

Abstract

In the present invention, an apparatus for direct decomposition of a hydrocarbon directly decomposes a hydrocarbon into carbon and hydrogen using a gas containing methane and a hydrocarbon having two or more carbon atoms as a raw material gas. The apparatus includes: a reformer that houses a first catalyst for methanation of the hydrocarbon having two or more carbon atoms; a reactor which is configured so that a reformed gas flowing out of the reformer flows into the reactor, and which houses a second catalyst that is an iron-based catalyst; a recycling line that connects a produced gas line through which a produced gas flowing out of the reactor flows, to a raw material gas line for introducing the raw material gas into the reformer.