

ABSTRACT

A hydrogen production device (10) includes a reactor (12) that produces hydrogen by thermally decomposing a hydrocarbon gas, which is a feed gas, using a catalyst (14) including fine metallic particles. The feed gas is introduced into the reactor (12) through a lower portion of the reactor (12) such that a fluidized bed of the catalyst is formed inside the reactor (12). Inert particles serving as a fluidizing medium (17) are mixed with the catalyst to increase fluidity of the catalyst.