(No Model.)

M. W. ILES.

CARBURETOR.

No. 522,418. Patented July 3, 1894.

FIG. 1.

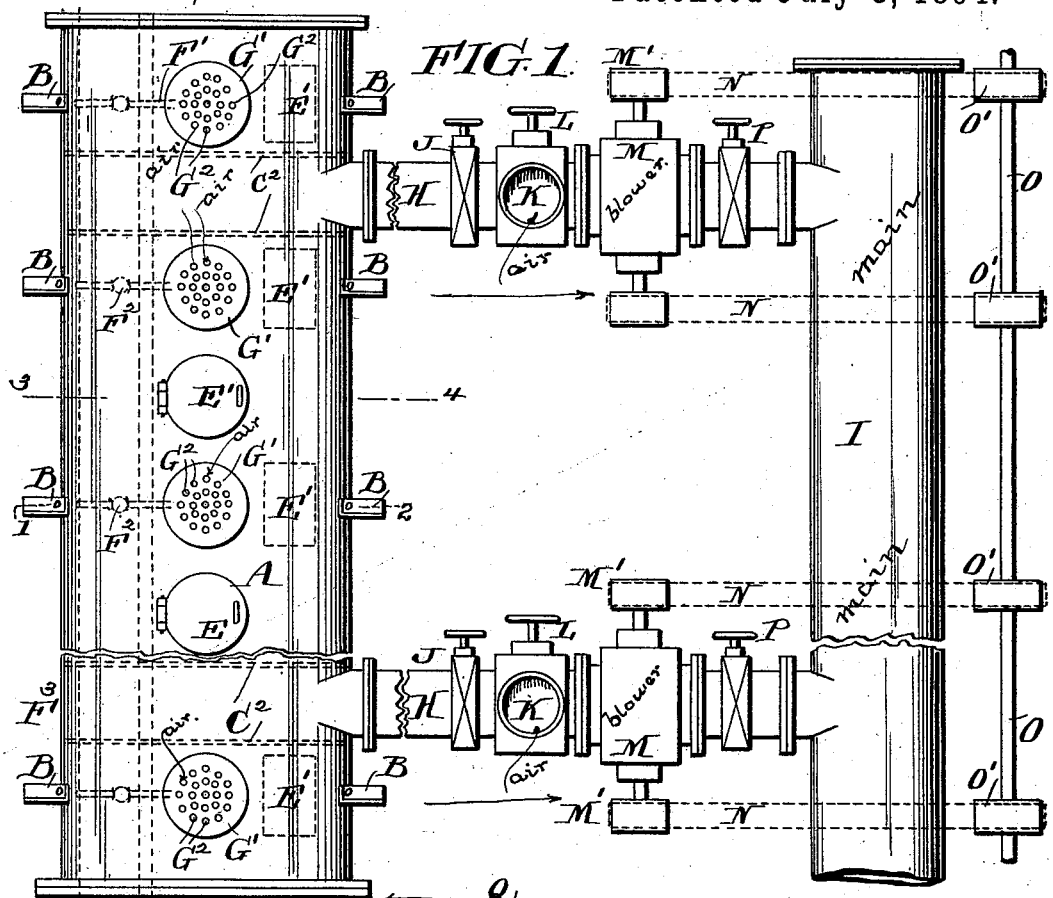


FIG. 2.

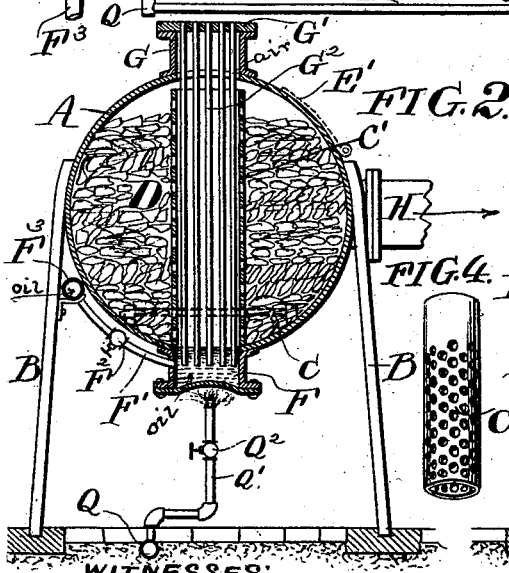
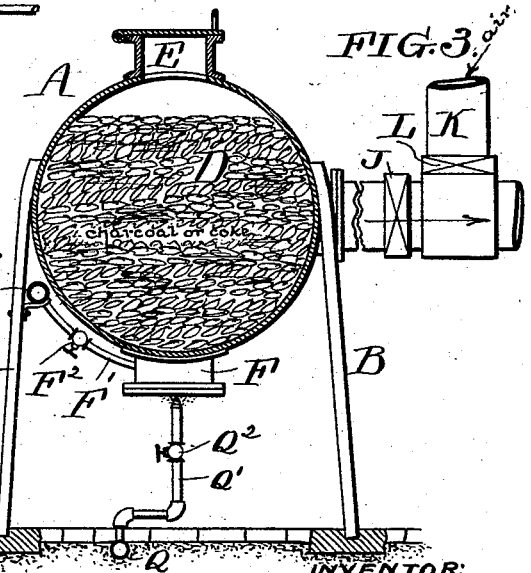


FIG. 4.

FIG. 3.



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MALVERN W. ILES, OF DENVER, COLORADO.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 522,418, dated July 3, 1894.

Application filed September 12, 1892. Serial No. 445,721. (No model.)

To all whom it may concern:

Be it known that I, MALVERN W. ILES, of Denver, county of Arapahoe, State of Colorado, have invented a certain new and useful Apparatus for Carbureting Air, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to apparatus for carbureting air and has for its object to provide carbureting devices which can be used to carburet large bodies of air, and in which the danger of fire and explosion will be very small.

My apparatus is especially, though not exclusively, adapted for use in connection with metallurgical furnaces, the carbureted air being introduced into the various furnaces where its presence is desired.

The nature of my invention will be best understood as described in connection with the drawings in which it is illustrated, and in which—

Figure 1 is a plan view of the apparatus; Fig. 2 a cross-section on the line 1—2 of Fig. 1; Fig. 3 a cross-section on the line 3—4 of Fig. 1, and Fig. 4 a perspective view of a detail of construction.

A indicates the carburetor chamber which I prefer to construct in the form of a large sheet metal pipe supported above the ground by supports B as indicated. The carburetor chamber is filled, or nearly filled with some absorbent material, preferably charcoal or coke, indicated at D. This material can be introduced into the carburetor chamber in any convenient way.

I have indicated at E E man-holes at the top of the chamber A for the introduction of the charcoal, and at E′ I have indicated in dotted lines doors provided for a similar purpose in the sides of the chamber.

Situated in the chamber A, and preferably at the bottom thereof, I provide oil chambers F which are fed with oil from time to time as may be necessary by any convenient device, as shown, a pipe F′ leading to each chamber F from an oil supply pipe F^3, valves F^2 being provided in pipes F′ for controlling the admission of oil to the oil chambers.

Openings G extend through the sides of the chamber A, preferably as shown above the oil chamber F. These openings are closed by a cast iron plate G′, in each of which plates are secured a group of pipes G^2 opening to the atmosphere at the top of the plate, and with their lower ends immersed in the oil in chambers F. In order to prevent the charcoal or other absorbent from falling into the oil chamber F, I provide shields arranged so that they will keep the solid matter from falling into the oil chambers, and at the same time permit the free escape of air from the oil chamber into the body of the carburetor. Preferably I use for this purpose a pipe C′ Fig. 4 which rests upon the bottom of the carburetor surrounding the oil chamber and extends up around the group of pipes G^2, the walls being perforated so as to permit the free exit of air. The same purpose can be served by providing a grating such as is indicated at C, Fig. 2, and which may extend over each oil chamber, and may also be extended partly or entirely along the whole length of the carburetor. The perforated pipe C′, however, is preferable because it keeps the charcoal or other absorbent material out of contact with the pipes G^2, permitting their ready insertion and removal, and also because the carbureted air arising from the oil chambers is by means of the perforations in the pipe C′ more evenly distributed through the charcoal filling.

H H are conduits leading from the carburetor to the delivery pipe, I; any desired number of these conduits may be employed, but I prefer in all cases to use at least two. As shown these conduits are protected from the danger of being choked by the charcoal filling of the carburetor by means of a grating C^2 which holds the charcoal away from that part of the carburetor chamber into which the conduits open.

J J indicate valves by which conduits H can be opened or closed at will. These valves are situated between the carburetor and valves L L arranged to permit the entrance of air through pipes K to conduits H at will; and these valves, as well as the valves J, are situated between the carburetor and blowers

M M which are so arranged that when in operation they will suck their supply either through the carburetor or through the valves L when open, and force it into the delivery pipe I as shown.

M′ indicates the pulley wheels by which the blowers are driven; N N indicating belts connecting the pulleys M′ with pulleys O′ on a power shaft O.

P P indicate valves by which the conduits H can be opened or closed between the blowers and the delivery pipe.

In cold weather, or when using very heavy oils, it is advisable at times to heat the oil in the oil chambers; for this purpose I lead a pipe Q from a convenient point in the delivery pipe, and from the pipe Q I lead burner pipes Q′ beneath each oil chamber F provided with valves Q^2 by which the gas can be regulated at will.

The operation of the apparatus above described is as follows: The chambers F being filled with oil and the charcoal filling D impregnated with oil, as by pouring a quantity through the doors E′ into the carburetor chamber, the blowers are set in operation, the valves J and P being opened and the valves L closed. The action of the blowers suck air down through the pipe groups G^2 into the oil chambers F. The air bubbles up through the oil chambers and then passes into the carburetor chamber whence it is drawn through the conduits H and forced by the blowers into the delivery pipe I which leads to the furnaces (not shown). It is obvious of course that there is no tendency to force combustible explosive gas out of the carburetor, a leak in which permits the entrance of air, but not the exit of explosive gas. This feature is of course of great importance It will also be seen that the apparatus is simple in construction, easily put together and arranged in operation, and easily extended to any desired degree by simply increasing the length of the carburetor chamber and the number of oil chambers situated within it.

Where it is desired to force air, not impregnated with oil, into the delivery pipe the valves J are closed and the valves L opened; the blowers then draw the air through the pipes K and force it into the delivery pipe. It is also apparent that by having two or more conduits H each provided with a blower, an injury necessitating the stopping of one blower will not throw the carburetor entirely out of operation, and also the quality of the gas can be regulated, it being evident that if air is caused to pass through the length of the carburetor and the oil impregnated charcoal with which it is filled, it will become more highly impregnated with oil and so furnish a richer gas, than if it pass a short distance as from a set of pipes to the conduit nearest thereto, therefore, if one (of two) blower is shut off, the one remaining in action will draw air from all of the pipes and the resulting gas forced into the main or delivery pipe I will be richer than where each blower draws its supply of air from the pipes nearest them. The valves P are provided to be used only when the blower in front of which they are situated is out of operation.

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

1. The combination with a carburetor having air admission pipes leading into it from the air, of a delivery pipe I, two conduits leading from different parts of the carburetor to the delivery pipe I, a blower situated in each conduit, each blower acting independently of the other to draw air through the carburetor and force it into the delivery pipe and a valve in each conduit whereby one of said conduits can be closed, all substantially as specified, and so that the quality of the gas can be regulated by operating the valves.

2. The combination with a carburetor having air admission pipes leading into it of a delivery pipe, a conduit or conduits connecting the carburetor and delivery pipe, a blower situated in said conduit, a valve for closing said conduit situated between said blower and the carburetor, and an air admission valve situated between said last mentioned valve and the blower, all substantially as specified.

3. A carburetor having air admission pipes leading into it in combination with a delivery pipe, a conduit or conduits leading from the carburetors to the delivery pipe, blowers situated in each conduit, valves for closing said conduits situated between the blowers and carburetor, air admission valves situated in each conduit between the above mentioned valves and the blowers and valves for closing the conduits situated between the blowers and the delivery pipe, substantially as specified.

4. The combination with the carburetor chamber A having oil chambers F situated therein, of air pipes G^2 arranged in groups with their lower ends in the oil chambers and their upper ends extending outside the carburetor, a delivery pipe, a conduit or conduits leading from the carburetor to the delivery pipe, a blower or blowers arranged in said conduits to suck air through the carburetor and force it into the delivery pipe, and gas burners Q′ arranged beneath the oil chambers to heat the oil when necessary.

5. The combination with the carburetor chamber A, having the oil chamber F situated therein, of air pipes G^2 arranged in groups with their lower ends in the oil chambers and their upper ends extending through the carburetor chamber, a shield arranged to keep solid particles out of the oil chamber while permitting the passage of gas, and a blower arranged to suck air through the carburetor.

6. The combination with the carburetor chamber A having the oil chambers F situated therein, of air pipes G^2 arranged in groups with their lower ends in the oil chamber and their upper ends extending through the carburetor chamber, perforated pipes C′ resting on the bottom of the chamber around the oil chambers and surrounding the pipe groups G^2 and a blower arranged to suck air through the carburetors.

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Witnesses:
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