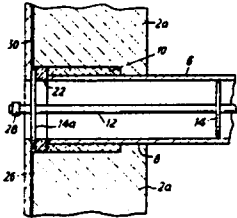


fluidizing air into the combustion chamber and the air flow therefrom can be controlled to afford a flexible turn-down capability.

**4449575**

### FLUIDIZED BED HEATING APPARATUS

William R Laws, Geoffrey R Reed, Worcester Park, Surrey, United Kingdom



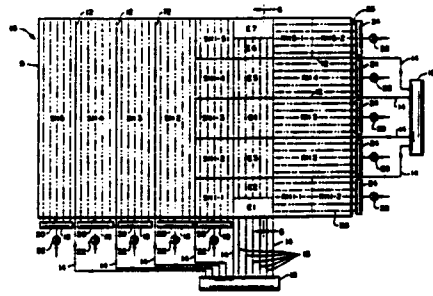
A heat exchanger for high temperature operation has a ceramic-walled chamber traversed by ceramic tubes and is capable of use inter alia in fluidised bed applications. The tubes are arranged in series of successive banks and to give a compact arrangement the successive banks of tubes at different levels are disposed transversely to each other. The tubes may have internal and external reinforcing means to allow them to withstand the loads imposed by the fluidised bed and generally to allow longer tubes to be used in ceramic constructions. The internal reinforcing means may also provide restrictions that in fluidised bed applications can function to minimise the effects of tube wall fracture by reducing carry-over of bed particles seeping into the tubes. For improved end sealing, means can be provided to hold resilient ceramic seals compressed against the tube ends while permitting axial thermal movement of the tubes.

**4453494**

### FLUIDIZED BED BOILER HAVING A SEGMENTED GRATE

Richard E Waryasz assigned to Combustion Engineering Inc

A fluidized bed furnace (10) is provided having a perforate grate (9) within a housing which supports a bed of particulate material including some combustibles. The grate is divided into a plurality of segments (E2-E6, SH1-SH5, RH1-

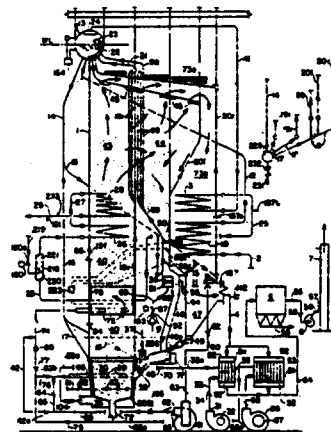


RH5), with the airflow to each segment being independently controlled. Some of the segments have evaporating surface imbedded in the particulate material above them, while other segments are below superheater surface or reheater surface. Some of the segments (E1, E7) have no surface above them, and there are ignitor combustors (32, 34) directed to fire into the segments, for fast startup of the furnace without causing damage to any heating surface.

**4453495**

### INTEGRATED CONTROL FOR A STEAM GENERATOR CIRCULATING FLUIDIZED BED FIRING SYSTEM

Charle Strohmeyer assigned to Electrodyne Research Corporation



The invention comprises an integrated control means, and particularly at partial loads, for a steam generator having a circulating fluidized bed combustion system wherein gas recirculation means is used to supplement combustion air flow to maintain gas velocity in the circulation