

(No Model.)

R. L. STEVENS.
GRAVITY STEAM ENGINE.

No. 264,363.

Patented Sept. 12, 1882.

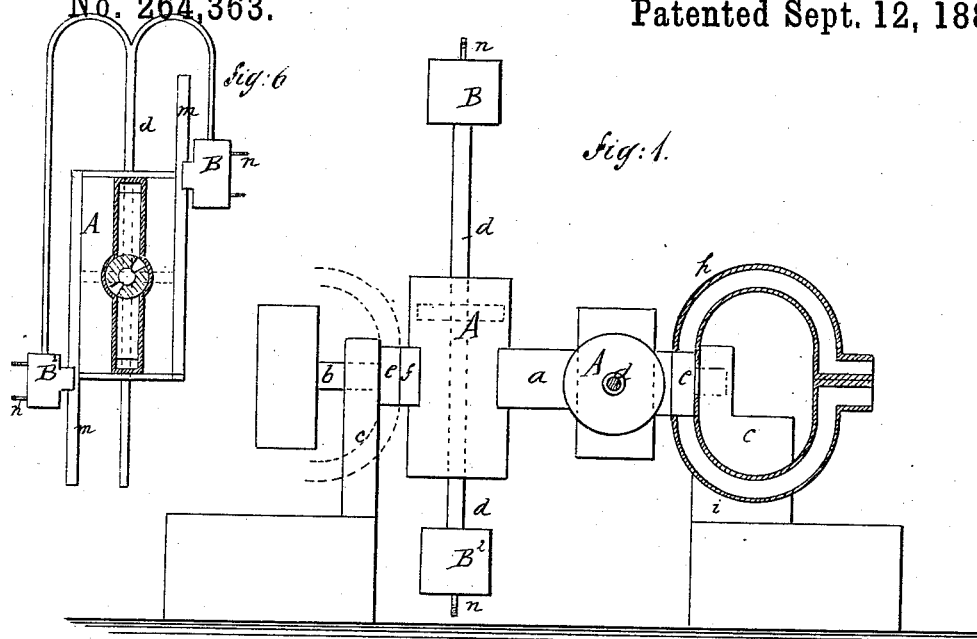


Fig. 4.

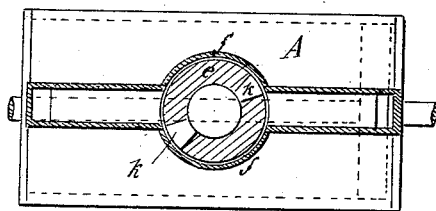


Fig. 5.

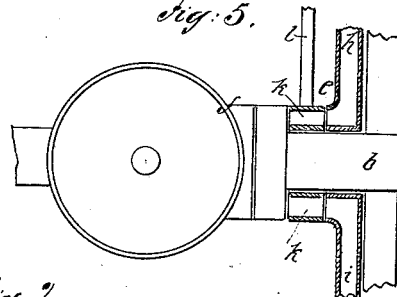
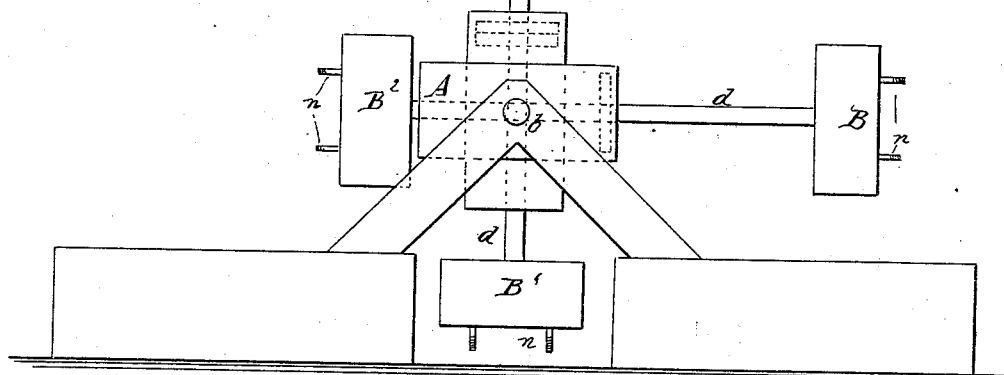


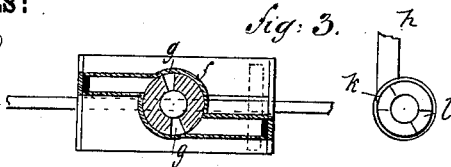
Fig. 2.



WITNESSES:

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Fig. 3.



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ROBERT L. STEVENS, OF ALBANY, OREGON.

GRAVITY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 264,363, dated September 12, 1882.

Application filed May 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. STEVENS, of Albany, in the county of Linn and State of Oregon, have invented a new and useful Improvement in Gravity Steam-Engines, of which the following is a full, clear, and exact description.

My invention relates to an engine in which the power to rotate the shaft is obtained by weights that are hung upon the ends of reciprocating piston-rods moved by steam or compressed air to shift the weights in the proper order for obtaining a continuous rotary movement, as will be more particularly set forth hereinafter.

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

Figure 1 is a front elevation of the gravity steam-engine. Fig. 2 is a side view of the same. Fig. 3 is a sectional view of the steam-chest, showing the valve mechanism. Fig. 4 is a face view of a modified form of valve device. Fig. 5 is a side view of the device represented in Fig. 4. Fig. 6 represents a modification in the construction of the engine.

A A are steam-cylinders, connected together, with their axes at right angles, by a block, *a*, which, if desired, may serve as a middle support for the two cylinders.

b is a horizontal shaft, supported at its ends in pillow-blocks *c*, and upon this shaft the cylinders A are attached, for rotation therewith.

d d are the piston-rods, passing through both heads of the cylinders, and fitted at their ends with weights B B' B² B³. The valve-chambers are fitted at the side of each cylinder next to the pillow-block *c*, and consist of the stationary portion *e* and the rotating plates *f*, that are formed or attached upon the cylinders. This valve mechanism is shown in detail in Fig. 3, where it will be seen that the plate *f* on the cylinder is formed with two ports, *g g*, connecting to passages along the sides of the cylinder to its opposite ends.

The steam is supplied to the chambers *e* by pipes *h* and exhausted by pipes *i*, these two pipes being connected with the openings *k l*

in the side of the chamber *e*, which, by the rotation of the cylinder, are brought into register with the openings *g* of the plate *f*, so that steam is taken in and exhausted from each end of the cylinders alternately.

The operation is as follows: Referring to Fig. 2, the rotation of the shaft *b* will be due to the weight B, which, being projected horizontally in its extreme position, more than counterbalances by its leverage the other weights, B' B² B³. This weight B owes its position to the projection of the piston *d* by steam or compressed air admitted to the cylinder A. As the weight B falls, thereby rotating the cylinder and shaft, the valve is opened and admits steam to the cylinder for moving the weights B' B³, so that these weights are raised upward at the same instant the exhaust is opened in the first cylinder, A, and by the time the piston-rod carrying the weights B B² reaches a vertical position the weight B has been moved inward to the position of weight B', as shown. In moving from their horizontal position to the lower position the weights gradually lose their gravity; but the weight next following gains power in the same proportion until it reaches a horizontal position, when its power is at maximum, and thus a steady and uniform power is exerted upon the shaft *b* for its rotation. The engine is reversed by forcing the weights in a contrary direction. In Fig. 4 valve mechanism of different construction is shown. In this case a fixed plate or chamber, *e*, fits into a recess of the plate *f*, the shaft *b* passes through plate *e*, and the openings *k* in this plate terminate within the recess in the plate *f*. *h i* are the steam and exhaust pipes. The plates *e* may be fitted to be rotated upon the shaft *b* by the lever *l* for reversal of the engine.

Fig. 6 illustrates a modification in the construction of the engine. It is intended for use where too much centrifugal force would be developed, the object of this modification being to bring the weights closely to the cylinder. The weights shown at B are fitted for movement upon slides *mm*, placed at opposite sides of the cylinders, and the weights are attached upon rods that extend outward, and are con-

connected by weights to the piston-rods *d*. In all cases the weights should be provided with bolts *n* for the connection of additional weights when it is desired to increase the power.

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

The gravity steam-engine herein described, consisting of the cylinders *A A*, arranged at right angles to each other on the shaft *b*, slid-

ing piston-rods *d*, provided with weights *B B'* to *B² B³* at their outer ends, valve-chambers *e*, rotating valve-plates *f*, and pipes *h i*, substantially as set forth.

ROBERT L. STEVENS.

Witnesses:

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