P. KILTZ.

ROTARY ENGINE.

APPLICATION FILED NOV. 28, 1910.

992,673. **Patented May 16, 1911.**

Fig. 1.

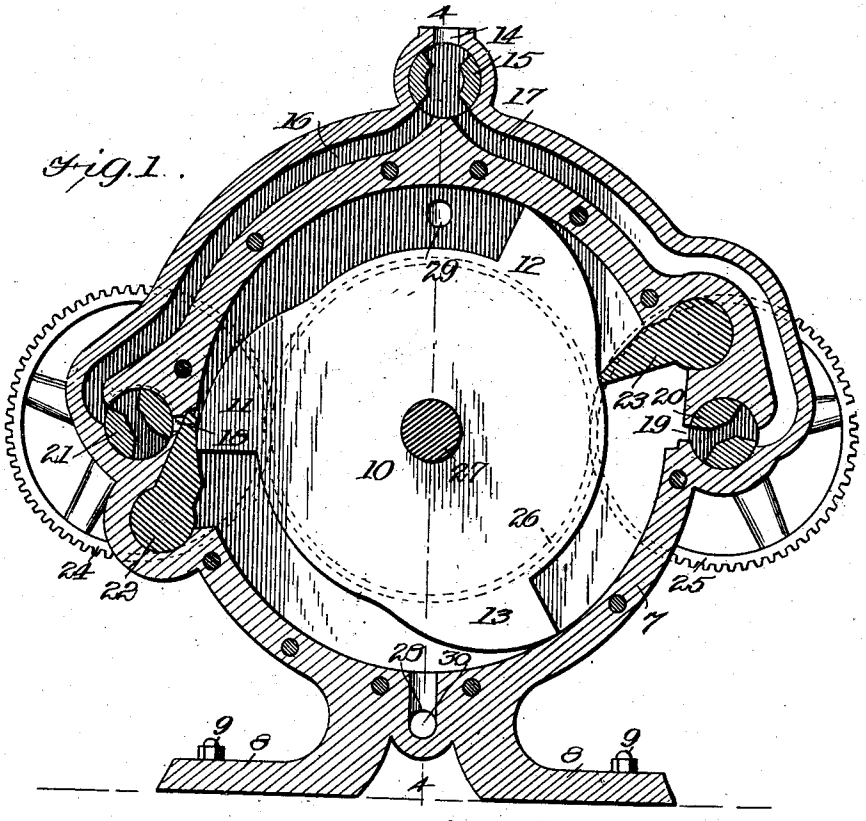


Fig. 2.

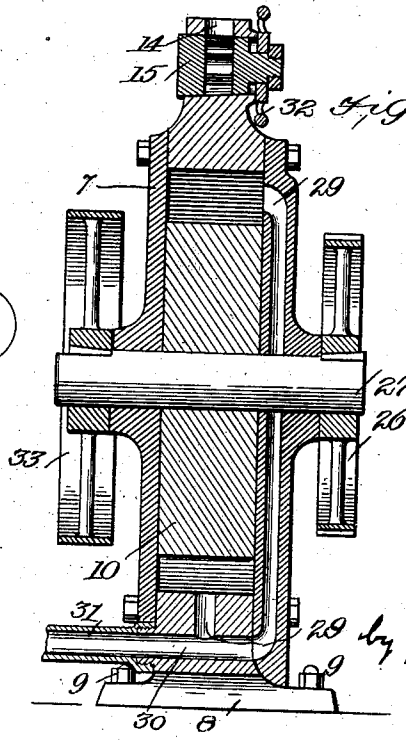


Fig. 3.

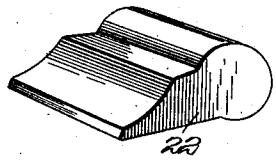
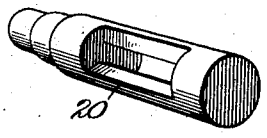


Fig. 4.



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ROTARY ENGINE.

992,673. Specification of Letters Patent. Patented May 16, 1911.

Application filed November 28, 1910. Serial No. 594,572.

To all whom it may concern:

Be it known that I, PETER KILTZ, a citizen of the United States, residing at Rich Hill, in the county of Bates and State of Missouri, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to that type of rotary engines characterized by a swinging abutment which is placed in operative position by the steam pressure, and which is periodically retracted to permit the piston to pass, the piston being a disk having radial wings which are shaped to act as cams for the purpose of swinging the abutment out of the way to permit said wings to pass the same.

It is the object of the invention to provide a rotary engine of the kind stated which will give the greatest amount of power with the least expenditure of steam, will run with the least possible friction and its consequent wear and noise, and will be sure, reliable and strong, and may be easily regulated for the greatest range of work, provision being made to regulate to a fine degree the induction and cut-off of steam.

With these objects in view, my invention consists in the improved construction, arrangement and combination of parts hereinafter fully described and afterward specifically pointed out in the claim.

In order that others skilled in the art to which my invention appertains may be able to make and use the same, I will proceed to describe the construction and operation thereof, reference being made to the accompanying drawings, in which—

Figure 1 is a central, vertical, longitudinal sectional view of the engine. Fig. 2 is a central, vertical, transverse sectional view thereof, on the plane indicated by the broken line 4—4 of Fig. 1. Fig. 3 is a detail perspective view showing one of the swinging abutments detached from the engine; and Fig. 4 is a detail perspective view, showing one of the rotary valves for regulating the admission of steam into the cylinder.

Referring specifically to the drawings, 7 is the main body or casing of the engine, generally cast, and provided at its base with suitable feet 8, through which it may be secured to the floor by bolts 9. Within the casing is formed a circular cavity occupying the greater portion of the body and forming the cylinder, in which operates the rotary piston comprising a central wheel or disk 10, which carries on its outer edge or periphery three tooth-like extensions or wings 11, 12, 13, against which the steam pressure is expended.

An induction port 14 is formed at the top of the casing and contains a valve 15, by means of which the steam may be caused to flow through either or both of two branch induction channels, 16, 17, the former leading to the left to an induction port 18, and the latter to the right to a similar port 19. In each of these channels is formed a valve seat in which is mounted a valve to regulate the flow of steam, the valve on the right being marked 20 and that on the left 21. Adjacent to each of these valves is a swinging abutment to alternately be held open by the steam in the cylinder, and be closed over its induction port by the action of the rear faces of the piston wings, the left hand abutment being marked 22 and the right hand one 23. The plugs of these valves project through the casing and are provided at their ends with gear wheels 24, 25, engaging on opposite sides a central gear wheel 26, on the projected shaft 27, of the piston 10.

Exhaust or eduction ports are provided at 28, 29, in communication with a channel 30 which leads out of the casing at 31.

The piston, as well as all joints, will be packed steam-tight in any suitable manner.

The piston wings 11, 12, 13, are, as before stated, tooth-shaped, each presenting one face directly across the steam space between the periphery of the disk 10, the wall of the cylinder, and another face curved and gradually inclined outward from its root at the periphery of disk 10 to the cylinder wall. The piston wings are spaced apart uniformly, and travel with their points in contact with the cylinder wall.

The abutments 22, 23, are mounted to swing into and out of the path of the piston wings, and to alternately close the steam space between the periphery of the disk and the cylinder wall, and to close the adjacent induction ports, and they are each provided with a straight face which assumes a substantially radial position with relation to the cylinder, and moves from that to a seat prepared for it immediately in front of the induction port. Its opposite face is curved in the arc of the cylinder wall, and in one

position, when the induction port is open, it is in line with and forms part of said wall.

The valve 15 has a port of sufficient width to permit the entering steam to flow through both branch induction channels, when desired, and it can be turned by means of a hand wheel 32 (see Fig. 4), so that steam will pass through both of said channels. When doing heavy work, I propose to use the valve wide open, with steam entering both channels, but with light work, one will be sufficient, and the amount admitted to this one can be accurately regulated.

The valves 20 and 21 are cut-off valves and are so arranged that when one is open the other is closed.

The operation of my engine may be described as follows: Supposing the valve 15 to be wide open, as in Fig. 3, steam will be admitted through the induction port 14, and will distribute itself in the channels 16 and 17. It will be noticed that in the position illustrated, the valve 21 is closed and the valve 20 open, while the induction port 18 is also closed by the abutment 22, and the abutment 23 is projected radially into the cylinder. The steam will now pass into the cylinder through the valve 20, and being unable to escape in one direction by reason of the obstruction caused by the abutment 23, its force will be exerted against the radial face of the piston wing 13 which will cause the rotation of the piston and the shaft 27 by which it is carried. By the time the piston wing 13 has passed the exhaust port 28, and that section of the cylinder steam is exhausted, the piston wing 11 will have passed the induction port 18 and the valve 21 will have been rotated sufficiently to admit steam thereto. This steam passing through the valve 21 and port 18 will force the abutment 22 away from the port and into its obstructive position across the steam passage. In the meantime the forward curved face of the piston wing 12 will have pressed upon the curved face of the abutment 23 and have forced it into a position in which its straight face will close the induction port 19 and its curved face have become part of the cylinder wall, the valve 20 in the meantime having been closed. The steam entering between the abutment 22 and piston wing 11, will force the piston forward and the operations described will be repeated, thus continuously rotating the disk 10 and the shaft 27, the motion of which latter may be communicated to any desired shaft or machinery through the medium of belting leading from a pulley 33 secured to the shaft 27.

The advantages of my invention will be apparent from the foregoing description. The abutments 22 and 23 are easily removable for replacement or repair by taking off one face of the casing. The valves can all be readily removed in the same way, and all the parts are arranged and timed so as to cause the least possible friction, and prevent back lash or lost motion of any kind.

I claim:

In a rotary engine, a cylinder provided with an inlet, diametrically opposite admission ports, and branch channels leading from the inlet to the admission ports, the wall of the cylinder also having recesses into which the admission ports open, a cut-off valve in each channel, swinging abutments working in the aforesaid recesses and controlling the admission ports, a rotary piston working in the cylinder, said piston having wings successively engaging the abutments and swinging the same into the recesses to close the admission ports, said abutments being swung out of the recesses by the steam pressure as the piston wings clear the abutments, and a valve in the inlet adapted to place the same in communication with either one or both of the aforesaid channels.

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

PETER KILTZ.

Witnesses:

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