

Title (en)  
STIRLING ENGINE

Publication  
**EP 0055769 B1 19860528 (EN)**

Application  
**EP 81902127 A 19810713**

Priority  
• US 16807580 A 19800714  
• US 16807680 A 19800714

Abstract (en)  
[origin: WO8200319A1] A free-piston Stirling engine usable as a heat pump has a closed vessel filled with helium working gas which is heated at the bottom end and cooled at the top end. The vessel contains a displacer (22) supported for axial reciprocal oscillation on a gas spring post (78) mounted on the vessel. The displacer (22) shuttles the working gas from end to end in the vessel, alternately heating and cooling the gas. The vessel is sealed with a flexible diaphragm (26) which flexes in response to the pressure wave generated in the vessel as the working gas is alternately heated and cooled. When the diaphragm (26) flexes, it displaces hydraulic fluid in a hydraulic chamber (14) and drives a power piston (126) for driving a linear alternator and a gas compressor. A gas spring (18) operating on a second hydraulic cylinder (128) on the other side of the power piston (126) stores part of the energy of the piston stroke and returns it for the return stroke. Controls (232, 290) are provided for balancing and controlling the hydraulic fluid pressure, for starting the Stirling engine, and for modulating its power output.

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IPC 8 full level  
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CPC (source: EP)  
**F02G 1/0435** (2013.01); **F02G 2244/50** (2013.01); **F02G 2275/40** (2013.01)

Citation (examination)  
• EP 0010403 A1 19800430 - NASA [US]  
• US 4183214 A 19800115 - BEALE WILLIAM T [US], et al

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