

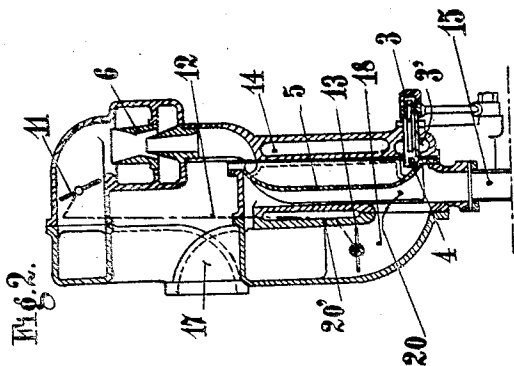
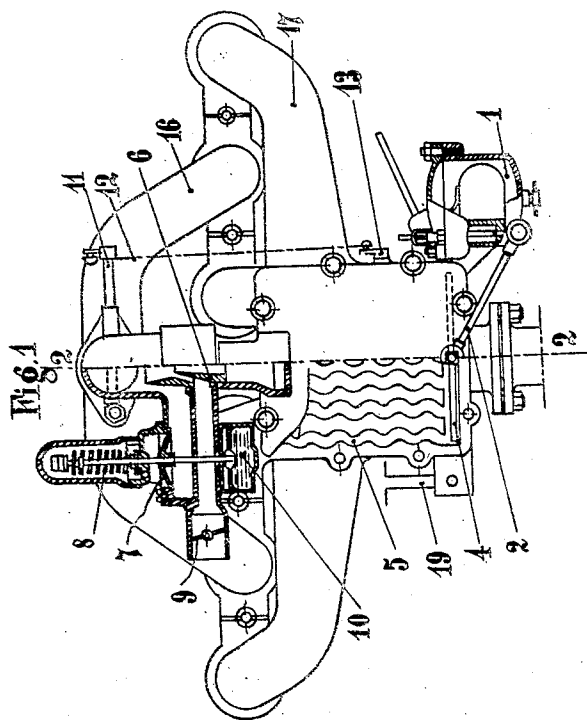
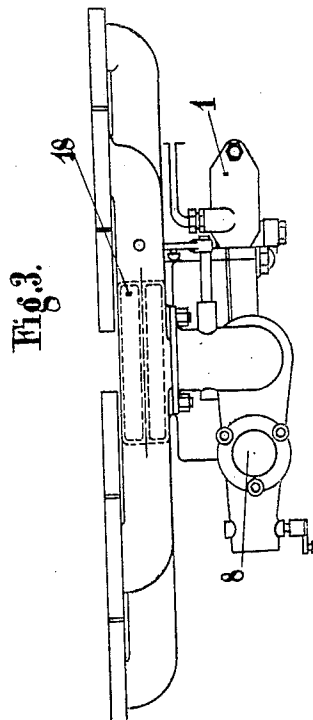
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D. BALACHOWSKY ET AL

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CATALYTIC MIXER

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INVENTORS:
D. Balachowsky, P. Caire, and
M. Levy

BY

Emil Bönnekye
ATTORNEY

UNITED STATES PATENT OFFICE

DMITRY BALACHOWSKY, PHILIPPE CAIRE, AND MANÈS LÉVY, OF PARIS, FRANCE,
ASSIGNORS TO SOCIETE DES BREVETS CATALEX, OF PARIS, FRANCE

CATALYTIC MIXER

Application filed July 30, 1929, Serial No. 382,141, and in France August 3, 1928.

This invention relates to improvements in such devices as will cause the catalytic decomposition or cracking of light and heavy hydrocarbons and are mainly but not exclusively intended for use in motor vehicles with the purpose of feeding with heavy hydrocarbons.

In order that the invention may more readily be understood, it will now be further described with the aid of the accompanying drawings wherein the device providing the subject matter of the invention is shown by way of example.

In the drawings:—

Figure 1 is an elevation partly in section of a catalyzer whereby the catalytic decomposition of heavy or light hydrocarbons may be obtained.

Figure 2 is a cross section at right angles to Fig. 1 taken on line 2—2 of Fig. 1.

Figure 3 is a plan view corresponding to Fig. 1.

As shown in these figures, 1 designates a constant-level cup one feature of which resides in its being provided with a float in which a partial vacuum has been created to enable it to resist the internal expansion resulting from the action of the heat radiated by the power set.

This constant-level cup communicates through the duct 2 with the spray-emulsifier indicated at 3 in Fig. 2. The primary air arrives at 3' through duct 19 and, under the suction set up by the engine or the action produced by a pump circulating the carbureted mixture, the hydrocarbon is drawn in and drives along the air arriving at 3', the carbureted air, which is a true emulsion of liquid hydrocarbon and air, being distributed through a rack 4 at the bottom of the catalyzing block.

The catalyzing block consists of a mass of copper or any other oxidation-promoting material; the block being formed with two series of cast or punched longitudinal sinusoidal grooves 5.

The first series of grooves, which extends on the front face of the catalyzing block and can be seen in Fig. 1 wherein the heat insulating lid 14 is omitted, serves as a path for

the mixture of primary air and fuel fed from the emulsifier 3, 4.

The second series, which extends at the rear of the catalyzing block at 20, is heated by the flow of exhaust gases which is passed there-through, eventually in combination with any other heat supply. This second series consists in some manner of blades secured to or solid with the grooves in which the emulsified mixture is caused to flow. A highly favourable heat exchange is thus obtained between the exhaust gases from the engine and the fuel vapours to be catalyzed.

As already mentioned, the block is closed at the front part thereof by a heat-insulating lid 14 bolted thereto or secured in any other suitable manner. Located at 9 at the top part of the catalyzing block is a duct by which the secondary air is led in, an adjusting throttle being incorporated in said duct. The catalyzed mixture issuing from the catalyzing block arrives in the upper Venturi tube or mixing element 6 and becomes mixed with the secondary air led in through the duct 9 and the whole mixture is fed to the engine through the manifold 16.

The valve 7 which communicates with the secondary air supply duct and is controlled through a spring 8 allows additional air to be introduced automatically into the mixture when the suction created by the engine happens to exceed a given limit. The exhaust gases from the engine arrive through the manifold 17 at the rear of the catalyzing block; opening the throttle 13 will allow them to directly proceed towards the exhaust gas orifice 15. When the throttle is fully closed, as shown in Fig. 2, the exhaust gases must flow over the partition 20' so that they come into contact with the blades before entering the exhaust duct 15.

The amount of exhaust gases flowing past the blades will be more or less considerable depending on how much the throttle is open. This arrangement thus allows the temperature in the catalyzer to be adjusted at will.

As already mentioned, the rear part of the catalyzer, that is, that part thereof provided by the blades, is likewise made of catalytic metal or any other such material; conse-

quently, a catalysis of these exhaust gases will take place whereby the deleterious action of said gases is destroyed, particularly on account of the carbon monoxide therein being converted into carbon dioxide.

5 The operating means for the shutter 11 controlling the amount of mixture fed to the engine is connected to the throttle 13 for the exhaust gases through a rod 12 so that both
10 shutters may be opened or closed simultaneously.

A branch pipe leading from the exhaust pipe into the pipe 19 through which the primary air is fed into the emulsifier 3, 4 may
15 be provided in order to allow an adjustable amount of exhaust gases to be introduced into the initial mixture submitted to catalysis. Such exhaust gas admixture is intended to cause in the explosive mixture a reaction
20 whereby a mixture is obtained which will give rise to a satisfactory explosion and cause the engine to work properly.

We claim as our invention:

A catalytic mixer for effecting catalytic
25 decomposition of heavy hydrocarbons in motors, comprising a catalyzing block formed with a series of sinuous channels through which a mixture of fuel and primary air is caused to ascend; blades on said block; means
30 for circulating exhaust gases through the rear part of the block in contact with said blades to heat said gases; a Venturi tube in which the catalyzed mixture is mixed with secondary air; and means for admitting additional air.

35 In testimony whereof, we affix our signatures.

MANÈS LÉVY.
PHILIPPE CAIRE.
40 DMITRY BALACHOWSKY.

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