

Title (en)
DEVICE, METHOD AND PRESSURIZED REACTOR FOR THE TREATMENT OF SOLIDS WITH LIQUEFIED GASES UNDER PRESSURE

Title (de)
VORRICHTUNG, VERFAHREN UND DRUCKREAKTOR ZUR BEHANDLUNG VON FESTSTOFFEN MIT VERFLÜSSIGTEN GASEN UNTER DRUCK

Title (fr)
DISPOSITIF, PROCEDE ET REACTEUR PRESSURISE PERMETTANT DE TRAITER DES MATIERES SOLIDES AVEC UN GAZ LIQUIDE SOUS PRESSION

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Abstract (en)
[origin: DE19910562A1] In the process to treat solid materials with liquid gases under pressure, and especially ammonia, the solid matter is placed in a pressure reactor at ambient pressures. The liquid gas is fed in under pressure and, after a given dwell time, the mixture is relaxed abruptly in an expansion vessel in an explosive action. At least two reactors are operated in time cycles.- DETAILED DESCRIPTION - During the explosive relaxation, released gas is recovered for further use. The solid material is fed into the pressure reactor by a dosing screw or a pneumatic conveyor. The solid material is mixed actively with the liquid gas in the pressure reactor. An automatic control sets the opening and closing of the pressure reactor, and the feed of the solid material and/or liquid gas. An additive is fed into the pressure reactor with the liquid gas in a dissolved, dispersed, solid or liquid form, fed into the liquid gas before it enters the reactor.- AN INDEPENDENT CLAIM is included for an apparatus with at least two parallel pressure reactors, to take and deliver the materials alternately. Each has controlled closures for the reactor inlets and outlets, and at least one entry for the liquid gas. It has at least one expansion vessel linked to the reactors. Transport systems carry the solid materials and the liquid gas.- Preferred Features: Ball valves are the closures for the reactor inlets and outlets, or the closure at the inlet is a lock system. The reactors are vertical pipe cylinders, with external heating, acting as mixers with a mechanism to compress the solid material within it especially of cellulose. Screws with heating or pneumatic systems feed the solid materials to the reactors. The control give a cycled operation to the material and/or liquid gas feeds, and the working of the ball valves. The material compression in the reactor uses pistons, with channels to allow liquids to pass through them upwards from below. The reactor can have a compression chamber and a reaction chamber, separated from each other. The compressed material is fed by the piston into the reaction chamber through the open barrier, which contains the liquid gas and especially ammonia under pressure fed in after the barrier is closed between the chambers. Carrier gas or compressed air used to feed the solid material is extracted from the reaction chamber. The pressure reactor can have a cyclone to take in the material and deliver it into the reaction chamber. The piston can be locked in a position of its possible stroke, to limit a reaction zone of the reaction chamber. The feed for the solid material, using a propeller, can supply a group of pressure reactors. A station prepares the solid material, before it enters the pressure reactor, using a heater to heat a heat-carrier fluid which is delivered to the material. The carrier fluid is liquid or gas ammonia heated to a temperature of 100 deg. C, moving through a heating circuit. The material is held in a heated silo, to be ground and passed through a sieve

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