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(12) **Patent:**

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(54) HYDRO-CARBON PRODUCTION

(54) PRODUCTION D'HYDROCARBURES

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ABSTRACT:

CLAIMS: Show all claims

*** Note: Data on abstracts and claims is shown in the official language in which it was submitted.

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The methods heretofore used for the synthesis of easily boiling hydro - carbons have the great drawback of requiring high temperature and pressures, which are avoided by our present invention.

According to our invention a mixture of unsaturated hydro - carbons, preferably acetylene with a gas containing carbon oxide and hydrogen, such as a generator gas, water gas, or a similar gas obtained from incandescent carbon or coak and vapour, without applying heat, and at normal pressure, are passed over a metallic catalyser which, at least temporarily, is subjected to the influence of chemically active light rays.

A suitable catalyser can be obtained, for example, by treating a mixture of a finely powdered, pure electrolytic copper, powdered wolfram and powdered pumice stone, with a dilute (at the most 10 %) lye of caustic soda, or caustic potash, or both together, and then quickly drying the mixture.

This method, by way of example, can be carried out as follows:

In a reaction chamber, several separate layers of the catalyser are arranged in such a way over each other on suitable supports that all parts of the gas to be treated can come into contact with the catalyser. Each layer can be heated up by electric resistances, and one or several lamps are provided in the reaction chamber to throw ultra-violet rays on the catalyser. The catalyser is heated to about 70 - 80° C and is subjected to ultra-violet rays for about 15 minutes. The heating current is then cut off and acetylene and water gas are introduced into the chamber through separate pipes. For every 10 parts of acetylene, 100 parts of water gas are

led in. Immediately behind the point where they enter the gases mix and they then pass over the catalyser layers, where the reaction takes place and a mixture of easily boiling hydro-carbons is formed. The reaction heat is sufficient to keep the catalyser layers at a temperature of 70 - 80° C. The application of further heat from the outside is not necessary. The gas and steam mixture containing the hydro- carbons is then cooled down to condense the hydro- carbons, for example, by means of pipe coils in which cold water circulates, the non - converted substances being conducted back for repeated use. From the water formed in the reaction the hydro-carbons are separated by any of the known methods. To lead the gas mixture through the reaction chamber a very small pressure can be employed. The suction arising by the condensation of the hydro- carbons, however, is also sufficient. The yield calculated for carbon is 85 to 90 % of the carbon contained in the original mixture. In experiments made it has been found that the catalyser, after being subjected to the light rays for 1/4 hour, remains effective for 2 hours. After this time has passed the rays are thrown on again. According to the working conditions, however, the application of the light can take place continuously, or in shorter or longer intervals. Other metals can also be used as catalyser.

What we do claim and desire to secure by letters patent is:

1.) The method of producing easily boiling hydro-carbons which comprises passing a mixture of unsaturated hydro-carbons and a gas containing carbon oxide and hydrogen, without applying heat, and at normal pressure, over a catalyser which, at least temporarily, is subjected to the action of chemically active light rays.

2.) The method of producing easily boiling hydro- carbons which comprises passing a mixture of unsaturated hydro-carbons and a gas containing carbon oxide and hydrogen, without applying heat, and at normal pressure, over a catalyser which has been subjected to chemically active light rays and consisting of a mixture of pure, powdered electrolytic copper, wolfram and pumice stone powder, treated with a dilute caustic alkaline lye and quickly dried.

Signed at Berne, this 15th day of June 1927.

Wilhelm Jenmann.

Eduardo William Rhodes