ABSTRACT

METHOD AND APPARATUS FOR CARBON CAPTURE COUPLED HYDROGEN PRODUCTION

Disclosed are a method and an apparatus for carbon capture coupled hydrogen production. The method includes: capturing low-concentration CO_2 by a solution of an alkali metal hydroxide to obtain a low-concentration CO_2 absorption solution; capturing high-concentration CO_2 by a first portion of the low-concentration CO_2 absorption solution to obtain a high-concentration CO_2 absorption solution; and performing electrolysis by a second portion of the low-concentration CO_2 absorption solution as a catholyte solution, using the high-concentration CO_2 absorption solution as an anolyte, and using a non-ionic diaphragm as a diaphragm. According to the method, capture of CO_2 in a wide concentration range can be realized; electrolysis is performed by a non-ionic diaphragm, to implement regeneration of an absorption solution coupled hydrogen production; capture costs of CO_2 in a wide concentration range can be reduced; additional products of H_2 and O_2 can be obtained; and hydrogen production costs can be reduced.

Fig 1