

No. 683,987.

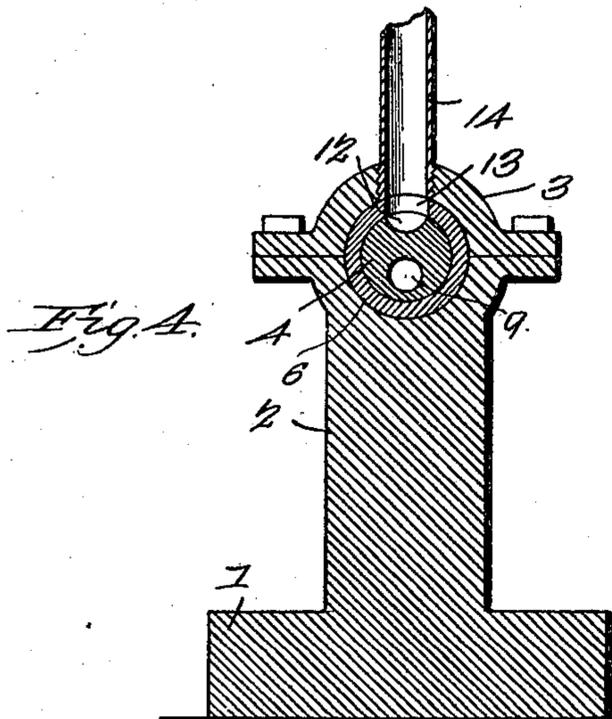
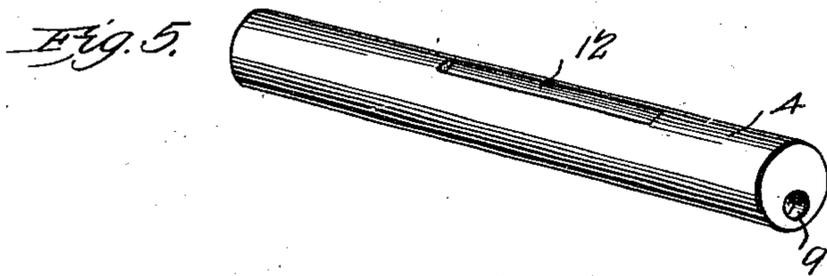
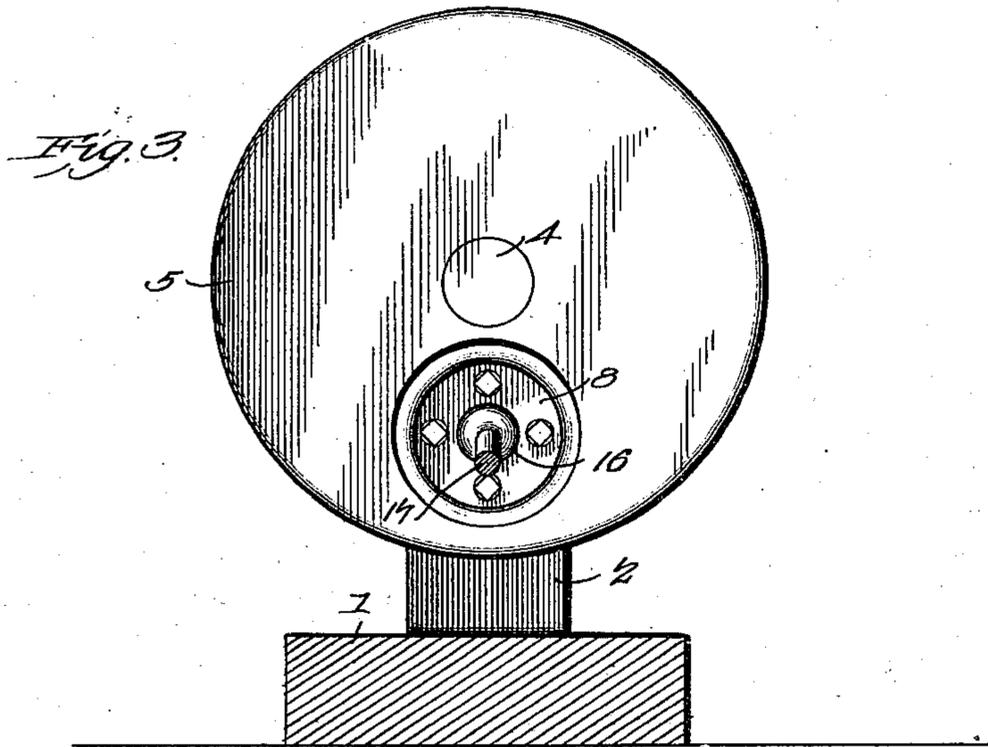
Patented Oct. 8, 1901.

M. J. ROBINSON.
ROTARY ENGINE.

(Application filed July 10, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

MAJOR J. ROBINSON, OF LOS ANGELES, CALIFORNIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 683,987, dated October 8, 1901.

Application filed July 10, 1901. Serial No. 67,743. (No model.)

To all whom it may concern:

Be it known that I, MAJOR J. ROBINSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Rotary Engine, of which the following is a specification.

My invention relates to engines of the rotary type, and particularly of the class wherein the rotary element receives its motion from the thrust incident to the linear movement of a reciprocating piston; and the special object of my invention is to provide a single-acting device of this class having a minimum number of operating elements and embodying a construction wherein the revoluble element may perform the dual function of a cylinder and a power-transmitting wheel, pulley, or gear.

Further objects and advantages of the invention will appear in the following description when considered in connection with the accompanying drawings, wherein similar reference characters represent corresponding parts, and the novel features thereof will be particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a sectional view of an engine constructed in accordance with my invention. Fig. 2 is a similar view showing the operating-piston in a different position—namely, at the end of the power-stroke. Fig. 3 is an end view of the rotary cylinder. Fig. 4 is a vertical sectional view on the plane indicated by the line 4-4 of Fig. 2. Fig. 5 is a detail view of the cylinder-spindle.

Arranged at one end of a suitable base 1 is a pedestal or column 2, provided with a bearing 3, in which is axially arranged a spindle 4. A cylinder 5 is provided with a tubular journal or trunnion 6, the bore of which is continued through the body portion of the cylinder and is of such a diameter as to snugly but revolubly fit said spindle, the latter being stationary. The cylinder consists of a block centrally disposed with relation to the sleeve 3 and with relation to the spindle 4,

and it is provided eccentrically with a piston guide or chamber 7, located wholly at one side of the spindle and having a reciprocating piston-head 8 located therein. In the construction illustrated one end of the piston-chamber is open, and it is designed to apply steam to only one side of the piston, and thus adapt it for only one direct power-stroke due to the expansion of the motive agent which is admitted to the piston-chamber through a feed-channel 9, formed in the spindle and having a port 10, which is adapted in one position of the cylinder to register with a cylinder-inlet port 11, located in the wall of the piston-chamber. Said ports are shown in registration in Fig. 1. Also preferably formed in the spindle 4 is an exhaust-channel 12, with which said piston-chamber port 11 is adapted to communicate in another position of the cylinder, as indicated in Fig. 2, the sleeve 6, which performs the function in the preferred embodiment of my invention of a valve or cut-off, having an exhaust-port 13 to register with the other end of the exhaust-channel 12 when said piston-chamber port is in position to permit the contents of the piston-chamber to exhaust. Obviously the piston is adapted to receive a secondary or return impulse by reason of the exhaust and condensation of the motive agent, particularly if the exhaust-pipe 14 is connected with a condenser, as may be desirable under certain circumstances, specific illustration of such an arrangement being unnecessary, however, because of the fact that it is well known in the art. The motive agent, whether steam or other fluid, may be conveyed to the feed-channel 9 by means of the supply-pipe 15.

Pivotally connected with the piston-head, preferably by a ball-and-socket or other practical antifriction and universal bearing 16, is a thrust member or pitman 17, having its other end correspondingly mounted, as at 18, upon a thrust-block or step 19, which in the construction illustrated consists of an enlargement at the opposite end of the base 1 from the said column 2. The relation between the parts is such that the outer or, as I will term it hereinafter, the "stationary" end of the thrust member is permanently below the plane of the movable end of said thrust member, or, in other words, is below

the plane of said movable end of the thrust member when the latter is at the limit of its downward movement. Hence when the piston is at the limit of its inward stroke the application of pressure to its inner face causes the thrust member to exert a downward thrust on the step 19 and a consequent upward thrust on that portion of the cylinder which is adjacent to the piston-head. Moreover, except when the thrust member is located exactly in the vertical plane of the axis of the cylinder the application of motive agent to the piston causes a lateral thrust to be applied to the cylinder. Hence even without a secondary impulse being applied to the piston by the suction due to the exhaust of the steam or other motive agent from the piston-chamber the effect of the thrust due to the application of the steam would carry the cylinder through one-half of a revolution, and at the end of the direct stroke of the piston the momentum of the cylinder would continue the rotation until the parts were in position to receive a second impulse of the motive agent. In practice, however, the ports for admitting and exhausting motive agent may be so disposed as to be brought into operative relation alternately, and the inlet feed-port may even be so controlled as to cut off the influx of motive agent and allow for the operation of the parts for a portion of the stroke by the expansion of the motive agent. These details of construction and arrangement, however, form no part of my present invention, which contemplates the operation of the rotary cylinder by means of a single-acting reciprocating piston, the valve mechanism whereby the inlet and exhaust of the motive agent are controlled being disposed axially of the cylinder to leave the cylinder with an unobstructed exterior surface, whereby, if made of a suitable contour, the cylinder may be used as a power-transmitting medium, such as a drive pulley or wheel or a gear or its equivalent.

Having described the invention, what is claimed is—

1. An engine having a revoluble cylinder provided with an eccentric piston-chamber, a reciprocating piston mounted therein, a thrust member connected with the piston and having its other end provided with a bearing on a stationary step and valve mechanism for controlling the inlet and exhaust of motive agent.

2. An engine having a revoluble cylinder provided with an eccentric piston-chamber, a piston operating therein, a stationary step, a thrust member or pitman having its extremities universally mounted respectively upon said step and upon the piston, and valve mechanism for controlling the inlet and exhaust of motive agent.

3. A revoluble power-transmitting element having a piston-chamber disposed eccentrically thereof and parallel with its axis of rotation, a piston, a thrust member connecting said piston with an exterior fixed object, and valve mechanism for controlling the admission and exhaust of motive agent.

4. A revoluble cylinder having an eccentric piston-chamber, and axial stationary spindle having feed and exhaust channels therein, a port in communication with the piston-chamber, for alternate registration with said channels, a piston, and a thrust member having one end fixed to an outside stationary object.

5. The combination of a rotary cylinder having an eccentric piston-chamber and a concentric sleeve provided with feed and exhaust ports, a stationary spindle located within said sleeve and having inlet and exhaust channels, a piston, and a thrust member connecting said piston with an exterior fixed object.

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

MAJOR J. ROBINSON.

Witnesses:

JOHN F. ANDREWS,
WM. M. COOK.