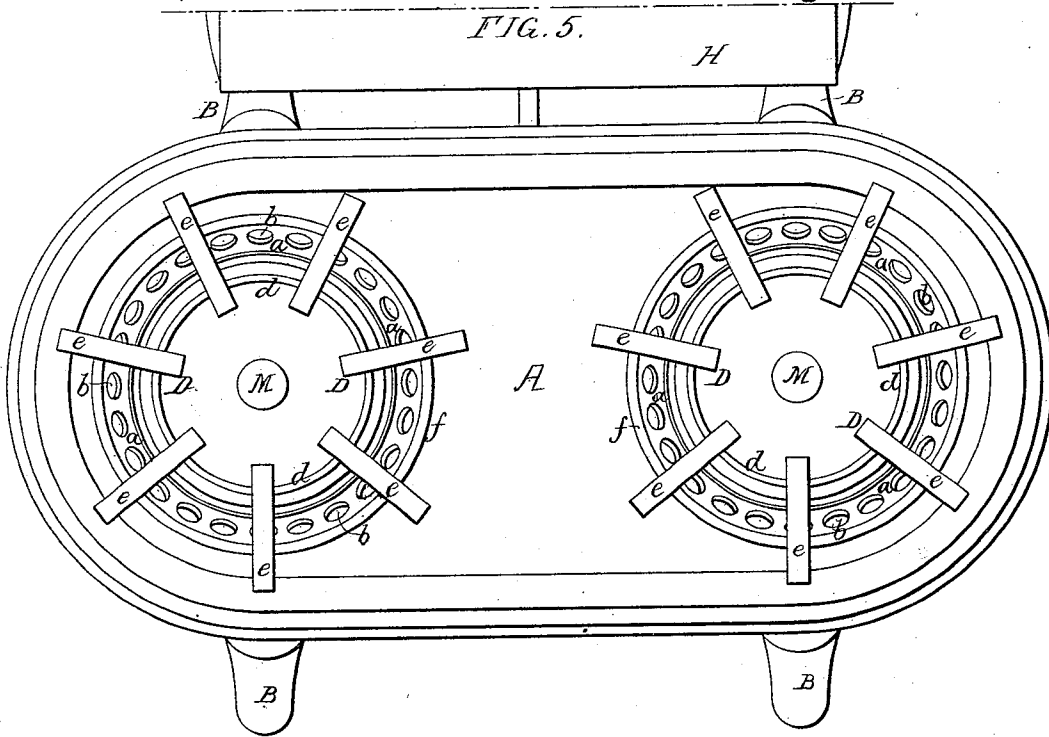
INVENTOR

*John P. Hayes.*  
by his Attorneys  
*Howson and Son*

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# UNITED STATES PATENT OFFICE.

JOHN P. HAYES, OF PHILADELPHIA, PENNSYLVANIA.

## VAPOR-BURNING STOVE.

SPECIFICATION forming part of Letters Patent No. 246,311, dated August 30, 1881.

Application filed August 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. HAYES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Vapor-Burning Stoves, of which the following is a specification.

My invention relates to stoves in which the vapor of naphtha or of other volatile hydrocarbons is burned; and the objects of my invention are, intensifying the heat for culinary purposes, to obtain additional warmth when necessary in the apartment containing the stove, to prevent the choking of the burner, and to so construct the stove with its reservoir and burners that simplicity in construction is assured and convenience in taking the stove apart and putting it together attained.

In the accompanying drawings, Figure 1, Sheet 1, is a sectional elevation of my improved vapor-burning stove; Fig. 2, a transverse section on the line 1 2, Fig. 1; Figs. 3 and 4, a vertical central section and sectional plan of the jet-burner; Fig. 5, Sheet 2, a plan view of the stove; and Fig. 6, a transverse section, showing a modification of my invention.

The permanent frame of the stove consists of a plate, A, supported by suitable legs, B. The plate A has, in the present instance, two circular openings, and on the edge of each opening, and extending below the plate, is an annular flange, *a*, in which are a number of openings, *b*. A detachable spider, D, is arranged over each opening, the said spider consisting of a ring, *d*, and a number of radial arms, *e*, which rest on the plate A, the arms and ring being preferably cast in one piece, and the concentricity of the ring *d* of the spider with the opening in the plate being assured by shoulders on the arms of the spider fitting within an annular rib, *f*, on the plate.

G is a reflector, which may be made of cylindrical form, but which I prefer to make with a slight taper, and this reflector fits snugly within the flange *a*, so as to extend to about the distance shown below the plate G. The cheapest material of which the reflector can be made is ordinary tinued plate, which presents the desired planished surface to the flame of the burner. The upper edge of the reflector G

does not extend above the plate A, and thus does not interfere with the application of the spider D.

A reservoir, H, is attached to the stove in any suitable manner described hereinafter, and a pipe, I, extends from the lower portion of the reservoir to two branch pipes, J J, each of which communicates with one of the burner-tubes K, and each branch pipe is furnished with a suitable cock for regulating the flow of burning-fluid. Two jet-burners are, in the present instance, attached to each burner-tube; but there may be but one burner, or more than two burners, according to the extent of flame and intensity of heat desired. Each burner consists of a hollow disk, M, containing a chamber, *p*, from which the vapor generated passes through a number of perforations in the periphery *m* of the disk, and between two annular horizontal flanges, *n n*, which project from the disk, one near the upper side and the other near the under side of the same.

It may be remarked here that I have adopted this jet-burner because it gives the usual satisfactory results. I however do not claim this burner *per se*.

If one burner only is required, the top of the disk should be closed; but if an additional burner is necessary it may be screwed or fitted onto or into a tubular projection of the lower burner, in the manner shown in Fig. 3, and in like manner a third or even a fourth burner may be added.

Each burner-tube K contains an ordinary fibrous wick, *g*, above which is a wick, *t*, of metal, this wick being preferably made by coiling a strip of wire-gauze to a cylindrical form, and this metal wick terminating at the chamber *p* of the lowest burner. This incombustible wick is of special service in connection with a jet vapor-burner, as it prevents the choking of the orifices through which the vapor passes. At the same time it retains the high degree of heat imparted to it, and presents contracted and intricate passages, through which the oil must pass, the effective vaporization of the oil before it reaches the burner being thus insured.

It is preferable to so locate the reservoir H that the fluid therein shall not reach the chamber *g* of the lowest burner.

I have found in practice that the reflector G materially enhances the heat derived from the flame of the burning vapor, and consequently that economy in the consumption of the burning-fluid results from the adoption of this reflector. I prefer to make the reflector of such dimensions that it can be combined with the ordinary glass globe, W, of a gas-burner, as shown in Fig. 6, the globe being, in the present instance, inverted, so that a portion of it shall be contained within the upper edge of the reflector.

I combine the globe with the reflector whenever it may be necessary to obtain additional warmth in the room which contains the stove, and special stoves for heating purposes solely—such as for heating cars, offices, and other apartments, and at the same time illuminating the same—may be made by combining the reflector with the stove.

A simple rod, N, forms the sole connection of the reservoir and burning-tubes with the plate A, the rod being secured at its lower end in any suitable manner to the pipe, and its upper end being screwed or bolted to the said plate A, so that the reservoir, burners, and

connecting-pipe can be readily detached for packing with other parts of the stove in comparatively small compass for transportation.

I am aware that the burner of a gas-stove has been combined with a surrounding tube, extending both above and below the supporting-plate, and hence I do not claim, broadly, the combination of the burner with a surrounding tube; but

I claim as my invention—

1. The combination, in a vapor-burning stove, of the plate A and burner M below the same, with a reflector, G, surrounding the burner and adapted to an opening in the plate, above which the reflector does not extend, as set forth.

2. The combination, in a vapor-burning stove, of the reflector G, the burner, and the globe W, substantially as described.

3. The combination of the plate A, the reservoir H, the burner or burners, and connecting-tubes with the rod N, detachably secured to the said plate, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN P. HAYES.

Witnesses:

H. R. SHULTZ,

HENRY HOWSON, Jr.