

(No Model.)

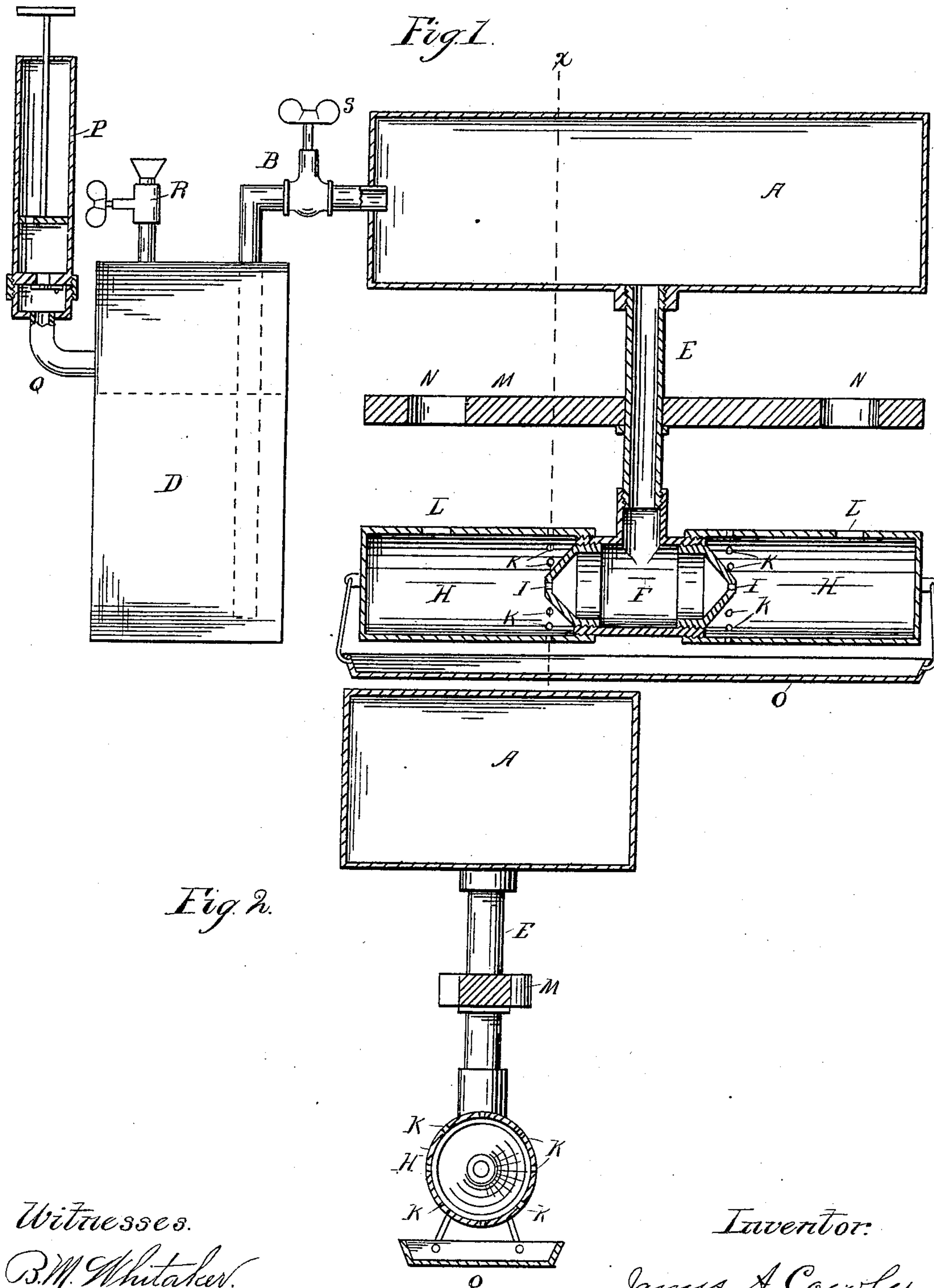
2 Sheets—Sheet 1.

J. A. COWLES.

OIL VAPORIZER AND BURNER.

No. 390,757.

Patented Oct. 9, 1888.



Witnesses.  
B. M. Whitaker.  
J. S. Hopkins.

Inventor:  
James A. Cowles.

(No Model.)

2 Sheets—Sheet 2.

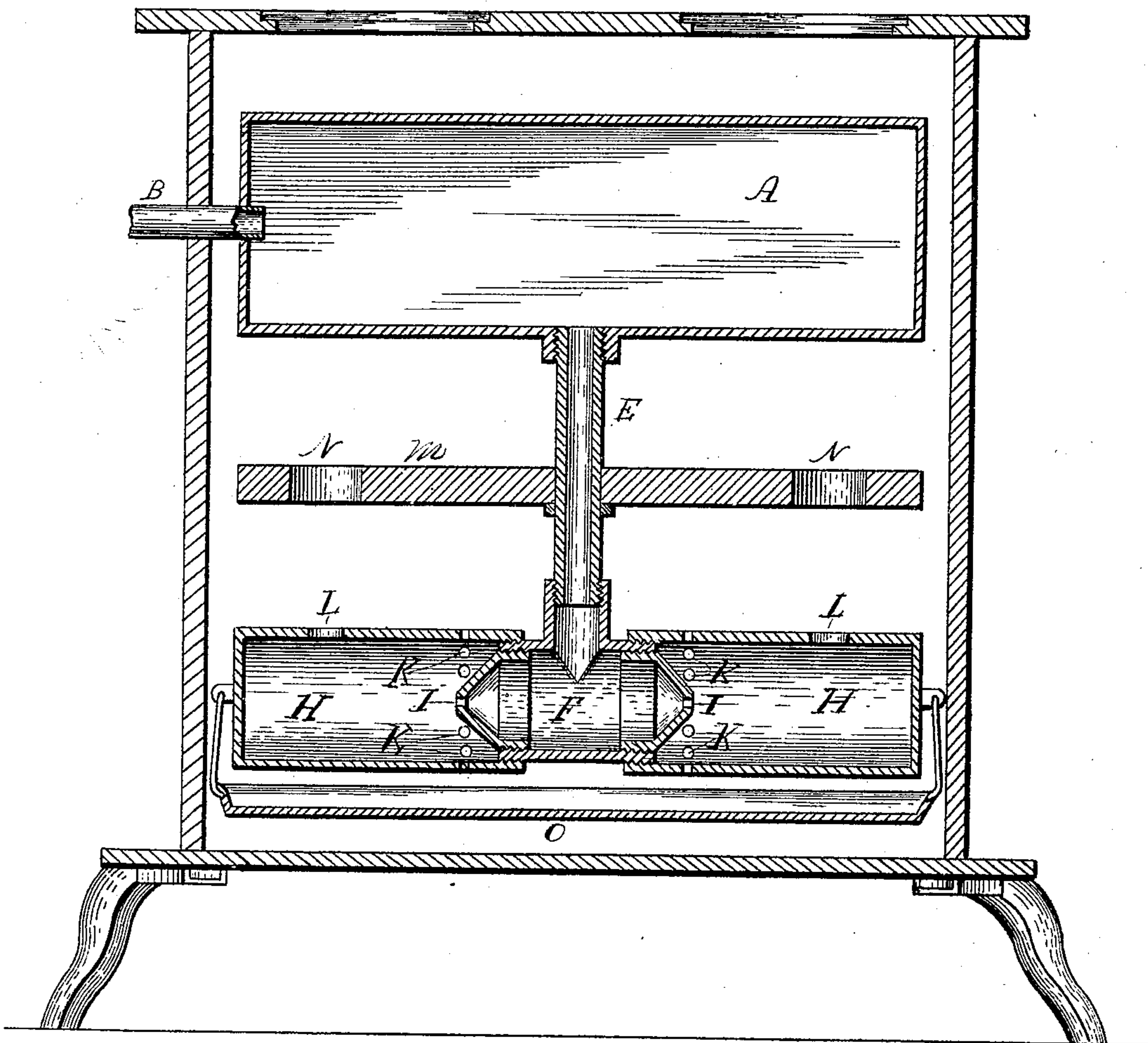
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*Fig. 3.*



*Witnesses—*

*Wm. H. Scott.*  
*D. C. Reinohl.*

*Inventor,*

*Jas. A. Cowles*



# UNITED STATES PATENT OFFICE.

JAMES A. COWLES, OF CHICAGO, ILLINOIS.

## OIL VAPORIZER AND BURNER.

SPECIFICATION forming part of Letters Patent No. 390,757, dated October 9, 1888.

Application filed March 12, 1888. Serial No. 266,997. (No model.) Patented in Canada March 9, 1888, No. 28,652.

*To all whom it may concern:*

Be it known that I, JAMES A. COWLES, a citizen of the United States, residing in the city of Chicago, in the State of Illinois, have made certain new and useful Improvements in Oil Vaporizers and Burners, (for which I have secured Letters Patent in Canada, No. 28,652, dated March 9, 1888,) of which the following is the specification.

In using common kerosene-oil as a fuel for ordinary purposes the greatest difficulty encountered is to provide the vapor with sufficient air to furnish the requisite amount of oxygen to produce a flame free from smoke and odor.

The object of this invention is to provide a means whereby the requisite amount of air will be brought in contact with the vapor.

Figure 1 is a longitudinal section. Fig. 2 is a cross-section through line *x* of Fig. 1. Fig. 3 is a sectional view of a stove, showing the burner in the fire-box.

A is a retort connected by means of the pipe B to the tank D. The pipe B extends to within a very short distance from the bottom of the tank, as shown by the dotted lines. From the retort A extends downwardly the single pipe E, and at the lower end connects with the horizontal pipe F, each end having the small apertures I I.

H H are air-chambers, within which are the ends of the pipe F, provided with the small apertures I I. The air-chambers are made of pieces of gas-pipe fastened to the ends of pipe F. The outer ends of these gas-pipes are closed. In the end of each air-chamber nearest the pipe F is a series of apertures, K K, of sufficient number and size to admit all the air necessary.

L L are holes in the upper part of the pipes forming the air-chambers.

M is a bracket supported by the central pipe, E. Extending to the right and left and near each end are the holes N N, directly over the apertures L L in the air-chambers.

O is the kindling-pan below the air-chambers, and suspended therefrom by any suitable means.

P is a force-pump for forcing air into the

tank D, to which it is connected by the pipe Q.

R is a pipe having a valve, through which the tank is filled with oil, and S is a valve in pipe B to cut off and regulate the flow of oil into the retort A.

Oil is poured into the tank through the pipe R to a sufficient amount—say about two-thirds full. By means of the force-pump P air is forced into the tank through the pipe Q above the oil. This pressure of air forces the oil up into the pipe B. In first starting, a little oil is admitted into the retort A, which flows down through pipe E and out at apertures I I into the pan O, where it is ignited. The ascending flames heat the retort A, which causes vapors to form therein. The valve S is now turned on. Oil under pressure flows into the retort, immediately is converted into vapor, and passes out through apertures I I into air-chambers H H under pressure, thence out at openings L L, at which points it is ignited. The flames pass up through tubular holes N N and impinge against the bottom of the retort, which constantly keeps it hot. As the vapor escapes through apertures I I into the air-chambers under pressure, a vacuum is formed in each chamber, which is instantly filled by air rushing in through the holes K K, where it mingles with the vapor, thus supplying the vapor with oxygen, causing the vapor to burn with purity and free from odor. As the flame rushes up through the tubular holes N N in bracket M additional air is gathered into the flame and a further combustion is promoted. The pressure of air in the tank is renewed from time to time as required.

This burner is placed in the fire-box of any cook or heating stove, and the pipe B passes through the wall or side of the stove. The flame impinging against the bottom of the retort causes the retort to discharge double duty—viz., vaporize the oil and spread the flame, which latter duty is quite necessary in preventing the flame from impinging against the top of the stove or bottom of the kettles.

I claim—

The combination, with the vaporizing-retort, of means for supplying the same with oil, the central descending pipe leading from the re-

tort, horizontal pipes provided with nozzles at  
ends thereof, and mixing-chambers at each  
end of the nozzle-pipe, each chamber being  
provided with a hole in the upper part thereof  
5 and a series of air-supply holes near the ends  
where they are attached to the horizontal  
pipes, the bracket supported by the central

descending pipe provided with holes, all constructed and arranged substantially as described.

JAMES A. COWLES.

Witnesses:

THOS. S. HOPKINS,  
E. H. BOND.