

J. F. LINDBERG & J. FITZGERALD.

OSCILLATING ENGINE.

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905,721.

Patented Dec. 1, 1908.

FIG. 2.

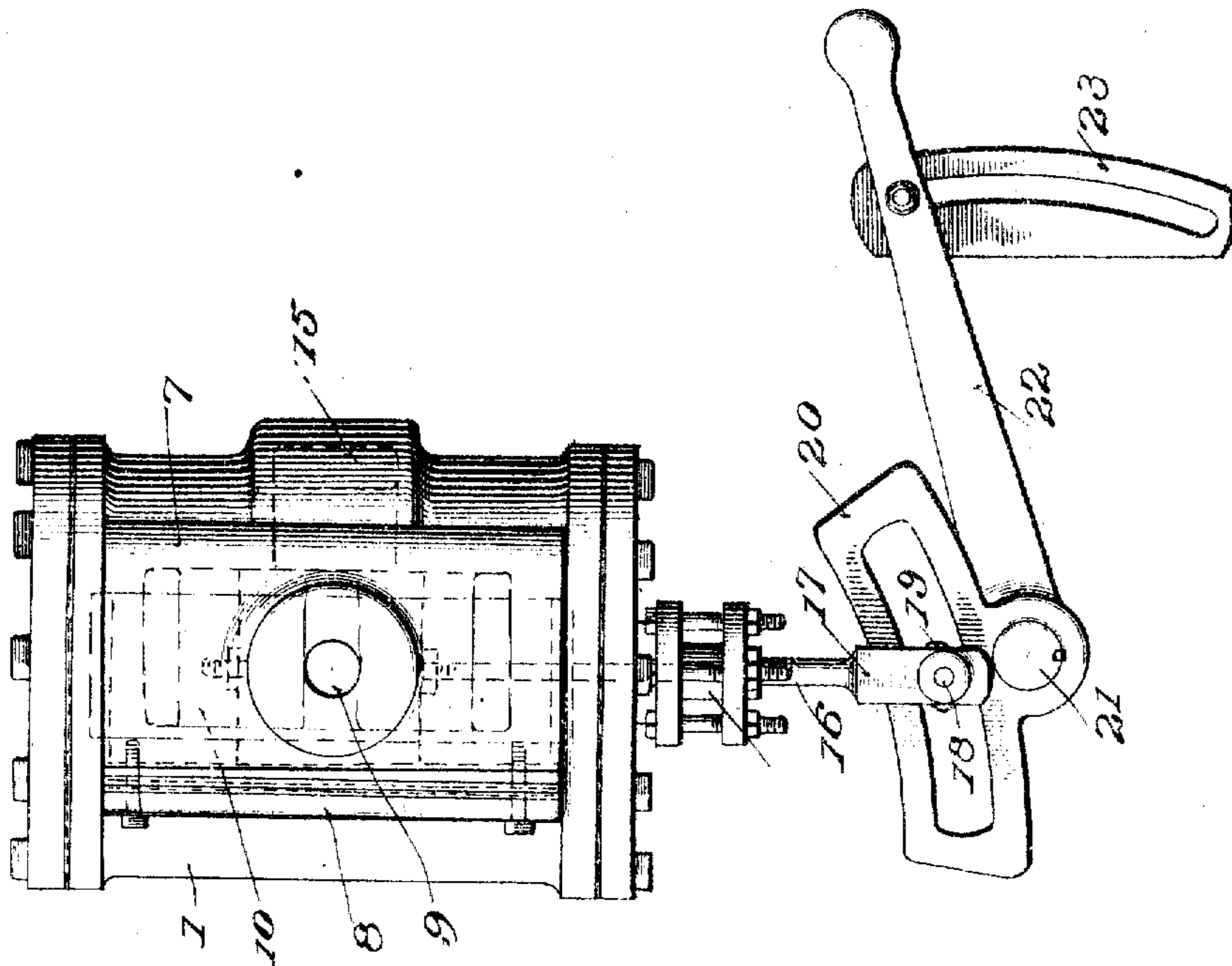
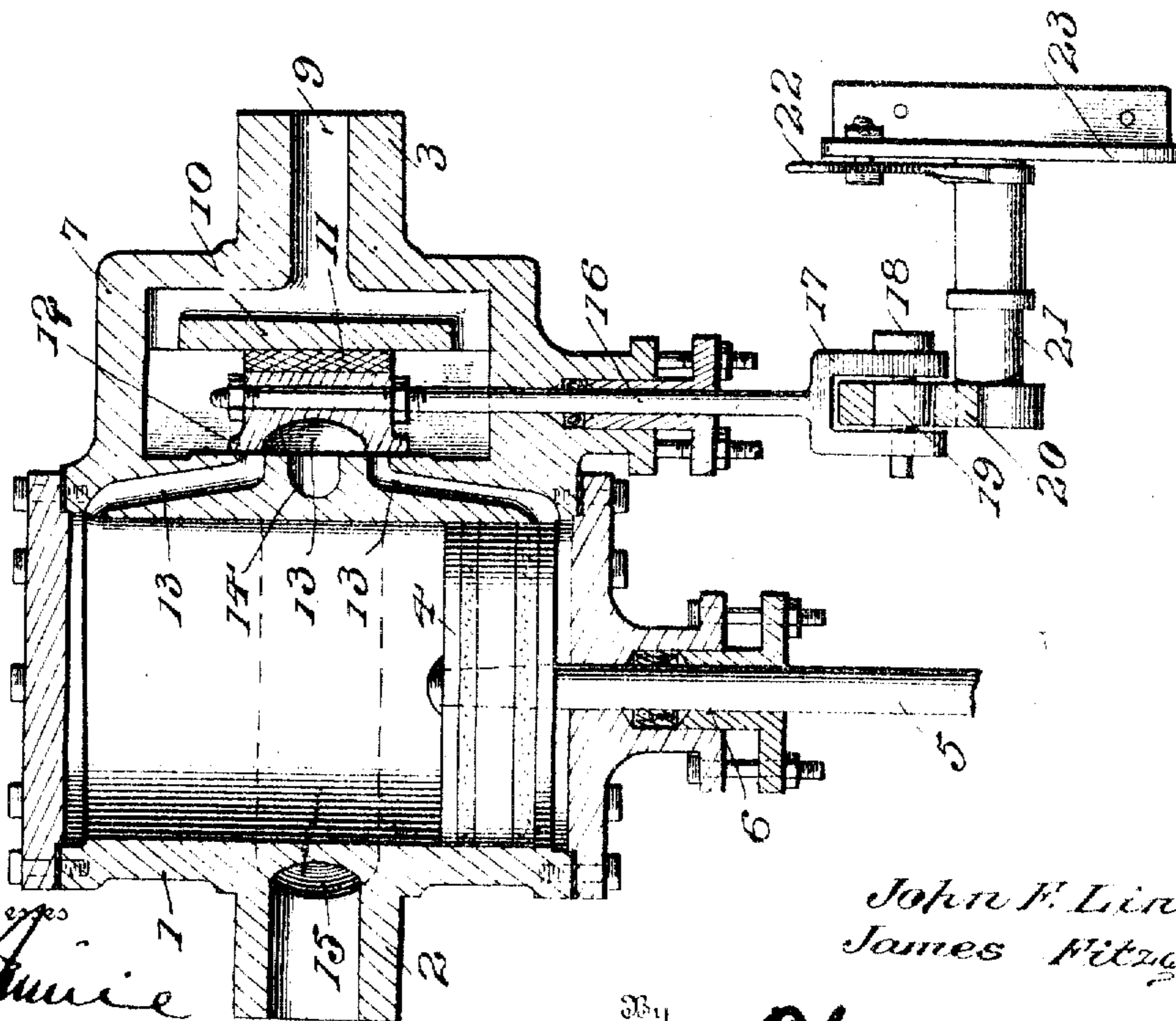


FIG. 1.



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# UNITED STATES PATENT OFFICE.

JOHN F. LINDBERG AND JAMES FITZGERALD, OF HIBBING, MINNESOTA.

## OSCILLATING ENGINE.

No. 905,721.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed February 26, 1908. Serial No. 417,887.

*To all whom it may concern:*

Be it known that we, JOHN F. LINDBERG and JAMES FITZGERALD, citizens of the United States, residing at Hibbing, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Oscillating Engines, of which the following is a specification.

This invention comprehends certain new and useful improvements in the art of steam engineering and the invention has for its primary object an improved construction of engine cylinder of the oscillating type in which is embodied a valve chest with a slide valve mounted therein, the parts being so arranged that a reciprocating motion will be imparted to the slide valve to properly admit steam to the cylinder as the same oscillates.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that we will hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a sectional view of our improved oscillating engine cylinder and steam chest; and, Fig. 2 is a side elevation thereof at right angles to Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates an oscillating steam engine cylinder, and 2 and 3 the trunnions on which said cylinder is mounted to oscillate.

4 designates the piston, and 5 the piston rod which extends out through the stuffing box 6 in one head of the cylinder.

The valve chest 7 of our invention is incorporated with the cylinder 1 and provided with a side-opening cover 8 so that the slide valve and its concomitant parts may be inserted or removed. The valve chest 7 is interposed between the body of the cylinder and the trunnion 3, as clearly illustrated in the drawing, and said trunnion is hollow as

shown to provide the steam inlet port 9 which diverges and opens into the valve chest 7 at the ends of the wall 10. This wall serves as a bearing for the wear plate 11 and as a balance plate for the slide valve 12. Steam from the chamber formed in the valve chest 7 passes into the cylinder 1 through the oppositely extending inlet passages 13, and the steam exhausts through the port 14 and its connecting port 15 which opens into the hollow trunnion 2.

The valve rod 16 is secured at one end to the slide valve 12 and passes out through a stuffing box in the valve chest 7, the outer end of the valve rod being forked in the present instance as indicated at 17. A pin 18 extends through the members of the fork and secures a roller 19 therein, said roller being accommodated in a slot in a quadrant 20, the fork 17 straddling said quadrant. The quadrant 20 is mounted upon a shaft or axis 21 which is supported by any suitable means, not shown, and a handle lever 22 is connected to said shaft and is arranged for adjustable connection with a latch plate 23, as by a clamp or set screw.

From the foregoing description in connection with the accompanying drawings, it will be evident that as the cylinder oscillates on its trunnions 2 and 3, the slide valve 12 will have imparted to it a reciprocating motion, through the instrumentality of the valve rod 16 and its cam-like engagement with the quadrant 20. By having the quadrant 20 adjustable on the axis 21, the handle 22 may be moved so as to swing the quadrant and incline it in an opposite direction from that shown in the drawing whereby to reverse the engine.

Having thus described the invention, what is claimed as new is:

The combination with an oscillating engine cylinder and a steam chest secured thereto and provided at one end with a stuffing box, of a balanced slide valve mounted in said chest, a rigid valve rod connected rigidly to said valve at one end and passing outwardly through the stuffing box in which it has longitudinal movement, the valve rod being formed at its outer end with a fork, a quadrant provided with a slot and straddled by said fork, a roller journaled in said fork

and received in the slot of said quadrant, a shaft upon which said quadrant is mounted, the shaft being arranged to turn about its longitudinal axis whereby to change the position of the quadrant, a handle rigidly connected at one end to said shaft, and a slotted latch plate with which the other end of said handle is connected.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN F. LINDBERG. [L. S.]  
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