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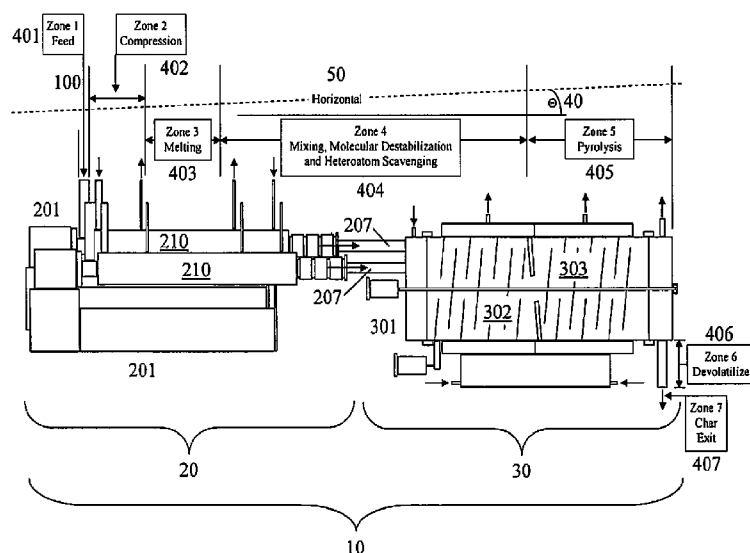


FIG. 1

(57) Abstract: An apparatus for continuous conversion of hydro carbonaceous materials to condensable, non-condensable and solid hydrocarbon products, comprising at least one extruder capable of providing shear force and heat and having three or more treatment zones, a continuous process thermal kiln reactor, said extruder and said kiln reactor being in fluid communication, means for transporting hydro carbonaceous materials through the apparatus, and between said extruder and said kiln reactor, means for feeding said hydrocarbonaceous materials to the apparatus, means for heating said hydrocarbonaceous materials, means for removing vapor products from said apparatus, means for removing solid products from said apparatus, and means whereby said hydrocarbonaceous materials are maintained within the zones for a range of defined temperature and residence times, wherein said extruder has at least three zones, and said kiln reactor comprises at least two zones, whereby said hydrocarbonaceous material is subjected to a plurality of defined temperature ranges and residence times.