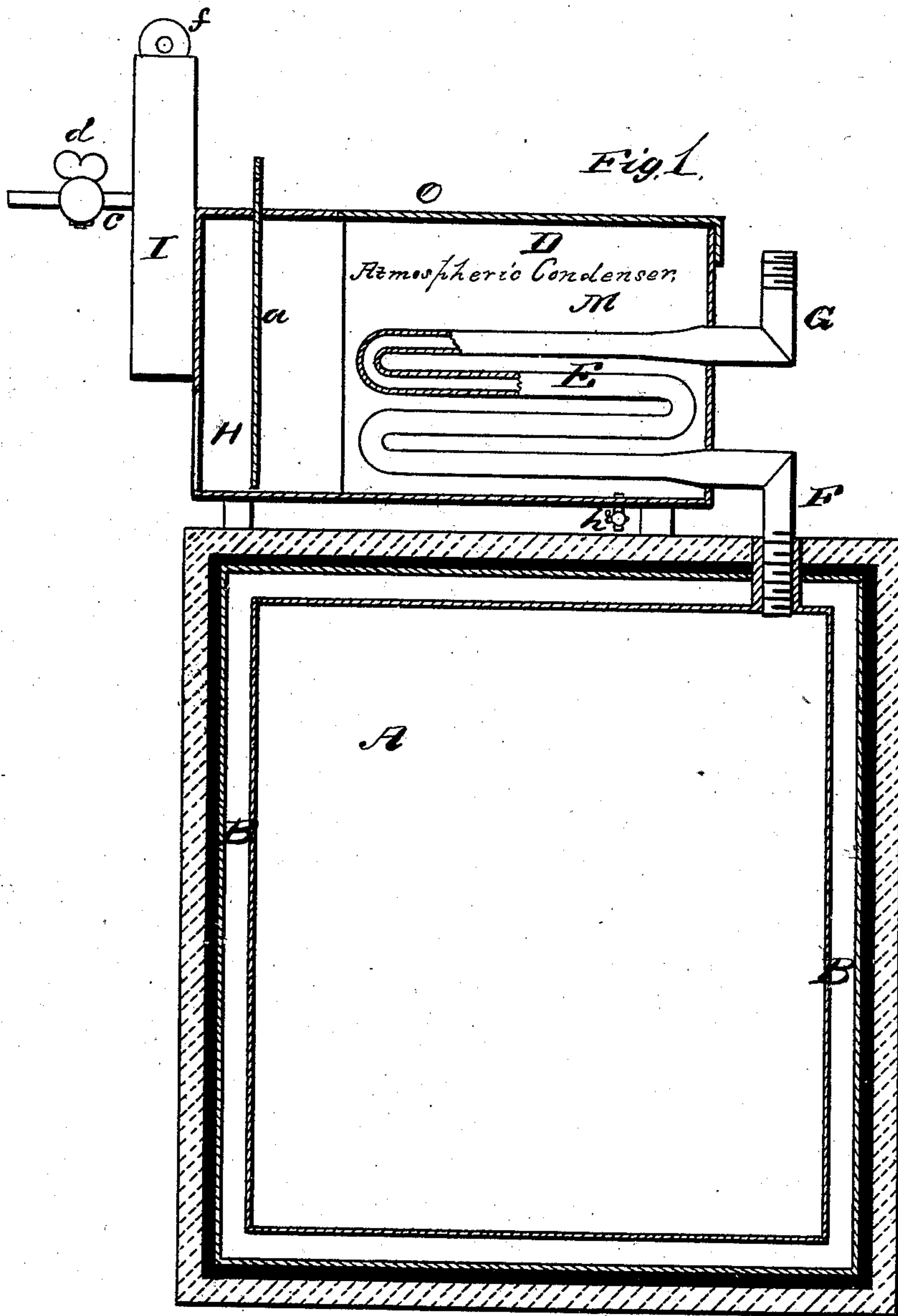


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Plastic Jacket and Condenser for Carbureters.  
No. 198,150. Patented Dec. 11, 1877.



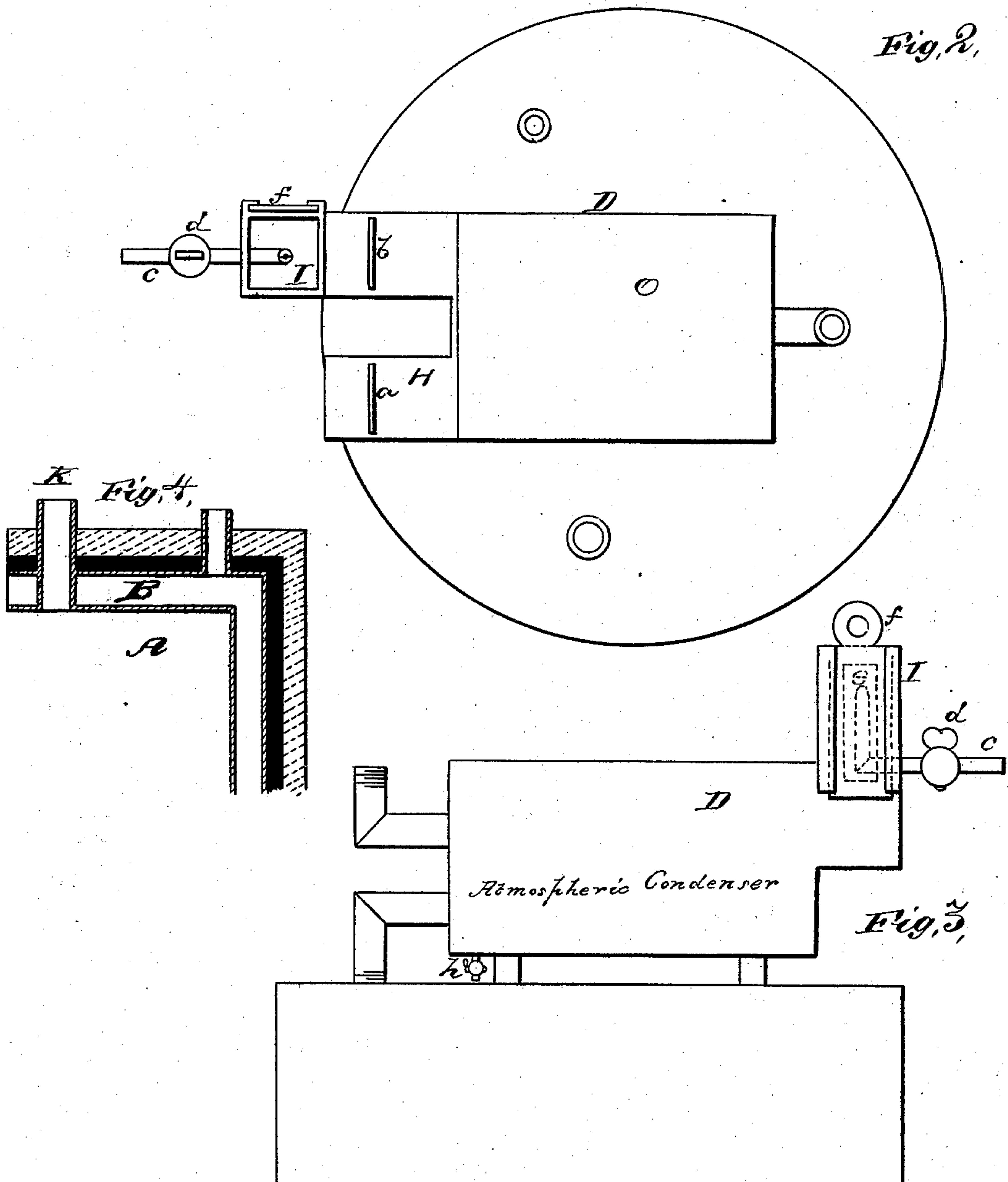
WITNESSES  
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# UNITED STATES PATENT OFFICE.

ALONZO W. PORTER, OF NEW YORK, N. Y.

## IMPROVEMENT IN PLASTIC JACKET AND CONDENSER FOR CARBURETERS.

Specification forming part of Letters Patent No. **198,150**, dated December 11, 1877; application filed December 1, 1877.

*To all whom it may concern:*

Be it known that I, ALONZO W. PORTER, of New York, in the county of New York and State of New York, have invented a new and valuable Improvement in Plastic Jacket and Condenser; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a central vertical section of my plastic jacket and condenser, and Fig. 2 is a plan view of the same. Fig. 3 is a side elevation thereof, and Fig. 4 is a detail sectional view.

This invention relates to details in the construction of that class of machines used for carbureting air and gas for illuminating purposes, the object being twofold—first, to maintain an equable temperature of the water in the outer case or jacket surrounding the carbureting-compartments and the fountain or holder of hydrocarbon spirits against the encroachment of the temperature of the surrounding air; secondly, to provide a means for condensing all excess of vapor from the gas or air when carbureted.

My invention, then, consists, first, in applying to the outer casing or jacket of a carbureter or gas-machine a non-corrosive coating of asphalt or other non-corrosive substance, and covering the same with a non-conducting plastic over-jacket.

It also consists in the peculiar construction and application of a condenser for condensing out of the air or gas any excess of vapor which may be temporarily mixed therewith in consequence of too high a temperature or too light gravity of the common spirits used in the machine.

In the accompanying drawings, A represents a carbureting-vessel, which may be provided with any preferred kind of compartments, also with a compartment for containing the hydrocarbon spirits, with suitable inlet and outlet passages for air or gas into and to the burners, and preferably surrounded by a jacket, B, containing water, to be kept at a

uniform temperature by means of a hydro-thermostat regulator.

I find in practice that any attempt to maintain a uniform temperature of the carbureter, so arranged or otherwise, is seriously and fatally interfered with by the surrounding air during those periods in which the machine may be at rest, owing to the contents of the vessel or carbureter becoming equalized with the temperature of the external air, thereby raising the temperature of the hydrocarbon spirits in the machine too high, and causing too rapid evaporation of the hydrocarbon spirits, supercharging the air or gas with the vapor of the spirits, causing two bad effects—to wit, smoke and precipitation of the excess in the distributing-pipes of the building.

These phenomena are of short duration, and generally confined to the first thirty minutes of the working of the machine; yet the result is damaging, and may be dangerous, and in practice must be avoided. Owing to the coldness of the water-jacket, caused by rapid evaporation of the hydrocarbon spirits in the carbureter, this outer case or jacket is liable to condense the moisture in the surrounding air, which will collect upon the surface of the jacket, thereby causing oxidization of the metal forming the outer jacket. This damaging result is increased by the application of a plastic jacket to the metal unless it be provided against.

To prevent these evil results, I prepare the outer surface of the jacket B with a coating of asphalt or other non-corrosive coating, to prevent the oxidization of the metal above referred to. Over this coating I place or apply a thick over-jacket of plastic non-conducting material, which may be gypsum, kaolin, and hair, or any other suitable non-conducting material, to keep out the heat of the surrounding air, thereby enabling me to secure a more equable temperature for the contents of the machine in overheated rooms, and in different climates and seasons.

Also, as above stated, I find in practice that in excessive charging of the air or gas with the vapors of the hydrocarbon spirits, caused by too high temperature or too light gravity of the spirits, and passing the gas, when



so charged, into distributing-pipes, which may be many degrees colder than the point at which the carbureting is effected, precipitation of the excess or condensation takes place in the distributing-pipes. This it is necessary in practice to guard against absolutely. To accomplish this I have placed between the carbureter and the "riser" a box or compartment, D, which I call an "atmospheric condenser." In this box is placed a series of horizontal flattened folds, E, with intermediate passages between them for the circulation of air between and around the folds. At one end of the folds is attached a pipe, F, through which the gas or air from the carbureter is passed to the folds. At the other end of the folds is attached another pipe, G, for conducting the gas to the riser, and thence to the burner.

To the rear end of the condenser-case is fixed a large pipe, H, communicating with the outdoor air, and is provided with a cut-off, *a*, to open and close the communication.

To the upper part of the rear end of the condenser-case is an outlet pipe or flue, I, which is also provided with a cut-off, *b*. The latter pipe, I, may also communicate with the outer air, or with the compartment air in which the machine is placed. In this flue I is arranged a gas-burner, which is supplied by means of the small gas-pipe *c*, having regulating-cock *d*. The burner is lighted through the aperture *e*, covered by a slide, *f*.

The object of flattening the folds is to gain greater condensing-surface for the gas within a small space. A coil of pipe or sinuous passages may be substituted for the folds when desired.

A space, M, is left above the folds in the box D, (see Fig. 1 of the drawings,) to receive ice or any freezing-mixture, if it should be desirable.

The letter O designates a hinged cover or lid to the box, and may be provided with a lock and key. In case ice should ever be used to reduce the temperature of the folds, the drainage of the melting ice is discharged by the waste-water pipe *h*.

In operation, the hydrocarbon spirits are poured through the filling-pipe K into any suitable holder. The gas passes through an inlet-pipe (not shown) into the carbureting-chambers, and passes over the hydrocarbon spirits contained therein, and takes up the vapors thereof by any of the known processes.

The gas, after being carbureted, passes out of the carbureting-chambers into the condensing-folds, where the excess of hydrocarbon fluid is precipitated by contact with the folds of said condenser. The condensation formed from the gas is returned to the carbureting-chamber through the pipe.

To operate the atmospheric condenser, the cut-off *a* and *b* being opened, and the gas-burner lighted, a draft is created from the outdoor air into and through the pipe H, and into the box D between and around the folds, and, finally, upward through the flue I, from whence it will escape. The folds of the condenser may be thus kept at the same temperature of the outdoor air, and as no distributing-pipe can be colder than the outdoor air, it necessarily follows that the gas passing through the folds can find no colder place beyond the condenser; consequently no further precipitation can take place in the distributing-pipes.

By means of this atmospheric condenser, so arranged, or its equivalent devices, and the plastic over-jacket hereinbefore described, I am enabled, in practice, to secure a more uniform and satisfactory result, with greater economy and safety in the manufacture of air-gas for country dwellings and buildings, and in the carbureting of street-gas for illuminating purposes than has heretofore been obtained by devices of which I have any knowledge.

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

1. In combination with a carbureter, a surrounding case or jacket having its outer surface covered with a non-corrosive coating, and supplemented with a plastic over-jacket, substantially as and for the purpose set forth.

2. In combination with a carbureter, an atmospheric condenser having a cold-air pipe to conduct the air from the outside of the building to the condensing-case, and a draft-flue, I, having a burner to accelerate the inflow of cold air so introduced, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ALONZO W. PORTER.

Witnesses:

J. FRED. ACKER, Jr.,  
JOS. B. LOOMIS.

1.750  
wood.