

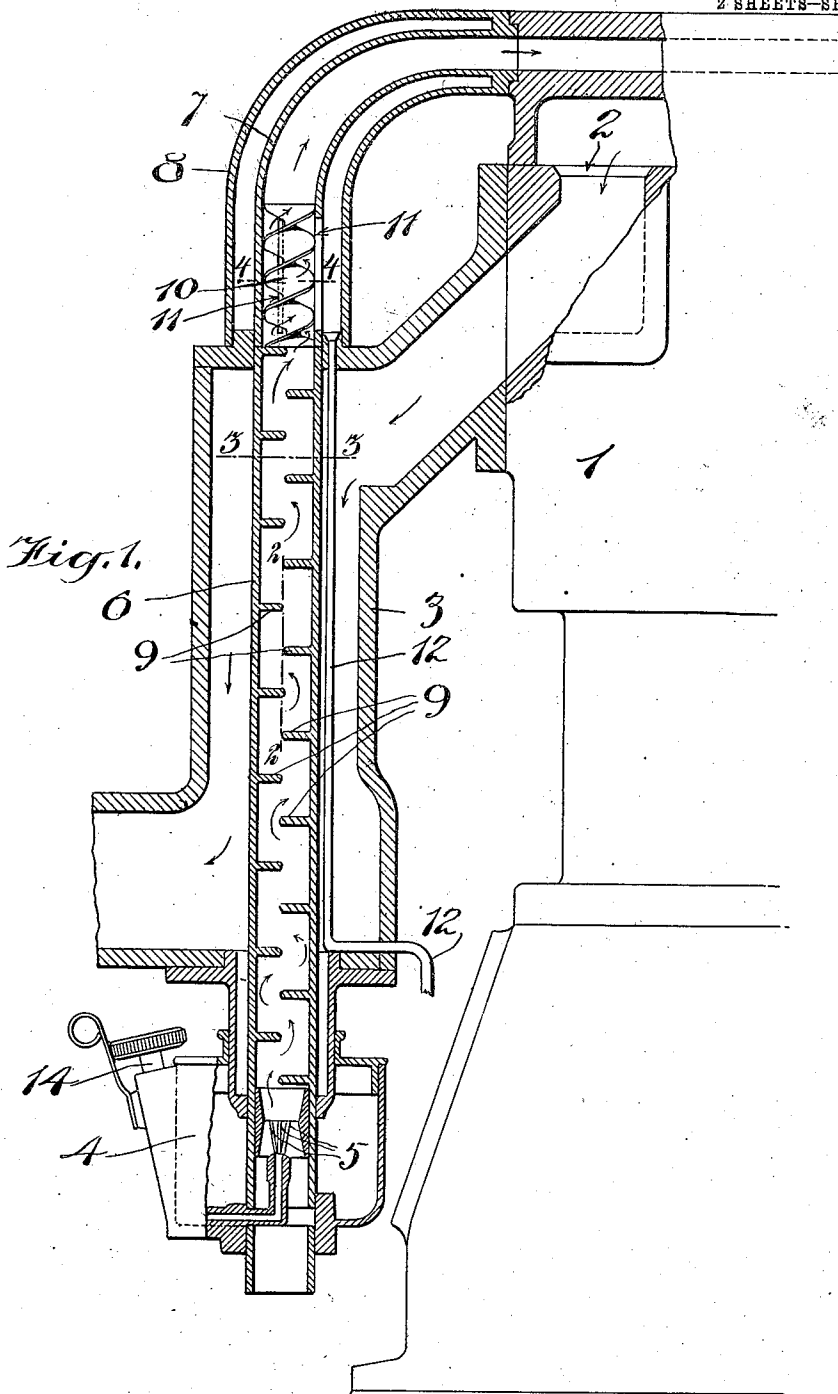
C. C. RIOTTE & B. C. SMITH.
M. L. RIOTTE, ADMINISTRATRIX OF C. C. RIOTTE, DEC'D.
GAS GENERATOR FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED FEB. 11, 1914.

1,121,868.

Patented Dec. 22, 1914.

2 SHEETS—SHEET 1.



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Fig. 4.

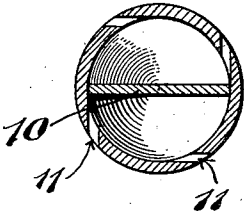


Fig. 2.

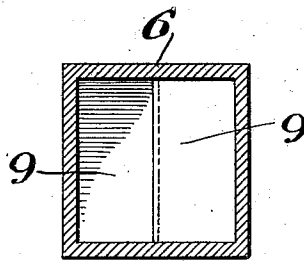
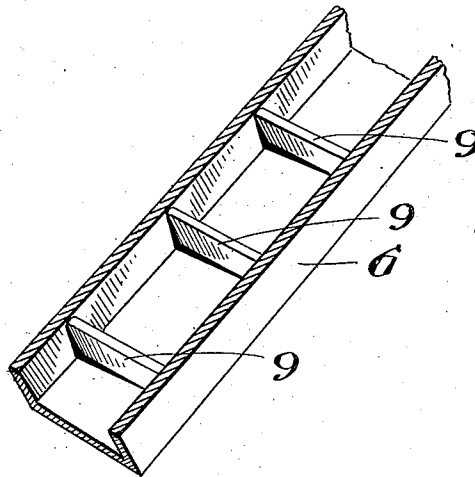


Fig. 3.

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UNITED STATES PATENT OFFICE.

CARL C. RIOTTE, DECEASED, LATE OF JERSEY CITY, NEW JERSEY, BY MARIE L. RIOTTE, ADMINISTRATRIX, OF BRONXVILLE, NEW YORK, AND BENJAMIN C. SMITH, OF BAYONNE, NEW JERSEY, ASSIGNORS TO STANDARD MOTOR CONSTRUCTION COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

GAS-GENERATOR FOR INTERNAL-COMBUSTION ENGINES.

1,121,868.

Specification of Letters Patent.

Patented Dec. 22, 1914.

Application filed February 11, 1914. Serial No. 817,965.

To all whom it may concern:

Be it known that we, CARL C. RIOTTE, deceased, late a citizen of the United States and resident of Jersey City, Hudson county, New Jersey, and BENJAMIN C. SMITH, a citizen of the United States, and residing at Bayonne, Hudson county, New Jersey, have invented certain new and useful Improvements in Gas-Generators for Internal-Combustion Engines and the like, of which the following is a full, clear, and exact description.

This invention relates to an improved means for forming and delivering gas to internal combustion engines, the object of the invention being to provide an improved construction whereby the heavier liquid hydrocarbon fuels may be successfully used therein.

Heretofore great difficulty has been experienced in the attempts that have been made to use the heavier liquid hydrocarbons in this connection because it has been impossible to prevent some of the fuel in liquid form from reaching the interior of the engine cylinder. When any of the fuel in solid form is drawn into the cylinder, it burns imperfectly and results in the rapid accumulation of carbon on the cylinder walls and piston head to the injury of the efficient operation of the motor.

By the present improvement, means is provided for effectively overcoming the difficulties heretofore standing in the way of complete success in the use of such fuel.

In the drawings, Figure 1 is an end elevation, partly in section, of a part of an engine equipped with this improvement. Fig. 2 is a relatively enlarged detail view shown in perspective and in section on the line 2-2, Fig. 1. Fig. 3 is a cross section on the line 3-3, Fig. 1. Fig. 4 is a cross section on the line 4-4, Fig. 1.

1 represents conventionally a motor of the internal combustion engine variety.
2 represents the exhaust port.
3 represents the exhaust pipe.
4 represents conventionally a feed tank

designed to hold liquid fuel at the proper level relatively to the sprayer tips 5. These tips are located in an air passage through which air may rush with a sufficient velocity to draw off, in the form of spray, the proper proportion of liquid fuel to mix with the air.

6 is a pipe leading from the sprayer tips 5 upwardly to a pipe 7, which represents the gas intake pipe of the motor, the same leading to the usual valved intake port (not shown.) The pipe preferably leads through the exhaust pipe 3 so that the hot exhaust gases will constantly maintain the pipe 6 at a high temperature, while the engine is running.

8 is a jacket which may surround the pipe 7 to prevent too rapid radiation of heat so that gas passing through the pipe 7 on its way to the cylinder head will not condense. In the zone where the pipe 6 connects with the pipe 7 is provided a separator means which is shown in detail in Fig. 1 in the immediate vicinity of the section line 4-4 and the function of which will be more fully explained later. Within the pipe 6 is provided means for causing any gas, or mixture of air and sprayed fuel, passing there-through to partake of a tortuous or circuitous course, said means in one form comprising the baffle members 9-9. The pipe 6 may be of rectangular cross section, as shown in Fig. 3. It will be seen that a mixture of air and atomized fuel flowing in the course indicated by the arrows through the pipe 6 will be constantly deflected in a direction to tend to throw any solid particles of fuel either against the side walls of the pipe 6 or against the deflectors 9 where said solid particles of liquid fuel will lodge and, under the direct heat thereof, be transformed into gas. Inasmuch as there may be some solid fuel passing through the pipe 6, and inasmuch as it is necessary to prevent any of the solid fuel from entering the cylinder, there is provided in combination with the pipe 6 and cooperating therewith the aforesaid separator, the function of which

is to remove from the gas mixture any solid fuel that may be therein before it enters the engine cylinder. This separator in its preferred form comprises the spiral 10 arranged in the pipe extension at the end of the pipe 6 formed by a plate twisted about its longitudinal center line with its edges engaging the interior of pipe 7, as shown in Figs. 1 and 4, which will impart to the gases a rotary movement as they pass or progress therethrough. This pipe extension has, adjacent to the spiral 10, one or more outlets, preferably in the form of longitudinal slits 11—11, which preferably enter the pipe tangentially, as best seen in Fig. 4, so that the action will be as follows: When the gas mixture has passed from the pipe 6 into the separator, it is given a rapid spiral or circuitous movement which tends, by centrifugal action, to throw such solid fuel out against the side wall of the separator, where it is forced through one or the other of the outlets 11 into the space between the outside of the separator and the jacket pipe 8, so that the gas mixture beyond the separator will be free from solid liquid fuel, hence the gas delivered to the engine is bound to burn freely and completely and without injuriously sooting the inner walls of the cylinder or piston head.

If desired, a drain pipe 12 may be provided leading from the space around the separator to the source of fuel supply or to any discharge point, so that any unmixed liquid fuel discharged from the separator need not necessarily be wasted.

Obviously any suitable means may be employed to heat the pipe 6, but for economy's sake, it is preferred to use the hot exhaust gases of the engine.

Obviously since any fuel may be used in the apparatus, if it is desired to start the engine with gasoline for the purpose of first heating up the parts preparatory to turning on the feed of heavier hydrocarbons such as kerosene, this method may be adopted, but no invention is claimed in this method of starting.

While the invention is shown in its preferred form, it is apparent that modifications may be made in the construction and design.

It will be observed that the jacket pipe 8 performs the second function of closing the pipe 7 to the admission of air at a point beyond the pipe 6, for it is obvious that air should not be permitted to leak through the slits 11 to adulterate injuriously the gas mixture, it being preferred to adjust the proportions of the mixture at the atomizing end. Any form of adjusting means may be provided for this purpose. In the drawings 14 represents a valve of conventional form designed to control the fuel supply delivered at the tips 5—5.

What is claimed is:

1. In a means for supplying gas to internal combustion engines, means for atomizing a liquid fuel, a pipe arranged to lead therefrom toward said engine, means within said pipe for deflecting a current of air and atomized fuel passing therethrough to cause any solid portions of fuel in said current to lodge upon the wall of the pipe, means for heating the pipe, and means imparting to the current a rotary progressive movement for separating from the moving current any solid fuel that may remain therein as the gas mixture approaches the motor.

2. In a means for supplying gas to internal combustion engines, means for atomizing a liquid fuel, a pipe leading therefrom toward said engine, deflectors within said pipe to form a tortuous passage therethrough, means for heating the pipe, a second pipe leading therefrom to the engine, separator means extending therein from the end of said first pipe comprising a spiral deflector formed by a plate twisted about its longitudinal center line with its edges engaging the interior of said pipe for imparting a rotary progressive motion to the gas mixture passing therethrough to cause any solid portions of fuel in the current to be forced laterally, said second pipe having lateral outlets to permit the escape of such solid fuel.

3. In a means for supplying gas to internal combustion engines, means for atomizing a liquid fuel, a pipe leading therefrom toward said engine, deflectors within said pipe to form a tortuous passage therethrough, means for heating the pipe, a second pipe leading therefrom to the engine, separator means extending therein from the end of said first pipe comprising a spiral deflector formed by a plate twisted about its longitudinal center line with its edges engaging the interior of said pipe, for imparting a rotary progressive motion to the gas mixture passing therethrough to cause any solid portions of fuel in the current to be forced laterally, said second pipe having lateral outlets to permit the escape of such solid fuel, with means to prevent air from entering through said outlets to injuriously adulterate the gas mixture passing through said separator.

4. In a means for supplying gas to internal combustion engines, means for atomizing a liquid fuel, a pipe leading therefrom toward said engine, deflectors within said pipe to form a tortuous passage therethrough, means for heating the pipe, a second pipe leading therefrom to the engine, separator means extending therein from the end of said first pipe comprising a spiral deflector formed by a plate twisted about its longitudinal center line with the edges engaging the interior of said pipe, for impart-

ing a rotary progressive motion to the gas
mixture passing therethrough to cause any
solid portions of fuel in the current to be
forced laterally, said second pipe having
5 lateral outlets to permit the escape of such
solid fuel, with means to prevent air from
entering through said outlets to injuriously
adulterate the gas mixture passing through
said separator, and a drain pipe adjacent to

said separator for draining any solid liquid 10
fuel discharged by said separator.

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