

(No Model.)

J. F. McELROY.
ROTARY ENGINE.

No. 510,482.

Patented Dec. 12, 1893.

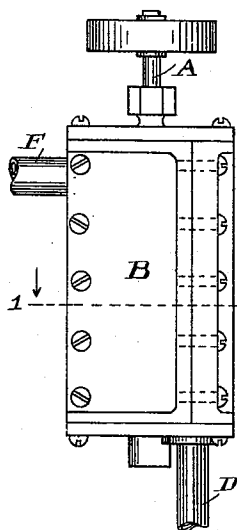


Fig. 1.

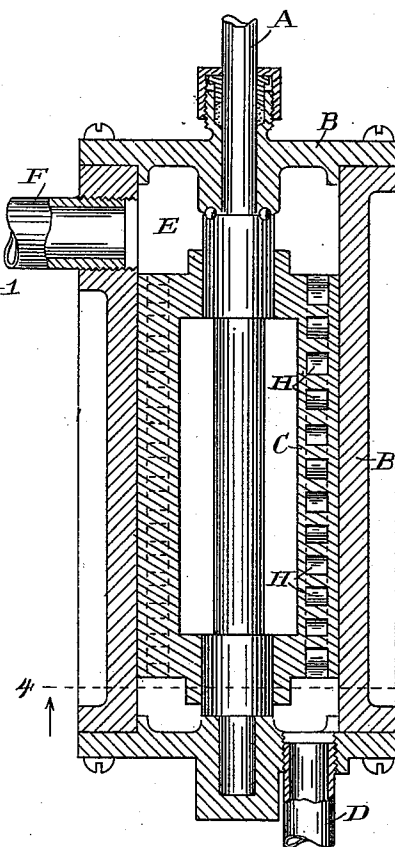


Fig. 3. Sec. 2-2.

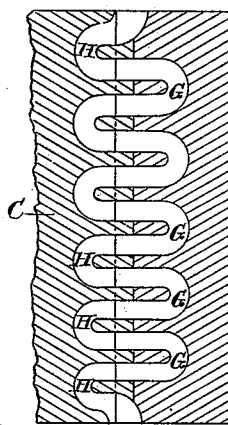


Fig. 4. Sec 3-3.

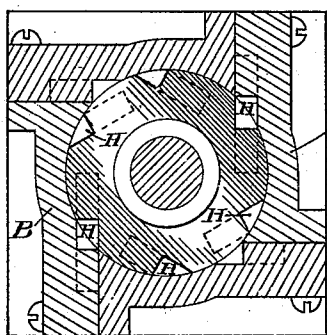


Fig. 5. Sec. 4-4.

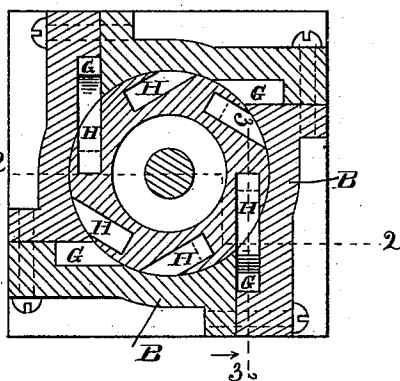


Fig. 2. Sec 1-1.

WITNESSES:

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ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 510,482, dated December 12, 1893.

Application filed July 7, 1892. Serial No. 439,245. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing in the city and county of Albany, State of New York, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification.

My invention relates to motors of the turbine type; and the object of my invention is to provide a simple, inexpensive, efficient and durable rotary engine. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation. Fig. 2 is a cross section along the lines 1—1 on Fig. 1. Fig. 3 is a vertical section through lines 2—2 on Fig. 2. Fig. 4 is a section along the lines 3—3 on Fig. 2, and Fig. 5 is a section along the lines 4—4 on Fig. 3.

Similar letters refer to similar parts throughout the several views.

The shaft A is suitably mounted in the casing or shell B and has keyed to it within the shell B, the cylinder C. The shell B is provided with an interior chamber, the lateral inner walls of which fit closely about the cylinder C, but leaving a space E above the cylinder for an exhaust chamber and a space below the cylinder into which the steam enters from the supply pipe D, the exhaust chamber E communicates with the discharge pipe F.

Into the cylinder C, I construct two or more series of passages H, each series extending from one end of the cylinder to the other. I form these passages by coring out from the cylinder the passage way extending from the periphery into the cylinder on the line of a cord of a circle formed by a cross section of the cylinder C. See Fig. 2. After passing a short distance into the cylinder, the passage way is curved in the direction of the axis of the cylinder and then extends back again to the surface in a line parallel to the line of entry; said passage way being thus U-shaped and each side being at right angles to a right line passing through the center of the cylinder.

Into the interior wall of the shell B, I core out two or more lateral series of U-shaped

passages G, having their sides parallel to and being of the same width as the corresponding passage way in the cylinder C. Each series of passages G in the shell extends from the bottom to the top of the cylinder C, and the passages H in the cylinder coincide and register with the passages G in the shell, as shown in Fig. 4. The cylinder has several series of passages H, each series extending along the cylinder from top to bottom, while the shell is usually provided with a smaller number of passages G, as is shown in Figs. 2 and 5. As thus arranged, the steam entering the shell from the pipe D passes immediately into the passage H in the cylinder, from thence it enters the corresponding passage G in the shell passing from there into the adjacent passage H in the cylinder and in this manner moves alternately from the cylinder to the shell in a continuous channel formed along the surface of the cylinder parallel to its axis in which the curves in one direction of the channel lie in the revolving cylinder and the curves in the opposite direction lie in the stationary shell, until it reaches the exhaust chamber where it is conducted to the open air. The passages G and H I construct in such a manner as to allow for the expansion of the steam, making the passage ways larger as they approach the exhaust chamber, in order that the full power and efficiency of the steam may be attained.

The operation of my engine is apparent. The steam impinges against the cylinder at right angles to a radius thereof, which will tend to cause the cylinder to revolve. Immediately upon the registration of the passage H in the cylinder with the passage G in the shell, the steam within the passage way H will force itself into the passage way G, where it will impinge and returning strike the cylinder in the manner already described.

By my arrangement of the passage ways of the shell and cylinder, I utilize the greatest amount of power that can be contributed by the steam, because I force the steam against the cylinder each time at right angles to a radius thereof and I cause the steam to strike the immovable part, to wit: the shell, at a right angle and to return immediately to the

cylinder. In each instance there is no loss of power; on the contrary, every particle of the force of the steam is made to assist in the revolution of the cylinder.

5 Another advantage to be gained by my construction of the cylinder and the passage ways within it, is that there is a positive coincidence with the passage ways in the shell, the steam is not allowed to escape or to waste, but is kept continually employed from the
10 time it enters the cylinder until it reaches the exhaust chamber, and when one of the passage ways in the cylinder is registered with a passage way in the shell, all of that series are in register and the steam within each
15 of them is in operation at the same time and in the same manner, thus exerting the greatest amount of power at each of the points of coincidence throughout the whole extent of
20 the cylinder.

My engine may be constructed very compactly and inexpensively, and it performs the work required of it in a positive and satisfactory manner.

25 I do not limit myself to the location of the steam supply pipe, since it may enter at the center rather than at the end of the shell, nor do I limit myself to the position of my engine, vertically rather than horizontally.

30 I am aware that Letters Patent were issued May 31, 1892, to G. J. Altham, No. 475,957, showing two revolving cylinders operated by steam pressure and joined by gearing to a disk secured to a shaft and I do not claim that
35 construction.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination with a stationary shell provided with a steam inlet chamber and a steam exhaust chamber, of
40 a driving shaft mounted to rotate in said shell, a cylinder keyed to said shaft within said shell, two or more series of disconnected U shaped steam passage-ways cored out of said
45 cylinder each series extending from one end

of said cylinder to the other, with steam passage-ways cored out of the interior wall of said shell corresponding in width and direction to the passage-ways in said cylinder, substantially as described and for the purpose set
50 forth.

2. In a rotary engine, the combination with a stationary shell provided with a steam inlet chamber and a steam exhaust chamber, a driving shaft mounted to rotate in said shell, a cylinder secured on said shaft in said shell
55 and provided with two or more lateral series of U-shaped steam passage ways cored out from the periphery of said cylinder, the sides of each of said passage ways being at right angles to a radius of the cylinder passing through the bottom of the U shaped passage-way two or more lateral series of U-shaped steam passage ways cored out of the interior
60 wall of said shell, said passage ways in the shell corresponding to and coinciding alternately with the passage ways in the cylinder, in such a manner that steam passes in a continuous channel formed along the surface of the cylinder parallel to its axis substantially
65 as described and for the purpose set forth.

3. In a rotary engine, the combination with a stationary shell, a steam inlet chamber, a steam exhaust chamber, a driving shaft mounted to rotate in said shell, a cylinder secured on said shaft in said shell, said cylinder
70 provided with steam passage ways cut into its periphery, said shell provided with steam passage ways cut into its interior wall, arranged in such a manner that at certain positions of the cylinder continuous channels are formed along the surface of the cylinder parallel to its axis, in which the curves in one direction of the channel lie in the revolving cylinder and the curves in the opposite direction lie in the stationary shell.
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Witnesses:

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