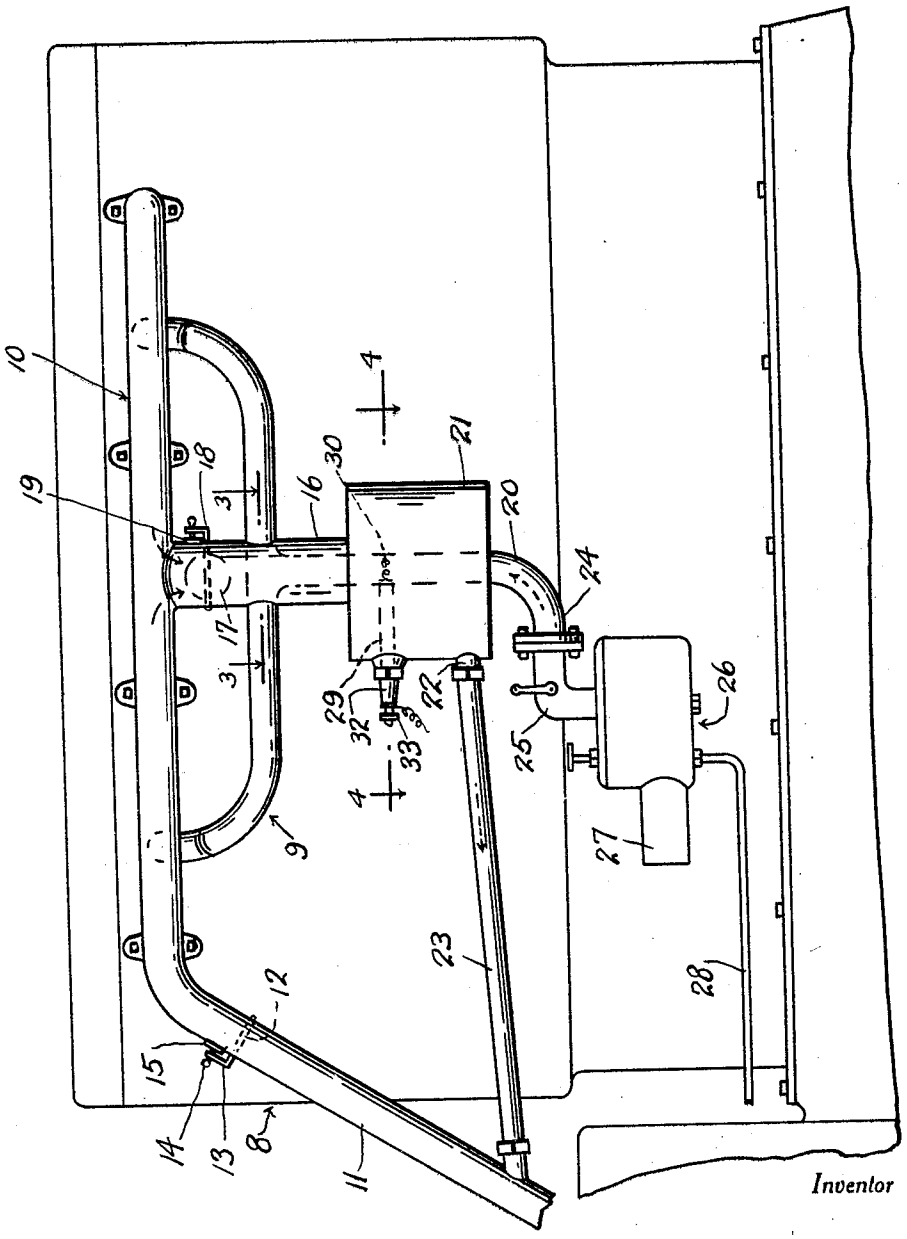
Feb. 9. 1932. C. C. ROGERS 1,844,298

FUEL CHARGE CONDITIONING DEVICE

Filed May 29, 1930 3 Sheets-Sheet 1

Fig. 1.



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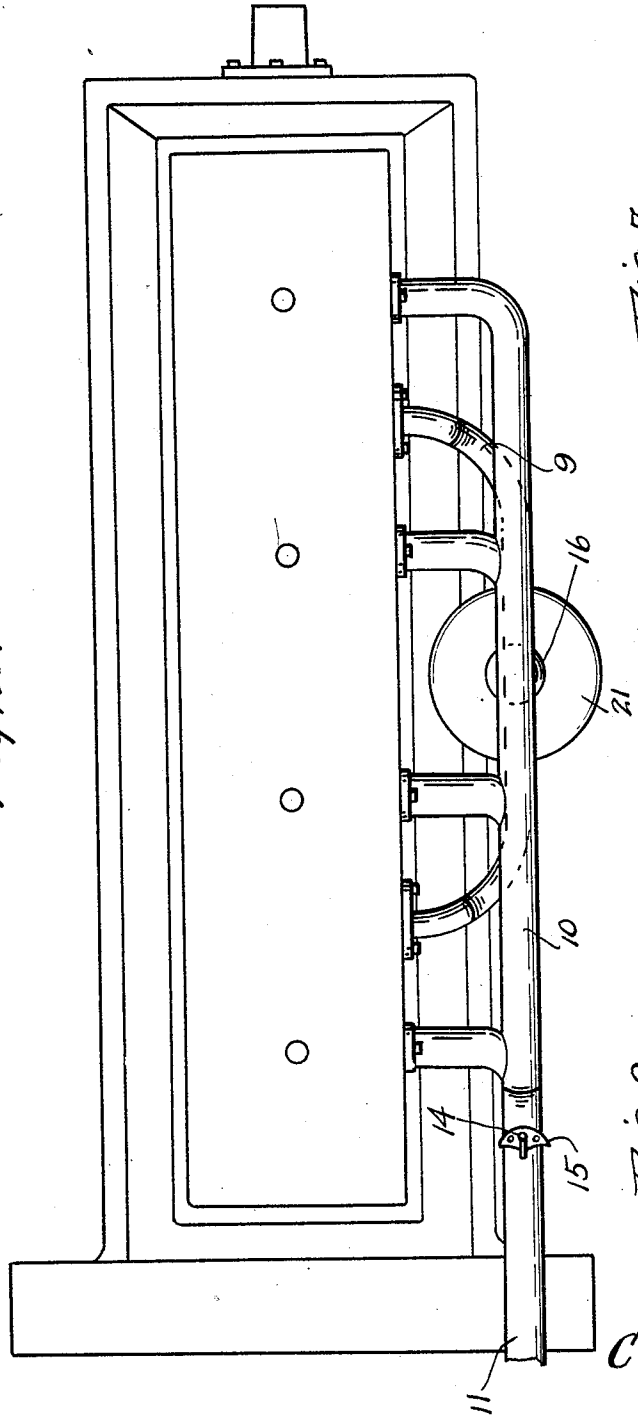


Fig. 2.

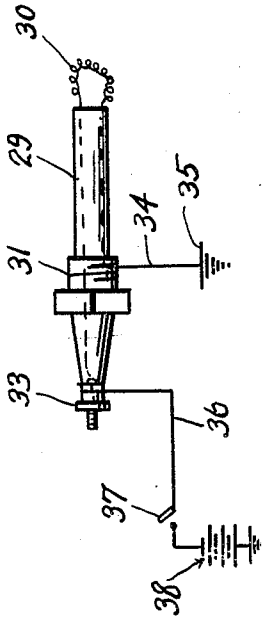


Fig. 1.

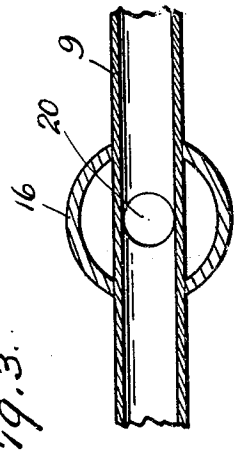


Fig. 3.

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FUEL CHARGE CONDITIONING DEVICE

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Fig. 4.

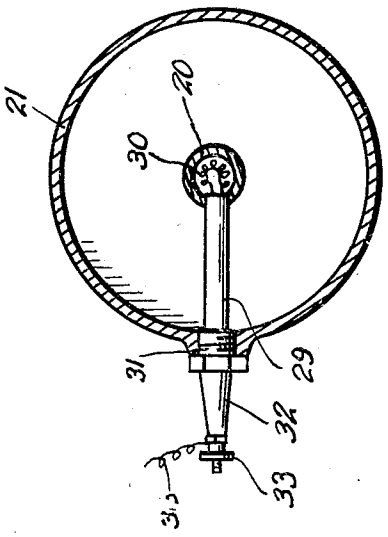
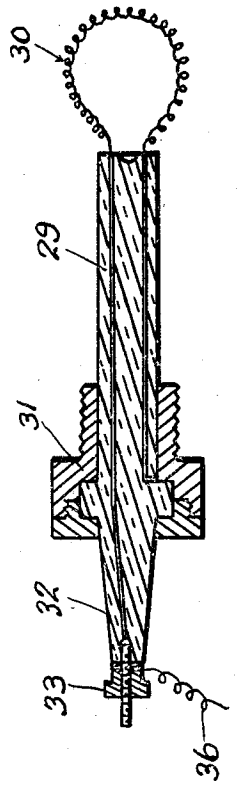


Fig. 6.



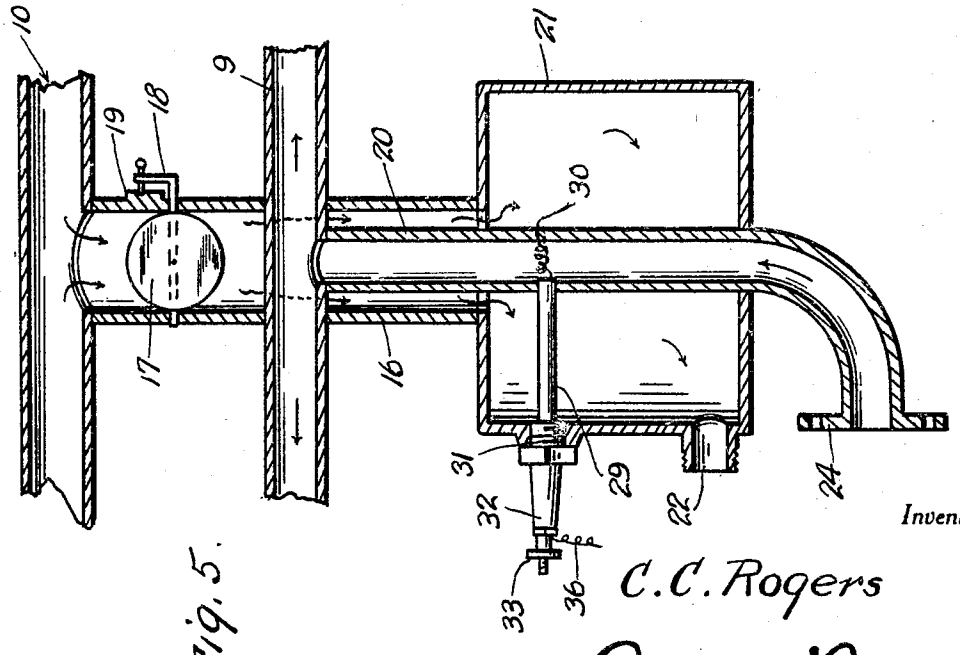


Fig. 5.

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UNITED STATES PATENT OFFICE

COURTNEY C. ROGERS, OF LOS ANGELES, CALIFORNIA

FUEL CHARGE CONDITIONING DEVICE

Application filed May 29, 1930. Serial No. 457,333.

This invention relates to an improved fuel charge conditioning device for use and association with motor vehicle internal combustion engines.

The purpose of the invention is to permit a low-grade of fuel oil to be employed as the combustible charge for introduction into the engine, whereby to promote more efficient motor running conditions, to minimize carbon formation in the cylinders, and to economize on fuel consumption, whereby to permit the engine to be operated far more inexpensively than is possible with the present-day gasolene carbureters.

The specific relative arrangement and association constituting the structural novelty of the invention will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is a side elevational view of an engine embodying the improvement of this invention.

Figure 2 is a top plan view of the structure shown in Figure 1.

Figures 3 and 4 are cross sectional views on the lines 3—3 and 4—4 respectively of Figure 1.

Figure 5 is an enlarged vertical sectional view through the central portion of the structure.

Figure 6 is a detail sectional view of the electrical pre-heater.

Figure 7 is a diagrammatic view of the wiring system for the electric heater.

In the drawings, in Figure 1, the motor block is generally represented by the reference character 8, the intake manifold by the numeral 9, the exhaust manifold by the numeral 10. The exhaust manifold includes the rearwardly extending main discharge pipe 11 for exhaust gases and this is provided with an internal shutter valve 12 having an operating crank 13 provided with retaining pin 14 for cooperation with an anchoring segment 15.

This permits the valve to be opened and closed to the desired degree. The purpose of the valve 12 is to shunt the exhaust gases through the intermediate vertical branch 16 and it will be noticed that this branch is provided with a separate control damper or valve 17 having an operating crank 18 and an anchoring segment or sector 19.

The valves 12 and 17 alternately permit the exhaust gases to be directed either through the pipe 11 or down through the branch pipe 16 as desired. The branch pipe 16 embraces the vertical fuel intake pipe 20 of the intake manifold 9 as shown for example in Figure 5.

The pipe 20 extends up through an exhaust gas heater housing or casing 21 shown in Figure 5, and the branch pipe 16 is connected with the top opening of this casing. The exhaust gases passing downwardly through the casing 21 escape through the nipple 22 which is connected with the exhaust gas return pipe 23 leading to the main exhaust pipe 11 as shown in Figure 1. This provides a novel valved control circuit for the exhaust gases permitting them to be directed outwardly into the atmosphere either by way of the valved pipe 11 or the valved branch pipe 16 and its associated casing 21.

The exhaust gases obviously serve to heat the fuel intake pipe 20, thus vaporizing the charge of fuel passing therethrough. This pipe 20 extends down below the casing where it is provided with an attaching flange 24 connected with the fuel supply connection 25 of the fuel oil carbureter 26. This carbureter is provided with appropriate mixing means (not shown) with an air inlet 27 and with the oil supply pipe 28.

The oil and air charge is mixed in the carbureter and conducted into the delivery pipe 20. It passes up through the pipe 20 and into the intake manifold 9 and in its passage it is acted upon by the exhaust gases which are confined therearound through the medium of the branch 16 and the casing 21, which as before stated, have communicating connection with the exhaust manifold 10.

To expedite the starting, I prefer to utilize an electrical heater. This is generally denoted by the numeral 29 and includes a portion projecting into the casing 21 and carrying a heating coil 30 embracing the pipe 20 within the confines of the casing 21. The numeral 31

designates a coupling threaded into the casing wall as shown in Figure 5.

On the insulated end 32 of the heater is an appropriate binding post 33. In the wiring diagram shown in Figure 7, the ground wire 34 leads to an appropriate ground 35 and the current supply wire 36 is connected with the binding post 33. The numeral 37 represents the switch located within convenient operating position of the driver and 38 represents the storage battery or other source of supply desired to be used.

The electric heater is brought into play when starting the engine. It heats the charge in the pipe 20 sufficiently for initial operation. When however, the engine has started, the electric heater is thrown out of play and the exhaust gases provide the desired heating medium for vaporizing the charge passing through the pipe 20.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary. Minor changes in shape, size, and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice if desired.

I claim:

In a structure of the class described, in combination, an internal combustion motor, a fuel oil carbureter, an intake manifold connected with the motor, a supply pipe connected with the carbureter and with an intermediate portion of the manifold, an exhaust manifold connected with the motor, an exhaust pipe connected with the exhaust manifold, a depending pipe connected with an intermediate portion of the exhaust manifold and through which the intermediate portion of the inlet manifold passes, a casing connected with the lower end of the depending exhaust pipe and through which the supply pipe from the carbureter passes, a part of the supply pipe also passing through the lower part of the depending pipe with the upper end of the supply pipe connected to that part of the inlet manifold which is located in the depending exhaust pipe, a pipe connecting the casing to the exhaust pipe, a valve in the upper part of the depending pipe and a valve in the exhaust pipe.

In testimony whereof I affix my signature.

COURTNEY C. ROGERS.