No. 713,578. Patented Nov. 11, 1902.

J. M. WILLIAMS.

ROTARY ENGINE.

(Application filed Oct. 1, 1901.)

(No Model.)

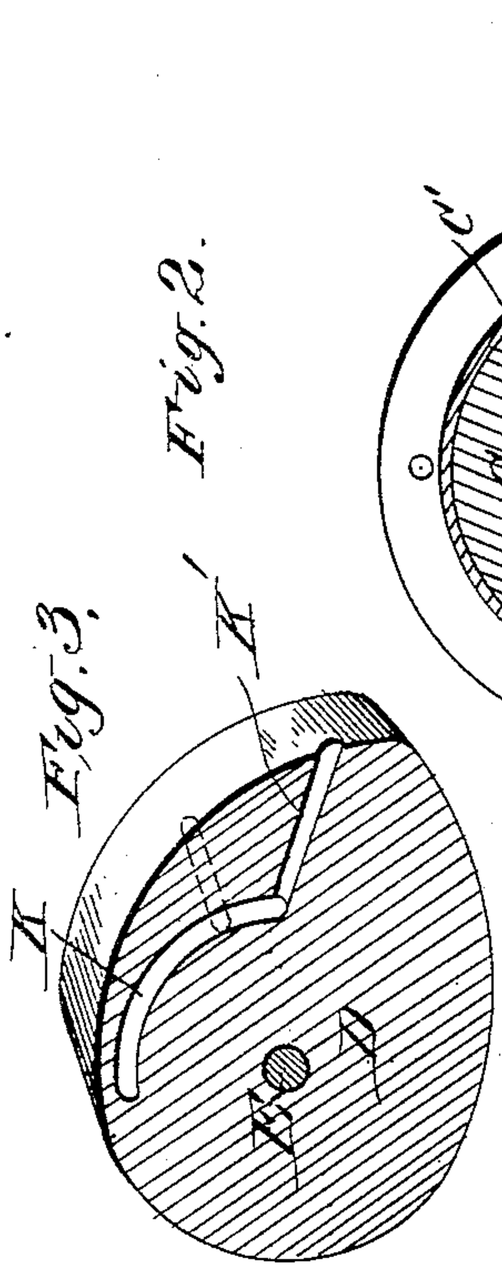

Fig. 1.

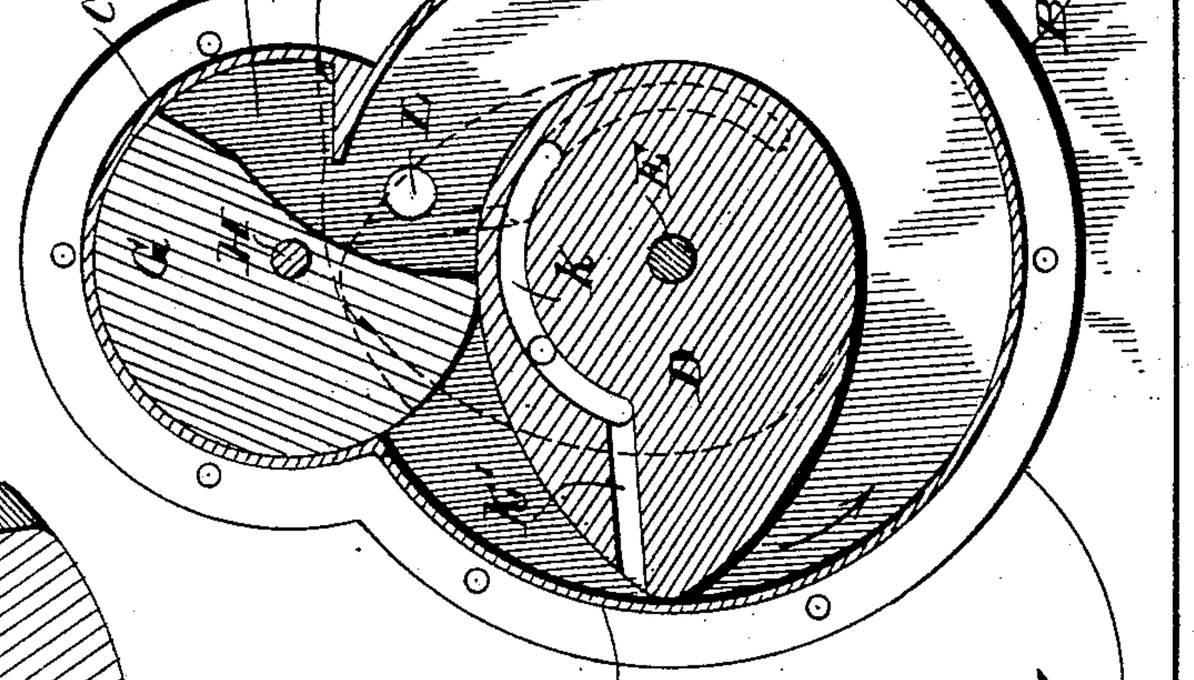

Fig. 2.

Fig. 3.

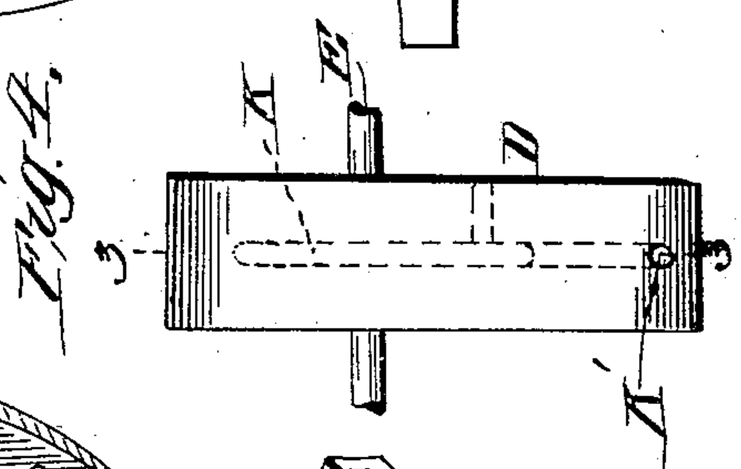

Fig. 4.

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JOHN M. WILLIAMS, OF KREBS, INDIAN TERRITORY.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 713,578, dated November 11, 1902.

Application filed October 1, 1901. Serial No. 77,236. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. WILLIAMS, a citizen of the United States, residing at Krebs, in the Choctaw Nation, Indian Territory, have made certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention is an improvement in that class of rotary engines in which a piston is eccentrically mounted on a shaft adapted to rotate within a circular drum or casing and to coöperate with a swinging or otherwise-movable abutment located in a chamber forming a circumferential enlargement of the steam-chamber of said drum or casing.

The invention is embodied in the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of my invention. Fig. 2 is a central vertical section of the same. Fig. 3 is a perspective sectional view of the conoidal piston. Fig. 4 is an edge view of the piston.

A indicates the drum or casing of the engine, which is supported upon a suitable base B. The said casing A is formed of two vertical plates and an intermediate rim C, interposed between said plates, which are secured together by screw-bolts, as shown. A conoidal piston D is mounted eccentrically upon the shaft E of the engine, which traverses the drum A at a point concentric with the rim C. The point or nose of the piston works in easy contact with the rim C and the other enlarged end is concentric with the rim, as shown in Fig. 2. The plates A and the rim C are extended upward, as shown, to form a supplemental chamber F, within which is pivoted the oscillating abutment G. The latter is a segment of a solid disk which slightly exceeds one hundred and eighty degrees. The abutment is mounted rotatably upon a shaft H, arranged transversely concentric with the extended portion C′ of the rim. As shown, the circular portion of the abutment G works in sliding contact with the rim C′. The opposite or under side of the abutment is so formed as to work close to the nose of the piston D as the latter passes it in rotating. Steam is admitted at the port I (see Fig. 1) above the axis of piston D and to the left of a vertical median line drawn through the axes E and H. The piston D is provided with a steam-inlet port or passage consisting of two parts K and K′. (See Figs. 2, 3, and 4.) The part K is concentric with the axis E, and the part K′ extends outward therefrom and opens at one side of the nose of the piston. The arrangement is such that as the piston B rotates the curved or concentric part K of the steam port will be in communication with the inlet I in the casing A, and consequently steam will be admitted to the chamber surrounding the piston until cut off by rotation of the piston. An exhaust is provided at L—that is to say, above the piston and in line with the axes E and H. It might be located at the right of this point. Adjacent to the exhaust and at the intersection of the right-hand portion of the circular rim C and C′ there is formed a shelf or ledge M, which projects inward, its lower side being concentric with the axis E and its upper side preferably horizontal.

The operation of the engine described is as follows: Steam being admitted at I it passes through the piston-port K and K′. The abutment being placed in the position indicated in Fig. 2 its left-hand end or point is alone in frictional contact with the piston, and the steam filling the space between the abutment and adjacent side of the piston the latter will be rotated in the direction of the arrow, Fig. 2. It is manifest that when the eccentric under side of the piston D reaches the abutment H the latter will be gradually raised or rocked until it reaches the position shown in dotted lines, Fig. 2, at which time the nose of the piston passes out of apposition or contact with the abutment. If now the abutment G resumes its former position, with its left-hand end or point in contact with the piston, as indicated in Fig. 2, it is manifest the operation will be repeated and that the piston will thus continue to rotate until steam is shut off. In the course of my primary experiments I employed mechanical means exterior to the casing A for throwing the abutment back, and for this purpose I used a lever and spring attachment, as indicated at X, Fig. 1; but in the course of practical tests it was discovered that the engine would operate without this attachment, and I have therefore dispensed with it; but the lever may be employed for setting the abutment in the

proper position for starting the engine. The reverse action of the abutment G is apparently due to mechanical rebound—that is to say, the abutment is rotated to the right by contact with the eccentric portion of the piston D, and is thus caused to strike upon the shelf or ledge M, and the nose of the piston passing off the abutment at this instant the abutment rebounds, and its left-hand edge or point is thereby again thrown into contact with the piston, as before. Just before the abutment strikes upon the ledge M the piston D has reached such a position that steam escapes between it and the abutment M into the space above the latter, whereby the abutment G is cushioned to some extent and its impact thereby rendered less severe. The rebound of the piston is also assisted to some extent by means of the steam-cushion.

What I claim is—

1. A rotary engine comprising a circular casing, and a circular peripheral enlargement, the former having inlet and exhaust ports as specified, a conoidal piston pivoted in said casing with its larger end concentric with the latter, and having a steam-port opening laterally of its point or nose, and an abutment journaled in said extension and constructed in the form of a segment of more than one hundred and eighty degrees, and a ledge arranged on one side of the casing substantially as shown and described.

2. A rotary engine comprising a circular casing having a circular peripheral enlargement and provided with inlet and exhaust ports arranged as specified, a ledge projecting inward between the body of the casing and said enlargement and having its under side formed on lines concentric with the axis of the casing, a segmental abutment pivoted in the said enlargement and adapted to strike upon the said ledge, its opposite end or edge being free to oscillate in the space between the body of the casing and said enlargement, and a conoidal piston keyed upon the shaft of the engine and having a steam-port opening on one side of its eccentric portion, substantially as shown and described.

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Witnesses:
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