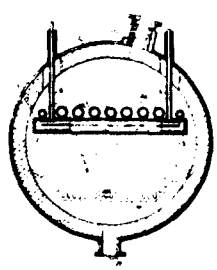
A metering system for delivering and metering two combinable and cooperatable liquids, in predetermined ratios in order to enable ultimate combining of such liquids or the fluids. The apparatus comprises a first discrete valve mechanism which is capable of receiving a first fluid from a source and a cooperating first discrete metering mechanism; a pumping mechanism for receiving the fluid from and directing fluid to this first valve mechanism. The apparatus also comprises a second discrete valve mechanism capable of receiving a second fluid from a source and an associated second discrete metering mechanism; a pumping mechanism for receiving fluid from and directing fluid to this valve mechanism. An actuating device operatively connects the first and second valve mechanisms and the first and second metering mechanisms in order to enable the first metering mechanism to pump the first fluid to and from the first valve mechanism and the second fluid to and from the second valve mechanism. The valve mechanisms are capable of metering the first and second fluids in proper predetermined amounts. The fluids may be combined at a mixing member as for example, a mixing gun.

US 4304574.

HEATING SYSTEM FOR FLUIDIZED BED GAS GENERATOR.

Guenter Buchner, Johannes Alkemper, Rainer Deurrfeld, Heinz Gaessler, Meerbusch Federal Republic of Germany. assigned to Mannesmannrhren-Werke AG.

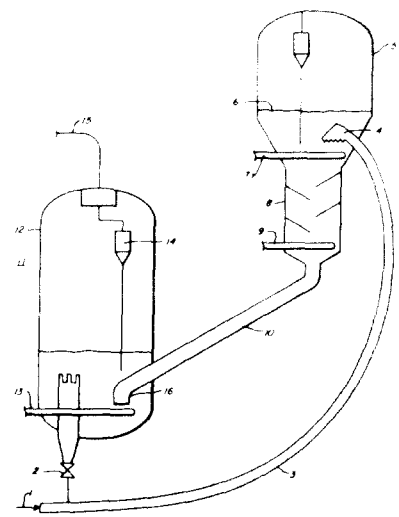


The retort chamber for generating gas by applying hot steam to coal in a fluidized bed is heated by meandering tubes, dipping into the bed, and being suspended from long, hollow boxes which, in turn, are particularly suspended in the retort chamber. The boxes support also manifold tubes connected to the heating tubes and being further connected to a heating fluid feed and distribution as well as a collecting and discharge system.

US 4304659.

METHOD FOR CONTROLLING REGENERATOR TEMPERATURE IN A FLUIDIZED CATALYTIC CRACKING PROCESS.

Roy E. Pratt, William R Menzies III, Leonce F Castagnos Jr, Port Neches TX. assigned to Texaco, Inc.



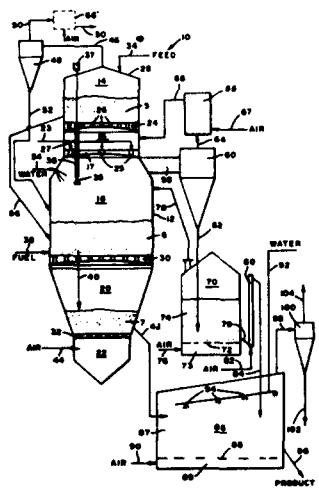
An improved method for controlling the fluidized dense catalyst phase temperature in the regeneration zone of a fluid catalytic cracking unit. In this method, the level of the fluidized catalyst bed above the riser discharge in the reaction vessel is adjusted in response to a change detected in the temperature of the fluidized dense catalyst phase of the regeneration zone. Adjustment of the catalyst bed level in the reaction zone affects the coke laydown on the catalyst in the reac-

tor and, consequently, the amount of heat liberated in the regeneration zone upon combustion of the coke contained in the partially deactivated catalyst. A reactor bed level is attained where the resulting coke laydown on the catalyst is sufficient to maintain the desired temperature in the fluidized dense catalyst phase. Also, as a part of this improved method, the amount of oxygen-containing regeneration gas supplied to the regeneration zone is adjusted to provide sufficient oxygen to effect substantially complete combustion of the coke to carbon dioxide and to maintain the oxygen content of the flue gas at a desired level within the range of from about 1 to about 10 mol %. Maintaining the oxygen content of the flue gas within this range provides a flue gas having a carbon monoxide content of from 0 to 500 ppm. The residence time of catalyst in the regeneration zone fluidized dense catalyst phase is adjusted to provide a regenerated catalyst with a low level of residual carbon-on-regenerated-catalyst.

US 4304754.

FLUID BED CALCINING APPARATUS.

Walfred W. Jukkola, Westport CT. assigned to Dorr-Oliver Incorporated.

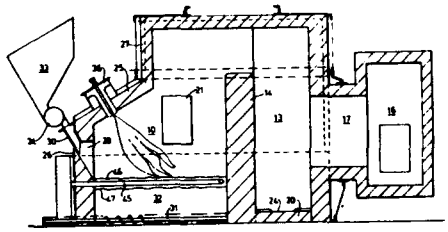


In order to increase or maintain the capacity of fluid bed calciners in the calcination of phosphate rock containng large amounts of organic matter ("hot rocks"), the calciner is modified to permit a pyrolysis reaction to occur in the freeboard zone of the calciner. The hydrocarbons and carbon monoxide gas produced by the pyrolysis reaction are removed from the calciner and burned in an afterburner unit. Dust and fines entrained in the exhaust from the calciner are sent to a dust oxidation chamber outside the calciner for oxidation by addition of air.

US 4306854.

FLUID BED FURNACES.

Harry Dawson, Rochdale United Kingdom - England. assigned to G. P. Worsley and Company Limited.



A fluid-bed furnace has at least one combustion chamber, preferably two side-by-side, housing a bed of incombustible particulate material to be fluidized when burning fuel fed thereto. Bed fluidization is by forced release in the incombustible material of combustion promoting gas, normally air, from a plenum chamber arrangement externally of the bed proper at a side or end thereof to save overall height. Other features include the return of used exhaust gas to the bed for additional fluidizing and heating purposes; release within the bed of such returned exhaust gas at a position higher than normal combustion promoting gas; an auxiliary burner within the combustion chamber to consume fine fuel material lifted from the bed in operation; insulation of at least the normal combustion promoting gas plenum chamber externally by incombustible bed material and/or internally by refractory lining; end tapering of bed traversing gas feed pipes to reduce expansion resistance; and a removable end plug in the latter pipes to ease cleaning thereof.
