No. 663,549. Patented Dec. 11, 1900.

C. MATHIEU.

CARBURETER.

(Application filed Aug. 16, 1898.)

(No Model.) 2 Sheets—Sheet 1.

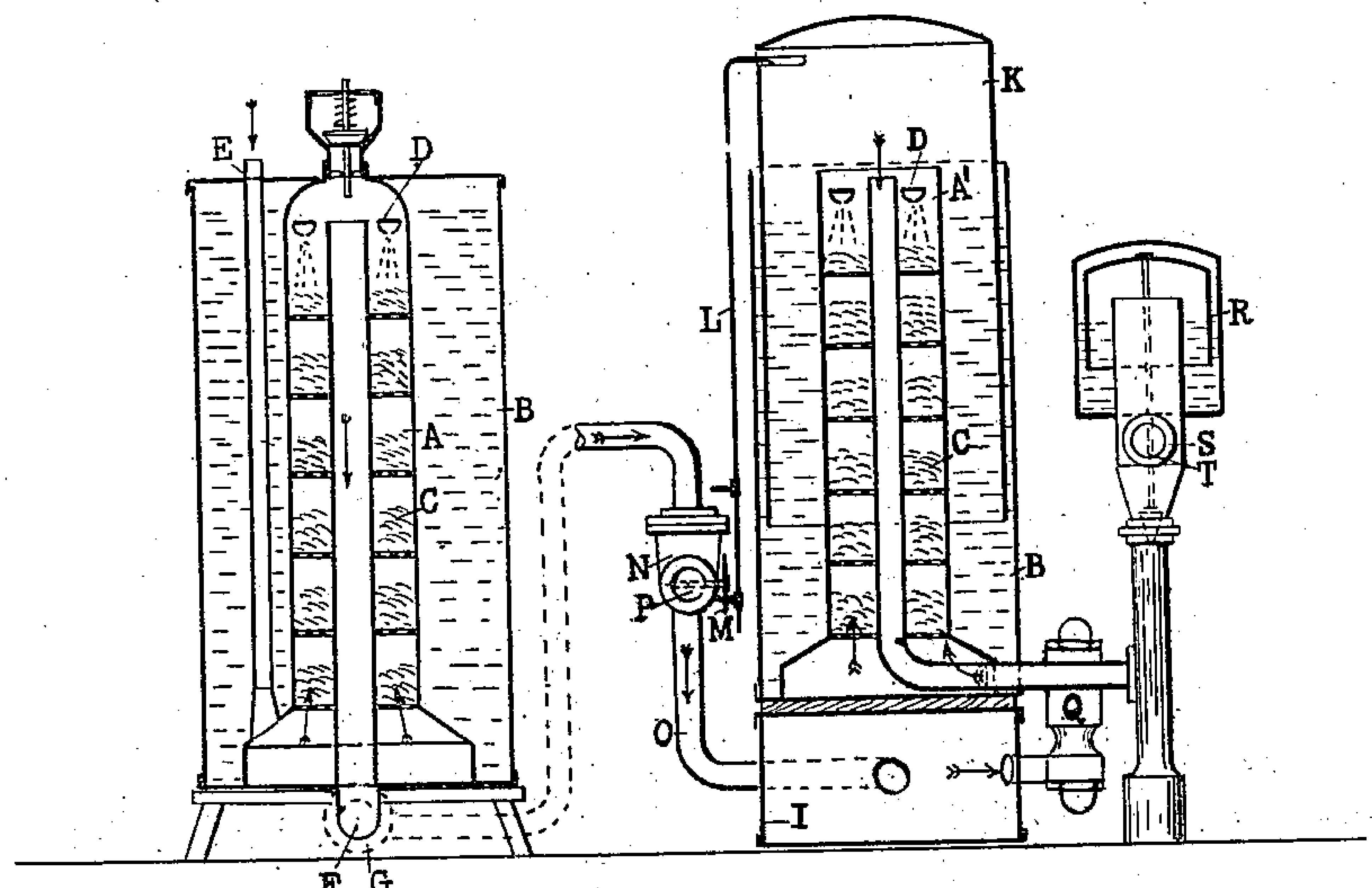

FIG. 1

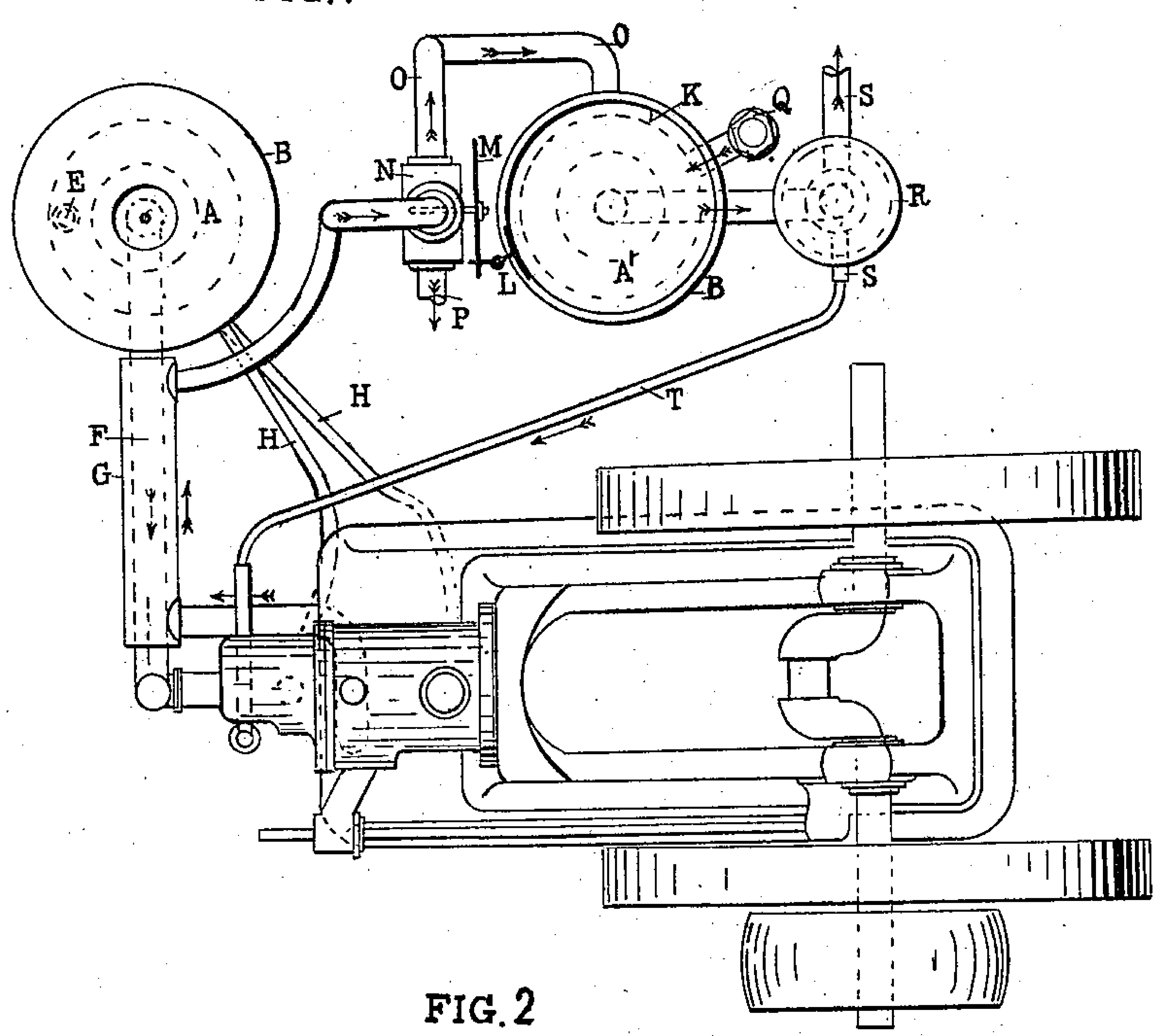

FIG. 2

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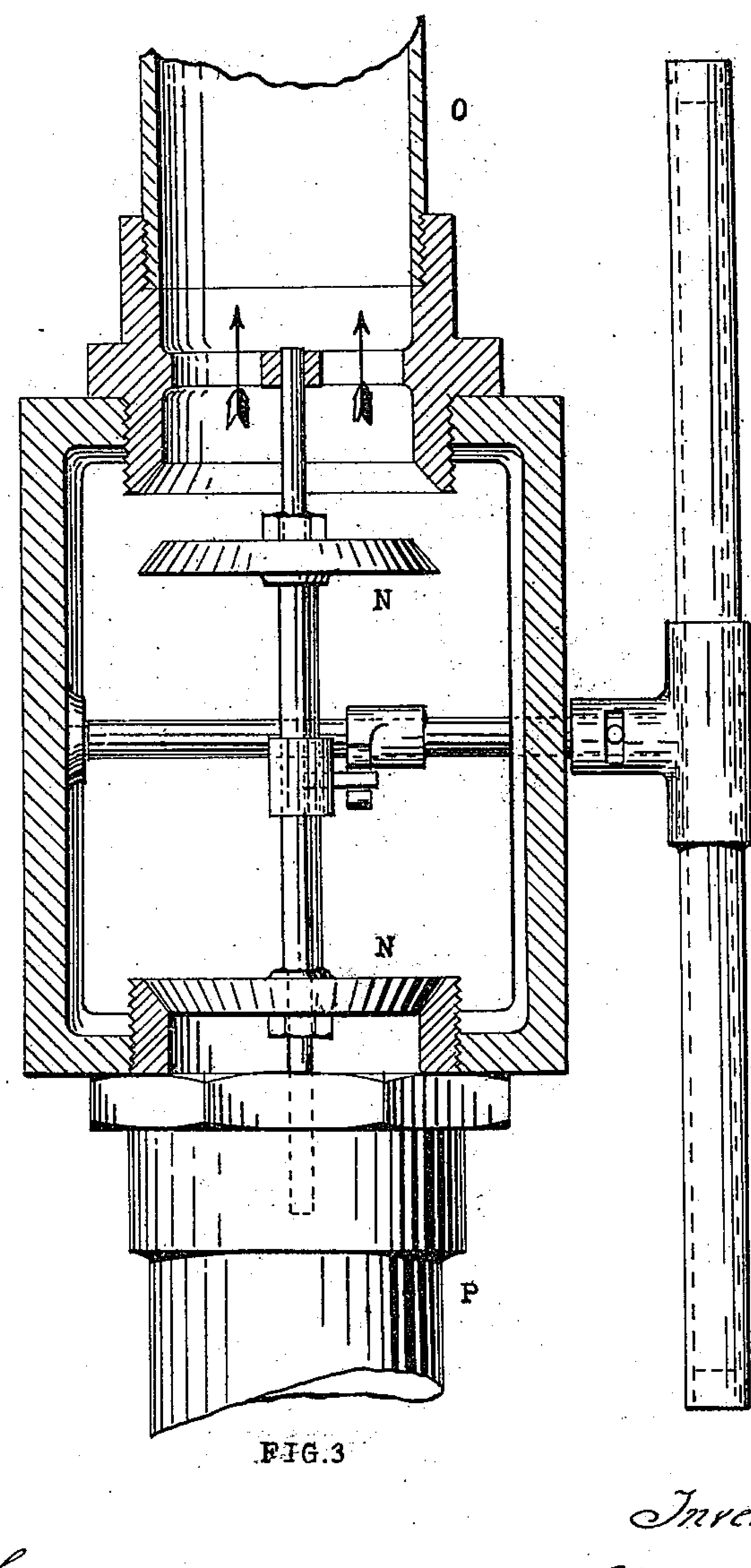

FIG. 3

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UNITED STATES PATENT OFFICE.

CLÉMENT MATHIEU, OF BRUSSELS, BELGIUM.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 663,549, dated December 11, 1900.

Application filed August 16, 1898. Serial No. 688,703. (No model.)

To all whom it may concern:

Be it known that I, CLÉMENT MATHIEU, a citizen of Belgium, administrateur délégué de la Société Anonyme du Gaz Aéro-Pétrolique, residing at Brussels, in the Kingdom of Belgium, have invented certain new and useful improvements in apparatus for feeding gas-engines with carbureted air and for producing an illuminating and heating gas recarbureting the burned products; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists, in the first place, in the carbureting of air for feeding gas-engines by sucking air through filtering layers of cotton moistened with a mineral oil, so as to reduce the latter to a fine spray or vapor, the condensation of which is prevented by a heating-tube of great surface heated by the burned gases of the engine and not submitted to any pressure, thereby producing a rich and dry gas in which the proportion of oxygen is too small for rendering the gas explosible without further addition of air.

In the second place, my invention consists in the recarbureting of the burned products by combining the discharge-tube of the gas-engine with an expansion-chamber, where the burned products can fully expand, so as to conserve only the pressure and heat required for getting through the recarbureter and for maintaining there a convenient temperature. The gas obtained is light; but as it does not contain any oxygen it is absolutely inexplosible in itself. It constitutes a very good heating and illuminating gas which is used for feeding the burner of the gas-engine, but which may also be produced in sufficient quantities for illuminating purposes.

I attain these objects by the apparatus illustrated in the accompanying two sheets of drawings, in which—

Figure 1, Sheet I, is a vertical section, and Fig. 2 a plan view. Fig. 3, Sheet II, is a section through the regulating-valve.

The air-carbureter consists of a cylindrical envelop A, fixed with its enlarged portion upon the bottom of a water-tank B and closed on top. The inner space of the envelop is divided by a series of wirework grates for supporting filtering-cotton layers C, which are saturated with petroleum or other mineral oil by means of a perforated coil D, which itself is connected with an oil-reservoir placed at a higher level. At each aspiration of the gas-engine a certain quantity of air enters into the carbureting apparatus at its lower part through pipe E and by passing upward vaporizes the oil and carries it through the heating-tube. F, which is fixed to the gas-sucking valve of the engine and which is surrounded by the discharge-tube G, having a suitably-increased diameter.

The water-tank of the carbureter is connected by pipes H H with the water-jacket of the gas-engine, so as to produce a circulation of the water through said tank, which acts as a refrigerator.

The recarbureter A′ is of similar construction, but connected with the expansion-chamber I, in which enter the burned products of the gas-engine.

As the quantity of the burned products and the ratio of consumption of the recarbureted gases are variable, the apparatus is completed by a regulator which consists in the combination of the recarbureter with a bell K or gasometer, which by means of a bar L actuates the key M of a double valve N, Fig. 3, Sheet II, in such a manner that as soon as the gas has raised the bell to a certain height the key M, which is hollow and partly filled with mercury, will shut off the passage O, leading the burned products to the expansion-chamber I, and open at the same time the passage P for the escape of said products into the atmosphere. A retaining-valve Q is provided between the recarbureter and the expansion-chamber I.

The burned products after having passed through the recarbureter are directed into a pressure-regulator R, and thence pass into the distribution-pipe S. A tube T is also provided for leading the recarbureted gas to the burner of the gas-engine.

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

1. The combination of an air-carbureter for feeding gas-engines, with a second carbureter, having an expansion-chamber adapted to be connected with the discharge-pipe of a gas-

engine, for the purpose of producing a heating and illuminating gas by recarbureting the burned products.

2. The combination of an air-carbureter for feeding gas-engines with a second carbureter having an expansion-chamber provided with a gasometer-bell and a regulating-valve, which latter is adapted to be operated by said bell and communicates with the discharge-pipe of the gas-engine, the expansion-chamber and the atmosphere as and for the purpose described.

3. The special construction of the recarbureter, consisting of an envelop A′, of grates C, supporting filtering material, of an oil-sprayer D, of an expansion vessel I, adapted to be connected with the discharge-pipe G of the gas-engine and with the recarbureter, in combination with a gasometer-bell K, a double regulating-valve N and a bar L attached to the bell K and actuating the key M of said regulating-valve N, substantially as described.

CLÉMENT MATHIEU.

Witnesses:
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