



Note 126. Origins of Crank, Cam, Con.-Rod, Poppet-Valve and Steel Wire Coil Spring

Brief notes on the origins of these essential components of virtually all automobile Grand Prix engines (until pneumatic valve springs were invented by Jean-Pierre Boudy in 1984 (474)) may be of interest. The source is (630: see Ref. below) unless given otherwise.

The Chinese knew of the **CRANK** in 100 BC, eg. for turning a hand mill.

The **CAM** to produce intermittent uni-directional motion from rotary motion appeared in the 10th C, with a water-wheel-driven camshaft lifting a trip-hammer to permit forging operations under the gravitational return motion.

The 1st **CRANK-PLUS-CONNECTING-ROD** mechanism, to produce reciprocating motion from rotary appeared in the 15th C, a water-wheel working a saw or blacksmith's bellows. The **inversion** of this principle to convert reciprocating motion into rotary was Patented by James Pickard in 1780. He applied it to a Newcomen-type steam engine.

The (weight-loaded) **POPPET-VALVE** was invented by Denis Papin as a safety device on his pressure-cooker in 1679.

The **COIL SPRING** was first Patented in 1763 by R. Tredwell (Wikipedia), and was originally used in upholstered furniture. Later it was used to load a poppet valve to provide a safety system for boilers. It needed **STEEL WIRE** to be effective and this became available after it was Patented in America in 1857 (Wikipedia).

Reference

DASO 630. The Inventions that changed the World. Consultant editor G. Taylor. Readers Digest 1982.
