4397742

COMPOSITION AND METHOD COMBINING FLUIDIZED BED RESIDUE WITH SCRUBBER SLUDGE

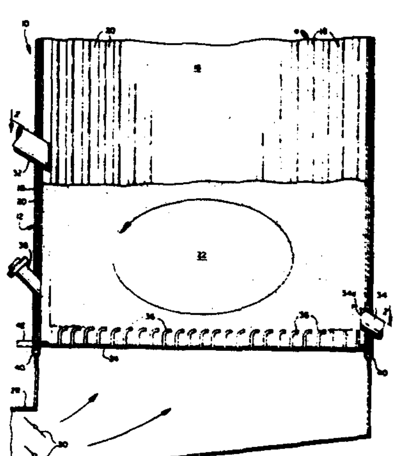
L Joh Minnick

A method of treating scrubber sludge removed from a gas scrubbing apparatus of the type adapted to reduce SOx content in the treated gas, is provided. The method comprises collecting the spent residue from a fluidized combustion bed of the type wherein lime or calcium carbonate particles are suspended in a fluidized medium and wherein a carbonaceous fuel is ignited proximate said fluidized medium to absorb therein substantial amounts of SOx which is generated upon ignition of said carbonaceous fuel. The fluidized bed combustion residue is then subjected to a separating treatment wherein a slurry of residue is mechanically agitated. The supernatant liquor from the slurry is separated therefrom, leaving a precipitate material which latter material is mixed with sludge. The novel composition comprises a combination of scrubber sludge and fluidized bed combustion residue precipitate, as above mentioned.

4397102

FLUIDIZED BED HEAT EXCHANGER INCORPORATING INDUCED CIRCULATION UTILIZING DIRECTIONAL AND/OR DIFFERENTIAL BED FLUIDIZATION

Robert Gamble, Robert D Stewart



A fluidized bed heat exchanger in which a perforated plate is disposed within a housing for supporting a bed of particulate material which is introduced into the housing through an inlet. Air is passed through the plate to fluidize the particulate material and a drain pipe is provided for discharging the spent material from the bed. A plurality of nozzles are provided in association with the perforations in the plate for directing air toward the drain pipe to promote the circulation of the bed materials from the inlet to the drain pipe.

4396056

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

James L Hodges, Anthony Cerkanowicz

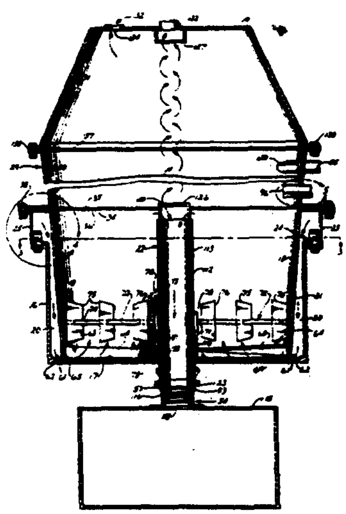
In a fluidized bed of solid particles having one or more heat exchange tubes immersed therein, the rate of heat transfer between the fluidized particles and a fluid flowing through the immersed heat exchange tubes is controlled by rotating an arcuate shield apparatus about each tube to selectively expose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

4395830

PULSE COMBUSTION FLUIDIZING DRYER

Raymond M Lockwood assigned to Jetsonic Processes Ltd

A fluid bed dryer includes a tank with an upright wall, a top, and a floor which rotates under a plurality of blades adjacent the floor and fixed to an inner annular baffle. A gas manifold is defined between the tank wall and the baffle, and opens under the baffle into a drying space in the tank. A pulse jet engine pumps pulsating hot gas and sonic waves to the gas manifold to fluidize a bed of moist particles which are introduced into the drying space above the blades. There is a time average uniform exposure of the bed to the



fluidizing gas effected by continuously changing the exposure of the particles to the gas. Pulsating hot gas and sonic energy waves flow from the periphery of the tank toward the center of the dryer. The pulse jet engine also supplies an auxiliary gas inlet at the side of the tank to maintain a swirl of gas above the fluidized bed. An adjustable bypass diverts the flow of gas from the auxiliary inlet to the gas manifold for adjusting the strength of the gas swirl. Gas and dried products are withdrawn from the dryer, and the gas is recycled to the tailpipe end of the pulse jet engine. The pulse jet inlet is supercharged to provide sufficient oxygen to support continuous combustion. The supercharged atmosphere is kept from feeding the tailpipe exhaust. Drying proceeds in an inert atmosphere.

4394282

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Robert Seiver assigned to Exxon Research and Engineering Co

Novel compositions, and process for the operation of a magnetically stabilized fluidized bed. The compositions are characterized as a particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed which comprises: (i) particles of average size ranging from about 10 micrometers (£82 m) to about 4000 +82 m, preferably from about 50 +82 m to about 500 +82 m, each containing a nonferromagnetic component, or components, and preferably a catalytically active component, or components, composited with a single elongate ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 +82 m in all directions and a length:diameter (L/D) ratio of at least 2 but not more than 17.3, said ferromagnetic component being present in the composite particles as inclusions within a nonferromagnetic matrix constituting at least 0.5%, preferably at least 5%, but not more than 3/2(L/D)+HU 2 +L of the total volume of each particle, where L/D ratio of the longest dimension of a ferromagnetic inclusion relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimensions of the ferromagnetic components parallel to the direction of the field and the short dimensions perpendicular to the direction of the field; or +RE+P1 (ii) particles of average size ranging from about 10 micrometers (+82 m) to about 4000 +82 m, preferably from about 50 +82 m to about 500 +82 m, each containing a nonferromagnetic component, or components, and preferably a catalytically active component, or components, and within each of which is composited a plurality of elongate ferromagnetic components, the ferromagnetic components being multidomain, having dimensions of at least 1 +82 m in all directions, elongated in one or two dimensions, and having a length:diameter (L/D) ratio of at least 2 but not more than 313, preferably not more than 30, said ferromagnetic components being present in the composite particles as inclusions within a nonferromagnetic matrix, and oriented in such a way that there is a preferred direction in each particle such that all the +PG,2 nonferromagnetic inclusions in that particle have a long dimension essentially parallel with said preferred direction and constituting at least 0.5%, preferably at least 5%, but for particles elongated in one dimension not more than 2 +90 /3(L/D+30 1)+HU 2+L , and for particles elongated in two directions not more than +90 /2(L/D+30 1, of the total volume of each particle, where L/D is the average ratio of the longest dimension of ferromagnetic inclusion relative to the shortest dimension, and, in said magnetically stabilized fluidized bed, the particles can rotate, or turn to line up said preferred direction parallel to the direction of the field such that essentially all of the ferromagnetic inclusions have a long dimension essentially parallel to the direction of the field; and a fluid-solids contacting process wherein the composite particles characterized in (i) and (ii), supra, are formed into a magnetically stabilized fluidized bed.+REbed.+RE