TITLE OF THE INVENTION

Circular Rotary Turbo Internal Combustion Engine.

CROSS-REFERENCE TO RELATED APPLICATIONS

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT

Not applicable.

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTTED ON A COMPACT DISC

Not applicable.

[1] Not applicable.

Title of the Invention

Circular Rotary Turbo Internal Combustion Engine

BACKGROUND OF THE INVENTION

The related art outlined below discloses an apparatus for generating rotational powers to vehicles. However, the prior art fails to disclose the presently described rotary engine in which a Rotor rotates in a spherical or cylindrical housing in which the center of rotation of the Rotor is at a precise center of sphere or cylinder with minimal tolerances in deviation of the center of rotation of a shaft and the Rotor preventing frictions and wear and tear of the point of contact of the Rotor with the internal wall of the housing. This simple scheme of generating a compression chamber inside a spherical or cylindrical shape housing give rise to an efficient engine with minimum number of moving parts. In most cases, the existing art for a rotary combustion engine, essentially teaches us of a piston and cylinder in which a piston makes linear reciprocating motions inside a cylinder to deliver rotational power.

BRIEF SUMMARY OF THE INVENTION

A primary objective inherent in this new invention of Circular Rotary Turbo Internal Combustion Engine is description of an apparatus and method not taught by the prior art.

The engine consists of a cavity that is formed by a spherical or cylindrical housing. A Rotor attached to a shaft, centrally rotating inside the housing along the center line of the rotation of the housing. A combustion chamber if formed inside the housing by a blade like Blocker and the blade like Rotor in which ignition takes place, and the ignition chamber expands radially providing rotational power to the shaft. Other features and advantages of the present invention

will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the presently described apparatus and method of its use.

Brief description of Figures

Figure 1: is the embodiment of the Circular Rotary Turbo Internal Combustion Engine including the cylindrical housing and the cover of the engine.

Figure 1A: is the embodiment of a complete Circular Rotary Turbo Internal Combustion Engine illustrating air, water, oil, gas suction compression pumps,

Figure 1B: is the first embodiment of the Circular Rotary Turbo Internal Combustion Engine.

Figure 1C: is the schematic of gear and timing assembly for the first embodiment of the engine.

Figure 1D: is the schematic of timing of the gear assembly for the activation of Blocker with respect to the Rotor.

Figure 2: is the second embodiment of the Circular Rotary Turbo Internal Combustion Engine.

Figure 2A: is the schematic of gear and timing assembly for the second embodiment of the engine.

Figure 2B: is the schematic of method of activating the Blocker for the second embodiment of the engine.

Figure 2C: is the schematic of timing of the gear assembly for the activation of Blocker with respect to Rotor.

Figure 3: is the third embodiment of the Engine Circular Rotary Turbo Internal Combustion.

Figure 3A is the schematic of gear and timing assembly for the third embodiment of the engine for the activation of the Blocker with respect to the Rotor.

Figure 4: is the third embodiment of the Circular Rotary single cycle suction and compression pump.

Figure 4A: is the schematic of the timing of the first embodiment of the Circular Rotary single cycle suction and compression pump.

Figure 4B: is the schematic of the timing of the second embodiment of the Circular Rotary single cycle suction and compression pump.

Figure 4C: is the schematic of the second embodiment of the Circular Rotary Turbo Internal Combustion Engine including the single cycle air pump.

Figure 5: is the fourth embodiment of the Circular Rotary Turbo Internal Combustion Engine for single cycle compression and combustion in a cavity.

Figure 5A: is the schematic of timing for gear assembly for the fourth embodiment of the engine.

Figure 5B: is the fifth embodiment of the Circular Rotary Turbo Internal Combustion engine for two cycle compression and combustion in a cavity.

Figure 6: is the timing schematic of a two cycle suction and compression for the circular suction and compression, one cycle for suction and another cycle for compression.

Figure 6A: is the schematic for the implementation of two cycles suction and compression pumps for fuel, water or oil in which a storage tanks are shown.

Figure 6B: is a schematic of single cycle suction and compression pumps utilizing the timed gear assembly timing reciprocating motions for a single cycle air compression and suction.

Figure 6C: is the schematic for a single cycle suction and compression illustrating a single tube utilizing reciprocating motions of the gear assembly.

Figure 7: is the schematic of lubrication methods for the Rotor and the Blocker inside a cavity.

Figure 7A: is the schematic of lubrication methods for the Rotor and the Blocker inside a cavity.

Figure 8: is the schematic of the electronic timing serving a timing system controller.

Advantages of the Invention

The invention differs from most of the previous art internal combustion engine in which the combustion chambers expand radially Unlike the present art, this invention provides expansion of combustion chamber between a blade like Rotor that is directly attached to the shaft and extended outward towards the inner surface of the housing of a cavity, and radially rotating inside the cavity. A combustion chamber is formed between a Rotor attached to a shaft and a blade like Blocker, making temporary transitional motions to form a barrier inside the cavity and form a combustion chamber. The combustion chamber is formed between the Blocker and the Rotor during combustion time, the Blocker remains stable and the Rotor rotates radially forcing the shaft to move with it.

This is a radical difference between the original Wankel rotary engine. The Wankel's rotation of the Rotor is in an elliptical housing and the center of rotation consists of a set of gears to guide the motion in a elliptical cavity. In the most recent patents of so called rotary engines, a reciprocating piston and cylinder configurations is used for combustion chamber and expansion of ignited gas.

The Wankel engine housing for the generation of pressured air and combustion of pressured air and gas is elliptical. Elliptical housing for the rotor is one of the sources of problems including the frictions between the housing and the rotor.

In order for the elliptical motions to take place, the shaft is connected to series of gears for the elliptical rotations. Generation of elliptical rotation through gear system is the cause and a major contributor of friction. By comparison:

- This invention resorts to a circular housing in which the shaft rotates in a center of the circular housing eliminating the requirements of elliptical motions and the necessity of gear system.
- The Rotor is a blade rotating in a spherical or cylindrical housing along the centerline of the housing resulting in minimal deviation in tolerances of the point of contact between the edge of the Rotor and the housing.
  - Minimal tolerance variations avoids severe loading (pressure) between the edges of the Rotor and the internal walls of the housing, preventing frictions and wear and tear.
  - The centrifugal force of the rotor in Wankle engine, the variation of tolerances acts as a hammering force destroying the tip of the rotor and the housing.
- The Blade shape Rotor and the Blocker provides for greater combustion chambers volumes within the cavity compared to Wankel engine's triangular shape rotor (for the same size volume of an engine). This increase in volume of the combustion, results in greater torque and rotational output power.
- Far smaller number of moving parts allows the engine to be built economically with advantage of greater efficiency in terms of conversion of gas to heat.
  - Far lower frictions for eventual higher miles per gallon of gas.
  - Far lower maintenance cost.
- Different option implementation for the type of engine allows:
- The design allows for the air compression to be implemented within the same cavity or external air suction and pump to be implemented in parallel with combustion cavity injecting pressured air before ignition.

- Combinations of air suction and air compression pump provides a rich mixture of oxygen for powerful turbo engine.
- Three different implementation of the Blocker allows for different types of engines with respect to their usages.
- Turbochargers and superchargers are fans that force compressed air into an engine's said cavities. Fans in this case are always open at the air intake side and thus will not produce a high pressure compressed air. That is why they are huge for race car engines.

- Bigger and more powerful engines will be built by enlarging the volume of the cavity and larger radiuses of the cylindrical shape housing. This will eliminate the need for multi piston and cylinders, reducing the number of moving parts and manufacturing costs.
- In the present piston and said cavity engines, crankshafts occupy a major portion of the engine volumes. They are not gear driven and they operate under heavy load. The crankshafts are the sources of friction and generation of heat for eventual failure. This invention does not require crankshaft. A small timed gear assembly is used to activate the Blocker to let the Rotor to pass for no friction.
- The present engine crankshafts operate under a heavy load. They require constant and heavy cooling and lubrication accessories adding more weight to an engine. Due to far lower frictions and moving parts of this invention, the need for lubrication and cooling are far smaller.
- Due to far less moving parts, friction and heat generations, this invention, allows an air cooling system, that is sufficient for cooling an engine with less moving parts and frictions compared to water cooling, further reducing weight and cost of manufacturing of an engine.

- Crankshaft are build heavy to bear the load for the actual motion of a vehicle. The heaviness adds to the size and weight of an engine. The present invention provides for a blade like Rotor and Blocker in which the size and weight are insignificant compared to a crankshaft.

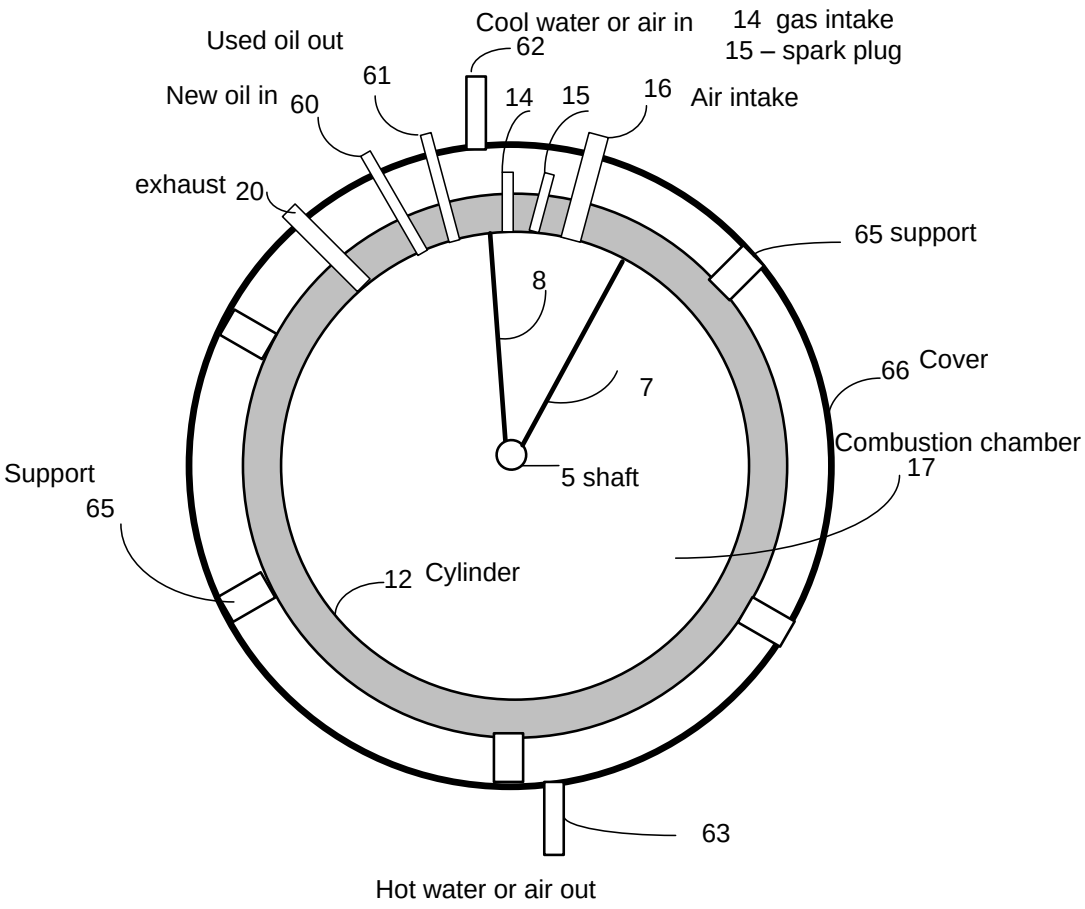
- This invention provides for a dual cycle compressed air pump eliminating an open end air intake side of present turbocharge engines. The same concept of cavity along with a Rotor and Blocker provides for suction and compression pumps that:

a. A compressed air is injected into the combustion chamber yielding more power output from the combustion chamber.

- Most turbocharged engines us an oversized open end fan to force pressure air into the combustion chamber.

b. The suction and compression capability of a pump allows greater freedom in design of engines wherein the source and destination of gas or liquid (to and from the engine) will be irrespective of their locations in the vicinity of the combustion chamber.

Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the presently described apparatus and method of its use.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Combustion chamber
17
Support
65
5 shaft
12 Cylinder
63
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Fig 1

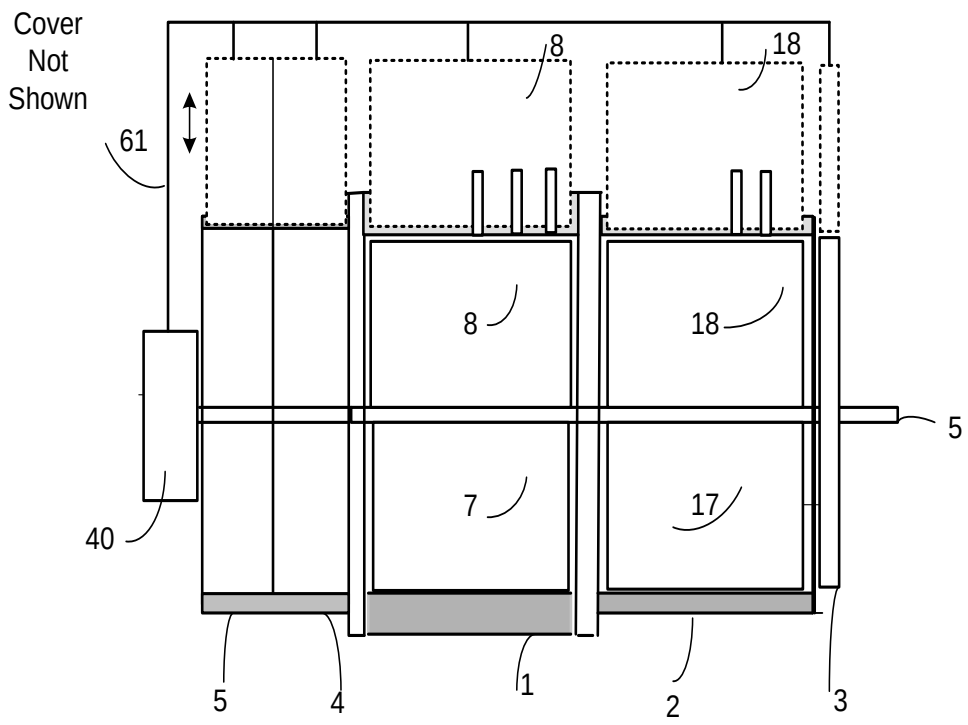

Fig. 1A

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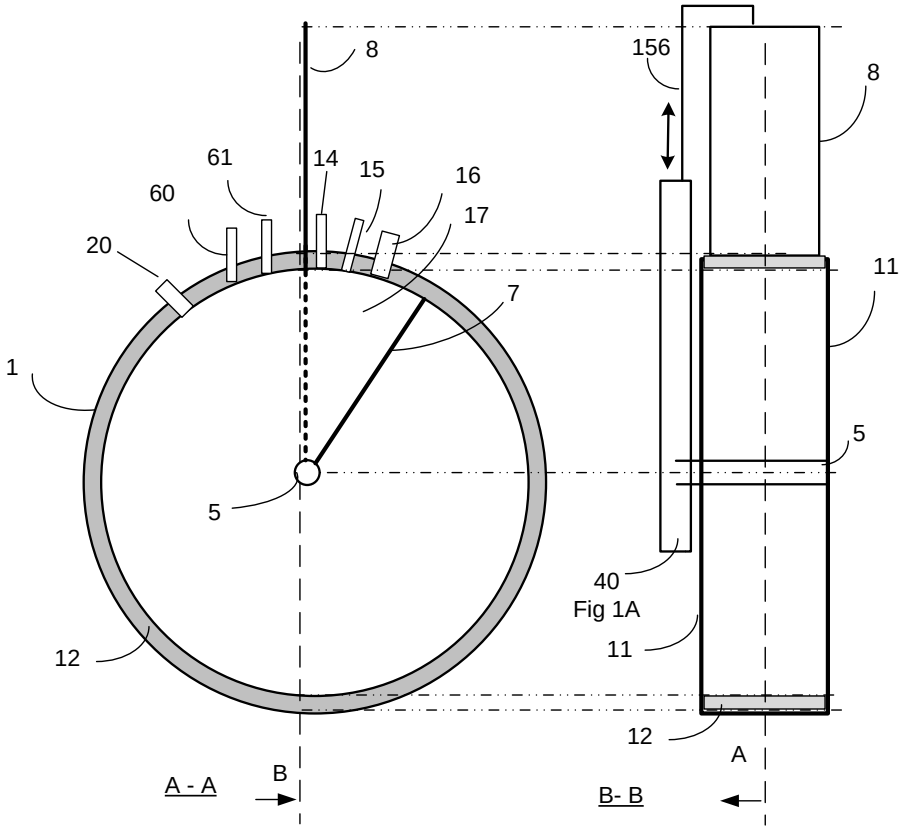

Fig. 1B

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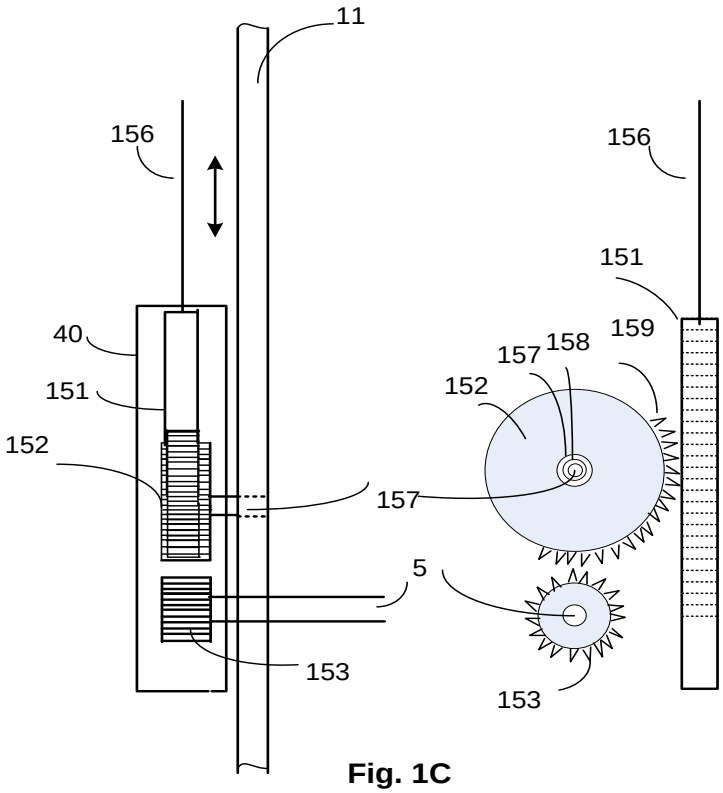
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Fig. 1C

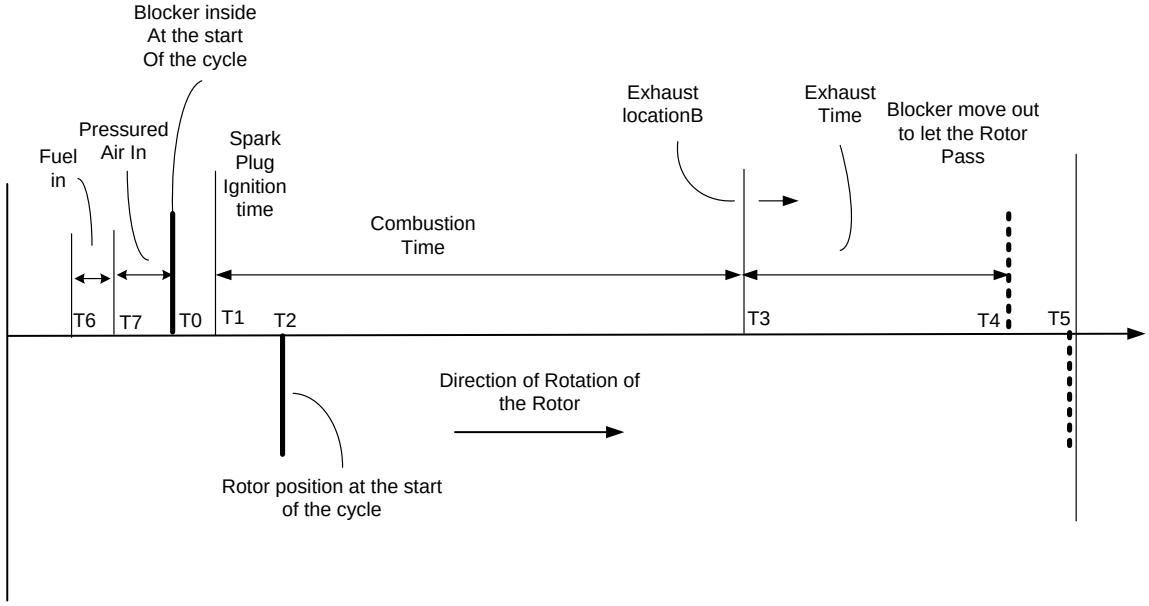

Blocker inside
At the start
Of the cycle
Pressured
Air In
Fuel
in
Spark
Plug
Ignition
time
Exhaust
locationB
Exhaust
Time
Blocker move out
to let the Rotor
Pass
Combustion
Time
T6
T7
T0
T1
T2
T3
T4
T5
Direction of Rotation of
the Rotor
Rotor position at the start
of the cycle

Fig. 1D

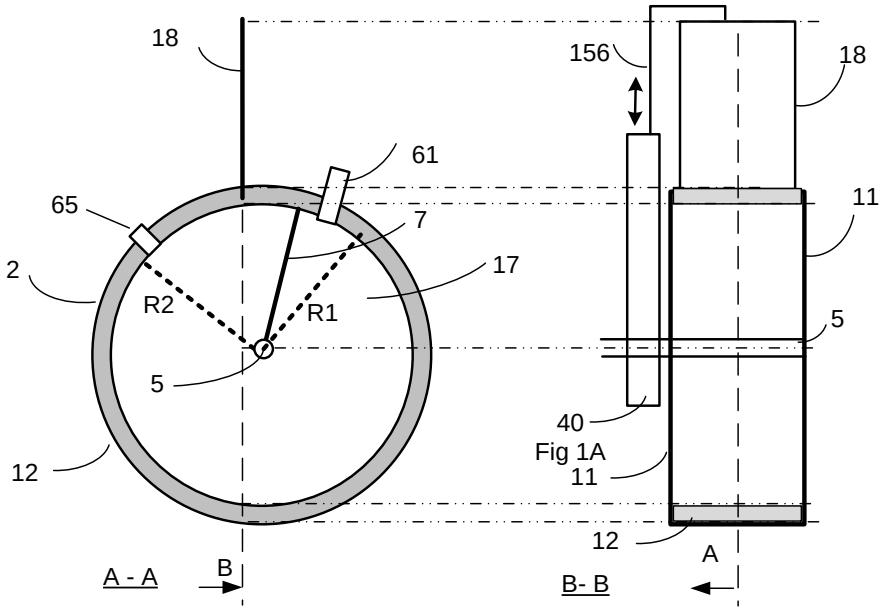
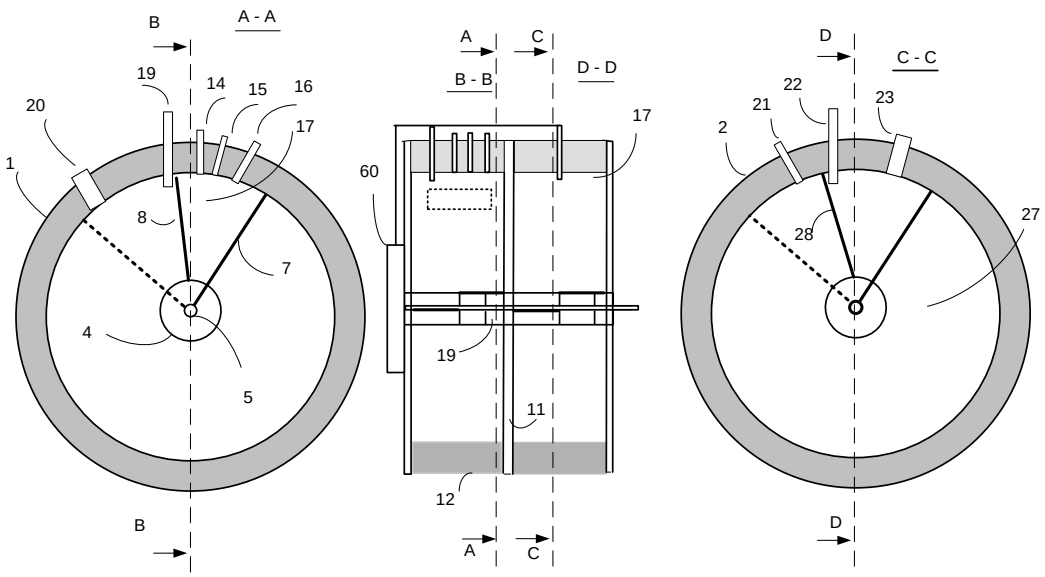


Fig. 4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28
D

Fig. 4C

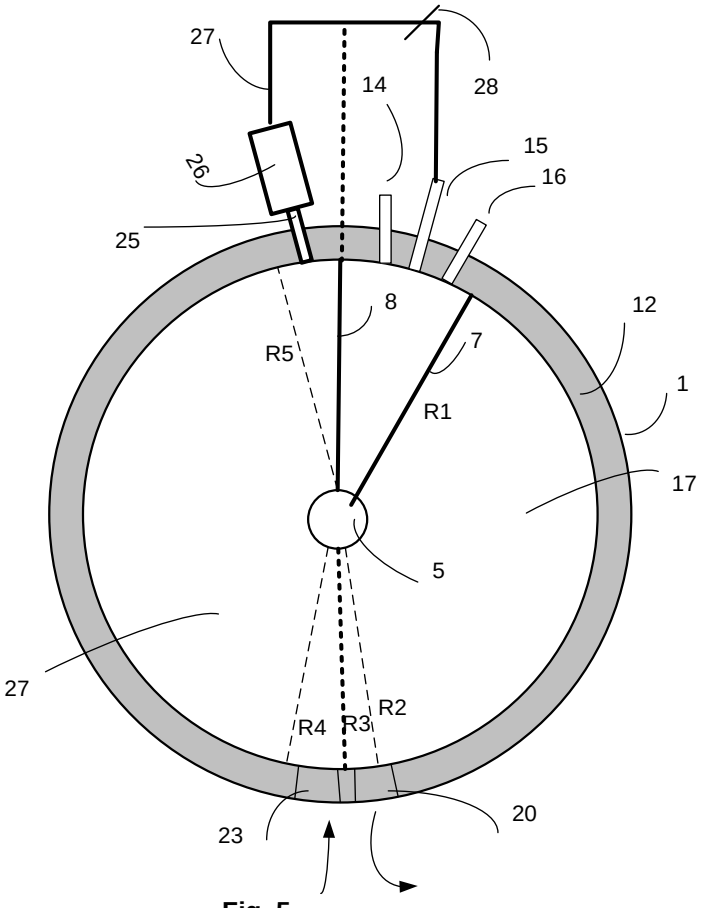
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Fig. 5

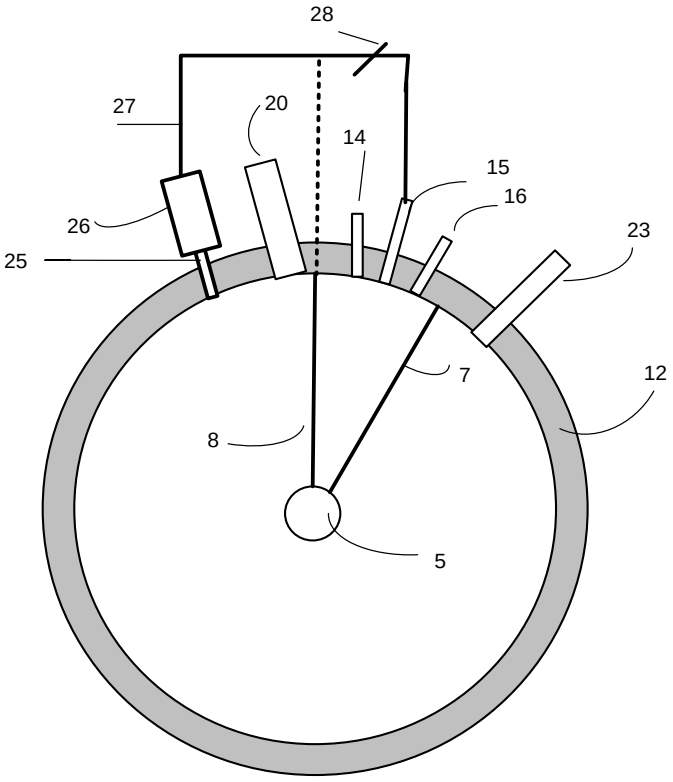

Fig. 5B

ABSTRACT OF THE DISCLOSURE

An apparatus to deliver rotation power to a shaft delivering mechanical rotation power, by a cavity that is formed by a spherical or cylindrical housing. A Rotor attached to a shaft, centrally rotating inside the housing along the center line of the rotation of the housing. A combustion chamber is formed inside the housing by a blade like Blocker and the blade like Rotor to ignition takes place. The ignition chamber expands radially providing rotational power to the shaft.