A. MOEGLIN.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED SEPT. 19, 1917.

1,351,783. Patented Sept. 7, 1920.

Fig. 1.

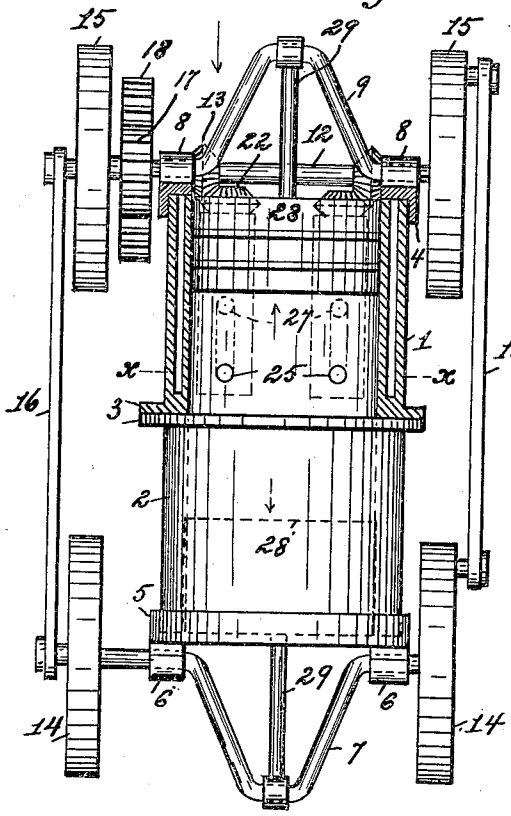


Fig. 3.

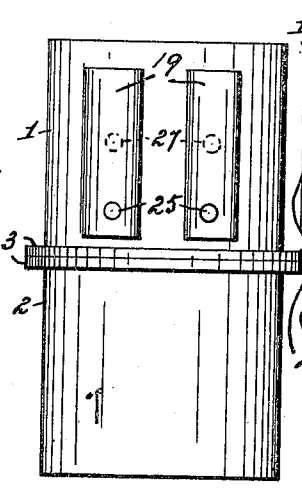
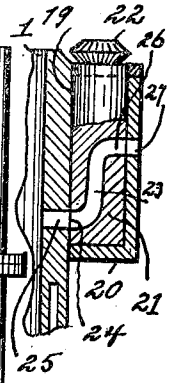


Fig. 5.



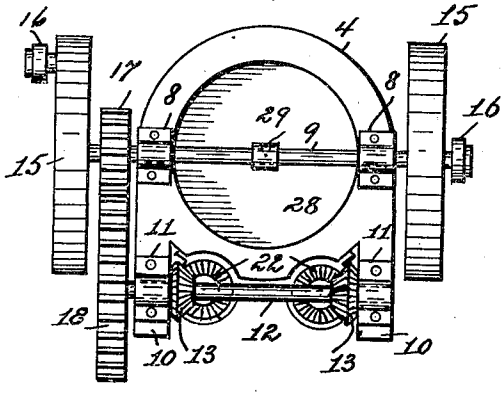
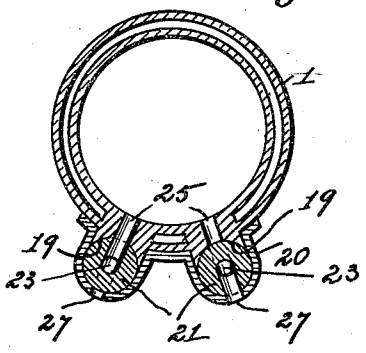


Fig. 2.

Fig. 4.



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INTERNAL-COMBUSTION ENGINE.

1,351,783. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed September 19, 1917. Serial No. 192,065.

To all whom it may concern:

Be it known that I, ALFRED MOEGLIN, a citizen of the United States, residing in the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it pertains to make, construct, and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, forming a part of this specification.

This invention relates to internal combustion engines, and the objects of my invention are to increase the simplicity of the construction and operation of the engine, by decreasing the number of parts of which the usual engine is composed; by lessening or avoiding the necessity for adjustment of the various parts, and by increasing the convenience in manipulation of the engine. To this end, I have made changes in this engine from similar engines; all with the object of increased efficiency. The invention comprises certain special constructions, combinations and arrangements of parts, as hereinafter set forth.

In the drawing, in which like numerals of reference indicate corresponding parts throughout,

Figure 1 represents a plan view partly in section of an internal combustion engine embodying one form of my invention.

Fig. 2 represents an end view looking in the direction indicated by the arrow in Fig. 1.

Fig. 3 represents an under plan view of the cylinders illustrating the rotary valve seats with the valves and valve casings removed.

Fig. 4 represents a transverse section taken on line *x*—*x* Fig. 1 through the valve seats and showing the valves and valve casings, and

Fig. 5 represents a side elevation partly in section of one of the rotary valves with gear attached.

Referring to the drawings, 1 and 2 represent the two cylinders secured together by means of the integral flanges 3—3 in any desired or convenient manner, each cylinder being open at its outer end and jacketed for cooling purposes. To the open ends of said cylinders collars 4 and 5 are secured, the collar 5 having centrally secured thereto bearings 6—6 for the reception of one of the crank-shafts 7 and collar 4 having centrally secured thereto bearings 8—8 for the reception of the other crank-shaft 9. The cylindrical pistons 28—28 are connected by piston rods 29—29 with the crank-shafts 7 and 9. The collar 4 is further provided with two integral extensions 10—10 to which are secured the bearings 11—11 for the reception of the rotary valve operating shaft 12 to which are secured the bevel wheels 13 and 13 presently to be described.

The crank shafts 7 and 9 have each attached thereto balancing fly wheels 14—14 and fly wheels 15—15 connected by connecting rods 16 and 16. The crank-shaft 9 is further provided with a gear wheel 17 designed to mesh with a gear wheel 18, the diameter of which is twice as large as the gear wheel 17, said gear wheel 18 being secured to the rotary valve operating shaft 12 in order to revolve said shaft 12 once to every two revolutions of the crank-shafts 9 and 7.

The under side of the cylinder 3 has formed integrally thereon two valve seats 19—19 over which are fitted the valve casings 20—20 which may be secured to said cylinder in any desired or convenient manner and which are designed to receive the rotary valves 21—21 to the ends of which are secured the bevel wheels 22—22 adapted to mesh with the bevel wheels 13—13 on the rotary valve operating shaft 12. Each rotary valve is provided with a passage or port 23 one end of the passage 24 registering with a port 25 in the cylinder 3 and the other end of the passage 26 which is located diametrically opposite to the first named end of the passage in one case registers with a port 27 shown in dotted lines in Fig. 3 which represents the port in the valve casing 20 and which is connected with the gas supply pipe not shown. And in the other case the end of the passage 26 registers with a similar port 27 also shown in dotted lines to indicate the port in the other valve casing 20 and which is connected with the exhaust pipe not shown.

With the parts in the position shown in Fig. 1, gas has been drawn into the cylinders by the movement of the pistons in the direction indicated by the arrows. This movement being the working stroke and one half revolution of the crank-shafts 7 and 9, movement of the pistons in the opposite di-

rection is the compression stroke and the other half revolution of the crank-shafts 7 and 9 further movement of the pistons in the direction again indicated by the arrows is a working stroke due to the explosion of a charge and the movement of the pistons in the opposite directions exhausts the cylinders. Thus there is a separate impulse or explosion for two revolutions of the crank-shafts 7 and 9. The charge is exploded in the center of the cylinders by means of an igniter of any convenient manner (not shown) and operated in the usual manner, forming no part of my invention.

Every revolution of the rotary valve operating shaft 12, which revolves once to every two revolutions of the crank-shafts 7 and 9 due to the gears 17 and 18 alternately causes the passage or port 23 to register with the port 25 of the cylinder to either admit the gas or vapor mixture or to exhaust the exploded gases.

I claim:

1. In an internal combustion engine, the combination with a cylinder having intake and exhaust ports, said intake and exhaust ports being located in line with each other in said cylinder, a single movable piston located in each end of said cylinder, a rotatable crank-shaft located in bearings on each end of the cylinder operatively connected with each piston, a connecting rod operatively connected to said crank-shafts, a rotary valve operating shaft mounted in bearings on one end of the cylinder, beveled gears carried by said shaft, two rotary valves fitted into a valve casing which is secured to the underside of the cylinder, each valve having a passage one for intaking and the other for exhausting charges, said passages communicating with the intake and exhaust ports of the said cylinder, and beveled wheels secured to the free ends of the rotary valves for engagement with the beveled wheels on the valve operating shaft for imparting rotary motion to said rotary valves for alternately registering the passages of said rotary valves with the intake and exhaust port in said cylinder.

2. In an internal combustion engine, the combination with a cylinder having intake and exhaust ports, said intake and exhaust ports being located in line with each other in said cylinder, a single movable piston located in each end of said cylinder, a rotatable crank-shaft located in bearings on each end of the cylinder operatively connected with each piston, a connecting rod operatively connected to said crank-shafts, a rotary valve operating shaft mounted in bearings on one end of the cylinder, a gear carried by the crank shaft meshing with a gear carried by the rotary valve operating shaft for revolving said valve operating shaft once to every two revolutions of the said crank shaft, beveled gears carried by said valve operating shaft, two rotary valves fitted into a valve casing which is secured to the underside of the cylinder, each valve having a passage one for intaking and the other for exhausting charges, said passages communicating with the intake and exhaust ports of the said cylinder, and beveled wheels secured to the free ends of the rotary valves for engagement with the beveled wheels on the valve operating shaft for imparting rotary motion to said rotary valves for alternately registering the passages of said rotary valves with the intake and exhaust port in said cylinder.

This specification signed and witnessed this 17th day of September, 1917.

ALFRED MOEGLIN.

Witnesses:

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FRED'K C. FISCHER.