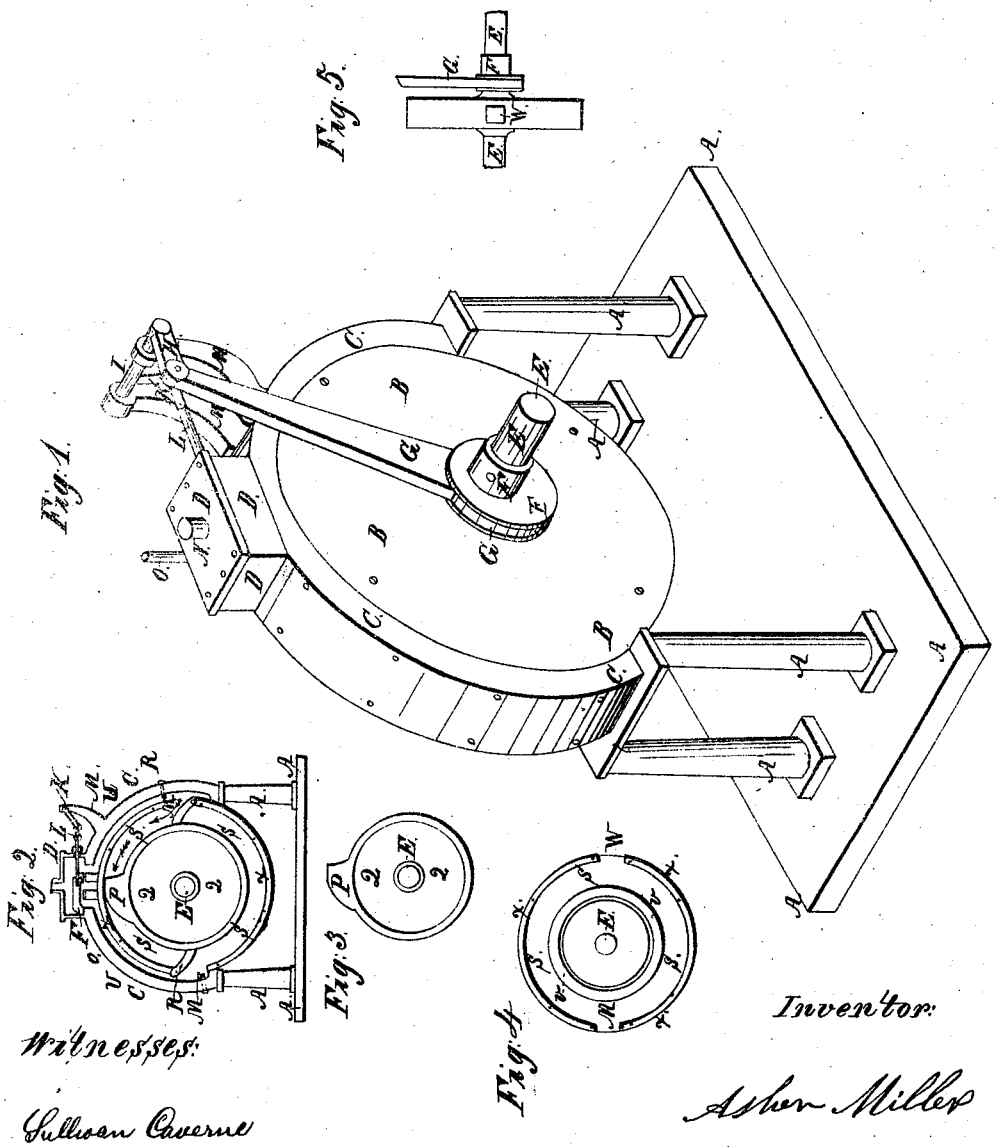
No. 342. PATENTED AUG. 8, 1837.

A. MILLER.

ROTARY STEAM ENGINE.



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UNITED STATES PATENT OFFICE.

ASHER MILLER, OF LOCKPORT, NEW YORK.

ROTARY STEAM-ENGINE.

Specification of Letters Patent No. 342, dated August 8, 1837.

To all whom it may concern:

Be it known that I, ASHER MILLER, of the village of Lockport, in the county of Niagara and State of New York, have invented a new and useful Improvement in Steam-Engines; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists in a revolving piston and in applying the steam thereto by means of a side pipe, eccentric or cam and shifting or slide valve as ordinarily applied to the reciprocating engine, thereby giving the piston a perfect rotary motion, which may be constructed on either the high or low pressure principle.

Figure 1 in the drawing gives a perspective view of the external part at an angle of 60 degrees on a scale of half the size of the model; that is to say, an inch on the scale of the model is equal to two inches on the scale of the drawing. Fig. 2 gives an internal view of the engine. Figs. 3 and 4 represent detached parts. Fig. 5 represents an edge view. Figs. 2, 3, 4 and 5 are on a scale of one fourth the size of the model.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, A, A, as seen in Figs. 1 and 2 represent the frame; this however is no part of the engine; it is intended merely as a support, and the engine may be supported in any other manner.

B, B, B, represents the side of the cylinder box or case in which the piston revolves; the size of which will vary according to the power required, and the size of all the machinery will vary in like manner according to the power and the purpose for which it is designed; and the whole may be made of such metal and materials as are ordinarily used for the construction of steam engines.

C, C, C, in Figs. 1 and 2, represent a circular steam pipe or side pipe terminating a little below and covering the apparatus W, W. This pipe may however be made to pass across the cylinder in a straight or curve line instead of going around the circumference as represented in those figures.

D, D, D, as seen in Figs. 1 and 2, represent the steam chest; E, E, as seen in all the figures, the axle or shaft; F, F, as seen in the Figs. 1 and 5 the eccentric, G, G, in Figs. 1 and 5, the eccentric rod, H, in Fig. 1, the arm on the rock shaft to which the eccentric is attached by means of a joint, I, in Fig. 1, the rock shaft, K, on Figs. 1 and 2 an arm on the rock shaft to which is attached the rod to the shifting or slide valve by means of a joint. L in Figs. 1 and 2, a rod to the shifting or slide valves with a joint near the center. M, M, in Figs. 1 and 2 stands which support the rock shaft. N, in Figs. 1, and 2, a steam pipe leading from the boiler to the steam chest. O in Figs. 1, and 2, an exhaust pipe. P, in Figs. 2 and 3, the revolving piston permanently attached or affixed to the wheel Q. Q in Figs. 2 and 3, a wheel permanently attached to the axle, E, to which it gives motion. Every revolution of the wheel and piston will give one revolution of the axle or shaft. The piston will in all cases fill the space S, (Fig. 2,) in which it revolves. R, R, in Fig. 2 the valves which give direction to the steam after it reaches and passes through the apertures W, W, as seen in Fig. 2. In this figure the darts <—— show the direction of the steam acting on this piston. These valves are sections of the circumference of the circle X X X and when raised fill the apertures W, W and complete the circle X X X.

S, S, S, in Fig. 2, represents the cylinder or groove in which the piston revolves. In Fig. 4, this cylinder or groove is represented when the wheel Q and piston P, are removed.

T in Fig. 2, represents the shifting or slide valve which acts as in the reciprocating engine, alternately admitting the steam and permitting its escape according as the piston passes the valves R, R. U U, Fig. 2, a passage for the steam in the side pipe, C, leading from the steam chest D, through the apertures W, W, into the cylinder, S.

V, V, in Fig. 4 represents only an additional thickness on the inside of the case or box B, B, B, which merely gives strength to the cylinder.

X in Figs. 2 and 4, represents the rim or edges of the cylinder, case or box, which when matched together and united or fastened with bolts or screws form the inclosure of the cylinder or space S.

The following is a brief statement of the manner in which the steam is applied, and of the motion and uses of the parts:—The steam from the boiler passes through the steam pipe N (Figs. 1, and 2,) into the steam chest D; thence into the passage or pipe U (Fig. 2). Its admission into this

passage or pipe is regulated by the shifting or slide valve T. This valve in Fig. 2, is shown at the extreme left hand side. When in this situation, the steam is permitted to enter the passage U, on the right hand side and prevented from entering that on the left hand side, while that steam which may be in the passage or pipe U, on the left hand side is permitted to escape through an opening in the bottom of this valve calculated for this purpose into the exhaust pipe. When this valve is changed to the right hand side the steam is let in on the left and let off on the right hand side. From the pipe or passage, U, it passes through the aperture, W, into the cylinder or space S. When direction is given to it by the valve, R, and it is turned in the direction as denoted by the darts <—— toward the piston P, and by pressure against it causes its revolution. The steam is let on and taken off alternately on the right and left which is regulated by the shifting or slide valve T, which is moved to the right and left by means of the eccentric, F, or a cam, the eccentric rod, G, the arm H, the rock shaft I, arm K, and rod L. The steam is let on and acts upon the piston, P, immediately after the piston passes the aperture, W, and continues to propel it during half its revolution until it passes the other aperture, W. When the steam is shut off and allowed to escape from this side as above described and let on through the other aperture and again from this side propels the piston half a revolution. The revolution of this piston causes the revolution of the wheel Q, and axle or shaft, E; the piston being permanently attached to the wheel and the wheel to the axle or shaft. The revolution of the axle or shaft gives motion to the machinery in any mode desired. The valves, R, as represented in Fig. 2, on hinge valves which are raised up by the piston, P, in its passage under them, and close immediately after the passage of the piston. In that figure both valves, W, are represented as closed. I design to construct them in such a manner as to move or slide them directly out so as to permit the backward revolution of, P, whenever a backward motion is desired. And I wish and intend my patent to cover both modes of operating the valves.

An engine constructed on the principles above described will be recommended by its simplicity. It will require less machinery than engines now in use and thus avoid much friction. The revolution of the axle or shaft, E, being primary and direct, whereas in the reciprocating engine this revolution is secondary or indirect. And the inventor believes it will give more power with the same quantity of steam than any engine now in use. Another advantage gained over the common reciprocating engine is the continuous, constant and equal pressure of the steam upon the piston in one direction, thus avoiding those dead points at which in the common reciprocating engine foreign air is required to start it.

What I claim as my invention is—

The combination of the shifting or slide valve with the rotary piston as seen in the accompanying model and in the drawings and as described in the above specification.

Dated Lockport July 22nd, 1837.

ASHER MILLER.

Witnesses:

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