No. 871,881. PATENTED NOV. 26, 1907.

A. MONTAN & J. SEHOLM.

ROTARY EXPLOSIVE ENGINE.

APPLICATION FILED JUNE 14, 1907.

2 SHEETS—SHEET 1.

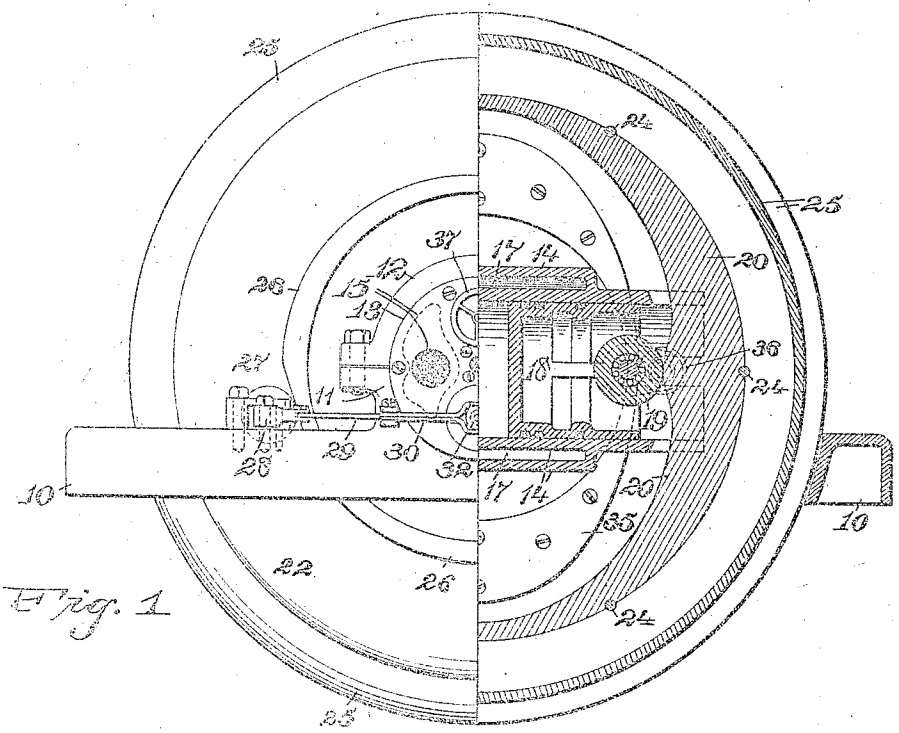


Fig. 1

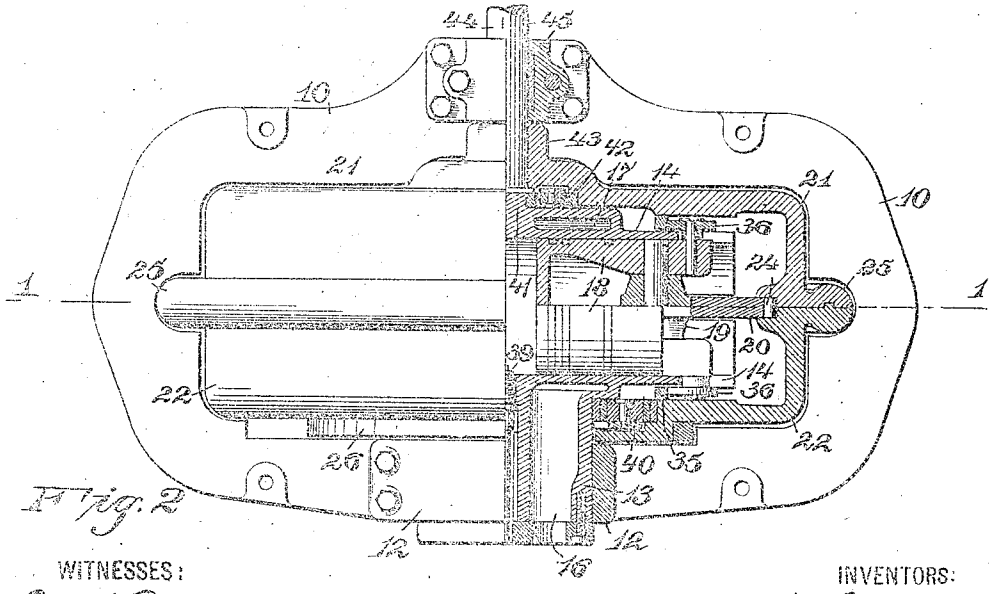


Fig. 2

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2 SHEETS—SHEET 3.

Fig. 3

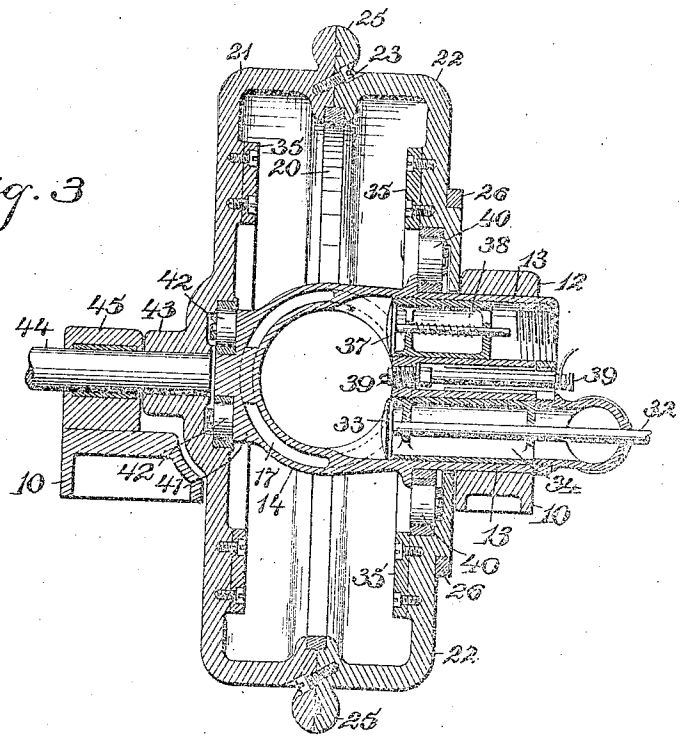


Fig. 4

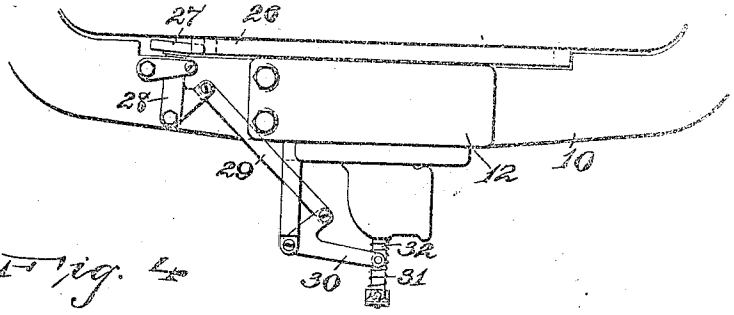
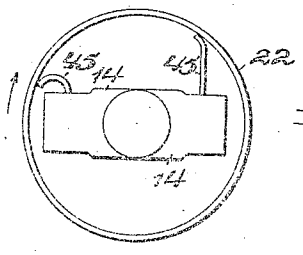


Fig. 5



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ROTARY EXPLOSIVE-ENGINE.

No. 871,881. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed June 14, 1907. Serial No. 378,916.

To all whom it may concern:

Be it known that we, ADOLF MONTAN and JOSEPH SEHOLM, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rotary Explosive-Engines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to a novel construction of internal combustion engine that employs a pair of pistons mounted in the opposite ends of a cylinder, the cylinder being fast, the pistons by their reciprocation causing the rotation of a case or cover which surrounds the cylinder and is connected with the drive-shaft.

The invention further consists of a rotary engine of this kind that employs the usual cooling means for the cylinder, and one that insures an even constant contact between the ends of the pistons and the cams in the casing, on which the pistons operate, to prevent any pounding or rattling when the engine is in motion.

A further object of the invention is the rotatable casing that is driven by the pistons and actuates them in turn to draw in a mixture to the engine or cylinder, after the old charge has been exhausted, this casing also providing a means for manually operating the engine to start it.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a view half in elevation and half on line 1, 1, in Fig. 2, showing the engine and a form of support. Fig. 2 is a similar view looking at the engine or motor from the top. Fig. 3 is a central cross-section on Fig. 1, and Fig. 4 is a detail view of the mechanism for operating the exhaust valve of the motor. Fig. 5 is a diagrammatic view of the oiling device of the engine.

In the drawings, we illustrate a support or base 10 which is not necessarily of the contour and design illustrated. On one side of the base 10 is a standard 11 with a crown piece 12 clamping between them the transverse portion 13 of the cylinder 14, which is thus held rigidly in place in its relation with the base portion. The transverse portion 13 of the cylinder has an opening 15, on one side, and an opening 16 on the other, as in Figs. 1 and 2, which are connected to provide a circulation through the cooling chamber 17 in the cylinder 14.

Two pistons 18 are arranged in the cylinder 14, one in each end, and they operate in opposite directions simultaneously. Thus, when a charge is exploded in the cylinder between the pistons, as will be hereinafter described, the pistons act, by means of the rollers 19, on the edge of the cam plate 20 which is clamped between the members 21 and 22 making up the casing of the motor. The members are secured together by means of the screws 23, and the cam plate 20 is prevented from slipping in the casing by the keys 24. The casing has a central ridge 25 which provides a grip for the manual manipulation of the motor. The motor thus started, exerts a pressure on the casing for a quarter of a revolution, and the cam plate 20 on the next quarter revolution, causes the pistons 14 to be pushed in again and at the same time a cam 26, on the outside of the casing, engages a roller 27 and causes the bell-crank 28, a link 29 and a bell-crank 30 to act against a spring 31 and push in the rod 32, of the exhaust valve 33, in the exhaust port 34 of the transverse portion of the cylinder. The engine has gone a one-half revolution, and a charge has been fired and exhausted, the pistons acting to expel the charge. On the next quarter revolution, cams 35, one on each side of the inside of the casing, engage the rollers 36, one on each side of each piston, and this causes a vacuum which operates, by suction, an inlet valve 37, in the inlet 38 of the portion 13, to admit the charge to be next exploded. On the last quarter turn, the cam plate 20 pushes on the rollers 19 to push the pistons together and the charge is compressed, and when the rollers 19 are just passing over the points on the cam plate, the sparker 39 ignites the charge and another revolution of the casing is started. The casing runs true and smooth by reason of the rollers 40 running on the transverse portion 13 of the cylinder 14, preferably traveling on hardened steel rings. On the other side of the cylinder is a small lug 41, between which and the casing are the rollers 42. The casing has a hub 43 thereon on the side opposite the inlets and outlets of the cylinder, and the hub acts to secure a

drive-shaft 44 and transmit motion thereto. The shaft 44 runs in bearings 45 secured to the support 10. To oil the engine, we propose to install the device shown in Fig. 5, which consists of pipes leading from the cylinder 14, these pipes being adapted to feed oil and being bent to curve near the inner edge of the casing to face the direction in which the engine is running, so that the oil, which is put into the casing in considerable quantities, when it is thrown out to the outer edge of the inside of the casing where it is carried by a centrifugal force, will be fed or forced into the pipes 45

This engine has one explosion for every revolution, and the pistons working in the same cylinder cause a positive compression of the charge, and on the outward thrust make an even distribution of power to the casing. The stationary cylinder allows of a cooling of the cylinder, and the rotatable casing can be grasped and operated by hand to start the motor. The casing also acts as a fly-wheel to sustain the revolution of the motor, being made heavy enough on its periphery to fill the office of a fly-wheel.

Having thus described our invention, what we claim is:—

1. A motor comprising a support, a cylinder fixed thereon, pistons operating in the opposite ends of the cylinder, a rotatable casing mounted on the cylinder and entirely inclosing the same, and means for driving the casing from the pistons.

2. A motor comprising a support, a cylinder fixed thereon, pistons operating in the opposite ends of the cylinder and adapted to be actuated by the same charge, a rotatable casing mounted on the cylinder and entirely inclosing the same, a cam in the casing, and a roller on each piston to engage the cam to operate it.

3. A motor comprising a support, a cylinder fixed thereon, pistons operating in the opposite ends of the cylinder and adapted to be actuated by the same charge, a rotatable casing mounted on the cylinder and entirely inclosing the same, a cam in the casing, a roller on each piston to engage the cam to operate it, a second set of cams, and means for actuating the pistons from the second cams to cause the admission of gas to the cylinder.

4. A motor comprising a support, a cylinder having a transverse portion secured to the support, the cylinder having a cooling chamber with openings through the transverse portion, the transverse portion also having inlet and outlet ports to the cylinder, pistons operating in the opposite ends of the cylinder, a casing rotatably arranged on the cylinder and entirely inclosing the same, and mechanism for rotating the casing from the pistons.

5. A motor comprising a support, a cylinder having a transverse portion secured to the support, the cylinder having a cooling chamber with openings through the transverse portion, the transverse portion also having inlet and outlet ports to the cylinder, valves in the inlet and outlet ports, a casing rotating on the cylinder and entirely inclosing the same, pistons operating in the opposite ends of the cylinder, mechanism for actuating the casing from the pistons, and the pistons from the casing, and means for opening the exhaust valve on the alternate movement of the pistons toward each other.

6. A motor comprising a support, a cylinder having a transverse portion secured to the support, the cylinder having a cooling chamber with openings through the transverse portion, the transverse portion also having inlet and outlet ports to the cylinder, valves in the inlet and outlet ports, a casing rotatably arranged on the cylinder and entirely inclosing the same, a piston in each end of the cylinder, mechanism for rotating the casing by the reciprocation of the pistons, a cam on the casing, and an operative connection from the cam to the exhaust valve for opening the exhaust valve on the alternate movement of the pistons toward each other.

7. A motor comprising a support, a cylinder having a centrally located transverse portion secured to the support, a piston in each end of the cylinder and adapted to compress a charge of gas between them and adapted to have the charge exploded between them, a casing arranged to rotate on the cylinder and entirely inclosing the same, and mechanism for rotating the casing from the pistons.

8. A motor comprising a support, a cylinder having a centrally located transverse portion secured to the support, a piston in each end of the cylinder and adapted to compress a charge of gas between them and adapted to have the charge exploded between them, a casing arranged to rotate on the cylinder and entirely inclosing the same, a cam on the casing, and a roller on each piston to bear on the cam to rotate the casing.

9. A motor comprising a support a cylinder having a centrally located transverse portion secured to the support, a piston in each end of the cylinder and adapted to compress a charge of gas between them and adapted to have the charge exploded between them, a casing arranged to rotate on the cylinder, a cam in the casing, a roller on each piston to operate the casing by bearing on the cam, a set of cams on the sides of the casing, and rollers on the pistons to engage the second cams to pull the pistons apart.

10. A motor comprising a support, a cylin-

der having a transverse portion secured to the support, the cylinder having a pair of pistons therein operating in opposition, the transverse portion having inlet and outlet ports, valves in the inlet and outlet ports, the inlet valve being operated by suction, mechanism connected with the casing for mechanically operating the exhaust valve, a casing adapted to rotate on the cylinder and its transverse portion and entirely inclosing the cylinder, a cam in the casing, a roller on each piston to operate the cam to rotate the casing, a second set of cams in the casing, rollers on the pistons to be operated by the second set of cams to draw the pistons apart, the casing being adapted to act as a fly-wheel to sustain the rotation of the motor, a shaft connected with the casing, a bearing for the shaft secured to the support, and a sparking device in the transverse portion of the cylinder and projecting into the cylinder between the pistons.

11. A motor comprising a support having a standard and a cap, a cylinder with a transverse portion rigidly secured between the standard and the cap, the cylinder having a pair of pistons therein working in opposition, the cylinder having a cooling chamber with passages passing through the transverse portion, the transverse portion also having valved inlet and outlet ports communicating with the cylinder, a lug on the side opposite to the transverse portion, a casing enveloping the cylinder, rollers on which the casing is adapted to rotate, the rollers being arranged to rotate on the transverse portion and on the lug of the cylinder, and mechanism to rotate the casing from the pistons.

12. A motor comprising a support, a cylinder having a transverse portion fixed in the support, a casing mounted to rotate on the fixed transverse portion of the cylinder and inclosing the cylinder, a shaft mounted on the support and being attached to the casing on the side opposite the transverse portion, pistons in the cylinder, and mechanism within the casing for operating the casing and the shaft from the pistons.

13. A motor comprising a support, a cylinder having a transverse portion fixed in the support, a casing mounted to rotate on the fixed transverse portion of the cylinder and inclosing the cylinder, a shaft mounted on the support and being attached to the casing on the side opposite the transverse portion, pistons in the cylinder, and mechanism within the casing for operating the casing and the shaft from the pistons, the casing being made of halves forming an annular joint.

14. A motor comprising a support, a cylinder having a transverse portion fixed in the support, a casing mounted to rotate on the fixed transverse portion of the cylinder and inclosing the cylinder, a shaft mounted on the support and being attached to the casing on the side opposite the transverse portion, pistons in the cylinder, and mechanism within the casing for operating the casing and the shaft from the pistons, the casing having means on its periphery providing for its manual manipulation to start the engine.

15. A motor comprising a support, a cylinder having a transverse portion fixed in the support, a casing mounted to rotate on the fixed transverse portion of the cylinder and inclosing the cylinder, a shaft mounted on the support and being attached to the casing on the side opposite the transverse portion, pistons in the cylinder, and mechanism within the casing for operating the casing and the shaft from the pistons, the casing having an annular rib on its periphery for its manual manipulation.

16. A motor comprising a fixed cylinder having a transverse portion thereon, pistons in the cylinder, a transversely split casing embracing the cylinder and rotating on the transverse portion, rollers on the ends of the pistons, and a cam plate clamped between the split portions of the casing and adapted to be engaged by the rollers on the pistons.

17. A motor comprising a fixed cylinder having a transverse portion thereon, pistons in the cylinder, a transversely split casing embracing the cylinder and rotating on the transverse portion, rollers on the ends of the pistons, a cam plate clamped between the split portions of the casing and adapted to be engaged by the rollers on the pistons, and pins passing through the casing and the cam plate to lock the cam plate against rotation in the casing.

18. A motor comprising a fixed cylinder, a casing inclosing the cylinder and adapted to rotate thereon, means for operating the casing from the cylinders, the casing being adapted to contain oil, a set of oil pipes in the cylinder having their inlet ends in close proximity to the inner surface of the casing and bent in opposition to the normal direction of rotation of the casing.

In testimony that we claim the foregoing, we have hereunto set our hands this 13th day of June, 1907.

ADOLF MONTAN.
JOSEPH SEHOLM.

Witnesses:
WM. H. CAMFIELD,
E. A. PELL.