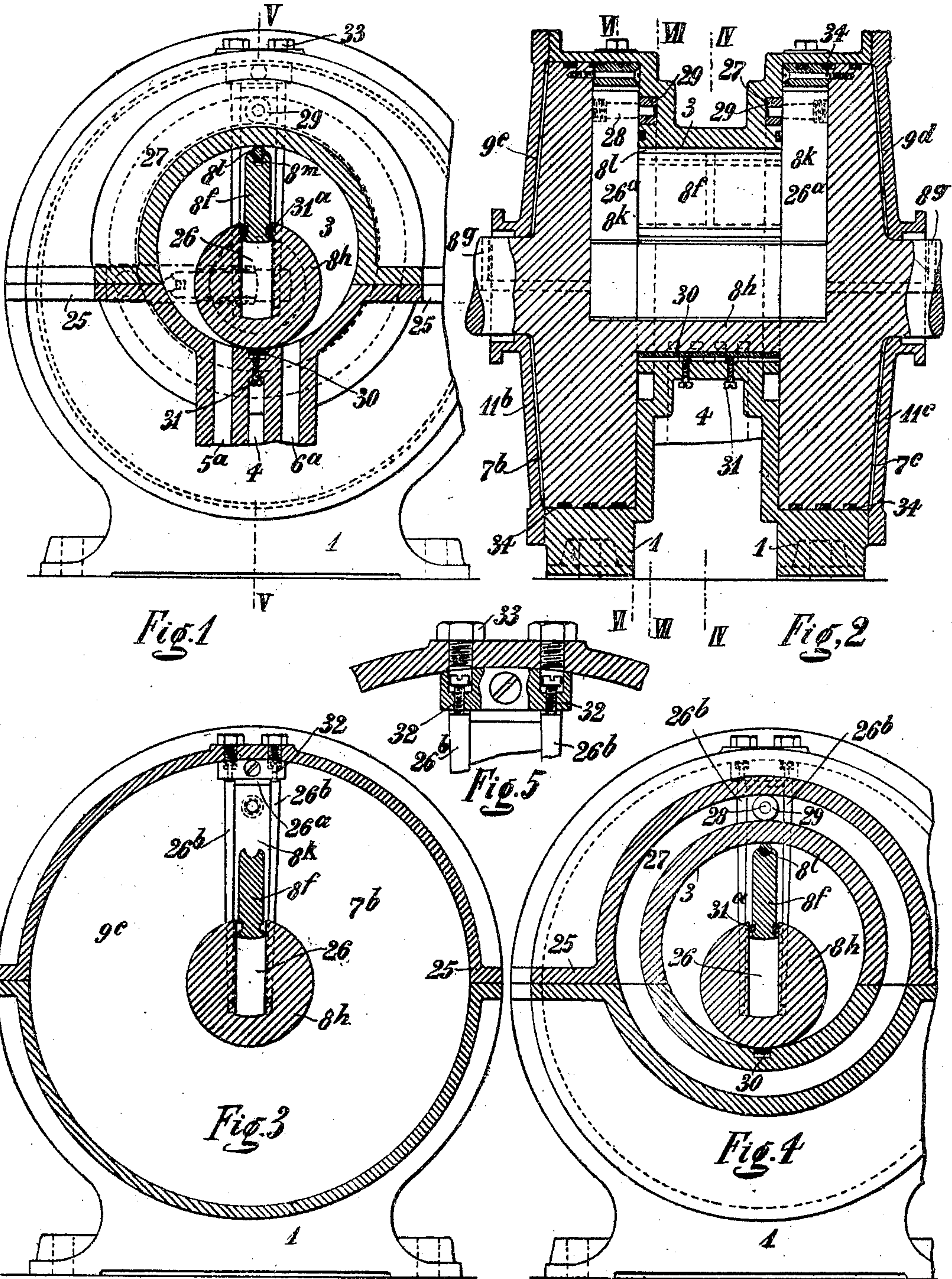


No. 798,094.

PATENTED AUG. 29, 1905.

F. EGERSDÖRFER.
ROTARY ENGINE.

APPLICATION FILED MAY 23, 1905.



Witnesses:

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FRITZ EGERSDÖRFER, OF WEISBADEN, GERMANY, ASSIGNOR OF ONE-HALF TO FRITZ LINDER, SR., OF BARMEN, GERMANY.

ROTARY ENGINE.

No. 798,094.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed May 23, 1905. Serial No. 261,755.

To all whom it may concern:

Be it known that I, FRITZ EGERSDÖRFER, a subject of the German Emperor, residing at Weisbaden, in the Province of Hesse-Nassau, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to improvements in rotary engines of that class in which the motive fluid works upon a piston, the latter having the shape of a flat plate adapted to move transversely of the center of the shaft within the cylinder, while its side edges—that is, those running parallel to the shaft—glide along the concave or hollow cylindrical inner surface of the cylinder. The piston or piston-plate in this instance is inclosed at both ends in enlarged parts or disks arranged inside of the cylinder and cast together with or otherwise rigidly connected to the engine-shaft, so that the impetus received by the piston is transmitted to the shaft proper forming the outside prolongations of the piston. These ends therefore need no tightening or packing, steam-tight joints being conveniently made on the circumference of said disks, whereby stuffing-boxes between the cylinder-covers and the shaft can be omitted, any escape of the motive fluid being absolutely prevented. Means for regulating the admission of the motive fluid automatically or by hand can be applied in any convenient manner.

The description of the engine forms part of my prior application, filed June 22, 1904, Serial No. 213,598, without, however, being claimed therein.

On the accompanying drawings, Figure 1 shows the new engine in cross-section on line IV IV of Fig. 2. Fig. 2 is a central longitudinal section on line V V of Fig. 1. Fig. 3 is a cross-section on line VI VI, and Fig. 4 a transverse section on line VII VII, of Fig. 2. Fig. 5 shows in an enlarged view a detail part of the engine.

I will now proceed to describe in detail the engine shown in the figures of the drawings, in which similar parts are indicated by similar reference-numerals.

The engine, as shown, is non-expansive and not reversible, and its construction is therefore simple.

On pedestals 1 is supported the cylinder, which is composed of four compartments—

namely, the smaller middle one 3 and the two outer and larger ones 7^b and 7^c at the right and the left, respectively, of the compartment 3. The cylinder-space 3 is placed eccentrically to the two outer ones 7^b and 7^c, and below the cylinder 3 is arranged the compartment containing the admission and exhaust ports 5 and 6. All four compartments form one hollow space.

The cylinder-casing is made in two parts, which are held together by flanges 25 and bolts. At both ends the cylinder-casing is closed by covers 11^b and 11^c, which are provided with central holes for the engine-shaft 8^e to pass through. Into this threefold casing is placed from the top, after the top of the shell has been taken off, the piston-plate 8^f and its accessories, including the means for guiding the piston-plate and for insuring tightness against escape of the motive fluid. The axis 8^h and the two disks 9^c and 9^d, guiding the piston, are integral, and centrally disposed with relation to the outer surfaces of the disks and cast with or otherwise rigidly attached to them are the right and left parts 8^g of the engine-shaft. The axis 8^h is slotted radially nearly right through, and the slot 26 is extended to a certain distance into the side disks 9^c and 9^d, respectively, where it is enlarged or widened and extended into radial direction in both disks to the edge of the latter, as seen at 26^a. In accordance with the enlarged slots 26^a the ends 8^k of the piston-plate 8^f are also made thicker to fit closely into said slots, and these thickened end parts 8^k are prolonged outward so as to reach beyond the grooves 27, arranged concentrically with the small cylinder 3 in the inner faces of the walls of the cylinder-casing facing the inner sides of the disks 11^b and 11^c. Guide-heads 28, screwed onto said prolongations of the thickened ends of the piston-plate, carry rollers 29, which are guided in said grooves 27, and thus give a positive radial motion to the piston-plate 8^f while rotating in the cylinder 3, so that the outer edge of the piston-plate 8^f is always kept in close contact with the inner circumference of the cylinder 3. In order to insure a tight fit between the piston-plate and the inner circumference of the cylinder and to reduce the friction between the same, the piston-plate is provided with a roller 8ⁱ, which is pressed outwardly by a spring 8^m, placed underneath said roller, and it will thus be understood that by

the combined action of the groove 27, the rollers 29, and the roller 8ⁱ the piston-plate will divide the cylinder-space 3 into two tightly-closed compartments, into one of which the motive fluid—as, for instance, steam—will be admitted by the passage 5^a, while the other compartment is in communication with the exhaust-port 6^a. The passages 5^a and 6^a are connected in the usual manner with admission and exhaust pipes, respectively. (Not shown in the drawings). In order to procure a steam-tight contact between the axis 8^h and the inner circumference of the cylinder 3, a packing-piece 30 is fitted into a groove of the cylinder and pressed against the said axis by a spring or other suitable means and bolts 31. At the inner end of the piston-plate 8^f a tight fit between it and the slot 26^a in the axis 8^h is obtained by packing-pieces 31^a, and for the purpose of providing adjustable guides for the piston-plate in the slots 26^a wedges 26^b are placed at the right and left of the respective part of the piston-plate, which can be kept in close contact with the piston-plate in case of wear by means of set-screws 32. The latter can be reached through holes in the cylinder-casing, which are closed by bolts 33. Around the disks 9^c and 9^d packing-rings 34 are placed, so as to provide also a steam-tight fit between the said disks and the inner walls of the cylinder-case.

I am aware that rotary engines of a similar design are known, and I therefore do not claim broadly such engines, but

What I claim is—

1. In a rotary engine, a cylinder 2 supported on pedestals 1 and composed of a small middle compartment 3 and of two larger ones 7^b, 7^c arranged respectively at the right and left of said compartment 3 and arranged eccentrically with relation to the same, flanges 25 for jointing the two halves of the cylinder-casing together, covers 11^b, 11^c respectively for closing both ends of the cylinder, and disks 9^c, 9^d respectively fitting exactly into said large compartments 7^b, 7^c and connected together rigidly by a shaft 8^h which bears closely on one side upon the circumference of said compartment 3, inlet and outlet passages 5^a, 6^a at the right and left respectively of the line of contact between said shaft 8^h and the compartment 3, a slot 26 in said shaft, enlarged extensions 26^b of slot 26 in the disks 11 and 11^c, a flat piston-plate 8^f placed movably in said slot 26, thickened extensions 26^a fitting into the extensions 26^b of the slot 26, shafts 8^g connected rigidly to the outside ends of the disks 11^b, 11^c respectively, said shafts passing through central stuffing-boxes of said covers 11^b, 11^c, the whole as described and illustrated.

2. In a rotary engine, a cylinder 2 supported on pedestals 1 and composed of a small middle compartment 3 and of two larger ones 7^b,

7^c situated respectively at the right and left of said compartment 3 and arranged eccentrically with relation to the same, flanges 25 for jointing the two halves of the cylinder-casing together, covers 11^b, 11^c respectively for closing both ends of the cylinder, inlet and outlet passages 5^a, 6^a respectively in combination with a shaft 8^h, disks 9^c, 9^d, packing-rings 34 placed around said disks, springs 30, set-screws 31 pressing said springs against the lower surface of shaft 8^h, a slot 26 in said shaft, enlarged extensions 26^b of said slot in the disks 9^c, 9^d, a piston-plate 8^f fitting in said slot 26, thickened extensions 26^a at both ends of the piston-plate and fitting closely into said slot, extensions 26^b, circular groove 27 on the inner sides of the compartments 7^b, 7^c respectively, pins 28 fixed to the prolongations 26^a of the piston-plate 8^f, rollers 27 on said pins 28 and coacting with said grooves 27 so as to give a positive radial movement to the piston-plate during its rotation in the cylinder 3, the whole as described and shown.

3. In a rotary engine, a cylinder composed of a small compartment 3, two large extensions 7^b, 7^c arranged eccentrically at the right and left of part 3 with relation thereto, inlet and outlet passages 5^a, 6^a respectively, covers 11^b, 11^c closing said cylinder, a shaft 8^h, disks 9^c, 9^d at both ends of said shaft and connected rigidly thereto, a slot 26 in said shaft, shaft extensions 8^g at both ends of the cylinder, and a piston-plate 8^f, enlarged extensions 26^a, an antifriction-roller 8ⁱ at the outer edge of piston-plate 8^f, a spring 8^m pressing said roller outwardly, the whole as described and illustrated.

4. In a rotary engine, a cylinder composed of a small compartment 3, two large extensions 7^b, 7^c arranged eccentrically at the right and left of compartment 3, with relation thereto, inlet and outlet passages 5^a, 6^a respectively, covers 11^b, 11^c closing said cylinder at both ends, a shaft 8^h, disks 9^c, 9^d at both ends of said shaft and connected rigidly thereto, a slot 26 in the said shaft, extensions 8^g at both ends of the cylinder and passing through stuffing-boxes in the covers 11^b, 11^c respectively, a piston-plate 8^f fitting in said slot 26 of shaft 8^h, enlarged extensions 8^k fitting in corresponding extensions 26^a of slot 26 in the disks 9^c, 9^d respectively, and wedges 26^b placed at the right and left of the extensions 8^k in said slot extensions 26^a, set-screws 32 for adjusting said wedges 26^b, closing-bolts 33 in the cylinder-casing to permit access to the set-screws 32, the whole as described and shown.

In testimony whereof I affix my signature in presence of two witnesses.

FRITZ EGERSDÖRFER. [L. s.]

Witnesses:

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