(No Model.)

J. E. SNEVELY.

ROTARY ENGINE.

No. 381,287. Patented Apr. 17, 1888.

Fig. 1.

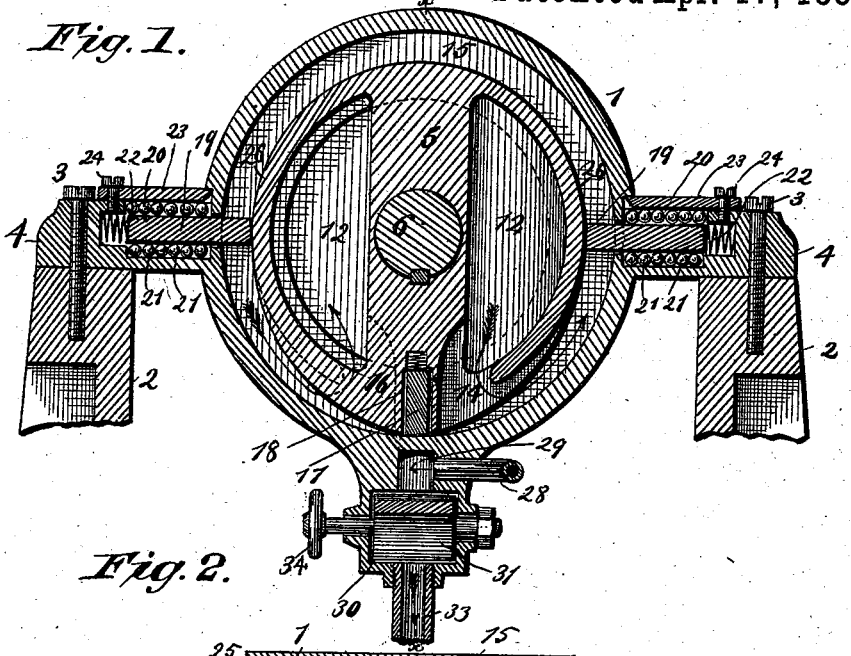


Fig. 2.

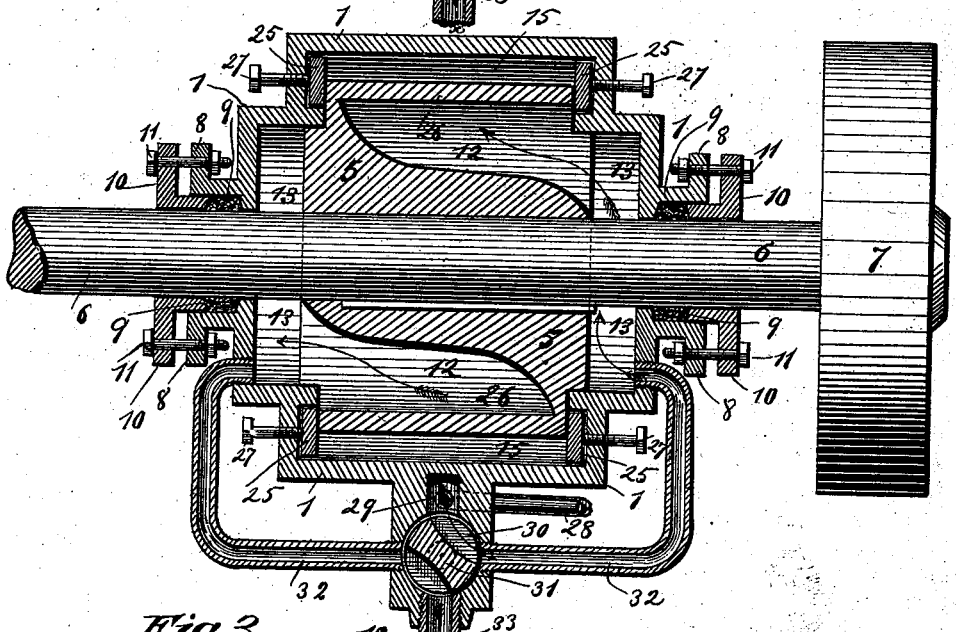
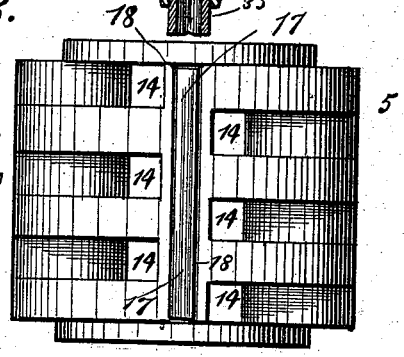


Fig. 3.



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JAMES E. SNEVELY, OF CHETOPA, KANSAS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 381,287, dated April 17, 1888.

Application filed December 15, 1887. Serial No. 257,947. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. SNEVELY, of Chetopa, in the county of Labette and State of Kansas, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

This invention relates to reversible rotary engines, and has for its object to provide a rotary engine which will operate easily and will be durable.

The invention consists in a rotary engine constructed and arranged as hereinafter described and claimed.

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

Figure 1 is a transverse vertical section of the invention, with supports and steam-pipes broken away. Fig. 2 is a vertical section on the line *x x* of Fig. 1; and Fig. 3 is a detail view of the piston, showing its inlet and outlet steam-ports.

In this invention the steam is introduced into the piston, and the latter (which is eccentric) rotates in a circular casing or cylinder provided with yielding abutment-blocks which bear against the periphery of the piston.

In the construction of this rotary engine a cylinder or casing, 1, is mounted on suitable supports, 2, and secured to the latter by screws or bolts 3 passing through arms 4. Within the casing 1 is located the piston 5, mounted on a shaft, 6, passing through the casing and having a band-pulley, 7. The journal-boxes 8 in the casing 1 are provided with suitable packing, 9, and retaining-plates 10, secured by nuts and bolts 11. The piston 5 is formed with recesses 12, having an S-shaped partition between them, the recesses 12 opening at the opposite ends of the piston 5 into the steam-chests 13, and by means of ports 14 into the annular space 15 between the casing 1 and piston 5. The piston 5 is formed with the eccentric portion 16, which has a perfect contact-bearing with the inner wall of the casing 1 by means of the yielding block 17, located in the recess 18. The eccentric piston 5 acts alternately to press back abutment-blocks 19, adapted to slide in recesses 20 in the arms 4 of the casing 1. To give free movement to the blocks 19, they are mounted on anti-friction ball-bearings 21, and are held in outward position by means of springs 22. Access is had to the parts just described by means of a removable plate, 23, secured by screws 24. A tight joint is formed between the piston 5 and the annular space 15 by means of the packing-rings 25 and the shouldered projecting portion 26 of the piston 5 and the set-screws 27, which hold the rings 25 against the projecting portion 26.

The steam-supply pipe 28 connects with a passage, 29, communicating with a circular chamber, 30, in which is located a rotary valve, 31. By means of the latter steam admitted into the passage 29 may be directed into either of the branch pipes 32, connecting with steam-chests 13. The chamber 30 also connects with a steam-discharge pipe, 33. The valve 31 is of such a shape as to freely permit the passage of steam into one or the other of the branch tubes 32, according as it is turned by means of handle or wheel 34, and the discharge of steam through the pipe 33.

The operation is as follows: The valve 31 being in the position shown in Fig. 2, steam is admitted through the pipe 28, and passes, as indicated by the arrows, through the right-hand branch tube 32 into the steam-chest 13 and recess 12, which is at all times open to steam-chest 13. The steam passes from the recess 12 through the ports 14 into the annular space on one side of the right-hand abutment-block 19 in Fig. 1, and is stopped thereby. The action of the steam causes the piston 5 to be driven forward until the ports 14 have passed the block 19, when the steam expands and enters the space 15 between the blocks 19. Upon the further revolution of the piston 5 the ports 14 of the second or opposite recess 12 are brought around to the annular space 15 between the blocks 19, and the steam therein and in the recesses 12 escapes into the left-hand steam-chest 13 in Fig. 2, and passes through the ports 14 therein and branch pipe 32, and is discharged by means of pipe 33. The piston 5 continuing to revolve, the left-hand abutment-block 19 is pressed back by the eccentric 16, and the steam enters the recesses 12. Upon the piston 5 reaching the position shown in Fig. 1 the operation is repeated.

In the foregoing operation the right-hand

branch tube acts as the inlet-pipe and the left-hand branch tube as the outlet-pipe. By turning the valve 31 in the opposite direction the left-hand pipe 32 will become the inlet and the right-hand pipe 32 the outlet for the steam, and the operation will be reversed.

It will readily be seen that a close frictional contact will be made between the eccentric 16 and the casing 1 by means of the yielding block 17. The configuration of the recesses in the piston will be such as to cause the steam to effectively drive it, and the abutment-blocks will offer the least resistance to the movement of the piston by reason of the ball-bearings and spring-cushions. It will also be seen that, owing to the adjustability of the parts in frictional contact, when the parts become worn they will still form perfect steam-joints and the piston will work regularly and smoothly.

The engine may be run by steam, water, or compressed air by varying the size of the power-inlet.

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

1. In a rotary engine, the combination, with a cylinder-casing having sliding abutment-blocks, of an eccentric rotary piston having S-shaped recesses opening into steam-chests in the casing, and steam-ports connecting the recesses with an annular chamber in the casing, substantially as described.

2. In a rotary engine, the combination, with a cylinder-casing having yielding abutment-blocks mounted on ball-bearings, of an eccentric piston having recesses opening into steam-chests in the casing, and steam-ports opening into an annular chamber in the casing, substantially as described.

3. The combination, with the casing 1, having abutment-blocks 19, recesses 20, with ball-bearings 21, and springs 22, steam-chests 13, branch pipes 32, passage 29, feed-pipe 28, rotary valve 31, and discharge-pipe 33, of an eccentric piston, 5, having S-shaped recesses 12, ports 14, yielding block 17, projection 26, and washers 25, having set-screws 27, substantially as described.

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