Description

With Energy-Efficient High-Torque Motion Mechanism and With Piston, Internal/External Combustion Rotary Engine

0001 In designs with crankshaft, the position of the pressure is very close to the upper dead point. This means that the pressure is not transformed into enough useful power. At the start of combustion, the angle between the piston axis and the output shaft is 10 to 15 degrees. In addition, it is not possible to apply five strokes when the combustion process is independent in conventional internal combustion engines. For these reasons, the mechanical and thermal efficiency deteriorates as the friction force increases greatly and therefore the overall efficiency decreases.

0002 This invention relates to a With Energy-Efficient High-Torque Motion Mechanism and With Piston, Internal/External Combustion Rotary Engine. In this invention, at the start of combustion, the angle between the axis of the piston 7 and the output shaft axis is 90 degrees. In the process of work and exhaust, the pistons (7) always act at a 90 degrees angle around the inner rail (10). Thus, the pistons (7) in the cylinders (14) are only subjected to axial pressure. As a result, a higher torque value can be obtained and the friction of the pistons (7) is less. A constant volume process is generated for combustion of the fuel - air mixture compressed in the combustion chamber. In this sense, a five-stroke, internal combustion engine expression can be used for the present invention. For these reasons, the thermal efficiency and mechanical efficiency have been increased. Therefore, the overall efficiency is higher, and the specific fuel consumption is lower. In addition, the piston - cylinder mechanism has not been changed in this invention and it has been ensured that the work, processes, methods, machinery and equipment which have become standard have been used.

0003 The main shafts (8), on which the cylinders (14) are positioned, are used with the inner rail (10) rotating in the same direction with 1/1. Gears (11, 23 and 24) are used to provide the rotation of these parts with the specified rotation rates. The 30 degrees surfaces of the outer rail (9) before they enter the combustion stroke are structured as an arc part. Their center is in the center of the main shafts (8). Radius values are at a value where the pistons (7) can be located at the upper dead point at the end of the compression and exhaust strokes. In this case, the pistons (7) have zero speed and constant volume value (combustion chamber volume value) in the cylinders (14) during the period they move in this section. The pistons (7) in the cylinders (14) move in the cylinders (14) in the periphery of these rails (9 and 10). The pistons (7) continue the cycle by passing from the inner rail (9) to the outer rail (10) and then again to the inner rail (9). For the internal combustion engine, each piston (7) forms one combustion stroke per 360 degrees. For the internal combustion engine, each piston (7) forms a work time of 360 degrees in which the main shaft (8) is connected. Considering each cylinder block consisting of 4 cylinders (14) connected to each main shaft (8), a total of 32 combustion strokes are performed for all cylinder blocks, with 4 combustion strokes per 360 degrees. Each of the four pistons 7 starts to perform the work time with a 90-degree rotation effect at the same time from the four corners of the inner rail 10 of a square section each 90 degrees. In this way, the motor produces a high torque while providing smooth rotation. As in the case of two-strokes engines, in the case of the main shaft (8), at the same time when the exhaust and suction strokes are carried out at the time of combustion strokes, eight combustion strokes at 360 degrees for each main shaft (8) are formed. It is desirable that the highest value of the force generated by the combustion occurs when the piston (7) starts to move from the upper dead point to the lower dead point. A controlled combustion is difficult to achieve with homogeneous charge, compression-ignition engines (HCCI). In this present invention, it is ensured that the combustion occurs in a time period of 30 degrees. The highest-pressure value thus obtained can be applied when the piston (7) starts moving towards the lower dead point. Thermal efficiency and overall motor efficiency are thus increased. In addition, there is no increase in HC emissions on the cylinder walls, at the top of the piston (7) and the accumulation of filler between the cylinder (14) and the segments. There is a constant volume of 30 degrees so that the fuel can be fully burned, and the highest-pressure value is reached. The fuel injection process shall be performed approximately 6 degrees before the piston (7) enters this constant volume value. Thus, the sprayed fuel will be mixed homogeneously with the air and will be subjected to the combustion process by not having any points that can cause HC emissions. During constant volume, combustion in the combustion chamber will be fully realized. Natural gas can also be used as fuel, with the compression ratio and combustion being fully controlled. If the thrust force is also required when the engine is running, it is permissible for the high-pressure gas burning in the combustion chamber to exit the exhaust outlet (13) while the pistons (7) are in a constant volume area of 30 degrees. The air density that may be required to form this thrust force can be realized by a turbo shaft which can be placed in the center of the time shaft (20). The high-pressure exhaust gases from the exhaust outlet (13) of the timing shaft (20) are driven by the impeller at the exhaust outlet (13) to be positioned on this turbo shaft, rotating this shaft at high speeds. Thus, the impeller at the suction inlet (12) connected to the same shaft can rotate at the same high speed to draw high density air into the cylinder from the suction inlet (12) of the time shaft (20).

0004 The invention is represented by the following figures;

Figure 1 - Front-left-top perspective view without the front cover (18). 1. pistons (7) are in the middle of the inner rail (10), at the end of the combustion stroke (30 degrees according to output shaft) and at the start of exhaust stroke (30 degrees according to output shaft). 2. pistons (7) are in the middle of the outer rail (9), finished the suction stroke (135 degrees according to output shaft) and started the compression stroke (135 degrees according to output shaft). 3. pistons (7) are approaching the end of the compaction stroke and are about to enter the fixed volume area (30 degrees according to output shaft) of the outer rail (9). 4. pistons (7) are about to approach the middle of the suction stroke (0. degrees).

Figure 2 - Front view without front cover (18) and rear cover (17). 1. pistons (7) are at the end of the inner rail (10), at the end of the exhaust stroke and at the start of the suction stroke. 2. pistons (7) have passed the middle of the outer rail (9), finished the suction stroke and started the compression stroke. 3. pistons (7) have finished the compaction stroke and the outer rail (9) has entered constant volume of 30 degrees according to output shaft. 4. pistons (7) are in the middle of the suction stroke. The figure also shows the arc, which indicates that the 30 degrees constant volume is configured as a circle part. This arc also represents the highest point (TDC) at which the pistons (7) can exit in the cylinders (14) (30 degrees).

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Figure 3 - Front view without front cover (18) and rear cover (17). 1. pistons (7) are in the suction stroke. 2. pistons (7) are in the compression stroke. 3. pistons (7) have passed the fixed volume and are at the beginning of the combustion stroke. 4. pistons (7) approach the end of the suction stroke. In the figure also shows the lines indicating that the angle between the axis of the pistons (7) and the axis of output shaft or the inner rail (10) are 90 degrees at the start of the work stroke (60 degrees).

Figure 4 - Front view without front cover (18) and rear cover (17). 1. pistons (7) are about to approach the middle of the suction stroke. 2. pistons (7) are approaching the end of the compaction stroke and are about to enter the fixed volume area of the outer rail (9). 3. pistons (7) are in the middle of the inner rail (10), at the end of the work stroke and at the beginning of the exhaust stroke. 4. pistons (7) are in the middle of the outer rail (9), have finished the suction stroke and started the compression stroke. The figure also shows the shape of the path of the piston balls (5) (90 degrees).

Figure 5 - Front view without front cover (18) and rear cover (17). 1. pistons (7) are past the middle of the suction stroke. The pistons (7) have finished the compression stroke and have entered the fixed volume of the outer rail (9). 3. The pistons (7) are at the end of the inner rail (10), at the end of the exhaust stroke and at the beginning of the suction stroke. 4. The pistons (7) have passed the middle of the outer rail (9), finished the suction stroke and started the compression stroke (120 degrees).

Figure 6 - Front view without front cover (18) and rear cover (17). 1. pistons (7) are in the middle of the outer rail (9), have finished the suction stroke and started the compression stroke. 2. pistons (7) are in the middle of the inner rail (10), at the end of the work stroke and at the beginning of the exhaust stroke. 3. pistons (7) are about to approach the middle of the suction stroke. 4. pistons (7) are approaching the end of the compression stroke and of the outer rail (9) is about to enter a constant volume of 30 degrees according output shaft (180 degrees).

Figure 7 - The back-right-top perspective view without the rear cover (17) (180 degrees).

Figure 8 - The front-left-top perspective view of the cylinder block and parts running on and inside (the main shaft gear (15) is shown as a section cut).

Figure 9 - The front-bottom perspective view of the cylinder block and parts running on it.

Figure 10 - The front-left-top perspective view of the timing shaft (20).

Figure 11 - The back-right-bottom perspective view of the timing shaft (20).

The parts and sections in the figures are described below.

(1) -Body

(2) -Cylinder ring

(3) -Output gear

(4) -Injector

(5) -Piston ball

(6) -Piston spring

(7) -Pistons

(8) -Main shaft

(9) -Outer rail

(10) - Inner rail

(11) -Intermediate gear

(12) -Fuel and / or air intake / input

(13) -Exhaust and / or air outlet

(14) -Cylinder

(15) -Main shaft gear

(16) -Main shaft ring

(17) -Rear cover

(18) -Front cover

(19) -Shaft of intermediate gear

(20) -Time shaft

With energy-efficient high-torque motion mechanism and with piston, internal/external combustion rotary engine; **body (1)** that accommodates all parts, square section **inner rail (10)** and **main shafts (8)** with cylinders, in which the pistons (7) are pressure and rotate in the same direction with a rotation ratio of 1/1, **outer rail (15)**, which enable the pistons (7) to perform suction and compression strokes and to form a constant volume of 30 degrees of combustion, **pistons (7)**, piston ball (5) which are connected to this pistons (7), allowing the pistons (7) to rotate to the periphery of **rail (9 and 10)**, **time shaft (20)** allowing the fuel and / or air to enter into the cylinders (14) and the exit of the residual gases or air through the cylinders, **injectors (4)** injecting fuel into the cylinders (14), **rear drive gear (3)**, which enables the first movement and movement from the motor, **cylinders (14)** in which the pistons (7) move, main **shaft rings (16)** and **cylinder rings (22)** which prevent the compressed fuel-air mixture from escaping from the cylinder (14), **front cover (18)** which is connected to the main shaft (8), to the time shaft (20), to the outer rail (2) and connected to the body (1), **rear cover (17)** which is connected to the main shaft (8), to the time shaft (20), to the outer rail (2), intermediate gear shaft (19) and connected to the body (1), **piston springs (6)**, located on the pistons (7) which prevent the pistons (7) to rotate in the cylinders (14) and strike the combustion chamber, ascent from in the cylinders (14), the outer rails (9) and the main shafts (8) are formed from **intermediate gears (11)**, which ensure that they rotate in the same direction and in the same rate. In addition, standard motor elements and sections such as pins, pipes, records, washers, gaskets, bolts, bearings, lubrication and cooling channels are not numbered. With energy-efficient high-torque motion mechanism and with piston, internal/external combustion rotary engine, according to the different quantity and form of outer rail (9) and the cylinder (14), the form of inner rail (10), each piston (7) uses one or more combustion in at 360-degrees cycle uses in the form of spark-ignition engines and diesel internal combustion engines producing can be used anywhere. It can also be used as a compressor motor and / or a pump, or to obtain a circular motion by condensing the wind effect.

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Nadir AKSOY