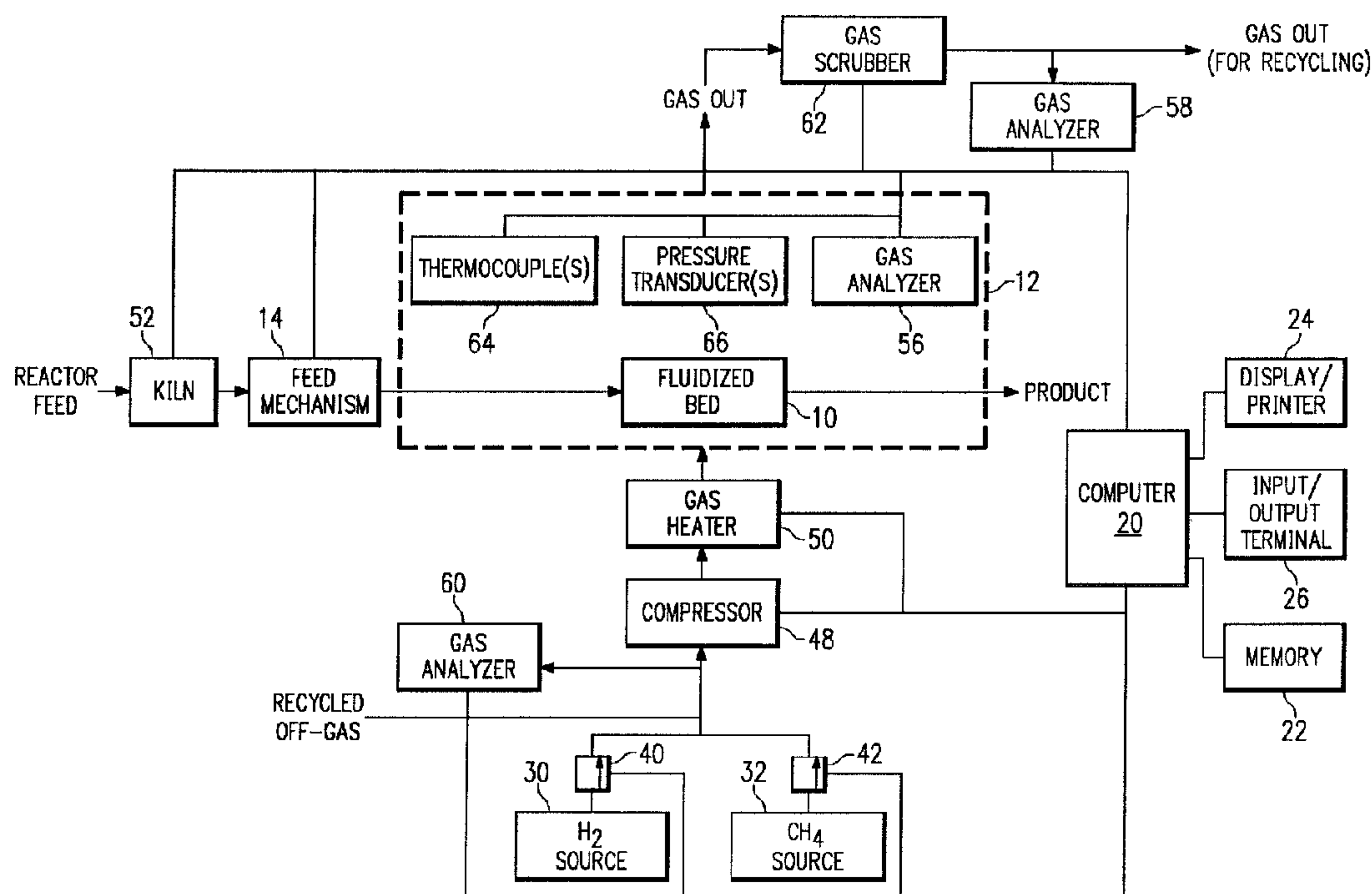




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(72) Inventeurs/Inventors:
Stephens, Frank M., Jr., US;
Stephens, Frank A., US;
Hager, John P., US
(73) Propriétaire/Owner:
Iron Carbide Holdings, Limited, US
(74) Agent: JOHNSON, ERNEST PETER

(54) Titre : METHODE SERVANT A REGULER LA CONVERSION EN CARBURE DE FER D'UNE ALIMENTATION DE REACTEUR CONTENANT DU FER
(54) Title: METHOD FOR CONTROLLING THE CONVERSION OF IRON-CONTAINING REACTOR FEED INTO IRON CARBIDE



(57) Abrégé/Abstract:

A process for controlling the conversion of reactor feed to iron carbide is disclosed. The reactor feed is subjected to a process gas in a fluidized bed reactor (10), and measurements (56) are taken of individual gases in the off-gas from this reaction and the temperature (64) and pressure (66). A stability phase diagram is generated based on the temperature. Different regions of the stability phase diagram are representative of different products being formed by the conversion of the reactor feed. Based on concentrations of the individual gases in the off-gas and the total pressure, a point is plotted on the stability phase diagram indicative of the favored reaction product. The process parameters can then be adjusted to insure that iron carbide can be produced from the reactor feed based on the stability phase diagram.



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METHOD FOR CONTROLLING THE CONVERSION
OF IRON-CONTAINING REACTOR FEED INTO IRON CARBIDE

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a method for controlling the processing of iron-containing reactor feed into a form which is useful in the direct production of steel. More particularly, the present invention relates to a method for controlling the conversion of reactor feed in a fluidized bed reactor into a product comprising mostly iron carbide.

10 Description of the Related Art

Typically, iron ore is converted to steel through a basic process that has been in use for many years. This process involves the conversion of iron ore to pig iron in a blast furnace using coke produced in a coke oven and the subsequent conversion of the pig iron to steel in an open hearth or basic oxygen furnace. However, this process has a number of drawbacks, some of which have been brought about by realities of life in the late twentieth century. For example, due to environmental standards, capital costs involved with the construction of a steel mill which meets pollution standards or the modification of existing plants to meet pollution standards would now be prohibitive. When the capital costs are factored into the price that must be charged for the steel produced by such a steel mill, the price of that steel would simply not be competitive on the world market. Additionally, the traditional steel-making

