bittern as a raw material, there is no problem even if magnesium chloride is not regenerated from the by-product after separating hydrogen from magnesium hydride.

[0051]

However, regeneration of magnesium chloride from by-products after separating hydrogen from magnesium hydride is also possible, and in this case, using metallic magnesium in a circulating manner is possible.

[0052]

Specifically, as described above, extraction of hydrogen from magnesium hydride can be performed by adding water to magnesium hydride (see Formula 1).

$$MgH_2 + 2H_2O \rightarrow Mg(OH)_2 + 2H_2 \quad (1)$$

Note that because the reaction of Formula 1 is an exothermic reaction, generating power using the heat generated by this reaction is possible.

[0053]

Then, the by-product containing magnesium after generating hydrogen is magnesium hydroxide, but when magnesium hydroxide is introduced into aqueous hydrochloric acid and neutralized, an aqueous solution containing magnesium chloride is formed (see Formula 2).

$$Mg(OH)_2 + 2HCl \rightarrow MgCl_2 + 2H_2O \quad (2)$$

[0054]

Next, the magnesium chloride hexahydrate crystals are precipitated by evaporating water in the aqueous solution containing magnesium chloride at a temperature at which the magnesium chloride does not decompose to generate a basic salt (Mg (OH) Cl).

[0055]

By dehydrating the magnesium chloride hexahydrate thus obtained, anhydrous magnesium chloride can once again be obtained.

For example, dehydration is performed by heat treatment at a molar ratio of magnesium chloride hexahydrate to ammonium chloride of about 1: 8 (see Formula 3).

$$MgCl_2 \cdot 6H_2O + 6NH_4Cl \rightarrow MgCl_2 + 6NH_4OH + 6HCl \quad (3)$$