No. 741,359. PATENTED OCT. 13, 1903.

E. A. MORPHEW.

ROTARY ENGINE.

APPLICATION FILED MAY 12, 1903.

NO MODEL.

Fig. 1.

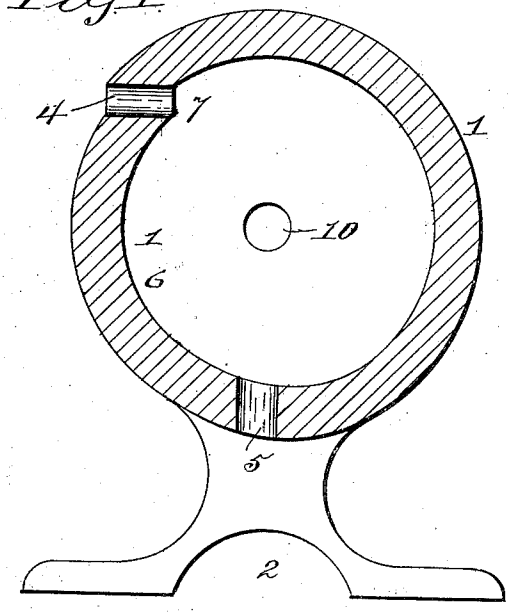


Fig. 2.

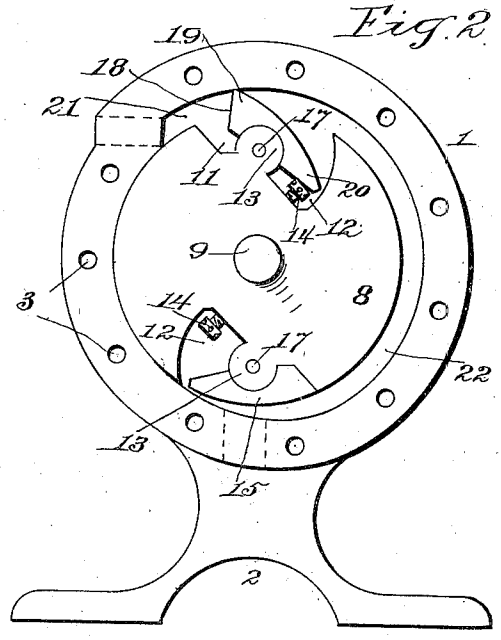


Fig. 4.

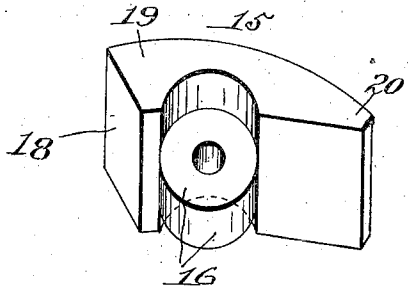
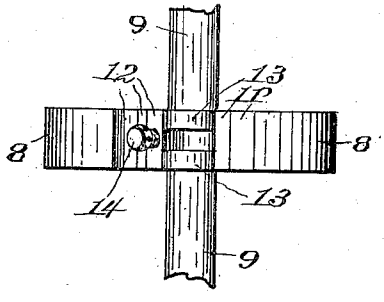


Fig. 3.



Witnesses

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No. 741,359. Patented October 13, 1903.

UNITED STATES PATENT OFFICE.

ENOS A. MORPHEW, OF HAVANA, ILLINOIS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 741,359, dated October 13, 1903.

Application filed May 12, 1903. Serial No. 156,770. (No model.)

To all whom it may concern:

Be it known that I, ENOS A. MORPHEW, a citizen of the United States, residing at Havana, in the county of Mason and State of Illinois, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines, and pertains particularly to the class of such engines having a revoluble piston provided with pivoted shoes.

The object of the invention is to provide a cylinder having a cam-offset or an offset concentric to the main body portion of the cylinder, in which and the offset a piston is rotated so as to have its bearing only on the offset.

A further object of the invention is to provide a cylinder having an offset and a piston working in the offset and having shoes adapted to work against the offset in one position and against the main cylinder-body in the other position.

A still further object of the invention is to provide a piston having pivot-lugs, a recess on one side of the lugs, a pocket on the other side of the lugs, and peripheral shoes pivoted to the lugs and operated in the recesses and pockets by the rotary movement of the piston.

The invention consists in the peculiar construction and arrangement of parts, and resides, essentially, in a piston having peripheral recesses and pockets, shoes pivoted between the recesses and pockets, a set-screw in the pockets to limit the movement of the shoes, and a cylinder capable of permitting the operation of the cylinder and the working of the shoes.

In the accompanying drawings, forming part of this application, Figure 1 is a sectional view of the cylinder. Fig. 2 is an elevation with face-plate removed, showing the two positions of the shoes. Fig. 3 is a detail edge view of the piston with the shoes removed. Fig. 4 is a detail perspective view of one of the shoes.

The same numeral references denote the same parts throughout the several views of the drawings.

The cylinder 1 is supported by a base 2, and the face of the cylinder is provided with set-screw holes 3, by means of which and suitable bolts a face-plate is secured to cover the cylinder. A steam-intake port 4 and an exhaust-port 5 are made through the body of the cylinder. Extending from the port 4 to the port 5 is an offset 6, and at one juncture of the offset and main body of the cylinder is a shoulder 7, through which the port 4 extends.

The piston 8 has a suitable piston rod or shaft 9, extending through the cylinder from one or both sides thereof, and the shaft is journaled at 10 eccentric to the main body of the cylinder. This shaft may have gear or pulley wheels attached for various driving purposes. The piston has peripheral recesses 11, pockets 12, and pivot-lugs 13 intervening between the recesses and pockets. An adjusting or set screw 14 is contained in each pocket to limit the pivot movement of the shoes 15. These shoes have a pivot-lug 16 fitting between the lugs 13 and loosely held by pivot-pins 17. The bearing-surface of the shoes are arcs of the circular piston 8. The face 18 of the short arm 19 of the shoes fits the recesses 11 and the long arm 20 of the shoes works in the pockets 12 and against the set-screws 14. The screws 14 may be adjusted to vary the pivot movement or play of the shoes as desired or as occasion may demand—that is, the screws are adjusted so that the long arm of the shoes will strike them and the short arms will only touch or engage the cylinder without making impact against the cylinder. Hence the screws receive the impact of the shoes instead of the cylinder. This arrangement prevents the bearing edge of the short arms from becoming battered or chamfered and prevents wear thereof and of the cylinder, which would occur in case the shoes were permitted to strike the cylinder. The shoulder 7, main body of the cylinder, piston, and shoes form a steam-passage 21, which permits live steam from the port 4 to exert itself against the face 18 of the shoes and rotate the piston while exhaust-steam is carried by a passage 22 to the exhaust-port 5. It will be seen that as one shoe passes the intake-port its short arm swings out from the piston simultaneously with the swinging out of the long arm of the other shoe as it passes the exhaust-port 5.

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

1. In a rotary engine the combination, with the piston, of the shoes pivoted to and working through the periphery of the piston, set-screws carried by the piston in the pivot path of the shoes to limit the movement of the latter, and a cylinder capable of permitting the operation of the piston and the shoes.

2. In a rotary engine the combination, with the piston having peripheral pockets and recesses, and a set-screw in each pocket, of the shoes pivoted to the piston and having a short arm working in the recesses, and a long arm working in the pockets and against said screws to limit the movement of the shoes, and a cylinder capable of permitting the operation of the piston and shoes.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ENOS A. MORPHEW.

Witnesses:
H. G. COAT,
HENRY SUTTON.