(No Model.)

A. T. & A. R. WILSON.

ROTARY ENGINE.

No. 570,889. Patented Nov. 3, 1896.

Fig. 1.

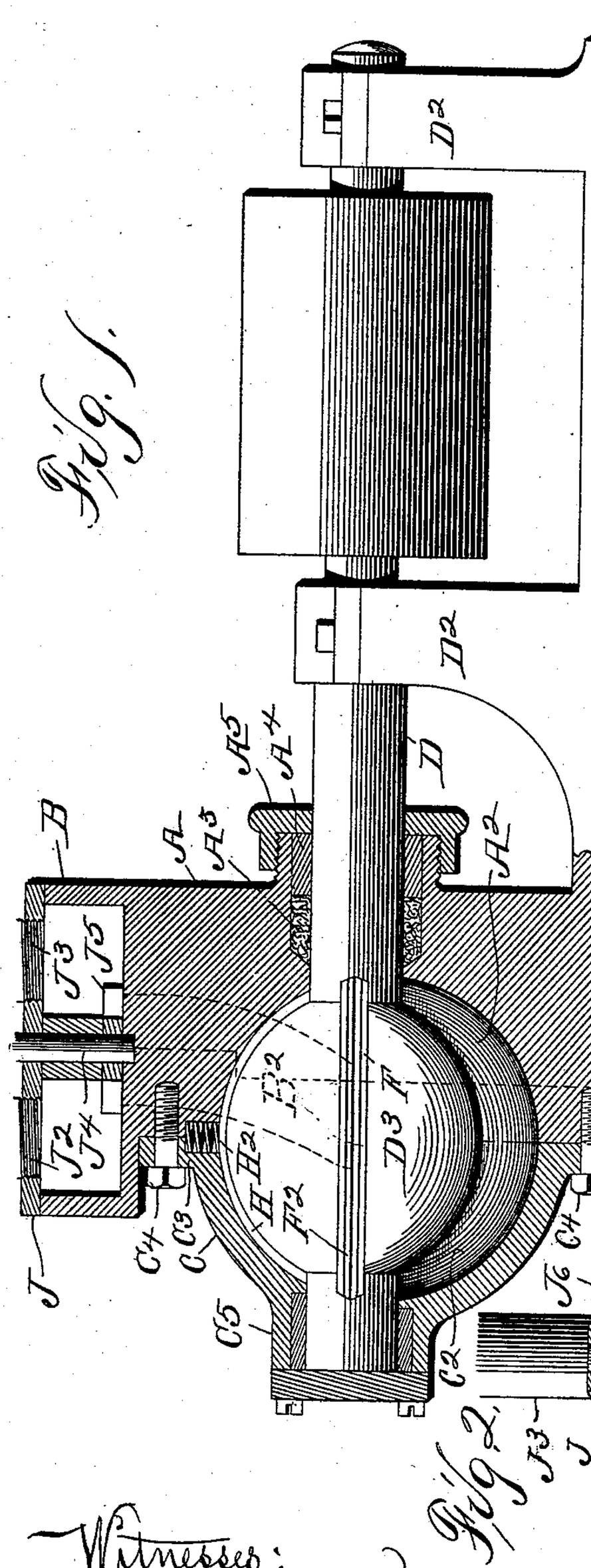


Fig. 2.

Fig. 3.

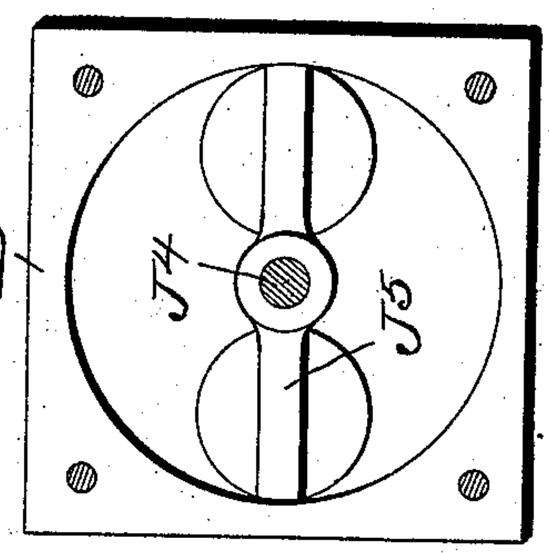


Fig. 4.

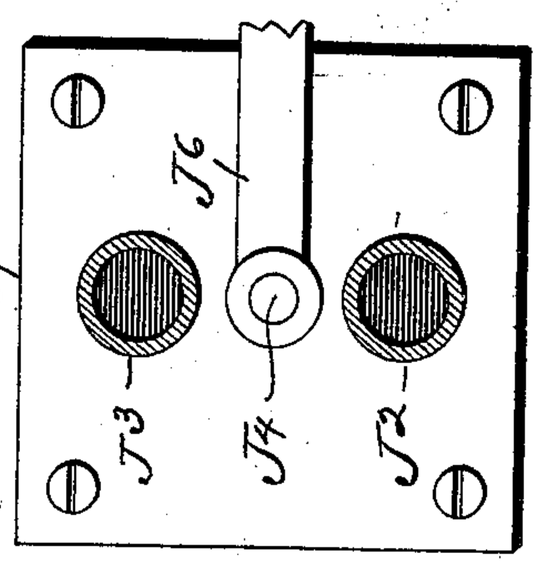
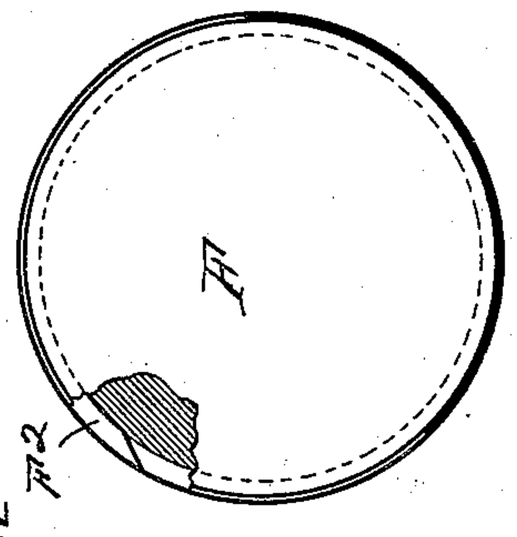


Fig. 5



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By Thomas G. and J. Ralph Orwig, Attys.

UNITED STATES PATENT OFFICE.

ALONZO T. WILSON AND ANNA R. WILSON, OF HOUSTON, TEXAS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 570,889, dated November 3, 1896.

Application filed February 4, 1896. Serial No. 577,986. (No model.)

To all whom it may concern:

Be it known that we, ALONZO T. WILSON and ANNA R. WILSON, citizens of the United States of America, residing at Houston, in the county of Harrison and State of Texas, have invented a new and useful Rotary Engine, of which the following is a specification.

The objects of this invention are to provide a steam-engine of this class having comparatively few parts and of simple, strong, and durable construction, to provide a rotary engine in which the friction of parts and noise is reduced to a minimum and wear automatically compensated for.

A further object is to provide an engine capable of running at a very low or high speed without subjecting the parts to any unusual strains or wear.

A further object is to provide improved means of simple construction for reversing the movement of the engine cutting off and controlling the supply of steam with one lever.

Our invention consists in the construction of a globular or spherical chamber and a disk-shaped valve therein and in certain details in the arrangement and combination of the various parts of the engine relative thereto, and, further, in the construction of the engine reversing and controlling mechanism, as hereinafter set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a longitudinal section of the complete engine. Fig. 2 shows a transverse section of the engine on the line 2 of Fig. 1. Fig. 3 shows a top view of the disk piston. Fig. 4 shows a top view of the reverse and cut-off box. Fig. 5 shows a horizontal section of the same.

Referring to the accompanying drawings, the engine-frame is seen to be composed of two parts that are held together by bolts. The part indicated by the reference-letter A is secured to a suitable support and is provided with a hemispherical opening A^2 in its outer face, a round opening leading therefrom backwardly to admit the shaft, an exteriorly-screw-threaded collar projecting rearwardly around said opening, and having a stuffing-box therein provided with the packing A^3, follower A^4, and a screw-cap A^5. At the top of this part of the frame is a rectangular box B, hereinafter described, and two ports B^2, of induction and exhaust, lead from opposite sides of said box to opposite sides of the said hemispherical opening. The other part of the frame (indicated by the letter C) also has a hemispherical opening C^2, surrounded with a flange C^3, designed to receive the bolts C^4, whereby it is secured to the part A, and also a bearing C^5, designed to receive the end of the valve shaft.

D indicates the piston or driving shaft mounted for rotation in the bearing-standards D^2 and passed through the part A into the bearing C^5. On the end that enters the interior chamber of the engine is a spherical formation or piston-seat D^3, somewhat smaller than said chamber and arranged eccentrically relative thereto, so that its uppermost surface engages the top central line of the spherical chamber throughout its entire length, as shown in Fig. 1.

F indicates a disk-shaped piston of approximately the same diameter as the interior of the chamber. Its edges are both beveled to conform to the shape of said chamber, and an expansion-ring F^2, also having its exterior beveled, is mounted in a groove in the periphery of said disk. It serves to insure a steam-tight point of contact between the piston and chamber and also to automatically compensate for wear. A longitudinal slot is formed in the said spherical formation to admit said disk and permit it to move therein at right angles to the shaft. This disk serves the purpose of the numerous pistons usually placed in a rotary engine, and its both edges are constantly in contact with the interior of the chamber. When standing in a horizontal position, both edges of the piston project beyond the spherical piston-seat D^3 an equal distance, and when the piston is in an upright position its top is, of course, flush with the spherical piston-seat D^3, while its lower end projects considerably below it.

It will be understood that the so-called "spherical" chamber is not a perfect sphere, it being so modified that the edges of the disk-shaped piston will constantly engage its interior, although it is mounted eccentrically. This principle of construction is common in rotary engines having cylindrical chambers

and pistons extended straight through the hub, to be operated by engaging the eccentrically-arranged cylinder, and hence need not be described more specifically.

H indicates a flat semicircular bar mounted in a slot that extends longitudinally of the spherical chamber. At its top interior surface the bar is arranged to be flush with the inner surface of the chamber, and an extensile spring H^2 is interposed to hold it downwardly. This bar serves to insure a steam-tight point of contact between the spherical piston-seat and chamber at all times and to automatically compensate for wear.

Within the reverse box at the top of the frame is a circular opening having a cover J and an induction steam-pipe J^2 and an exhaust J^3. As before mentioned, the two ports B^2 lead downwardly into the chamber from diametrically opposite sides of the reverse box. J^4 indicates a pin rotatably mounted in the reverse box and having a double valve J^5 fixed thereto and comprising two flat disks designed to cover the ports B^2 and a vertical partition to divide the box centrally, so that any amount of steam may be introduced or completely cut off, and the engine may be quickly and easily reversed by the same lever. A handle J^6 is secured to the projecting end of this pin by which the valves may be operated.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent of the United States therefor, is—

1. A rotary engine, comprising an approximately spherical chamber, a rotatable shaft extended eccentrically through said chamber, an approximately spherical piston-seat on said shaft with its surface in contact with the chamber at a point extending longitudinally of the shaft, induction and exhaust ports on opposite sides of said contact-point and a disk-shaped piston, of a size to normally engage the inner surface of the chamber at all times, slidingly mounted in a central longitudinal slot in the shaft and an expansion-ring in the periphery of said disk-shaped piston.

2. A rotary engine comprising an approximately spherical chamber, a semicircular flat bar on the interior of said chamber extended longitudinally thereof at its top, yielding pressure devices to normally force the bar downwardly, a rotatable shaft extended longitudinally of the chamber, and slightly above its center, an approximately spherical piston-seat on said shaft with its top surface in contact with said flat bar, and a disk-shaped piston of a size to normally engage the interior of the chamber on all sides, extended through a central longitudinal slot in the piston-seat, and an expansion-ring mounted in the periphery of the said disk piston.

3. In a rotary engine having induction and exhaust openings on opposite sides and so arranged that steam may be admitted in either opening and discharged at the other, to reverse the movement of the engine, the combination of a reverse box on top of the engine having ports on its opposite sides communicating with said openings, a double valve rotatably mounted in the box having two disks thereon arranged to cover both of the said ports and a vertical partition to divide the box centrally, and a lever attached to said valve, substantially as and for the purposes stated.

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