

UNITED STATES PATENT OFFICE.

HOWARD LANE, OF BIRMINGHAM, ENGLAND, ASSIGNOR TO INTERNATIONALE WASSERSTOFF AKTIENGESSELLSCHAFT, OF FRANKFORT-ON-THE-MAIN, GERMANY, A CORPORATION OF GERMANY.

PROCESS FOR THE PRODUCTION OF HYDROGEN.

1,078,686.

Specification of Letters Patent.

Patented Nov. 18, 1913.

No Drawing. Original application filed June 16, 1910, Serial No. 572,411. Divided and this application filed December 9, 1911. Serial No. 664,809.

To all whom it may concern:

Be it known that I, HOWARD LANE, a subject of the King of Great Britain, and resident of 125 Edmund street, Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in a Process for the Production of Hydrogen, of which the following is a specification.

This application is a division of my application for patent for the same invention filed the 16th June 1910 Serial No. 572,411.

This invention relates to the well-known method of producing hydrogen in which a metal is alternately oxidized by steam and deoxidized by a reducing gas. In practice it has hitherto been found impossible to obtain a sufficiently pure product by this process in consequence of the steam admitted to the retort during the oxidation stage coming into contact with the reducing gas admitted during the previous reduction stage and with the sulfur, carbon, etc., associated with and introduced into the retort by said gas, the result of which contact being the formation of sulfureted hydrogen, sulfurous acid, carbon dioxid, etc., and consequent contamination of hydrogen produced by the action of the steam.

The object of my invention is to avoid this disadvantage and to this end it consists in a method of carrying the process into effect according to which the whole of the reducing gas, as well as the sulfur, carbon and other impurities associated with said gas may be got rid of between the two phases of the process.

The invention is carried into practice as follows. The process being continuous it

will be assumed that the metal has just been oxidized during the hydrogen producing phase. The sulfur, carbon and other impurities left by the preceding reduction phase are thereupon got rid of by admitting air under pressure to the retort and the products of combustion being discharged into the atmosphere. The admission of air to the retort and the discharge of the products of combustion are then cut off and reducing gas admitted and passed through and out of the retort to a gas-washing and regenerating apparatus. When the reduction stage has been completed the admission of the reducing gas to the retort and its discharge from the retort to the gas washing and regenerating apparatus is then cut off and steam admitted. As a certain proportion of reducing gas will then be present impure hydrogen will be produced and this is allowed to escape to waste, until the product is found to be sufficiently pure. Thereupon the outlet to the atmosphere is closed and the hydrogen passed into a storage tank.

Claim.

The process of producing hydrogen in a heated retort, which consists in deoxidizing a metal oxid within said retort by means of a reducing gas, in then oxidizing the deoxidized metal by means of steam, and in then introducing a blast of oxygen in the form of air into the retort and then again deoxidizing the oxidized metal by means of the reducing gas as described.

HOWARD LANE.

Witnesses:

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