

4339620

**COPPER-CATALYZED FLUID-BED  
ETHYLENE  
OXYHYDROCHLORINATION  
PROCESS**

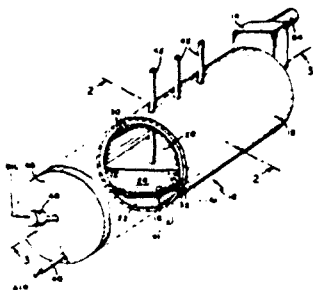
Joseph A. Cowfer; Jamal S. Eden; Angelo Magistro; assigned to The B F Goodrich Company

There is disclosed a method and composition for improving the fluidization characteristics and alleviating or inhibiting stickiness in a supported cupric chloride catalyst used as fluid bed catalyst in oxyhydrochlorinations reactions. The method involves the in situ preparation of the supported cupric chloride catalyst by addition of bare support on which no cupric chloride is deposited to the supported cupric chloride catalyst in the fluidized bed, or the use in the bed as the initial charge or as addition to the bed as makeup, of a composition which is a mixture of supported cupric chloride catalyst and bare support. In either event, as the oxyhydrochlorination proceeds, a portion of the cupric chloride on the supported catalyst becomes released therefrom and deposited in situ on the bare support, and stickiness of the cupric chloride containing catalyst particles to one another in the fluid bed is alleviated or inhibited.

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**LOW PROFILE FLUID BED HEATER  
OR VAPORIZED**

Albert M. Leonp; assigned to Dorr-Oliver Incorporated

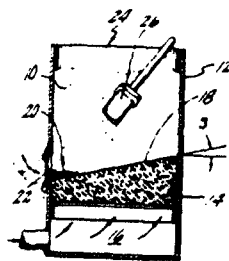


A fluid bed heater or vaporizer unit has a generally cylindrical configuration with its major axis horizontally disposed. A mixture of coal and limestone is fed into the elongated fluidized bed within the unit for combustion; the limestone being present to minimize sulfur emissions due to the sulfur present in the coal. The wall of the unit in the region of the freeboard is lined with horizontally disposed heat exchange tubing. The delivery of air to the fluidized bed is regulated so as to establish a combustion zone of high turbulence and one or more heat transfer zones of lower turbulence. A plurality of heat exchange tubes are located in the heat transfer zone or zones and within the expanded bed level of the fluidized bed but above the region occupied by the slumped bed. Economizer heat exchange coils may be located in the passageway for exhaust gases.

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**FLUIDIZED BED WITH SLOPED  
APERTURE PLATE**

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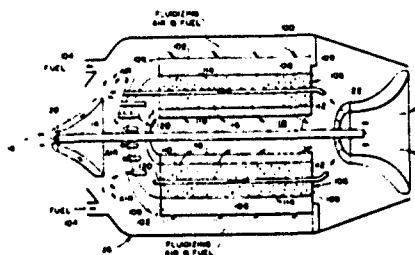
A fluidized bed has an aperture plate which is inclined to the horizontal, to cause excessively large or dense particles to migrate to a collection point from which they may be removed from the particulate mass. Disruption of fluid flow through the aperture plate due to settled out particles is thus avoided. Preferably the aperture plate is made of a material which has the same permeability as the fluidized mass, thus inherently providing

flow regulation necessary for even fluidization above the slope plate. To make investment casting molds, a gravity rainsander device is coupled with a fluidized bed. When slurry used in the mold making process drips from a pattern it falls into the fluidized bed thereby converting the errant drops into particulate balls which are conveniently removed.

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### ROTATING FLUIDIZED BED COMBUSTOR

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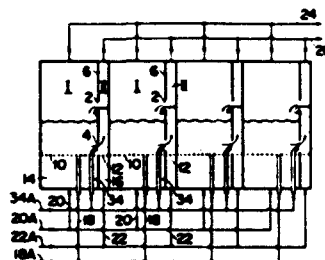


A rotating fluidized bed combustor particularly adaptable for mounting on conventional gas turbine engines comprising an annular fluidized bed, defined by inner and outer spaced apart coaxial, cylindrical, perforated walls, which rotates about the longitudinal axis of the cylinders. Compressed air and solid or liquid fuel enter the bed through the outer perforated wall and fluidize the bed. The air reacts with the fuel within the bed to produce hot combustion gas which exits the bed together with unreacted compressed air, through the inner perforated wall. When employed with gas turbine engines, the gases exiting the bed are directed into the guide vanes of the gasifier turbine. Cooling tubes pass substantially longitudinally through the rotating fluidized bed and compressed air is directed through the tubes to absorb combustion heat from the bed.

4338283

### FLUIDIZED BED COMBUSTOR

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A fluidized bed combustor wherein a combustion chamber and a regeneration chamber are both contained in a single hollow body is provided. These two chambers are formed by vertically partitioning the body by a partition wall, which has an upper opening and a lower one, and also each have a perforated plate at the bottom part thereof on which a heat transfer medium containing a desulfurizing agent is placed and fluidized. The desulfurizing agent is transferred from the combustion chamber through the lower opening to the regeneration chamber and circulated by overflow through the upper opening again to the combustion chamber. Various modifications of the above-mentioned fundamental embodiment are proposed. Combustion and desulfurization are automatically and effectively carried out in make an apparatus to give a high percentage desulfurization, make an apparatus compact, and reduce an initial cost and a running cost thereof.

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### TWO STAGE FLUID BED REGENERATION OF SPENT CARBON

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