

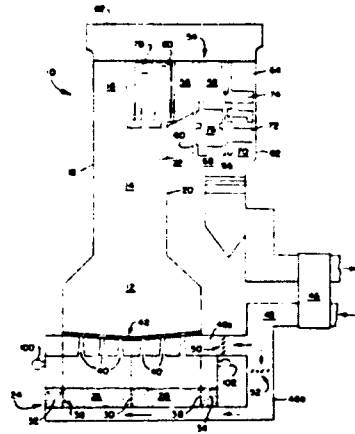
A novel thermal process for recovering hydrocarbon and other products from tar sand. The process includes blending tar sand with a bitumen-rich concentrate while heating the same with a hot, burnt sand. The products are recovered by passing the combined feed through a fluidized bed and selectively controlling the temperature and residence times to obtain predetermined ratios of products. Coked sand residue from the fluidized bed is burned to produce the hot, burnt sand, a portion of which may be recycled to provide heat to the fluidized bed. Coked sand may also be recycled into a known, hot-water, caustic separation process where it synergistically improves the separation efficiency of the hot-water, caustic separation process.

4336769

INTEGRAL VAPOR GENERATOR/GASIFIER SYSTEM

Ernest L. Daman; assigned to Foster Wheeler Energy Corporation

An integral generator/gasifier system in which a vapor generator is provided that includes an upright furnace section and a plurality of nozzles, each having one end registering with the interior of the furnace section. A gasifier extends adjacent to the furnace section and supports a bed of adsorbent material for the sulfur generated

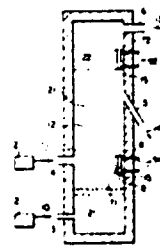


as a result of the gasification of fuel introduced to the gasifier. Air is passed through the bed of adsorbent material to fluidize said material so that, upon gasification of the fuel, a substantially sulfur-free product gas is produced. The other ends of the nozzles communicate with the gasifier so that the product gas passes from the gasifier through the nozzles and into the furnace section for combustion.

4336227

FLUIDIZED BED REACTOR

Shuntaro Koyama; Tomohik Miyamoto; Mizuho Hirato; assigned to The Agency of Industrial Science and Technology



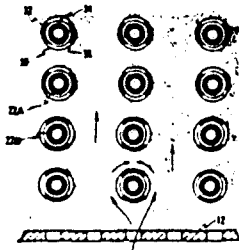
In a fluidized bed reactor having a reactor vessel, two detector vessels are mounted in the reactor vessel near the inside surface of the reactor vessel near the inside surface of the reactor vessel in the fluidized bed and in the gas outlet region. Each detector vessel contains larger detecting particles and passes the gas in the reactor vessel. Pressure drop across the detecting

particles is measured. The ratio of the two pressure drops represents the ratio of the fluid velocity and minimum fluidizing velocity under the operating conditions and can be used as control factor.

4335785

APPARATUS AND METHOD FOR CONTROLLING HEAT TRANSFER BETWEEN A FLUIDIZED BED AND TUBES IMMersed THEREIN

James L. Hodge; Anthony E. Cerkanowicz



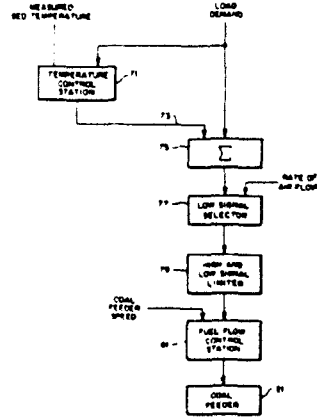
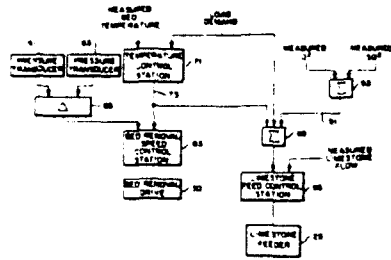
In a fluidized bed of solid particles having one or more heat between the fluidized particles and a fluid flowing through the immersed heat exchange tubes is controlled by rotating an arcuate shield apparatus about each tube to selectively expose various portions of the tube to the fluidized particles.

4335683

FLUIDIZED BED HEAT EXCHANGER WITH CONTROL TO RESPOND TO CHANGES IN DEMAND

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In a fluidized boiler system, the rate of fuel flow and bed depth are simultaneously controlled in response to variations in a



load demand signal representing the need for steam output from the system. When the load demand changes, the rate of fuel flow is varied accordingly to provide a change in the bed temperature to thus provide a rapid response to the change in the demand signal. At the same time, the system changes the rate of flow of limestone to the bed and the rate of removal of spent particulate material of the bed to change the bed depth to respond more slowly to the change in the demand signal. As the depth of the fluidized bed approaches a value corresponding to the demand signal, the temperature of the bed will change back toward a median value.

4335662

SOLID FUEL FEED SYSTEM FOR A FLUIDIZED BED

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