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(54) Title: IMPROVED INTERNAL COMBUSTION ENGINE AND WORKING CYCLE

(57) Abstract

The invention is concerned with a method of deriving mechanical work from a combustion gas in internal combustion engines and reciprocating internal combustion engines (100) for carrying out the method. In its preferred embodiments, the method includes the steps of (i) producing an air charge, (ii) controlling the temperature, density and pressure of the air charge, (iii) transferring the air charge to a power cylinder (7) of the engine such that an air charge having a weight and density selected from a range of weight and density levels ranging from below atmospheric weight and density to heavier-than-atmospheric weight and density is introduced into the power cylinder, and (iv) then compressing the air charge at a lower-than-normal compression ration, (v) causing a predetermined quantity of charge-air and fuel to produce a combustible mixture, (vi) causing the mixture to be ignited within the power cylinder, and (vii) allowing the combustion gas to expand against a piston operable in the power cylinders with the expansion ratio of the power cylinders being substantially greater than the compression ratio of the power cylinders of the engine.

