H. T. Carter,

Oscillating Steam Engine.

No. 52,677. Patented Feb. 20, 1866.

Fig: 1.

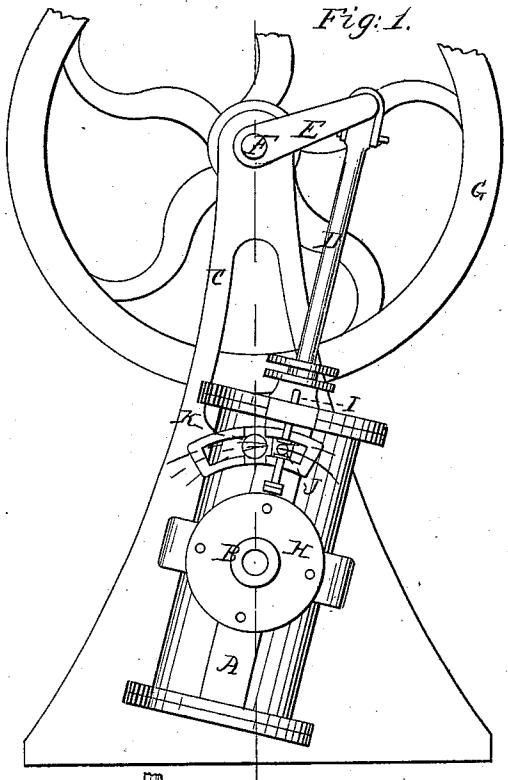


Fig: 2.

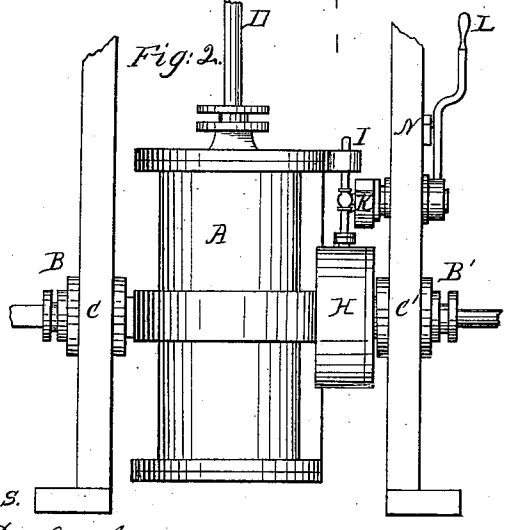
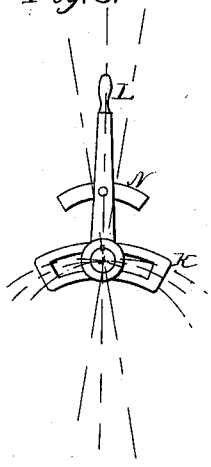


Fig: 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY T. CARTER, OF PORTLAND, MAINE.

IMPROVEMENT IN TUBE-GEAR FOR OSCILLATING ENGINES.

Specification forming part of Letters Patent No. **52,677**, dated February 20, 1866.

To all whom it may concern:

Be it known that I, HENRY T. CARTER, of Portland, in the county of Cumberland and the State of Maine, have invented a new and Improved Valve-Gear for Oscillating Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a sectional end elevation of this invention; Fig. 2, a longitudinal elevation of the same, and Fig. 3 an isolated view of the operating-link.

Similar letters of reference indicate like parts.

This invention consists in the arrangement of a link in combination with a valve-stem of an oscillating steam-engine in such a manner that by the combined effect of this link and the oscillation of the cylinder the requisite reciprocating motion is imparted to the valve-stem and the valve is moved at proper intervals.

A represents an ordinary steam-cylinder, which is hung upon trunnions B B′, which have their bearings in suitable standards C C′, which are secured to a bed-plate, as common, or are otherwise arranged in such a manner as to allow the cylinder to oscillate freely in either direction. The piston-rod D connects directly to a wrist-pin of the double crank E, which revolves the shaft F and balance-wheel G in the usual manner for oscillating engines.

Attached to the cylinder and in line with the trunnions B B′ is the valve-chest H and the stem I, operating the valve. The stem I extends through a lip or guide on the cylinder-flange, as is clearly shown in the drawings. By this arrangement the valve-stem is guided in its up-and-down motion, thus preventing its bending or binding when the engine is in motion.

Attached to the valve-stem I is a box, J, which slides in a link, K, as is shown particularly in Fig. 1. The curve of this link is on a radius of the distance from the center of the link to the center of the steam trunnion or oscillation. Rigidly attached to this link is a trunnion or rocking shaft, which rocks in suitable bearings in the frame. Upon the end of this shaft is affixed a lever, L, which slides on a guide, N.

When the link is on the center or at a right angle with the valve-stem, although the cylinder may oscillate, the valve will not move upon its seat. When the link is placed eccentric with the center of oscillation, by tipping it by means of the lever L the oscillation of the cylinder and the combined effect of the link will cause the valve to move at proper intervals of the stroke. If the link be tipped to the right the balance-wheel will revolve in a like direction, but if the link be tipped in an opposite direction the engine will be reversed.

This valve-gear may be applied to oscillating engines of any desired description, whether the cylinder oscillates on a horizontal or vertical axis.

The advantages of this invention are the simplicity, durability, and cheapness of the engine.

The Letters Patent granted to me, No. 48,904, and dated the 25th of July, 1865, embraced this principle, but specified an arm in combination with the link.

I claim as new and desire to secure by Letters Patent—

1. The arrangement of the slotted link K, the valve-stem I, and the oscillating cylinder A, all as and for the purposes specified.

2. The manner of reversing an oscillating engine by means of the slotted link K, the valve-stem I, the lever L, and the oscillating cylinder A, as specified.

HENRY T. CARTER.

Witnesses:

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