UNITED STATES PATENT OFFICE.

FRITZ HOFMANN AND LUDWIG TANK, OF ELBERFELD, GERMANY, ASSIGNORS TO FARBENFABRIKEN VORM. FRIEDR. BAYER & CO., OF ELBERFELD, GERMANY, A CORPORATION OF GERMANY.

PROCESS OF PRODUCING DOUBLE OLEFINS.

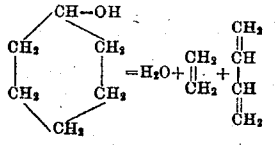
1,010,050. Specification of Letters Patent. Patented Nov. 28, 1911.

No Drawing. Application filed January 21, 1911. Serial No. 603,892.

To all whom it may concern:

Be it known that we, FRITZ HOFMANN and LUDWIG TANK, doctors of philosophy, chemists, citizens of the German Empire, residing at Elberfeld, Germany, have invented new and useful Improvements in Processes for Producing Double Olefins, of which the following is a specification.

It has been found that double olefins, like erythrene and its homologues can readily be obtained by heating above 500° C. cyclohexanols. Agents promoting the decomposition can be added. This process proceeds *e. g.* according to the following equation:



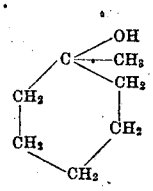
By this process it is possible to obtain the valuable olefins with double bonds in a very simple manner.

In order to illustrate the new process more fully the following examples are given, the parts being by weight:

Example 1: 1000 parts of cyclohexanol are dropped into an iron tube heated to about 600° C. The decomposition takes place immediately with a lively evolution of gas. Water, cyclohexene and cyclohexanone and also a small quantity of unchanged cyclohexanol distil over. The gases are then fixed by bromin or are directly condensed. Erythrene is thus obtained with a good yield.

Example 2: 500 parts of ortho-methylcyclohexanol are converted into gas form in a porcelain tube which is heated at 500–600° C. and is filled with iron filings, a slight evolution of gas takes place. The cooled receiver contains hydrocarbons from which isoprene can be isolated by distillation.

Example 3: On replacing in Example 1 the cyclohexanol by oxymethylcyclohexane of the formula:



the process takes place in an analogous manner. Isoprene is obtained with a good yield. In this case the iron tube is filled with native aluminium sesquioxid.

Instead of the cyclohexane derivatives mentioned in the above examples other of these compounds can be used.

We claim:—

1. The process for producing olefins with two double bonds, which process consists in heating above 500° C. cyclohexanols, substantially as described.

2. The process for producing olefins with two double bonds, which process consists in heating above 500° C. cyclohexanols with the addition of an agent promoting the decomposition, substantially as described.

3. The process for producing isoprene, which process consists in heating above 500° C. methylcyclohexanol, substantially as described.

4. The process for producing isoprene, which process consists in heating above 500° C. methylcyclohexanol with the addition of an agent promoting the decomposition, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

FRITZ HOFMANN. [L. S.]
LUDWIG TANK. [L. S.]

Witnesses:
WALTER OONNEGUT,
ALFRED HENKEL.