Kilgore & Eberhard,

Oscillating Steam Engine.

No. 45,159. Patented Nov. 22, 1864.

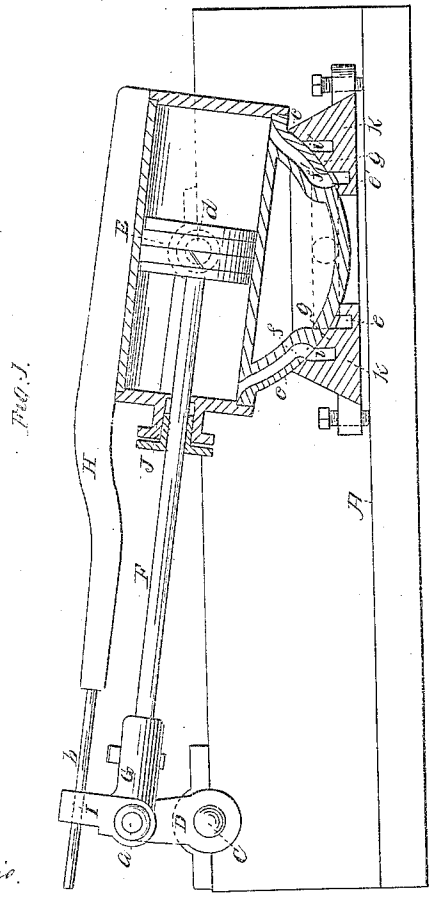

Fig. 1.

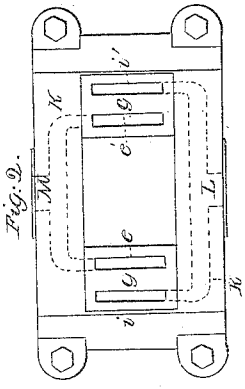

Fig. 2.

Witnesses:
Henry Morris.
J. W. Coombs.

Inventors:
M. C. Kilgore
W. Eberhard.
Munn & Co
Attorneys.

UNITED STATES PATENT OFFICE.

M. C. KILGORE AND WILLIAM EBERHARD, OF WASHINGTON, IOWA.

IMPROVEMENT IN OSCILLATING ENGINES.

Specification forming part of Letters Patent No. 45,159, dated November 22, 1864.

To all whom it may concern:

Be it known that we, M. C. KILGORE and WILLIAM EBERHARD, both of Washington, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Oscillating Steam-Engines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central longitudinal vertical section of an engine with our improvements. Fig. 2 is a face view of the valve.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in the attachment to the cylinder of a rigid arm which is parallel with the piston-rod, and to which is fitted a bearing or socket attached rigidly to the head of the piston-rod, in combination with a valve-face and valve-seat arranged below the cylinder in the form of a cylindrical arc concentric with the cylinder, the object being to relieve the piston-rod of strain and the stuffing-box of friction and wear in as great a degree as possible, render the engine more durable, and adapt it to operate with greater ease and smoothness.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

The engine is of what is known as the "horizontal oscillating" kind, the cylinder being horizontal when the crank is on the centers. A is the bed-plate; B, the cylinder; C, the crank-shaft; D, the crank; E, the piston; J, the stuffing-box; F, the piston-rod, and G the head of the piston-rod containing the bearing for the crank-wrist *a*, all of known construction.

H is the rigid arm, bolted or otherwise secured to the top of the cylinder, and terminating in a straight pin or guide, *b*, of cylindrical or other parallel form, and parallel with the axis of the piston.

I is the bearing or socket to which the pin *b* is fitted, formed upon or rigidly secured to the head G of the piston-rod. In the operation of the engine the socket I works on the pin or guide *b*, and the lifting of the cylinder is done by the arm H, thereby relieving the piston-rod of the strain and the stuffing-box J of friction and wear, and keeping the piston-rod and piston true.

c c is the valve seat provided on the under side of the cylinder of the form of an arc of a cylinder concentric with the trunnions *d*. In this face there are two ports, *f f'*, leading into the cylinder close to the ends thereof.

K is the stationary valve having its face *g g* hollowed in the form of the arc of a cylinder to fit the valve-seat *c c*, and supported upon the bed-plate by screws *t t* in such manner that it may be adjusted to compensate for the wear of its face and of the valve-seat, and provided with two induction-ports, *i i*, communicating with the main induction-passage L, with which the steam-pipe from the boiler is connected, and with two eduction-ports, *e e'*, communicating with the main eduction-passage M, with which the exhaust-pipe is connected, the eduction-ports being so arranged between the induction-ports that the cylinder-port *f* may communicate with the induction-port *i* while the cylinder-port *f'* communicates with the eduction-port *e'*, as shown in Fig. 1, and that the induction-port *i'* may communicate with the cylinder-port *f'*, while the eduction-port *e* connects with the cylinder-port *f*. The oscillation of the cylinder causes the induction of the steam to take place through the ports *f* and *f'* alternately, the eduction always taking place through the opposite port.

By changing the passage L to the eduction-passage and the passage M to the induction-passage the engine may be reversed. This may be done by a suitable valve, as in some other oscillating engines, and we cannot claim it as our invention.

We are aware that the parts of our invention, separately considered, are old; but

What we claim as new, and desire to secure by Letters Patent, is—

The combination of the arm H *b*, attached to the cylinder, the guide I, attached to head G of the piston-rod, the arc-formed valve-seat attached to the under side of the cylinder, and the adjustable arc-formed stationary valve K K, all constructed, arranged, and operating in the manner and for the purposes herein specified.

M. C. KILGORE.
WM. EBERHARD.

Witnesses:
J. A. HENDERSON,
J. VAN NOSTRAND.