(No Model.)

J. T. DAVIS.

ROTARY ENGINE.

No. 268,195. Patented Nov. 28, 1882.

Fig. 7.

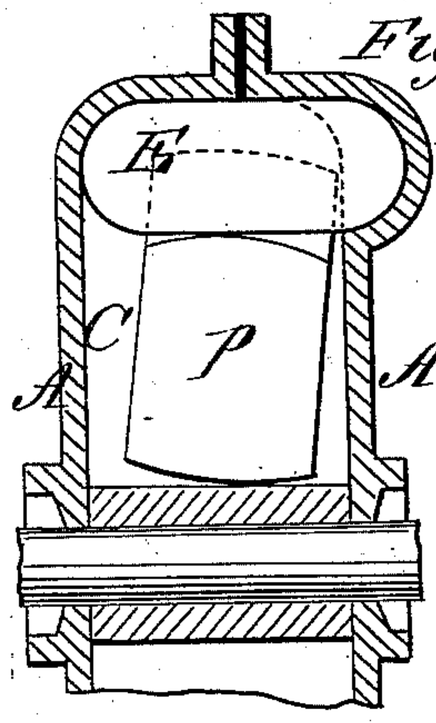


Fig. 2.

Fig. 1.

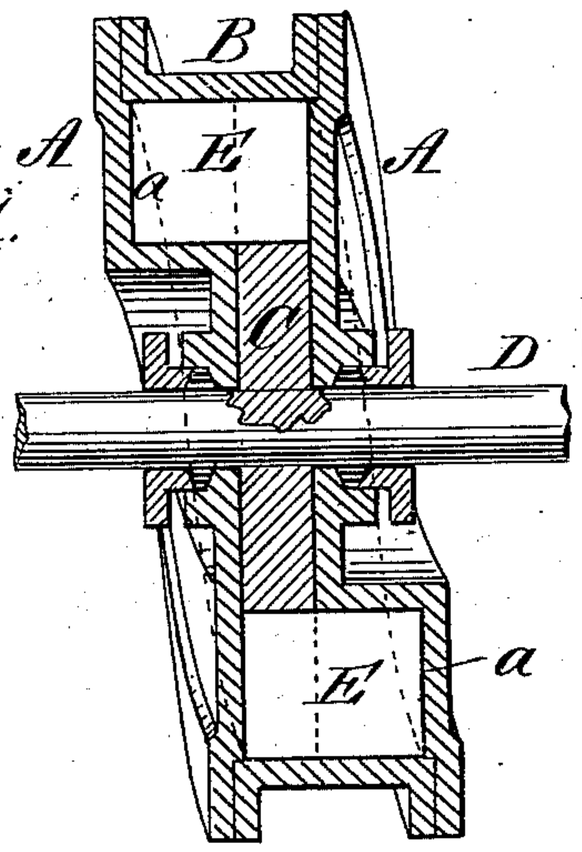


Fig. 6.

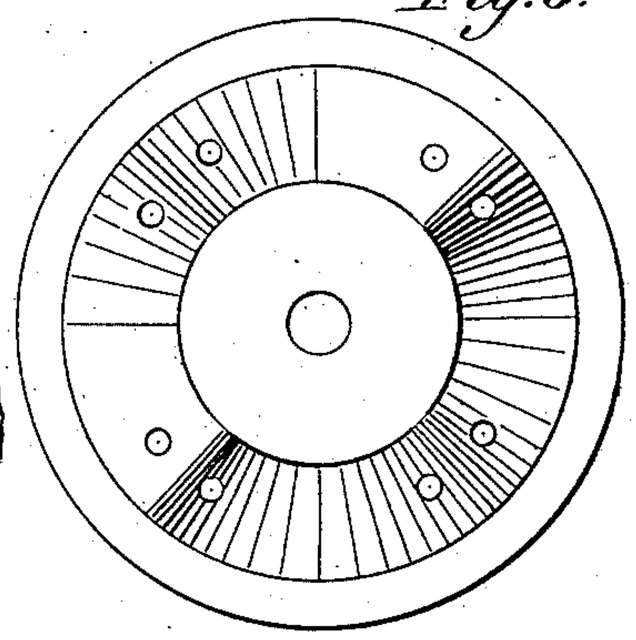
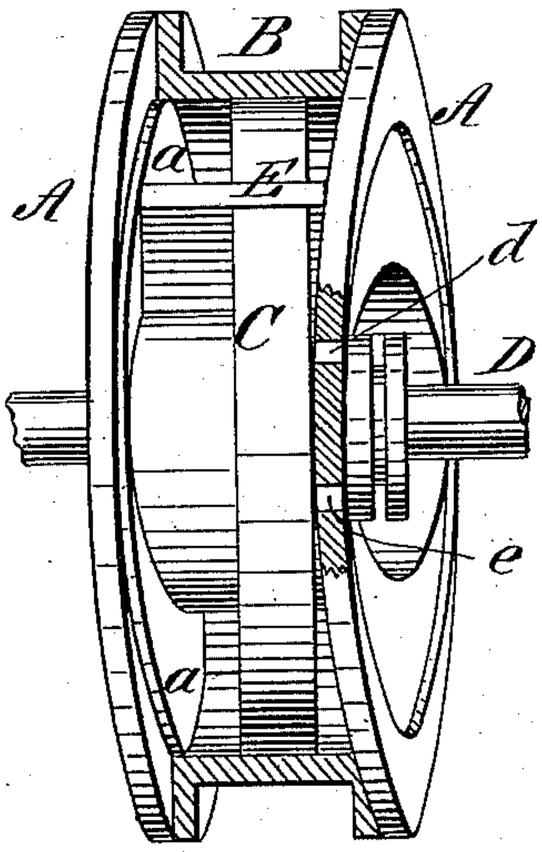


Fig. 3.



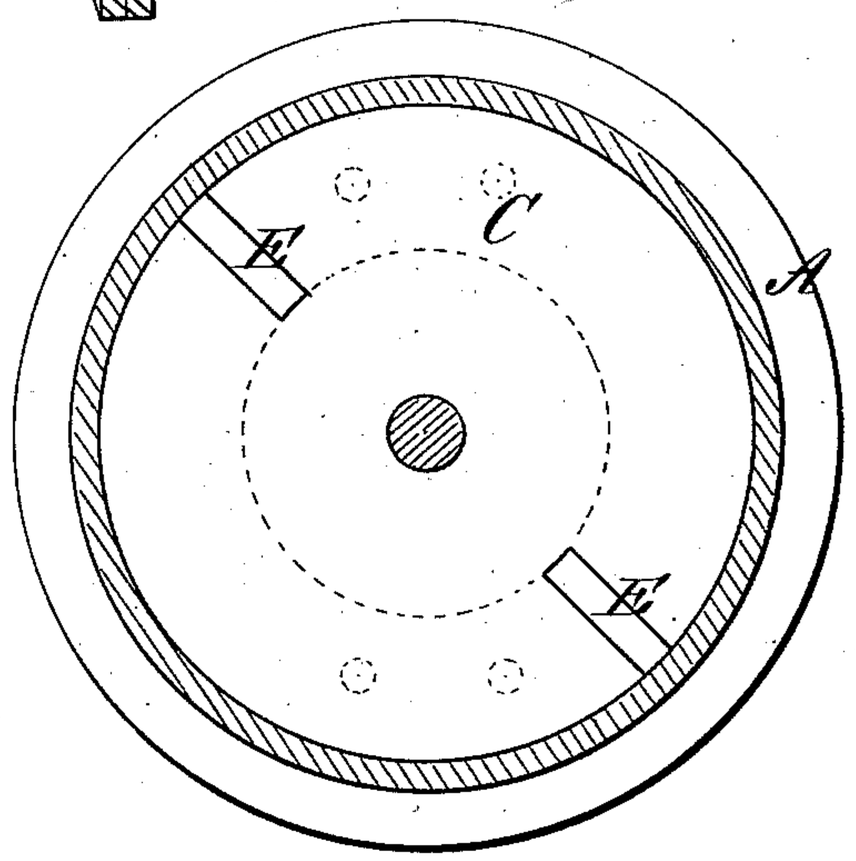


Fig. 4.

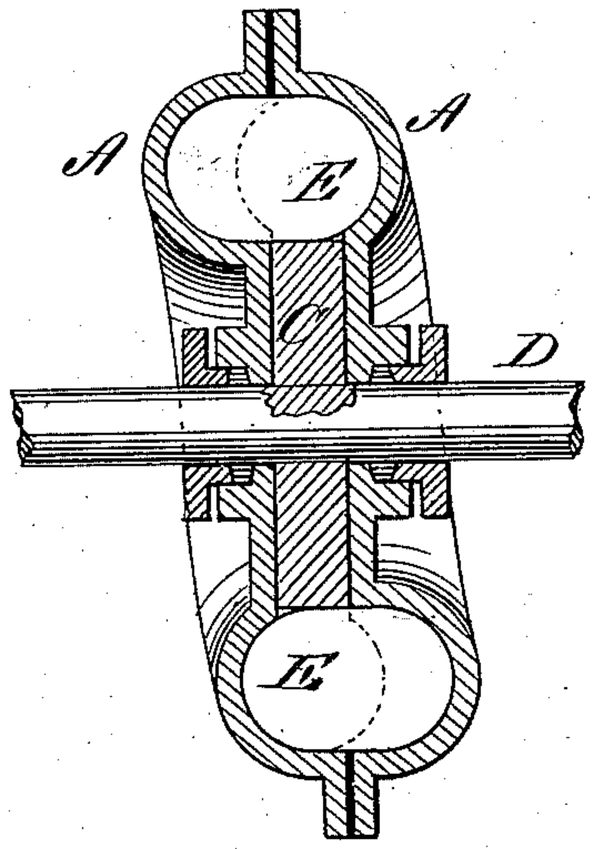
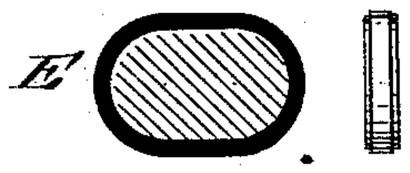


Fig. 5.



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JOHN T. DAVIS, OF NEW YORK, N. Y.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 268,195, dated November 28, 1882.

Application filed May 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. DAVIS, of the city, county, and State of New York, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of rotary engines in which a disk provided with valves or pistons that are fitted for transverse movement is combined with a case, the sides of which are formed with one or more helicoidal planes, in contact with which the pistons move, so as to form steam-chambers of gradually increasing and decreasing area; and the invention consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section of an engine of my improved construction. Fig. 2 is a perspective view of the same, partly in section. Fig. 3 is a transverse section at right angles to the shaft. Fig. 4 is a section showing a modification in the form of the valve or piston. Fig. 5 shows the pistons detached. Fig. 6 is a face view, representing a modification in form.

A A are the two sides of the case. B is the inclosing-rim. C is the central disk on the shaft D, and E E are the pistons or valves.

The inner surfaces of the sides A A are shaped to form helicoidal planes *a*, and the cases are fixed so that the extending portion upon one corresponds or is opposite the depressed portion of the other side.

The disk C is formed with parallel sides, which are in contact with the extended or projecting portions of the helices, so as to make a steam-tight joint at the point of contact. By the inclination of the sides or helicoidal surfaces, the space between the central disk and the sides increases from the point of contact to the extreme lower point, and from that point gradually decreases again to the next point of contact.

The valves or pistons E are placed in radial grooves formed in the disk C, and are of a size to accurately fit the space between the two sides A A, so that a chamber is formed at both sides of the pistons. The pistons are fitted so as to move freely, and are moved transversely of the disk by contact with the helicoidal plane as the disk is revolved. This transverse movement of each piston in connection with the helicoidal surfaces has the effect to form a chamber of continually increasing and decreasinn capacity on each side of the central disk and alternately. At the point of contact between the central disk and the sides are steam-ports *d d*, which admit the steam at the moment when the chamber begins to open by the receding of the sides from the central disk.

The sides A are inclined planes upon the outside of the circle, but are helicoidal at the inside, so that a square piston can be used and moved backward and forward in lines parallel with the axis, thus securing a perfect bearing at all points of contact. When the engines are used for gases, vapors, or air, the square piston is preferable; but for steam purposes the planes are turned out in semicircular form and the rim of the central disk made of corresponding shape, the inclination of the sides remaining the same as before described. The piston in this case is formed with rounded ends to correspond to the semicircular form of the grooves. This construction is shown in Fig. 4. I prefer to use a comparatively thick disk, so as to secure sufficient support for the sliding pistons to overcome the leverage by the pressure on the end of the piston as it passes into the chamber, and thereby reduce the friction that would otherwise occur from the extended portion of the piston. This spherical form is also most convenient for taking up any wear that might occur from long use. The pistons or valves E are provided with packing set in grooves on their outer edges, as shown in Fig. 5.

To overcome the friction on the sides of the slot in the disk produced by the extension of the piston into the largest part of the steam-chamber, the piston may be fitted as shown in Fig. 7. The piston is connected on the end of a movable arm, P, which arm is fitted in a radial slot of the disk C, so that it is free to move back and forth in a plane parallel to the movement of the piston, but has no movement in the direction of rotation except with the disk. The bottom of the arm where it is fitted into the disk is semicircular, to allow the rocking movement, and the outer end of the arm en-

tering the piston is also semicircular, so as to admit transverse motion of the piston parallel to the shaft. The piston is thus allowed to move transversely and take all the pressure, and when in the extreme position the pressure on its end is not exerted on the opposite end, but on the arm as a whole. The piston thus moves without friction.

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

1. The rocking arm P, fitted in a disk and carrying the piston, substantially as and for the purposes set forth.

2. The combination of disk C, arm P, piston E, and inclined sides A, substantially as shown and described.

JNO. T. DAVIS.

Witnesses:
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