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(54) **Title :** Split-cycle engine with dwell piston motion.

(57) **Abstract :**

An engine includes a crankshaft (108) having a crank throw, the crankshaft rotating about a crankshaft axis (110). A compression piston (116) is slidably received within a compression cylinder (106) and operatively connected to the crankshaft such that the compression piston reciprocates through an intake stroke and a compression stroke of a four stroke cycle during a single rotation of the crankshaft. An expansion piston (116) is slidably received within an expansion cylinder (104). A connecting rod (152) is pivotally connected to the expansion piston. A mechanical linkage (200) rotationally connects the crank throw to the connecting rod about a connecting rod/crank throw axis such that the expansion piston reciprocates through an expansion stroke and an exhaust stroke of the four stroke cycle during the same rotation of the crankshaft. A path is established by the mechanical linkage which the connecting rod/crank throw axis travels around the crankshaft axis. The distance between the connecting rod/crank throw axis and crankshaft axis at any point in the path defines an effective crank throw radius. The path includes a first transition region (228) from a first effective crank throw radius to a second effective crank throw radius through which the connecting rod/crank throw axis passes during at least a portion of a combustion event in the expansion cylinder.

FIG. 6B

