No. 751,842. PATENTED FEB. 9, 1904.

V. ERICSON.

ROTARY ENGINE.

APPLICATION FILED NOV. 30, 1903.

NO MODEL.

Fig. 1.

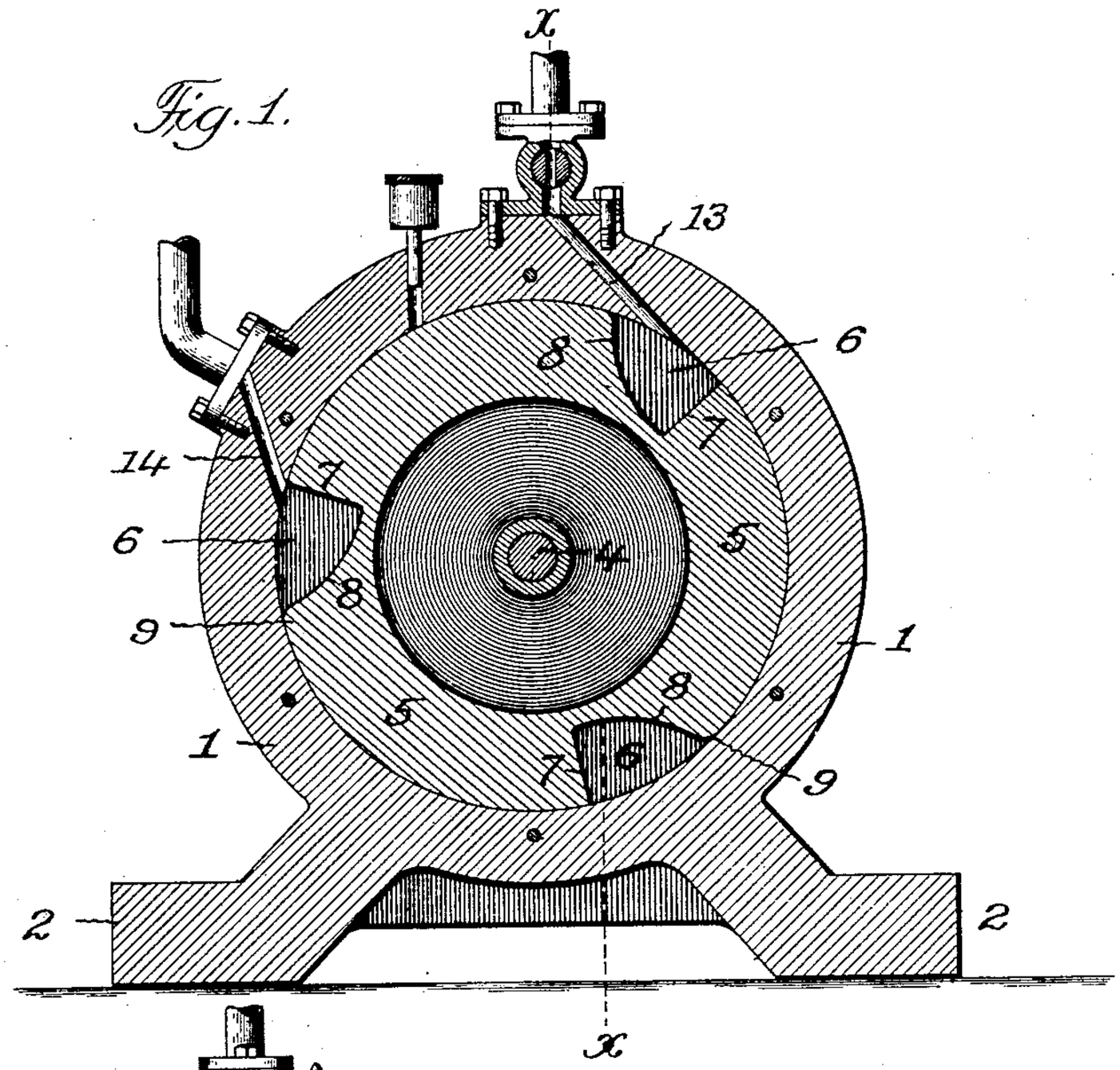


Fig. 2.

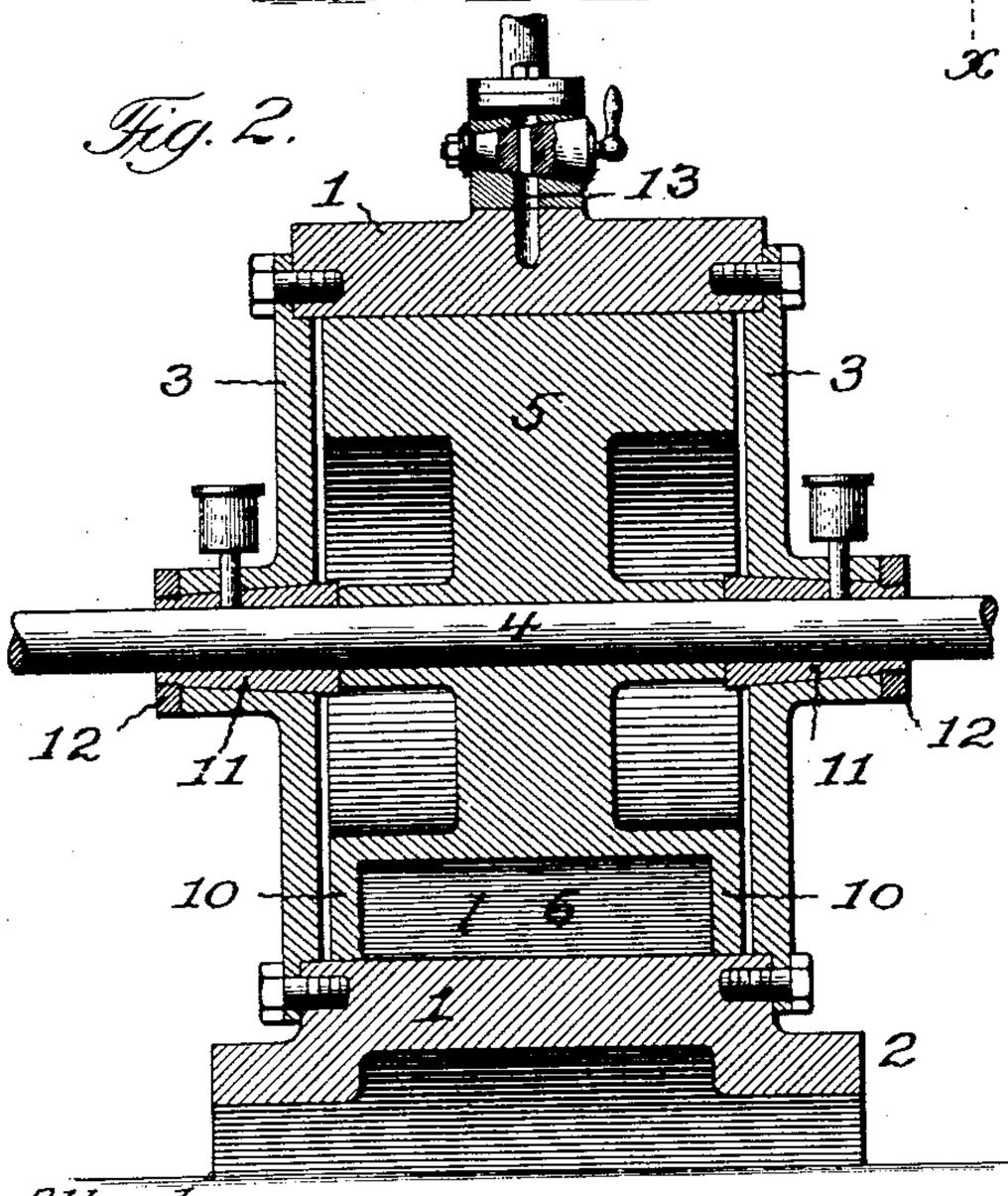
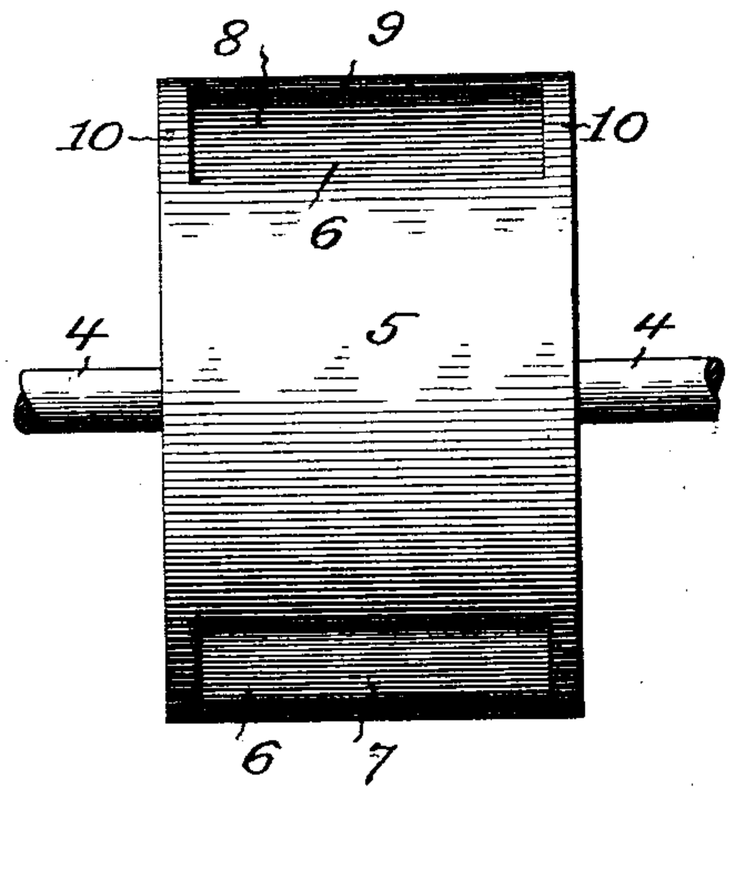


Fig. 3.



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No. 751,842. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

VICTOR ERICSON, OF CHICAGO, ILLINOIS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 751,842, dated February 9, 1904.

Application filed November 30, 1903. Serial No. 183,148. (No model.)

To all whom it may concern:

Be it known that I, VICTOR ERICSON, a subject of the King of Sweden and Norway, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

The present invention relates to that type of rotary engines in which the direct impact of the motive fluid against the piston is adapted to impart rotation to such piston and to the engine-shaft upon which such piston is secured; and the present improvement has for its object to provide a simple and efficient structural formation and combination of parts whereby an efficient operation of the engine is attained with a minimum amount of friction and wear during long continued use, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings, illustrative of the present invention, Figure 1 is a sectional elevation of a rotary engine embodying the present invention. Fig. 2 is a sectional elevation at right angles to the plane of Fig. 1 and taken on line x x, Fig. 1. Fig. 3 is a plan view of the piston detached.

Similar numerals of reference indicate like parts in the different views.

Referring to the drawings, 1 represents the stationary engine-casing, integrally formed with the the bed-plate 2 and having a horizontal cylindrical bore or piston-chamber, the ends of which are closed by the closure-heads 3, in which are formed bearings for the engine-shaft 4, which carries the revoluble piston 5, such general arrangement of parts being common to the present type of rotary engines.

In the present invention the piston 5 is shorter than the distance between the inner faces of the aforesaid closure-heads 3, so as to leave clearance-spaces between the ends of said piston and the inner faces of said heads with an entire avoidance of surface contact and friction between said parts. Such piston has a cylindrical periphery of substantially the same diameter as the cylindrical bore or piston-chamber of the stationary engine-casing 1 and is adapted to rotate therein without any frictional resistance and yet without any clearance which would admit of the motive fluid leaking around the periphery of the piston from the inlet to the outlet passages for the motive fluid, and to the practical attainment of such ends the piston 5 will have a diameter one one-thousandth of an inch less than the diameter of its piston-chamber aforesaid.

6 represents a series of triangular chambers formed in the periphery of the piston 5, and in the present improvement each of such chambers have a straight face 7, radial with the axis of rotation, and a curved face 8, that merges into the periphery of the piston by a small reverse curve 9, as shown in the drawings. A material feature in this connection involves the formation of the piston of a greater length than the above-described pockets, so that the piston will have unbroken cylindrical end portions 10 of some extent to fit the interior of the piston-chamber and prevent lateral leakage of the motive fluid at the end closure-heads 3 aforesaid.

While a series of three peripheral pockets 6 are shown in the drawings, a greater or less number may be employed in accordance with the judgment of the constructor and without departing from the scope of the present invention.

11 represents conical bushings, preferably of the usual split form and occupying centrally-arranged tapering sockets or bores in the respective end closure-heads 3 of the piston-chamber to constitute bearings for the engine-shaft 4 and in the present construction are adapted to afford a very efficient means for taking up the wear of the bearing-surfaces without disturbing the proper concentric relation of the piston to its piston-chamber in the stationary casing 1. 12 represents adjusting-nuts for said conical bushings, screwing upon screw-threaded cylindrical extensions of said bushings and having bearings against the outer faces of the respective closure-heads 3 aforesaid.

13 is the inlet pipe or passage for the motive fluid, having a tangential arrangement in the stationary casing 1 with relation to the periphery of the piston 5.

14 is the outlet or exhaust pipe or passage for the motive fluid, having a like tangential arrangement in the stationary casing 1.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine of the class herein described the combination of a stationary casing having a cylindrical bore and provided with the usual tangential inlet and outlet passages for the motive fluid, end heads closing said bore and provided with centrally-arranged tapering sockets, a cylindrical piston arranged in said bore and having a less length than the distance between said end heads and provided with peripheral chambers of an angular form in cross-section and with one face of each chamber in radial alinement with the axis of rotation, the length of the piston being in excess of the length of said chambers to provide unbroken cylindrical ends on the piston adapted to fit the piston-chamber and prevent leakage of motive fluid, an engine-shaft carrying said piston, and conical bushings fitting the conical bores of the end heads to constitute bearings for the engine-shaft, substantially as set forth.

2. In a rotary engine of the class herein described, the combination of a stationary casing having a cylindrical bore and provided with the usual tangential inlet and outlet passages for the motive fluid, end heads closing said cylindrical bore, a cylindrical piston arranged in said bore and having a less length than the distance between said end heads and provided with peripheral chambers of an angular form in cross-section, each pocket having a face radial to the axis of rotation and a curved face connecting said radial face with the periphery of the piston and merged into said periphery by a small reverse curve, the length of the piston being in excess of the length of the chamber to provide unbroken cylindrical ends on the piston adapted to fit the piston-chamber and prevent lateral leakage of the motive fluid, and an engine-shaft carrying such piston and having bearings in the end heads aforesaid, substantially as set forth.

3. In a rotary engine of the class herein described the combination of a stationary casing having a cylindrical bore and provided with the usual tangential inlet and outlet passages for the motive fluid, end heads closing said bore and provided with cylindrically-arranged tapering sockets, a cylindrical piston arranged in said bore and having a less length than the distance between said end heads and provided with peripheral chambers of an angular form in cross-section each pocket having a face radial to the axis of rotation and a curved face connecting said radial face with the periphery of the piston and merging into said periphery by a small reverse curve, the length of the piston being in excess of the length of said chambers to provide unbroken cylindrical ends on the piston adapted to fit the piston-chamber and prevent leakage of motive fluid, an engine-shaft carrying said piston, and conical bushings fitting the conical bores of the end heads to constitute bearings for the engine-shaft, substantially as set forth.

Signed at Chicago, Illinois, this 29th day of November, 1903.

VICTOR ERICSON.

Witnesses:
LAWRENCE ERICSON,
ROBERT BURNS.