

# The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

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## Combustion Engine Linkage Systems

**INVENTOR: Wesley E. Pettinger**

### TECHNOLOGY NEED

A longer piston stroke in an internal combustion engine helps in achieving higher compression ratio resulting in better thermodynamic efficiency and higher power output. Single link mechanism in conventional rods limits the length of the stroke and any elongation complicates the design making it bulky and heavy. In Prior multi-link engines, the designs subject its components to high tension and stress while providing little gain in useful work. Therefore, there remains a need for an improved internal combustion engine that overcomes the drawbacks of conventional designs and offers optimized thermodynamic efficiency for use with modern fuels and multiple engine applications.

### INVENTION DESCRIPTION/SOLUTION

Researchers have developed an innovative multi-link mechanism which consists of three links forming a U-shaped configuration. It also consists of a fourth link which couples counterweight and crankshaft indirectly. To provide clearance as the links move with the piston, the cylinder is configured with reduced walls. This mechanism helps to achieve higher compression ratio and thus extracts more work leading to increased fuel efficiency, better torque output rating and higher power output for low and high speed engines respectively.

### APPLICATIONS

- Internal Combustion engines
- Gas turbines
- Reciprocating compressors

### KEY BENEFITS

- Reduction in overall engine volume
- Minimal radial forces
- Pumping losses are nearly eliminated
- Length of connecting rod is 1/3<sup>rd</sup> of conventional engine
- Torque output is 1.75 times of conventional engine
- Reduction in angularity
- Reduction in cylinder friction

### STAGE OF DEVELOPMENT

Prototype

### INTELLECTUAL PROPERTY STATUS

Patent pending



### Contact information

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