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VAPORIZER FOR HEAVY AND SEMI-HEAVY LIQUID FUELS

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2 Sheets-Sheet 1

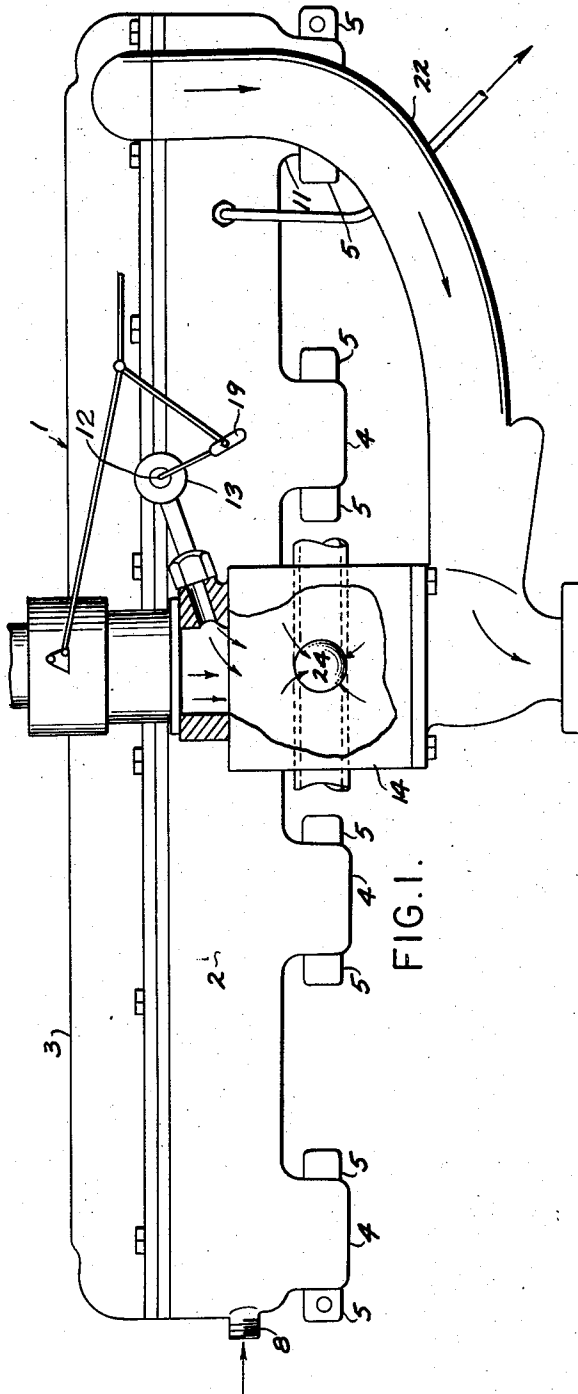


FIG. 1.

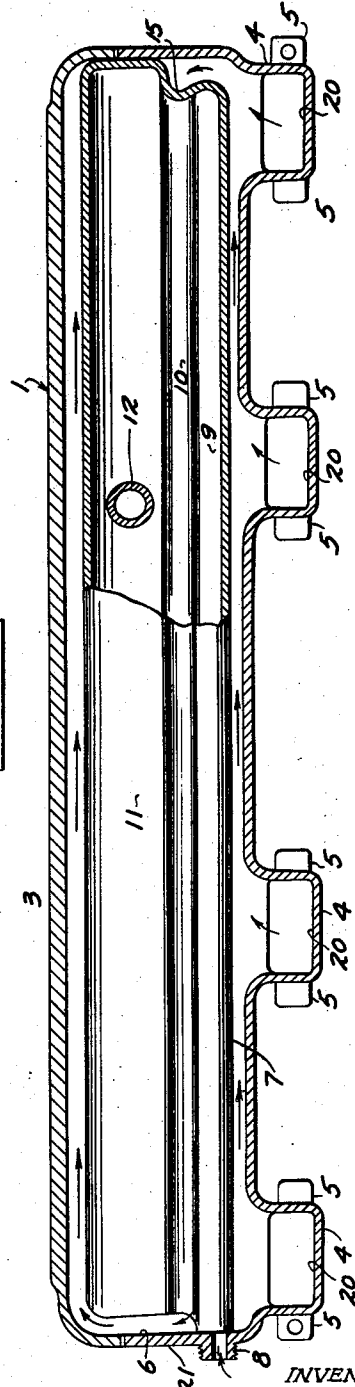


FIG. 2.

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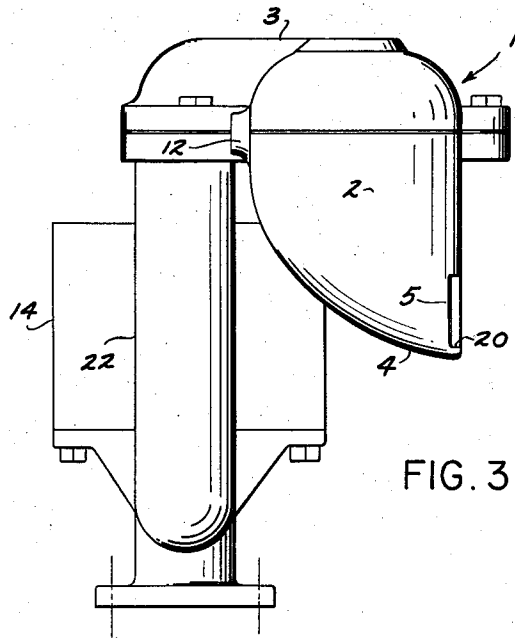


FIG. 3.

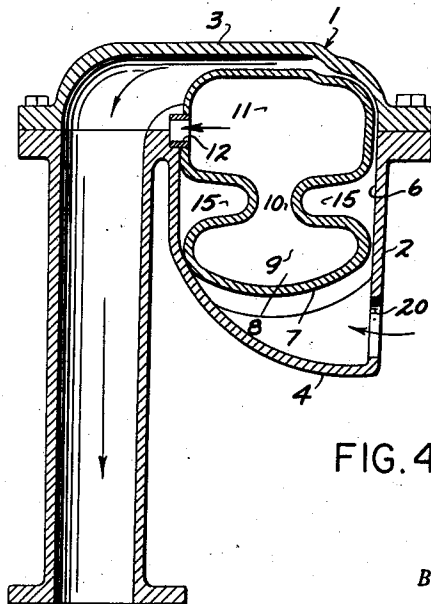


FIG. 4.

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VAPORIZER FOR HEAVY AND SEMI-HEAVY LIQUID FUELS

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1 Claim. (Cl. 123—133)

The new vaporizer which is the object of this invention is designed for operation as a component of internal combustion engines of the type normally burning light hydrocarbons and is intended specially for attachment to automobile engines to enable such engines to work without any other alteration or modification, either on gasoline, or on semi-heavy or heavy liquid fuels, thereby obtaining an appreciable economy and perfect performance, especially in those cases where gasoline is only used for starting and preliminary heating, after which the feed is switched to heavier fuel for the remainder of the run.

For the sake of clarity and easy comprehension the vaporizer is shown in one preferred embodiment in the accompanying drawings where

Fig. 1 is an elevation of the vaporizer,

Fig. 2 is a longitudinal sectional view thereof,

Fig. 3 is an end elevational view thereof, and

Fig. 4 is a transverse vertical sectional view through the part of the vaporizer shown in Fig. 3.

The vaporizer for heavy and semi-heavy liquid fuels illustrated in the drawings is adapted to be an easily attachable component for internal combustion engines normally burning light hydrocarbons and is especially designed for motor vehicles. It comprises essentially an elongated casing or jacket 2, with a removable cover 3, sealably attachable over the main access opening in the upper portion of the casing 2, and having a plurality of tubular branches 4 provided with flanges 5, spaced apart from each other at its lower portion, to facilitate attachment of the device to the engine body. The device is designed to fit the corresponding exhaust outlets of the engine. The gases pass into the interior 6, of casing 2, which forms a heating chamber or jacket with an outlet to which is attached the exhaust pipe of the engine.

The exhaust gases circulate around the outer casing 2, entering by the openings 20 and then pass along the narrowed passages 15, and returning in the opposite direction along the upper hollow space in the cover of the casing 3.

A hollow interior member 7, is located inside the casing 2, having an entrance 8, for the heavy fuel into the hollow member 7, and an outlet 12 for the thermally vaporized heavy fuel, provided with a regulating means 19 for valve 13.

The interior hollow member 7, defines an enclosed space 9, at its lower portion, which is the vaporizing chamber, and this chamber communicates with the upper chamber 11, of the same member by means of an elongated narrowed passage 10. The upper chamber 11, forms a supply or accumulating chamber for the gas produced from the heavy fuel.

The gas outlet 12, from the upper chamber 11, is connected to the interior of a hollow body 14, by a pipe having a valve 13 regulated by member 19, and the hollow body 14, is also heated by the exhaust gases before these reach the outlet to the atmosphere.

The interior of hollow body 14, forms the admission

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chamber of the heavy fuel vapors between the carburetor and the manifold of the engine, where the gas is mixed with air drawn into the carburetor by the engine.

In order to make full use of the calorific content of the exhaust gases in the interior 6, of the elongated outer jacket 2, the special shape of the hollow inner member 7, is adapted to form two passages 15, which increase the area of the heating surfaces exposed to the exhaust gases.

The engine to which the new vaporizer is attached is started up on gasoline, using the ordinary carburetor and should then be run for 5 to 10 minutes on this fuel, until the vaporizing chamber is thoroughly heated, when the gasoline feed valve is closed and the heavy fuel valve opened.

The vaporizer now receives the hot exhaust gases from the cylinders, under pressure, passing through the entry passages 20, of the tubular branches 4, to the interior 6, of the elongated jacket 2, and traversing the passages 15, after which they pass upwards through the passage 21, to the conduit 22, to the jacket of the hollow body 14, from which they finally pass out to the atmosphere.

The vaporizer 1, receives the incoming supply of heavy liquid fuel through the inlet 8. A slight vacuum is formed in the upper chamber 11, by the action of the pistons in the cylinders. The heavy liquid fuel is vaporized on its passage through chamber 9, in the hollow member 7, whence the flow of hot gas passes out through opening 12, regulated by the valve 13 and filtered, passes to the hollow member 14, and to the carburetor, where it is mixed with incoming air and forms the combustion mixture that passes through inlet 24 to the engine manifold and thence to the cylinders.

While certain embodiments of this invention have been illustrated and described herein, it is to be understood that the invention is not limited thereby, but is susceptible of changes in form and detail within the scope of the appended claim.

I claim:

Vaporizer for heavy and semi-heavy fuels for use with an internal combustion engine, said vaporizer comprising an outer casing adapted to be connected to the exhaust of the engine to receive hot exhaust gases, a hollow inner body defining an elongated member disposed inside said outer casing and having elongated opposite walls converging inwardly one toward the other and defining an intermediate relatively restricted passage and upper and lower relatively wider portions constituting a vaporizing chamber into said lower portion whereof the heavy or semi-heavy liquid fuel is introduced, said relatively restricted passage of said chamber being effective in a manner similar to a nozzle and said upper relatively wider portion defining a storage or accumulation space for vaporized fuel gas, whence a tubular conduit, provided with an adjustable feed valve leads to a heated mixing chamber, said mixing chamber being connected to the conventional carburetor for producing the carbureted mixture from said fuel gas with air drawn through said conduit by the engine, the outer surfaces of said walls of said elongated member defining passages for the hot exhaust gases along the interior of the said outer casing.

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