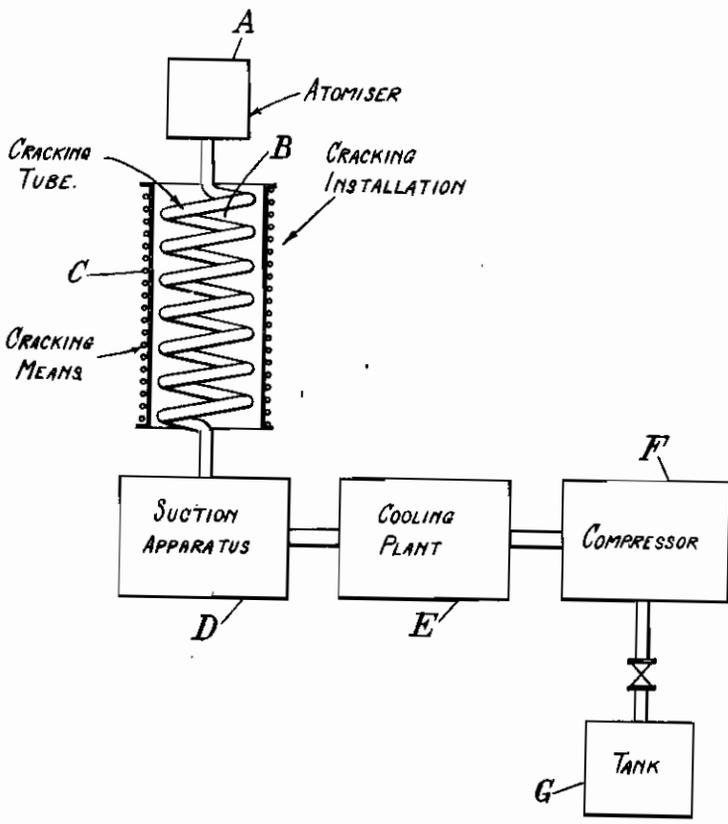


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METHOD OF CONVERTING LIQUID HYDROCARBONS  
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# ALIEN PROPERTY CUSTODIAN

## METHOD OF CONVERTING LIQUID HYDROCARBONS INTO HIGHLY COMPRESSIBLE DRY GAS

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The present invention relates to a method of converting liquid hydrocarbons of any chemical composition (of natural or synthetic nature), without employment of high pressure or high temperatures and without any carbon separation, into a highly compressible dry gas (or a gas which is no longer condensable), which is capable of perfectly smokeless, sootless and odourless combustion without any soot and oil coke formation and with formation of waste gases which are completely free from carbon monoxide.

Up to now it has never been possible without employing high pressure or high temperatures to convert natural or synthetic liquid hydrocarbons of any desired chemical compositions, such as light oils, medium heavy oils or heavy oils, without carbon separation into a gas which is no longer condensable and is capable of burning without substantial residues.

The present invention opens up for liquid hydrocarbons of any chemical composition (more particularly aliphatic compounds) new fields of application in various branches of technics in which the use of highly compressible dry gases comes into question as fuel gas, heating gas, driving gas etc.

In the present method liquid hydrocarbons are, before the ignition or the actual combustion or work-producing process, rendered reactive by conversion of the carbon to carbon monoxide or by separation of the carbon from the hydrogen.

The conversion of the carbon to carbon monoxide takes place by the atomised hydrocarbon being drawn into serpentine ducts which are heated to 400-600° C., the liquid hydrocarbon being chemically adulterated or rendered reactive by the atomising air before the conversion.

In this manner a highly compressible dry gas is produced from the liquid hydrocarbon without any carbon separation (or without any soot formation or oil-coke formation) which is capable before the initiation of the ignition or the combustion process of being mixed without recondensation with cold air to form ignition gas, fuel gas or heating gas, which in its combustion process or work-producing process proper is capable of perfectly smokeless, sootless and odourless combustion with formation of waste gases which are completely free from carbon monoxide.

According to one example for carrying out the invention 1 kg. of liquid hydrocarbon of chemical composition  $C_{10}H_{22}$  (decane according to its empirical formula) for example is converted within five minutes without any carbon separation into a highly compressible and no longer condensable gas which is capable of perfectly smokeless, sootless and odourless combustion.

For this purpose liquid  $C_{10}H_{22}$  is finely atomised in an atomiser of known or suitable construction and is sucked through a 120 nozzle into a cracking plant having a duct 1315 mm. long

with an internal width of 8 mm., which after a third of the path divides up into two ducts of 7 mm., at a suction velocity of  $1/200$  of a second.

In the above splitting or cracking plant for hydrocarbons of the decane series the liquid hydrocarbon is converted into a highly compressible gas which can be cooled down with air of an atmospheric outside temperature of itself far below 0° C., without condensing again and can be used as gas for combustion, heating or driving purposes from transportable containers after suitable admixture with fresh air.

Since up to now it has never been possible to burn liquid hydrocarbons irrespective of what empirical formula series without separations of soot and oil carbon as well as carbon monoxide in the waste gases, and since, further, only very few hydrocarbons were highly compressible and no hydrocarbons at all could up to now be converted into a gas which was no longer condensable without high pressure and without high temperatures, the method according to the present invention of converting liquid hydrocarbons of any desired chemical compositions without any formation of soot or oil carbon into highly compressible gas capable of absolutely smokeless, sootless and odourless combustion represents a far-reaching advance in the whole hydrocarbon art and all the practical applications thereof.

The method according to the invention may be carried out in any desired cracking plants which permit of a heating of the duct walls to a temperature of 400-600° C., and through the ducts of which the atomised liquid hydrocarbon is forced through by suction action and is cooled down before the combustion or work-producing process.

The details for carrying the invention into effect, such as length and surface of the duct walls of the cracking plant, the velocity of the suction action, the degree of final cooling down as well as the quantity of atomising air necessary for the adulteration etc., depends on the character of the liquid hydrocarbons used as well as the quantity thereof necessary in each particular case.

The accompanying drawing illustrates diagrammatically and by way of example one mode of carrying the invention into effect.

Referring to the drawing, the liquid hydrocarbon to be treated is atomised in the atomiser A, and the hydrocarbon mist produced is drawn by means of the suction apparatus D through the cracking installation comprising a cracking tube B, which is heated to 400-600° C., by cracking means e. g. an electrical heating resistance C. The hydrocarbon mist converted into dry gas is passed from the suction apparatus D to the cooler E, after which it is compressed by a compressor F into the storage tank G.

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