

UNITED STATES PATENT OFFICE.

GEORG ORNSTEIN, OF BERLIN, GERMANY.

PROCESS OF PRODUCING ACETYLENE TETRACHLORID.

1,030,916.

Specification of Letters Patent.

Patented July 2, 1912.

No Drawing.

Application filed September 12, 1910. Serial No. 581,613.

To all whom it may concern:

Be it known that I, GEORG ORNSTEIN, Ph. D., chemist, subject of the German Emperor, and resident of Berlin, Kingdom of Prussia, German Empire, have invented new and useful Improvements in Processes for Producing Acetylene Tetrachlorid, of which the following is a full, clear, and exact specification.

My invention relates to an improved process for producing acetylene tetrachlorid.

The known processes for the production of acetylene tetrachlorid may be divided into two main classes, that is to say, such in which chlorids of antimony are used, and such in which iron is employed as the catalyzing agent. The processes of the first class possess this disadvantage that the acetylene tetrachlorid produced can be obtained in a pure state only by repeated fractional distillation, and this is rendered still more complicated by the separation of the chlorin from the pentachlorid of antimony during the heating. This disadvantage may be met by using iron as the catalyzing agent. Thus, according to a certain process already proposed the end product is obtained in a pure state by a single washing and distillation, but this process, the same as the others of that class, possesses this disadvantage, that it is necessary to mix the gases with some other diluting agent first before they can be subjected to the action of the iron. Moreover, it is necessary in most of the processes above referred to, to employ exactly measured quantities of the gases, as otherwise any surplus of the one gas may very easily cause an explosion.

The object of my invention is to avoid these objections, and my invention therefore consists in the improved process hereinafter more fully described. According to this invention I cause acetylene to act on chlorin dissolved in acetylene tetrachlorid and in the presence of such means as are capable of accelerating chemical reactions, for instance a non-volatile catalyzing agent, such as iron, but without the presence of any foreign body as diluting agent.

The advantages of this improved process, which avoids the objectionable features of the processes heretofore known, may be enumerated as follows:—1. The end product is obtained in a pure state with only one washing operation and distillation. 2. Apart

from the reacting gases, the catalyzing agent and the end product, no other body is present during the reaction, for instance as diluting agent. 3. It is altogether immaterial, so far as the safety of the process is concerned, whether the gases are introduced in exactly measured quantities or whether there is a surplus quantity of any of them. 4. The process may be carried out in a continuous manner, which is of great practical importance. Moreover, it has been found that in the improved process here referred to a material increase in the catalytic effect is obtained and that the acetylene tetrachlorid apparently acts at the same time as a chlorin carrier.

One example of carrying out my improved process is as follows:—Chlorin and acetylene are admitted into acetylene tetrachlorid at different points of a receptacle containing iron chips. Since acetylene tetrachlorid is a good solvent for chlorin and a bad solvent for acetylene, it is necessary to apply the inlet pipe for the acetylene below the level of the inlet at which the chlorin is admitted, so that the acetylene which rises will always meet acetylene tetrachlorid saturated with chlorin, to be then immediately combined with this chlorin, under the action of the iron present, into acetylene tetrachlorid. In this manner two temporarily distinct actions will take place, that is to say, firstly, the dissolving of the chlorin in acetylene tetrachlorid, and secondly, the action of the acetylene on the finished solution in the presence of iron. The heat generated by the reaction is removed by cooling. The acetylene tetrachlorid generated is discharged by way of an overflow pipe.

In the practical operation the process above described may, of course, be modified in regard to details and thereby adapted to various technical requirements and conditions.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The hereinbefore described process of manufacturing acetylene tetrachlorid by introducing acetylene and chlorin into an initially present quantity of acetylene tetrachlorid in the presence of means capable of accelerating chemical reactions, the acetylene being introduced below the level at which the chlorin is admitted.

2. The hereinbefore described process of

manufacturing acetylene tetrachlorid by allowing acetylene to act on chlorin dissolved in acetylene tetrachlorid in the presence of a non-volatile catalyzing agent.

5 3. The hereinbefore described process of manufacturing acetylene tetrachlorid by introducing acetylene and chlorin into an initially present quantity of acetylene tetrachlorid in the presence of a non-volatile
10 catalyzing agent.

4. The hereinbefore described process of manufacturing acetylene tetrachlorid by introducing acetylene and chlorin into an initially present quantity of acetylene tetrachlorid in the presence of a non-volatile
15 catalyzing agent, the acetylene being introduced below the level at which the chlorin is admitted.

5. The hereinbefore described process of
20 manufacturing acetylene tetrachlorid by allowing acetylene to act on chlorin dissolved

in acetylene tetrachlorid in the presence of iron.

6. The hereinbefore described process of manufacturing acetylene tetrachlorid by introducing acetylene and chlorin into an initially present quantity of acetylene tetrachlorid in the presence of iron. 25

7. The hereinbefore described process of manufacturing acetylene tetrachlorid by introducing acetylene and chlorin into an initially present quantity of acetylene tetrachlorid in the presence of iron, the acetylene being introduced below the level at which the chlorin is admitted. 30

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses. 35

GEORG ORNSTEIN.

Witnesses:

MORRIS COHN, Jr.,

JOHN PIERCE LANGS.