

No. 640,746.

Patented Jan. 9, 1900.

C. M. CONNER.
ROTARY ENGINE.

(Application filed Sept. 14, 1899.)

(No Model.)

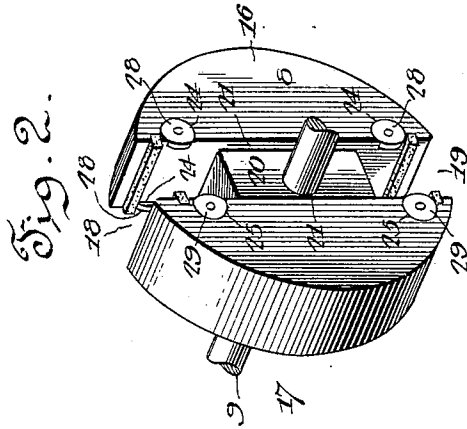


Fig. 2.

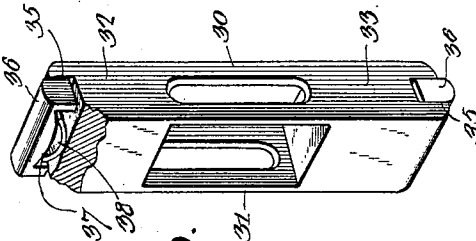


Fig. 3.

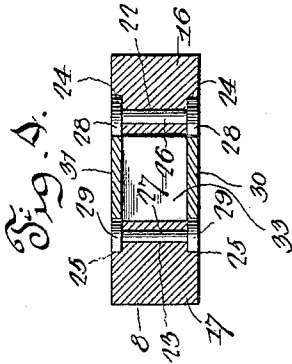


Fig. A.

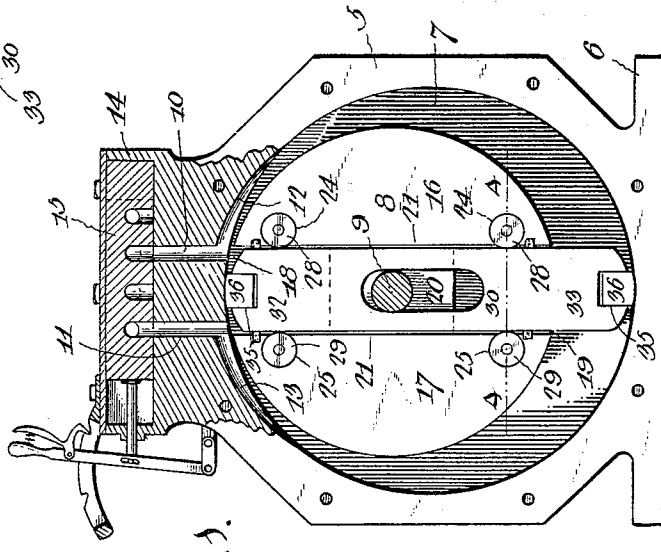


Fig. 1.

Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES M. CONNER, OF OTISCO, INDIANA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 640,746, dated January 9, 1900.

Application filed September 14, 1899. Serial No. 730,462. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. CONNER, a citizen of the United States, residing at Otisco, in the county of Clarke and State of Indiana, have invented a new and useful Rotary Engine, of which the following is a specification.

This invention relates to rotary engines, and more particularly to that class including a rotatable piston having a radially-movable abutment; and the object of the invention is to provide a simple and efficient construction in which the friction of the abutment will be reduced to a minimum.

In the drawings forming a portion of this specification and in which like reference characters designate corresponding parts in the several views, Figure 1 is a side elevation showing the engine with one of the cylinder heads or plates removed and showing the reversing mechanism in section, as also the inlet and outlet ports. Fig. 2 is a perspective view showing the rotatable piston with the abutment removed and illustrating the location and arrangement of the friction-rollers. Fig. 3 is a perspective view of the movable abutment and showing the adjustable packing in the ends thereof. Fig. 4 is a transverse section taken through the piston and the abutment and showing the friction-rollers in elevation.

Referring now to the drawings, the engine consists of a cylinder 5, having a suitable base 6 and the ends of which are adapted to be closed by means of the usual plates or heads held in place in any desired manner. This cylinder 5 has a central bore 7 and within which is rotatably mounted a revoluble piston 8 upon a shaft 9 at a point above the center of the bore of the cylinder and in such a position that the periphery of the piston will have slidable contact with the uppermost portion of the inner periphery of the cylinder. Passages 10 and 11 are formed vertically of the cylinder and open into the inclosure thereof upon opposite sides of the point of contact of the piston therewith, said passages having communicating tapered channels 12 and 13 formed in the inner periphery of the cylinder and communicating therewith.

Upon the upper portion of the cylinder 5 is located a steam-chest 14, in which the pas-

sages or ports 10 and 11 open, and in this chest is arranged a slide-valve 15, adapted to connect the ports 10 and 11 alternately with the supply and exhaust pipes for the engine in the usual manner.

The piston 8 comprises two segmental portions 16 and 17, separated at their ends by interspaces 18 and 19, and connected between their ends by means of a block 20, having a width somewhat less than the width or length of the piston and resulting in the formation of shoulders 21.

Parallel with the faces of the segmental portions 16 and 17, bounding the interspaces 18 and 19 and opening through the ends of the segmental portions, are perforations 22 and 23, at the ends of which are formed annular depressions 24 and 25, opening through the inner faces of the said segmental portions.

Within the perforations 22 and 23, which form bearings, are disposed spindles 26 and 27, upon the ends of which are disk-shaped rollers 28 and 29, having a diameter to fill the depressions 24 and 25, and the peripheries of which rollers project slightly into the interspaces 18 and 19.

A slidable abutment comprising parallel sides 30 and 31, having their ends connected by means of blocks 32 and 33, is mounted with the blocks lying in the interspaces 18 and 19 and the sides lying between the shoulders 21 and with the edges of the sides and the opposite faces of the blocks in positions to engage the projecting portions of the peripheries of the rollers 28 and 29. Thus will the friction between the abutment and the segmental portions of the piston be reduced to a minimum and at the same time the blocks 32 and 33 have packing-strips 42 fill the interspaces 18 and 19 to prevent leakage of steam.

The length of the slidable abutment is somewhat less than the diameter of the bore of the cylinder, and in order to establish and secure a close contact of the ends of the abutment with the inner periphery of the cylinder said abutment has longitudinal slots 35 formed in its ends and extending transversely thereof and in which slots are disposed packing-blocks 36, having recesses 37 in their rear ends, in which are disposed spring bow-plates 38, the ends of which engage the floor of the slots

35 and the bows of which engage the walls of the recesses 38, the tendency of these bow spring-plates being to hold the packing-blocks yieldably against the inner periphery of the 5 cylinder.

From the above description it will be seen that with the slide-valve 15 in the proper position and with the piston at the proper side of the port 10 if steam be admitted to said 10 port the piston will be rotated to the right and the abutment will have a slidable movement to maintain its ends in engagement with the cylinder periphery. When the end of the abutment last operated upon passes beyond 15 the port 11, the steam behind that end of the abutment will exhaust through the port 11 and the piston will continue its rotation so long as steam be admitted. If now the position of the slide-valve 15 be reversed, the 20 steam will enter through the port 11 and exhaust through the port 10 with a reverse movement of the piston.

It will of course be understood that in practice various modifications of the specific structure shown may be made and that any desired materials and proportions may be used without departing from the spirit of the invention. 25

As shown in Fig. 3 of the drawings, the sides 30 30 and 31 of the abutment are slotted for the reception of the shaft 9 of the piston, and thus permit the movement of the abutment diametrically of the piston.

What I claim is—

35 1. A rotary engine comprising a rotatable piston including segmental portions having a connecting-block and separated at their ends

by interspaces, a slidable abutment comprising blocks slidably disposed in the interspaces and having mutual connections, perforations 40 formed longitudinally of the piston, recesses in the ends of the piston concentric with the perforations and opening into the said interspaces and spindles mounted in the perforations and having rollers at their ends lying 45 in the recesses and projecting into the interspaces to engage the blocks of the abutment.

2. In a rotary engine, the combination with a cylinder and a shaft, of a piston mounted upon the shaft and adapted for rotation, said 50 piston including segmental portions separated at their ends by interspaces and having a connecting-block through which said shaft is passed, perforations in the said segmental portions, depressions concentric with the perforations, spindles in the perforations, rollers 55 at the ends of the spindles and lying in the depressions, and projecting into the interspaces, and an abutment, comprising slotted side pieces disposed with the shaft in their 60 slots, blocks connecting the side pieces and lying in the interspaces in contact with the rollers, and bearing-blocks seated in the ends of the abutments and having means for holding them yieldably against the inner periph- 65 ery of the cylinder.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES M. CONNER.

Witnesses:

JOHN BOLLY,
RILEY BAKER.