

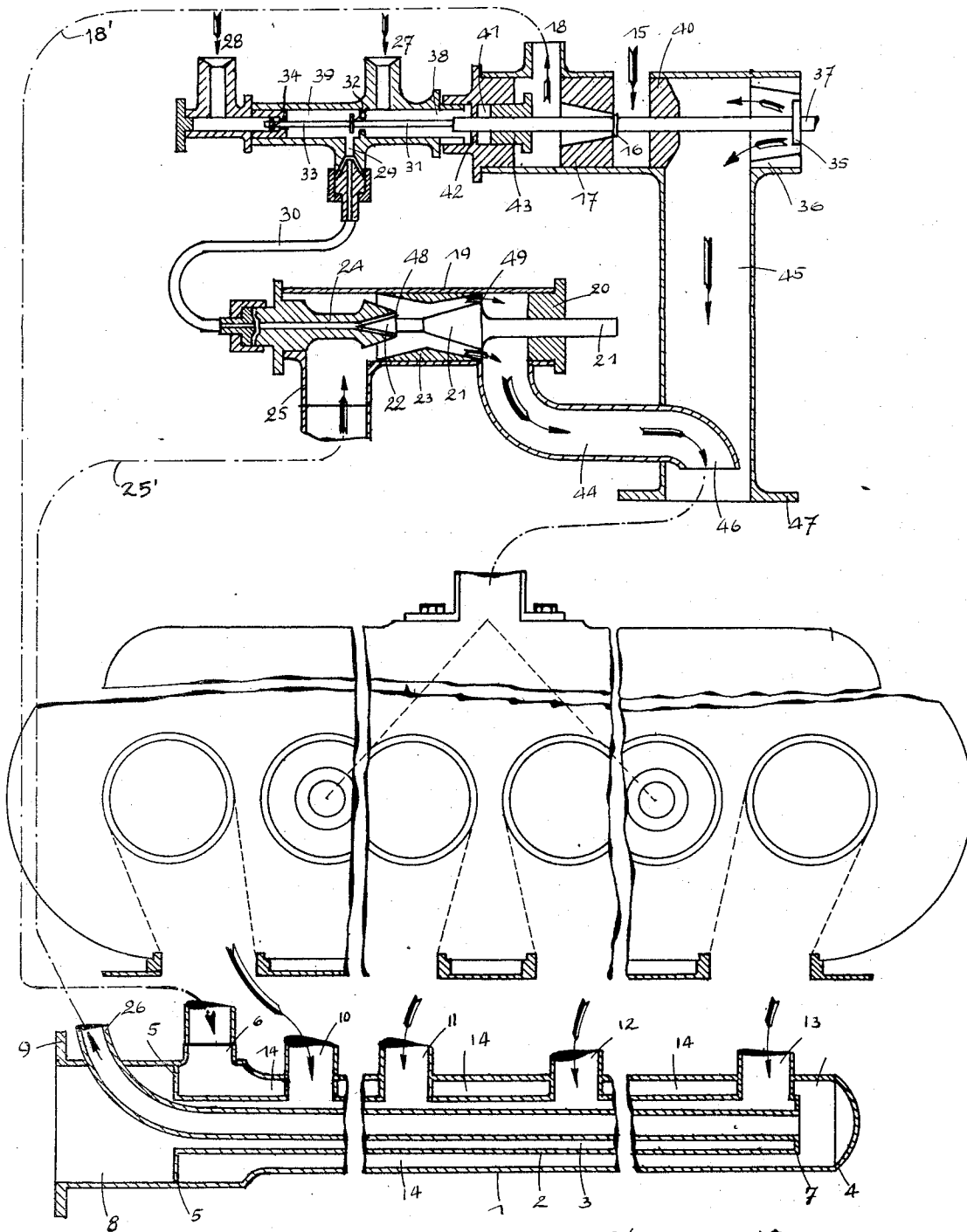
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CARBURETOR

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CARBURETOR

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The present invention relates to carburetors for explosion or internal combustion engines fed with light and heavy liquid fuels and in which the liquid fuel is wholly vaporized by means of a small stream of very hot air, the resulting gaseous mass being afterwards mixed with the cold air with the object of forming a lukewarm, powerful explosive mixture.

10 The object of the invention is to provide a device of particular construction by means of which the complete and instantaneous vaporization of the combustible liquid is obtained by the stream of very hot air proceeding from a suitable heater, the said vaporizing device being conveniently branched on a carburetor of any desired form and construction and provided with an admission duct for the cold air flowing to the heater, 15 an admission for the cold air to be mixed with the vaporized fuel and an admission for the liquid fuel.

According to the invention, the vaporizer for the liquid fuel comprises a central duct through which flows the liquid fuel fed in regulable amounts through the corresponding admission of the carburetor, said duct ending in shape of a bell mouth into which penetrates concentrically an elongated solid member in such a manner that the liquid fuel is flattened into the shape of a thin conical sheet and in such condition exposed to the stream of hot air proceeding from a concentric outer duct and flattened into the shape 30 of a conical sheet striking the sheet of fuel, the gaseous mass thus formed being forwarded to the admission valves of the motor, where it is mixed with the cold air current to be carbureted.

40 The figure is an axial section through the carburetor with the engine indicated in partial plan and the heater element of the engine with which the carburetor cooperates shown in section.

45 The air heater shown serves at the same time as an exhaust manifold for the engine. It is formed of three tubes 1, 2, 3, arranged concentrically within each other. The exhaust gases enter through openings 10, 11, 50 12, 13, (the engine having four cylinders for

instance) and escape through 8. Cold air entering at 6 passes through the space 14 between the tubes 1 and 2 and enters the central tube 3 through the bottom. Thus such cold air passes in two opposite directions, 55 each time along a surface directly heated by exhaust gases. It will be seen that in this arrangement the heat of exhaust gases may be utilized to a maximum.

15 designates the inlet of cold air from the atmosphere towards the admission 16—17. Air thus admitted in varying volumes and at varying rates of speed according to the running and load of the engine, passes into the heater, wherein the vein of hot air is formed. To this end the mechanical admission 16—17 is connected to the heater by means of a pipe 18' connected at 18 and 6. The apparatus comprises two admissions 27, 31, 32 and 28, 33, 34 for liquid fuel, but if 70 more than two grades or kinds of liquid fuel are to be disposed of and utilized simultaneously or successively in the same engine, the carburetor may have more than two admissions. The fluid inlets are controlled by 75 valves 32 and 34 operated from the rod 31—33 simultaneously with the operation of the air admission port.

The shaft 37 is held exactly in the axis of the apparatus by means of guides 40 and a stuffing box 41, 42, 43. Said stuffing box must be completely liquid tight to avoid possible losses of liquid fuel.

It is obvious that instead of two or more liquid fuel admissions, a single admission 85 may be used in cases where a single fuel is used at a time.

The fuel or fuels admitted through the admission or admissions enters the apparatus through the pipe 30, in which apparatus heat 90 is exchanged between said fuel or fuels and the vein of hot air. The latter enters at 25 connected by a pipe 25' to the tube 26 of the heater, whilst liquid fuel passes into the nozzle 24, at the end of which it will be expanded to a thin circular film by the cone 22 arranged concentrically in the flaring mouth of the nozzle 24. Owing to the bulging portion 23 the vein of hot air will also be expanded to a conical film so that at 48 the two films of 100

liquid fuel and hot air will cross each other and mix intimately with an instantaneous and complete exchange of heat, and an instantaneous vaporization of fuel will result. The mixing is assisted by the deflecting action of the reversed cone 21 and the wall 23, which have a tendency to deflect the current of hot air incompletely utilized in the direction of the movement of fuel. The combustible mixture produced passes through the conduit 44 to the cylinder or cylinders of the engine, but before reaching the latter it meets with cold air arriving from the admission 35, 37 through the pipe 45.

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

1. In a carburetor for explosion engines, a controlled primary cold air inlet, a heater connected to said inlet and by which the primary air is heated, controlled liquid fuel inlets, a vaporizing chamber connected to said fuel inlets and to the heater, in which the liquid fuels are vaporized by the heated primary air, a controlled secondary cold air inlet, leading directly to the engine, the vaporizing chamber opening into the stream of secondary cold air, and means whereby the primary air inlet, the liquid fuel inlets and the secondary air inlet are controlled simultaneously and proportionally.

2. In a carburetor for internal combustion engines, a primary cold air inlet, a connection from said air inlet leading to a heater, a valve for controlling the passage of the air from the cold air inlet to the heater, a vaporizer, a heated air connection from the heater to the vaporizer, independent fuel admissions formed in the carburetor, a conduit common to said fuel admissions and leading to the vaporizer, valve mechanism for each of the fuel admissions whereby the admission of a particular fuel may be controlled, a secondary air passage leading directly to the engine manifold, a conduit from the vaporizer leading into the secondary air passage adjacent the junction of the latter with the manifold, a valve controlling the admission of air to the secondary air passage, and a single member for simultaneously controlling all of said valves.

In testimony whereof I have hereunto set my hand.

FRANCOIS VICTOR ALBERT THOMAS.

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