[Second Edition.]

PATENT SPECIFICATION

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3412

COMPLETE SPECIFICATION.

Improvements in or relating to the Production of Methyl Alcohol by Catalysis.

We, SOCIÉTÉ FRANCAISE DE CATALYSE GENERALISEE, of 16, rue Lacretelle, Paris, France (and having an office at 30, Avenue des Champs Elysees, Paris, France), a société anonyme duly organized according to the French laws, Assignees of CHARLES HENRY, a French citizen, of 31, Clos des Vignes, Coyes (Oise), France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

In the commercial production of methyl alcohol carbon-monoxide is caused to react with hydrogen under certain physical conditions in the presence of a catalyser, the latter having the effect of lowering the temperature and pressure necessary for the reaction.

If we designate by R the efficiency of a catalyser, by θ_1 the temperature of formation without catalyser, and by θ_2 the temperature of formation in the presence of a catalyser, we have $R = \frac{\theta_1 - \theta_2}{\theta_1}$ the θ being counted in absolute temperatures.

As to the catalyser actually recognised as the most efficient for this reaction, it has been found by experience that $R = 0.465$, this catalyzer being constituted by a mixture corresponding to 3 molecular proportions of zinc oxide (ZnO) and one molecular proportion of chromium oxide (Cr_2O_3); the pressure necessary for the reaction with this catalyser being equal to about 200 atmospheres and the temperature 300 degrees Centigrade, or 573° absolute. Under these conditions, the mixture $CO + 2H_2$ is transformed almost entirely into methyl alcohol which can be condensed by a suitable device.

The present invention comprises a process of producing methyl alcohol, starting from carbon monoxide and hydrogen by using catalysers, constituted by either a finely ground mixture of metallic strontium and oxide of lead, or a finely ground mixture of metallic zinc and trioxide of bismuth.

The first mentioned catalyser is preferably in the proportion of 3 atomic proportions of (Sr) to one molecular proportion of (PbO) or 4 atomic proportions of (Sr) to one molecular proportion of (PbO). Using a mixture of the composition $3Sr + PbO$, at 300 degrees Centigrade methyl alcohol is obtained under a pressure of 5 atmospheres and if the operation is carried out at 200 degrees Centigrade, 10 atmospheres only will be necessary. Under these conditions it has been found that

$$R = 0.819.$$

The second mentioned catalyser is preferably in the proportion of 3 atomic proportions of metallic zinc to one of Bi_2O_3.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Improvements in the production of methyl alcohol by catalysts by starting from carbon monoxide and hydrogen characterised by the use of new catalysers constituted by a finely ground mixture of metallic strontium (Sr) and oxide of lead (PbO), preferably 3 atomic proportions of strontium to 1 molecular proportion of oxide of lead, or 4 atomic proportions of strontium to 1 molecular proportion of oxide of lead.

2. Improvements in the production of methyl alcohol by catalysis by starting from carbon monoxide and hydrogen characterised by the use of new catalysers constituted by a finely ground mixture of metallic zinc (Zn) and of trioxide of bismuth (Bi_2O_3), preferably 3 atomic proportions of zinc to 1 molecular proportion of trioxide of bismuth (Bi_2O_3).

Dated this 27th day of January, 1927.

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