

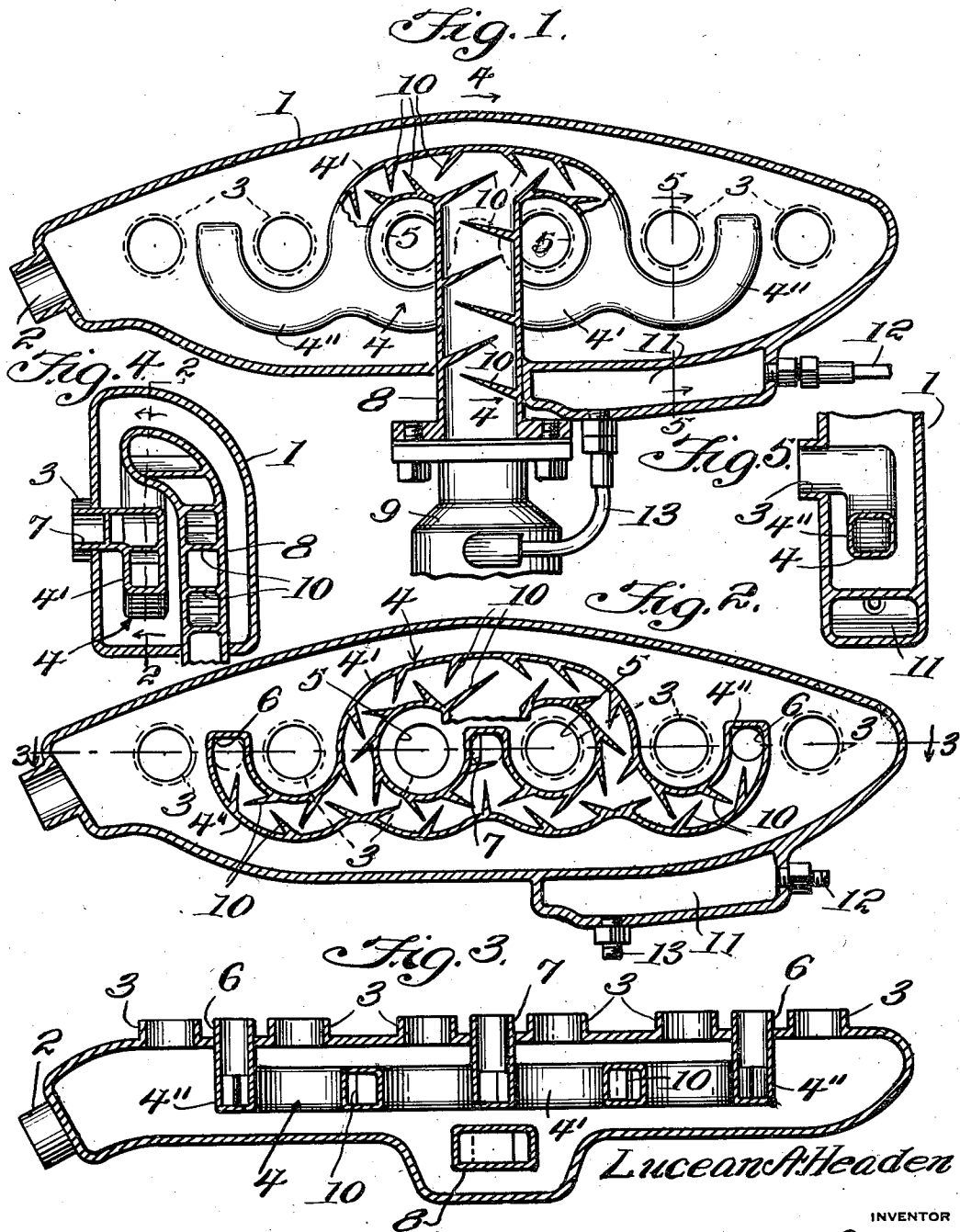
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VAPORIZER

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VAPORIZER

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6 Claims. (Cl. 123—122)

This invention relates to a vaporizer, the general object of the invention being to provide means for thoroughly vaporizing crude oil or any grade of fuel oil so that it can be used in an internal combustion engine.

Another object of the invention is to provide means for heating the oil before it is introduced into the carburetor or the like, so that the oil is preheated before being mixed with the air.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an elevation of the invention, with parts in section and parts broken away.

Figure 2 is a section on line 2—2 of Figure 4.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a section on line 5—5 of Figure 1.

In this drawing, the numeral 1 indicates the exhaust manifold which is made in the form of a casing having the outlet 2 at one end thereof and the nipples 3 at its inner side for connecting the exhaust ports of the motor with the interior of the manifold so that the exhaust gases from the motor will enter the chamber formed by the manifold and then pass through the outlet 2. The inlet manifold 4 is located in the exhaust manifold and is spaced from the walls thereof so that the exhaust gases will contact the walls of the inlet manifold and thus heat the mixture therein. The inlet manifold is formed with an enlarged part 4' and a substantially semi-circular extension 4'' at each end thereof, with a pair of spaced openings 5 passing through the enlarged part 4'. These openings register with the inner pair of nipples 3, so that the exhaust gases from the central cylinders will pass through the openings 5 and thus heat the interior walls of the enlarged part 4' so that the mixture within this enlargement is thoroughly heated by the exhaust gases contacting the exterior walls of the enlargement and the walls of the openings 5.

A nipple 6 is formed at the extremity of each of the extensions 4'' and a nipple 7 is formed at the center of the enlargement 4', these nipples being connected with the inlet ports of the motor so that the explosive mixture will pass from the inlet manifold into the cylinders. As shown, the

nipple 7 is placed between the openings 5 and in the same horizontal plane as said openings, so that the mixture must flow around the walls of said openings 5 to reach the nipple 7. Each extension 4' is curved around an exhaust opening, with its nipple 6 in the same horizontal plane as the exhaust openings, so that the mixture passing to the nipple 6 is thoroughly heated by the exhaust gases before reaching said nipple.

A tubular upright part 8 passes through the lower wall of the exhaust manifold and has its upper end curving inwardly and this upper end is connected with the top part of the enlargement 4', the lower end of the part 8 being connected with the carburetor or the like, part of 15 which is shown at 9.

Baffles 10 are connected with the internal walls of the inlet manifold and the member 8, these baffles tapering to their free ends and are inclined in the direction of flow of the mixture so as to cause the mixture to follow a tortuous path and as these baffles are heated by the exhaust gases contacting the exterior walls of the inlet manifold and member 8, as well as the walls of the passages 5, the baffles will transmit the heat to the mixture.

A chamber 11 is formed on the lower part of the exhaust manifold and the liquid fuel is led into said chamber from a source of supply through the pipe 12 and the liquid fuel is led from said chamber into the carburetor through the pipe 13. Thus the fuel is heated before being introduced into the carburetor.

From the foregoing it will be seen that the liquid fuel is heated before being introduced into the carburetor and the fuel mixed with air is highly heated as it passes from the carburetor to the cylinders, due to the arrangement of the parts, including the member 8 and the inlet manifold and the baffles on the parts, whereby the mixture is intensely heated before it reaches the cylinders, so that the liquid fuel is thoroughly vaporized.

With this invention, fuel oil, crude oil and other heavy oils can be used as fuel in internal combustion engines and the like.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. A vaporizer including an exhaust manifold having a chamber provided with spaced nipples connected to the exhaust ports of an engine and
 5 an outlet in communication with the chamber, a hollow fuel conveying pipe extending into the chamber, a second fuel conveying pipe formed
 10 integral with the first pipe and extending laterally therefrom in opposite directions within the chamber and having oppositely extending curved
 extensions disposed between pairs of the nipples, said second named fuel conveying pipe having
 15 passages through the walls thereof and disposed in alignment with a pair of the nipples, and nipples in communication with the extensions and
 the second named fuel conveying pipe extending through the exhaust manifold for connection with the inlet ports of the engine.
2. A vaporizer including an exhaust manifold
 20 having a chamber provided with spaced nipples connected to the exhaust ports of an engine and an outlet in communication with the chamber, a hollow fuel conveying pipe extending into the
 chamber, a second fuel conveying pipe formed
 25 integral with the first pipe and extending laterally therefrom in opposite directions within the chamber and curved to provide a substantially elliptical
 shaped portion with oppositely extending
 30 curved extensions disposed between pairs of the nipples, said substantially elliptical shaped portion having passages through the walls thereof
 and disposed in alignment with a pair of the nipples, nipples in communication with the extensions and the substantially elliptical shaped
 35 portion and extending through the exhaust manifold for connection with the inlet ports of the engine, and staggeredly arranged baffles in the first
 and second named fuel conveying pipes.
3. A vaporizer for an internal combustion engine comprising a hollow casing having openings
 40 at one side corresponding in number to the exhaust ports of the engine and communicating therewith, a discharge opening at one end of the casing, a fuel conduit within and spaced from
 the walls of said casing so as to be substantially
 45 entirely surrounded by the exhaust gas within said casing, communicating passages between said conduit and the inlet ports of the engine extending through the wall of said casing, and stag-

gered straight heat exchanging baffle members of decreasing thickness toward their ends within said fuel conduit and acute angularly related to the direction of travel of the fuel therein.

4. A vaporizer for an internal combustion engine adapted to form a combustible mixture from
 5 heavy or crude oils, comprising a chamber provided with spaced nipples connected to the exhaust ports of an engine and an outlet in communication with the chamber, a hollow fuel conveying
 10 pipe extending into the chamber having lateral branches extending in opposite directions and having their curvatures aligned with the arcs of said nipple to permit free discharge
 of exhaust gas through said nipples into said
 15 chamber, said branches embodying extensions protruding through the wall of said chamber in alignment with the inlet ports of said engine, and staggeredly arranged sloping baffle members
 of decreasing wall thickness in said hollow fuel
 20 conveying pipe and its branches.

5. A vaporizer for internal combustion engines adapted to form a combustible mixture from
 heavy or crude oils, comprising a casing, a fuel
 25 mixture intake manifold within said casing spaced from the walls thereof and adapted to communicate with the inlet ports of an engine, means to connect the space between said walls
 with the exhaust passages of an internal combustion engine, staggered straight heat conducting
 30 baffle members of decreasing wall thickness projecting inwardly from the walls thereof partially across the fuel mixture passage, and means to connect said manifold with the carbureter of
 said engine.

6. A vaporizer for internal combustion engines adapted to form a combustible mixture from
 heavy or crude oils, comprising a heated fuel mixture
 35 intake manifold provided with staggered heat conducting cross walls projecting inwardly
 40 from the wall of said manifold substantially beyond the central axis of said vaporizer and sloping in the general direction of the atomized oil and air mixture, each of said cross walls decreasing
 in thickness toward its free end to effect satisfactory
 45 heat exchange between said cross walls and the fuel mixture when advancing through said vaporizer.

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