(No Model.) 2 Sheets—Sheet 1.

E. SALOMON.

CARBURETOR.

No. 499,597. Patented June 13, 1893.

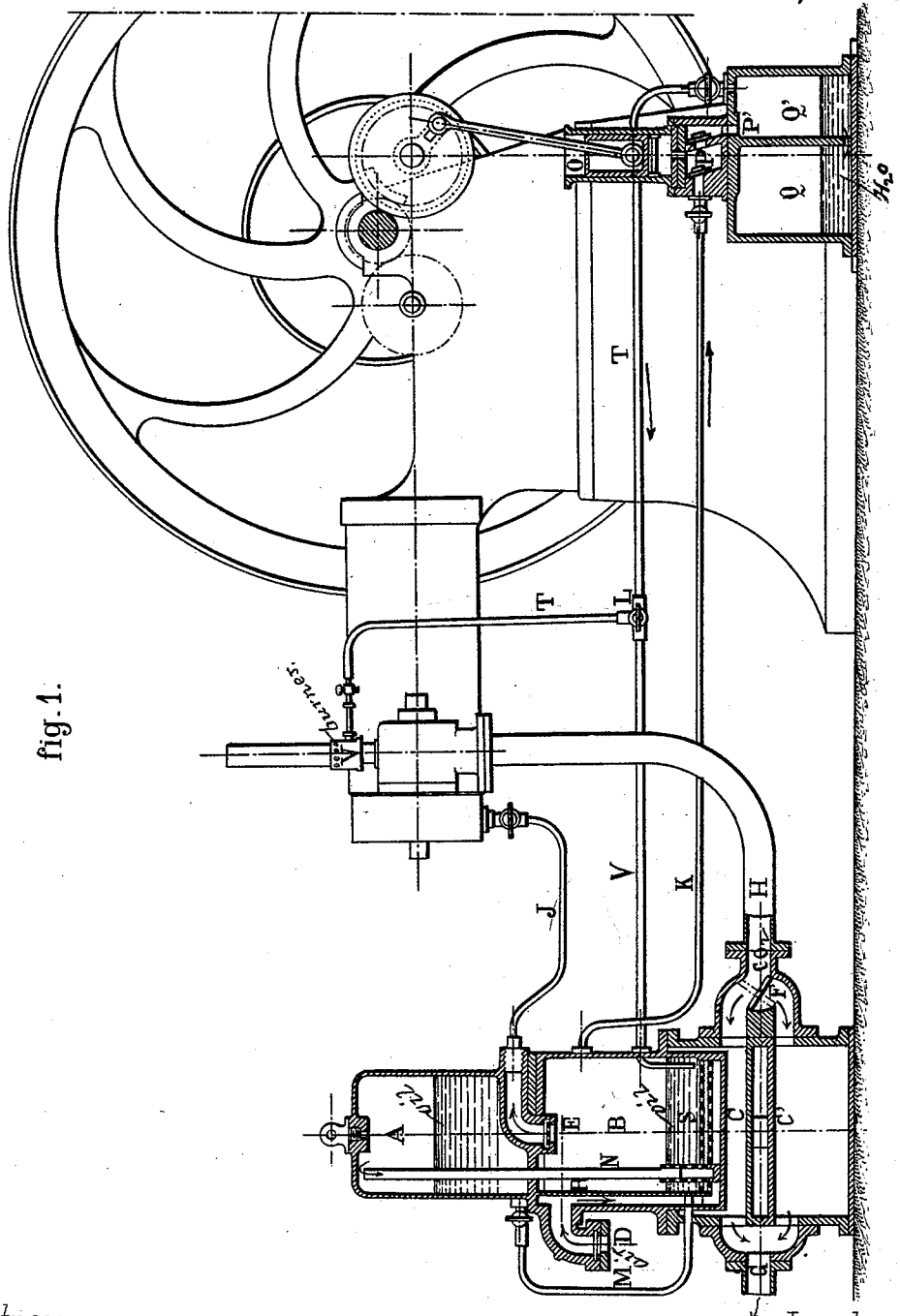

fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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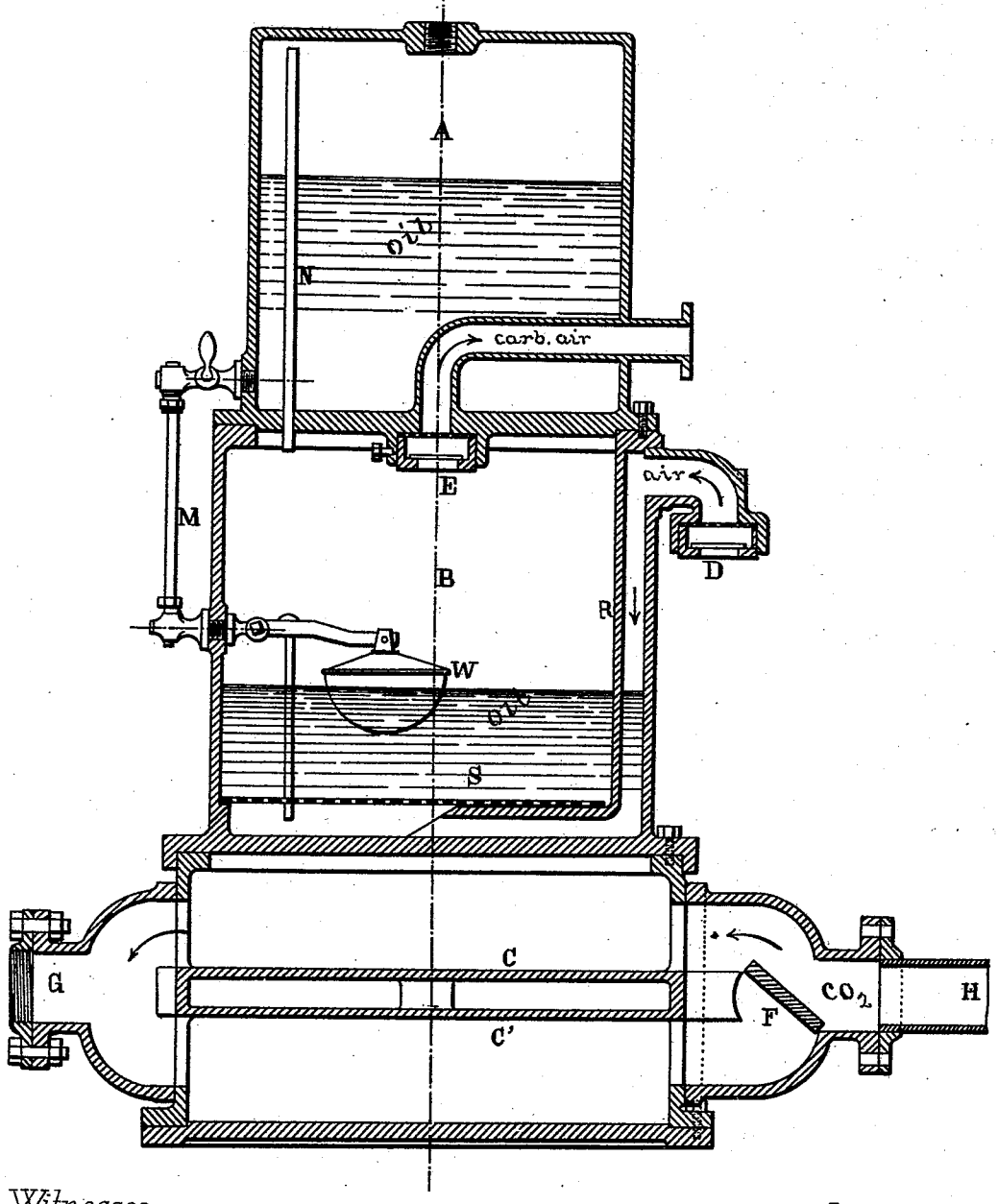
fig. 2.



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UNITED STATES PATENT OFFICE.

EDOUARD SALOMON, OF PARIS, FRANCE.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 499,597, dated June 13, 1893.

Application filed December 31, 1892. Serial No. 456,934. (No model.) Patented in France August 8, 1890, No. 207,498, and in Belgium August 8, 1890, No. 91,565.

To all whom it may concern:

Be it known that I, EDOUARD SALOMON, a citizen of France, and a resident of Paris, in the Department of the Seine, France, have invented a new and useful Improvement in Carburetors, (patented in France, No. 207,498, dated August 8, 1890, and in Belgium, No. 91,565, dated August 8, 1890,) of which the following is a specification.

My invention relates to a new and improved system of carburetors, in which carbureted air may be produced directly by passing air through a liquid hydrocarbon, this apparatus being more especially designed for feeding a petroleum motor, in which the explosive compound is ignited electrically or by a vapor-burner through which the carbureted air is forced by a special pump. And in order that my invention may be readily understood, I have illustrated a preferred method of embodying same in the accompanying drawings, which show my improved carburetor arranged for the peculiar use above mentioned and it will appear clearly to any person skilled in the art that the apparatus might be employed for other carbureting purposes without modifying the essential features of the same.

In said drawings: Figure 1, is a longitudinal external view of a complete plant, the carburetor being axially cut in order to show the internal features thereof. Fig. 2, is an axial vertical section made at a somewhat larger scale of a carburetor more particularly intended to feed an electrically ignited petroleum-motor, the construction of the apparatus being in this case slightly simplified.

The carburetor consists substantially of two superposed metallic tanks A and B, the upper of which A may be filled with petroleum, gasoline or other suitable liquid hydrocarbon through a hole normally stopped up by means of a screw-threaded plug provided on its top for that purpose. The liquid contained in this tank flows down slowly through the pipe M, provided with a regulating cock, in the lower tank B. A vertical tube N makes a communication between the two vessels and equalizes the internal pressures. Instead of directly dipping in the carbureting liquid, this tube enters a perforated sleeve in order to avoid any bubbling of the liquid near the aperture of the tube and to prevent the petroleum vapor from penetrating too rapidly in the lower tank. The latter acts as a fire-pan, the bottom part of which is located in the heater or exhaust reservoir C C′, which consists of a cast-iron box or casing divided in two compartments C and C′ by a horizontal hollow partition in which the air may circulate freely. A doubleway cock or butterfly-valve controlled from the outside permits to direct into either of the compartments C or C′ the combustion gases which escape through the exhaust pipe H of the motor. Said cock or valve enables also the gases of the explosion to be distributed in these two compartments in suitable proportions for maintaining at a convenient temperature the carbureting liquid in the tank B.

It will indeed be readily understood that when the cock F is in the position shown in full lines in Fig. 1, the whole of the explosive gases passing through C heat the lower walls of the tank B and the liquid therein at the maximum temperature. When the said cock occupies the position shown in dotted lines, the gases escape through the compartment C′ and escape pipe G without communicating a practically appreciable heat to the tank B. The air which circulates between the two compartments C and C′ prevents the production of heat from one of them to the other.

By setting the cock F in an intermediate position, the liquid in the tank B will be maintained at a temperature comprised between the two above mentioned limits and suited for the most efficient working of the carbureting process.

The motor sucks through the pipe J, during the inlet period, the carbureted air from B. During the same time, the air-inlet valve D is lifted from its seat and the external air, following the direction indicated by arrows through the flue formed by the partition R and passes beneath a perforated plate dipping in the carbureting liquid, whereby it is divided into thin jets for the purpose of facilitating the carbureting process. This air passes through the perforated double bottom

S of the tank B where it bubbles in the carbureting liquid and loads itself with the petroleum (or other) vapor. The carbureted air thus formed fills the tank B and, by the suction of the cylinder, the valve E is lifted, whereby this air is enabled to reach the cylinder through the tube J. A cock provided on this tube permits to control the supply of carbureted air.

It must be pointed out that the object of the two tanks A and B being superposed and communicating constantly by the cock of the pipe M, is to prevent the liquid in B from becoming inefficient by unceasingly regenerating its carbureting power.

In the motor the burner is fed with petroleum vapor by an apparatus consisting of a single acting sucking and forcing pump O, the plunger of which is moved to and fro by means of a connecting rod and a disk crank rotated by the main shaft of the motor. This pump sucks the carbureted air in the tank B through the pipe K and valve P, then forces it by the valve P′ in the compartment Q′ of a reservoir divided in two compartments Q Q′. These two chambers communicate with each other by an aperture provided at the lower part of the partition and constantly dipping in the water, the level of which is about at the quarter of the height of the chambers Q Q′. In the space above the level of the water in the chamber Q, air is contained which is compressed during the period of forcing and expands afterward during the period of suction, acting thus like the ordinary india-rubber expanding bag of the gas motors. The carbureted air is forced from the chamber Q′ through the pipe T to the burner V which works as an ordinary gas-burner. In the herein-described device, this burner heats to the red a pipe which ignites the explosive compound.

Two means are provided for regulating the supply of the pump according to the quantity of vapor consumed by the burner. The first one consists in varying the position of the wrist upon the disk by setting it more or less near the center according as it is desired to lessen or enlarge the stroke of the plunger and consequently the supply of gas to the burner. When the position of the wrist is definitely adjusted so that the pump supplies an amount of carbureted air somewhat larger than is necessary, the triple-way cock L on the burner-supply pipe T may, at any moment and while the motor is running, be set in such a position that the carbureted air forced by the pump is partially (or even wholly, when it is desired to quench the burner) sent back in the tank B, through the pipe V, the end of which, bent downwardly, dips in the carbureting liquid in the tank B, thus contributing to the carbureting process.

Fig. 2, illustrates another method of constructing my carbureting apparatus according to my invention, the latter being designed more especially for a motor in which, the explosive compound being ignited electrically, no burner is necessary and the pipes K and V, as well as the pump and its accessory devices may be dispensed with.

In Figs. 1 and 2, the same letters of reference indicate the parts of the two forms of apparatus which work correspondingly, and the above explanations will be sufficient for enabling the features of the apparatus to be readily understood. It must however be pointed out that, in the apparatus shown in Fig. 2, the tube N does not reach the bottom of the tank B, but acts only as an overflow pipe for the upper tank A, also the passage of the carbureting liquid from the tank A in the tank B through the pipe M is controlled by a cock and lever on which acts a float W, the buoyancy of which regulates the supply of carbureting liquid and maintains its level at a practically constant height. This well known device might be of course employed in the form of apparatus shown in Fig. 1.

I do not limit myself strictly to the exact shape, proportions and unessential features illustrated in the accompanying drawings for the only purpose of enabling the manner of carrying out my invention to be readily understood.

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

1. In an air carburetor, the combination with a heater divided into two compartments by a partition, and a valve for controlling the admission of heat to either compartment, of superposed tanks A and B located above the heater, an air inlet for the lower tank, a liquid-conveying pipe M extending from the upper to the lower tank for conveying liquid hydrocarbon from the former to the latter, and a pipe leading from the lower tank for conveying carbureted air therefrom, substantially as described.

2. In an air carburetor, the combination with a heater having an escape pipe and divided into two compartments by a partition, and a valve for controlling the admission of heat to either compartment, of superposed tanks A and B located above the heater, a liquid-conveying pipe M extending from the upper to the lower tank for conveying liquid hydrocarbon from the former to the latter, an air-inlet valve D for the lower tank, and a pipe leading from the lower tank for conveying carbureted air therefrom, substantially as described.

3. In an air carburetor, the combination with a heater divided into two compartments by a partition, and a valve for controlling the admission of heat to either compartment, of superposed tanks A and B located above the heater, a liquid-conveying pipe M extending from the upper to the lower tank for conveying liquid hydrocarbon from the former to the latter, a perforated bottom located in the lower tank, an air-inlet for the lower tank, and a

pipe leading from the lower tank for conveying carbureted air therefrom, substantially as described.

4. The combination of superposed tanks A and B, a pipe M leading from the upper to the lower tank for conveying hydrocarbon liquid from the former to the latter, an air-inlet for the lower tank, a heater composed of a casing having an escape pipe and divided into two compartments by a partition, a motor having an exhaust pipe H connected with the casing, an adjustable valve F for directing the gases from the exhaust pipe to either of said compartments, and a pipe leading from the lower tank for conducting carbureted air therefrom to the motor, substantially as described.

5. In an air carburetor, the combination with a heater and a partition dividing the same into two compartments, of a valve for controlling the admission of heat to said heater, superposed tanks A and B, located above said heater, a fluid conveying pipe connecting said tanks, a perforated bottom in the tank B, a pressure regulating pipe communicating with the tanks A and B, an air admission pipe communicating with the tank B, and a pipe leading from the lower tank for conveying carbureted air therefrom substantially as described.

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

EDOUARD SALOMON.

Witnesses:
O. C. MILLAR, Jr.,
G. DELONG.