F. SCHNEIDER.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED OCT. 18, 1915.

1,232,097.

Patented July 3, 1917.

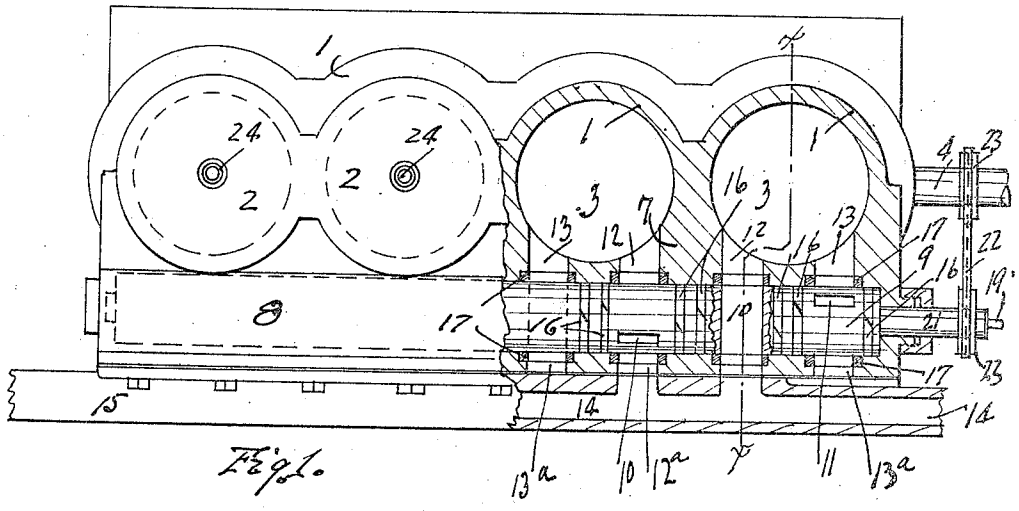


Fig. 1.

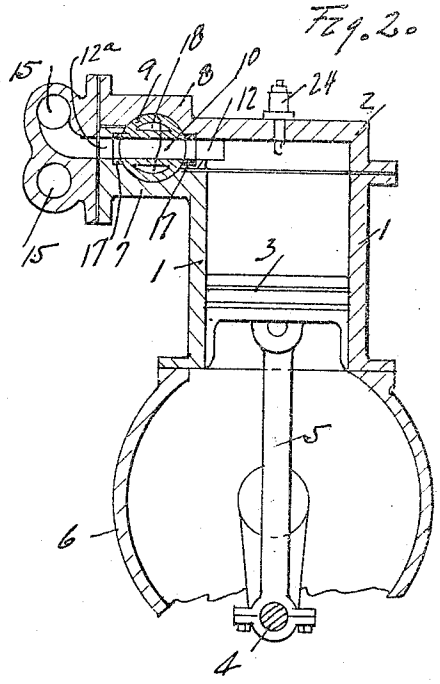


Fig. 2.

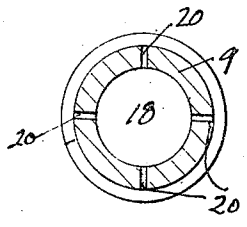


Fig. 3.

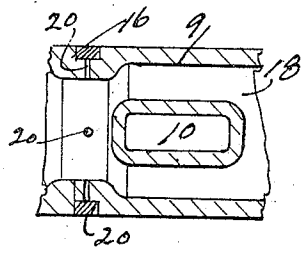


Fig. 4.

WITNESS

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INTERNAL-COMBUSTION ENGINE.

1,232,097. Specification of Letters Patent. Patented July 3, 1917.

Application filed October 18, 1915. Serial No. 56,387.

To all whom it may concern:

Be it known that I, FREDERICK SCHNEIDER, a citizen of the United States, and a resident of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a full, true, and exact specification.

My invention relates to improvements in internal combustion engines and has for its principal object to generally improve upon and simplify combustion engine construction by eliminating all valve springs and puppet valves; by providing a cylindrical rotary valve which may be positively geared to the crank shaft of the engine and which serves all the cylinders of an engine. A further advantage of my device lies in the fact that the admission of gas and exhaust from the cylinders is positively timed at the time of construction of the engine. Still another advantage lies in the arrangement for oiling the valve and its moving parts. It is a well known fact that much of the combustion engine troubles lie in faulty construction or operation of the valves which are generally quite complicated and require fine adjustments.

With my improved valve, there is a minimum of noise, shock and friction as all valve motion is rotary, which will give a very quiet operation of the engine.

Other objects will appear as the invention is more fully explained in the following specification, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings, Figure 1 is a plan of my improved engine with parts broken away. Fig. 2 is a sectional elevation along line *x—x*. Fig. 3 is an enlarged cross sectional view of the engine valve taken through the packing ring groove. Fig. 4 is a longitudinal sectional elevation of the valve showing a port and a packing ring.

Referring more particularly to the drawings, numeral 1 indicates the main cylinder casting of a four cylinder internal combustion engine. 2 are cylinder heads. Pistons 3 operate in cylinders 2 in the usual manner and are connected to a crank shaft 4 by connecting rods 5. A crank case 6 completes the standard skeleton of an ordinary engine. The valve casing consists of a base portion 7 which is integral with or attached to the cylinders, a cover 8 which is integral with or attached to the cylinder cap 2. The joint between the two parts of the valve casing is preferably located so that the ports on each side of the valve are entirely within one casing member or the other. Within the valve casing is a cylindrical opening in which a valve 9 fits revolubly. Intake ports 10 and exhaust ports 11 pass diametrically through valve 9 and register with intake and exhaust passages 12 and 13 respectively, which communicate with the interior of the cylinder near the top. Ports 10 and 11 may be arranged spirally or otherwise around the valve 9 so as to bring about any desired sequence of filling the cylinders and exhausting them. Passages 12^a and 13^a are continuations of passages 12 and 13 respectively, and connect into intake and exhaust manifolds 14 and 15 respectively. The manifolds are preferably adjacent the valve casing but may be in any desired position and have connections to their respective ports.

Packing rings 16 around valve 9 render it gas tight with respect to the valve casing and port packings 17 in recesses in the valve housings adjacent the ports 9 render the ports additionally tight. Valve 9 is internally cored as at 18 to allow for a water cooling space or preferably as shown for lubricating oil which is fed into the end of valve 9 by a connection 19 and is forced out of the valve by centrifugal force through oil holes 20 beneath packing rings 16 or elsewhere. The valve terminates at one end in a shaft 21 which is positively geared to crank shaft 4 by a chain 22 and sprockets 23 or otherwise. The charge of gas is sucked into the cylinders as usual from the intake manifold when the intake port 10 registers with passages 12 and 12^a, the valve being properly timed with respect to the piston in the cylinder. The exhaust port 11 comes into register with passages 13 and 13^a at the proper time for scavengering the cylinder after combustion has taken place, by firing in the usual manner by spark plugs 24. It will be understood that the arrangement of ports gives the cylinders any desired timing and arrangement of firing the various cylinders, The ab-

sence of puppet valves, springs, cams and the like gives a very simple engine which will be easy running and noiseless.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art, without departing from the spirit and scope of the invention, and I therefore desire to avoid being limited to the exact form shown and described. Having described my invention, what I claim as new and desire to protect by Letters Patent, is

Claims:

1. In a combustion engine, the combination of a cylinder body having cast at its upper end a lateral extension provided with a semicircular transverse depression, a cylinder head having cast on one side an extension formed with a semicircular transverse depression, the last mentioned extension and depression registering with the first mentioned extension and depression, the depression forming a valve seat, the extensions having inlet and outlet ports which communicate with the cylinder body, a hollow cylindrical valve rotatably mounted in the valve seat, said valve having straight ports extending therethrough adapted to register at determined times with the inlet and outlet ports, means for supplying the inlet port with a charge of explosive mixture, the valve having circumferential grooves each side the ports and oil ports communicating with said grooves and the interior of the valve, packing rings seated in the grooves, and means for supplying the hollow valve with a liquid lubricant.

2. In a combustion engine the combination of a cylinder body formed with a lateral extension, a head on the cylinder formed with a lateral extension fitted over and secured to the lateral extension on the cylinder body, said extensions having registering depressions which form a valve seat, the extension having inlet and outlet ports which communicate with the cylinder body, a hollow cylindrical valve mounted in the valve seat and provided with openings extending through the valve, the circumference of the valve each side the inlet and outlet ports being grooved and provided with oil ports, packing rings fitted in the grooves, a hollow lateral reduced portion extending from the valve, a bearing cast with the cylinder body in which the hollow lateral extension is mounted, means for supplying the hollow valve with a liquid lubricant, and means on the lateral extension for rotating the valve from the crank shaft of the engine.

FREDERICK SCHNEIDER.