

J. FITZGERALD.
OSCILLATING ENGINE VALVE.
APPLICATION FILED DEC. 31, 1910.

994,582.

Patented June 6, 1911.

Fig. 1.

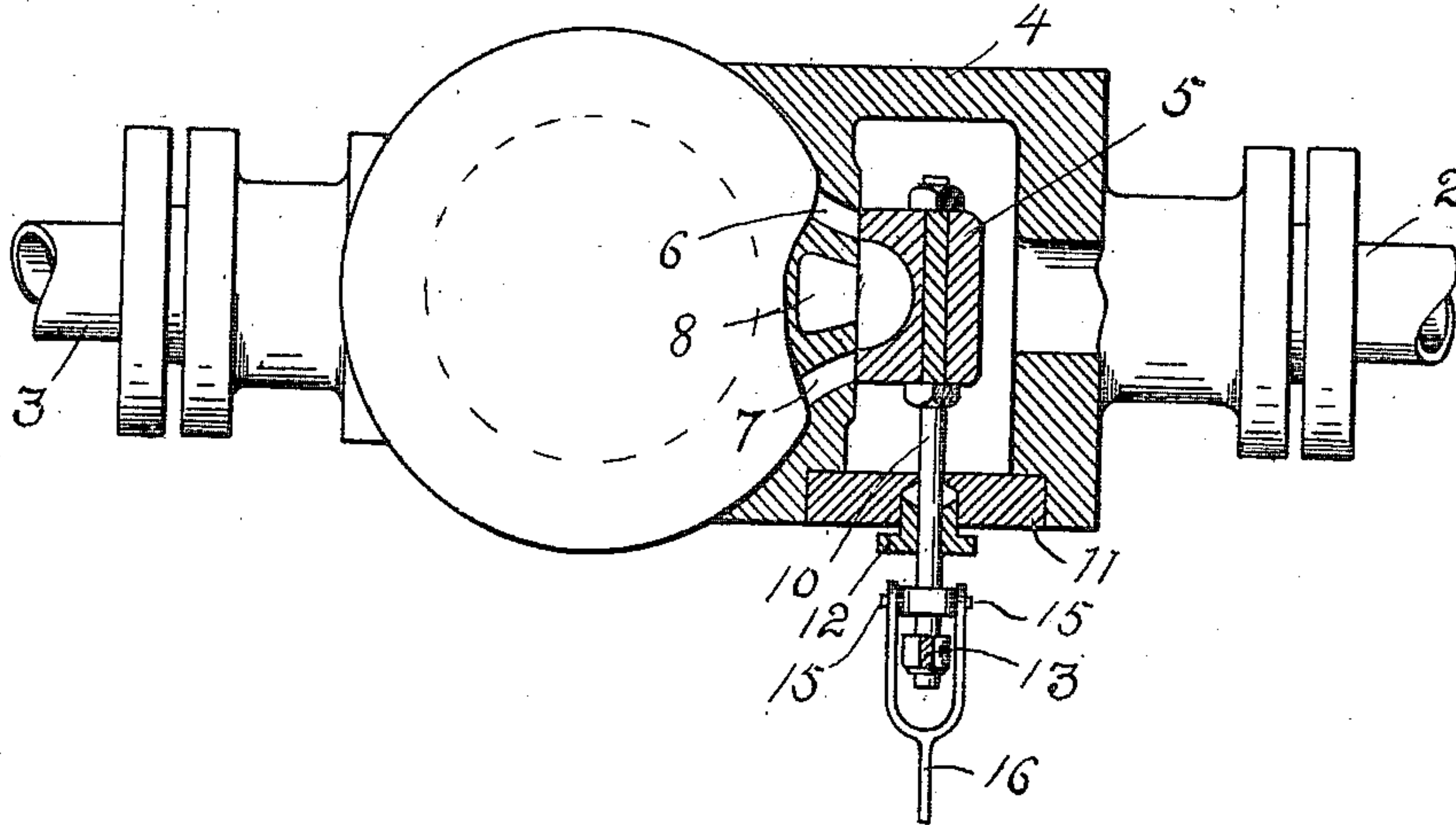
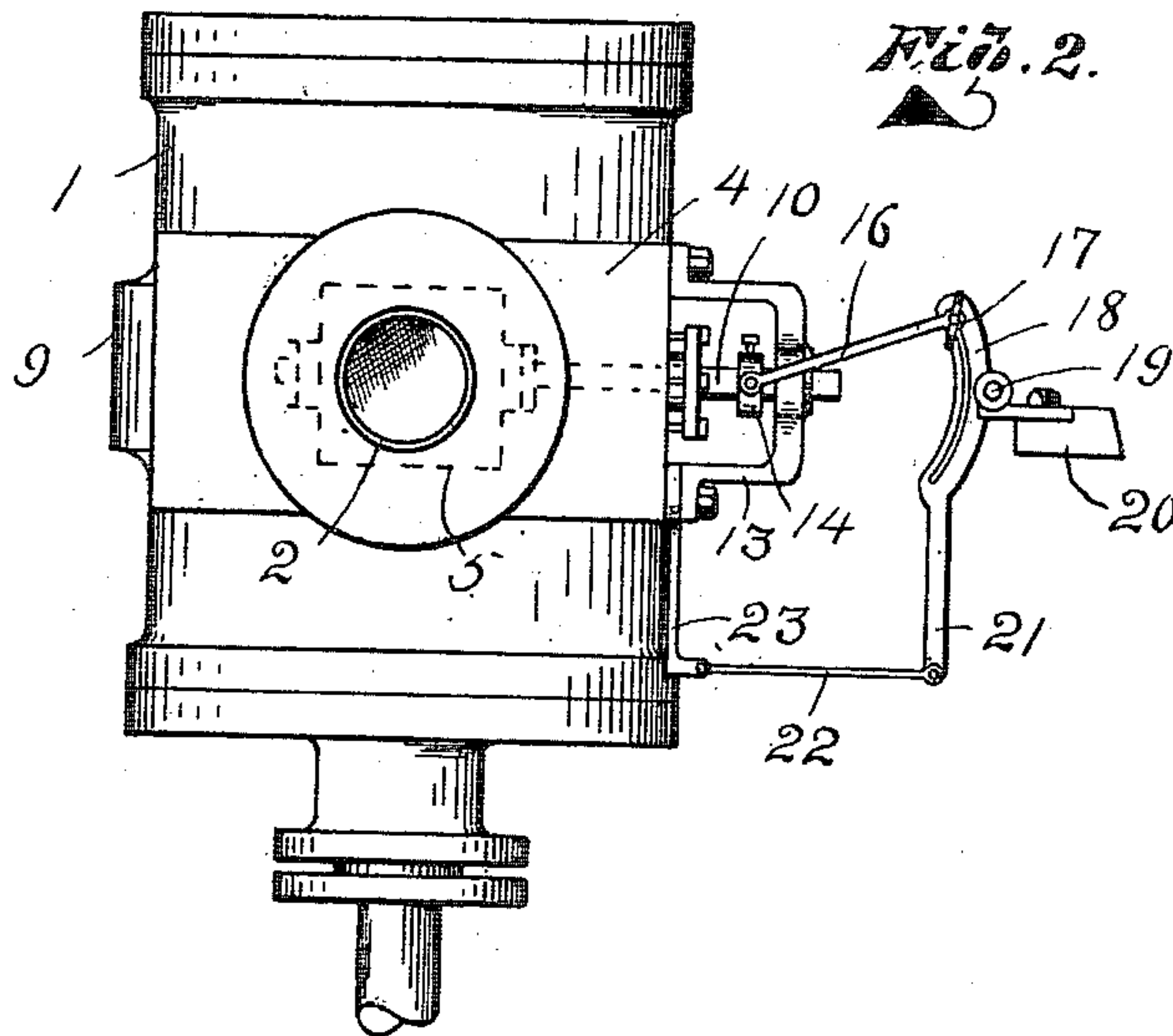


Fig. 2.



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JAMES FITZGERALD, OF WEST DULUTH, MINNESOTA.

OSCILLATING-ENGINE VALVE.

994,582.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed December 31, 1910. Serial No. 600,302.

To all whom it may concern:

Be it known that I, JAMES FITZGERALD, a citizen of the United States, residing at West Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Oscillating-Engine Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in steam valves for engines, and pertains particularly to valves for oscillating engines.

The object of my invention is to provide a valve for oscillating engines in which the same is operated by the oscillation of the engine cylinder.

Another object of my invention is to provide a valve for an engine of this character in which the friction is greatly reduced and thus requiring less power to operate the same.

A still further object of my invention is to provide a more simple, cheap and effective valve which can be readily adjusted and by which the engine can be reversed.

In the accompanying drawings Figure 1 is an end view of an oscillating engine, showing my valve applied, the steam chest and valve being in section. Fig. 2 is a side elevation of Fig. 1, showing the valve operating mechanism.

In the drawings the numeral 1 designates an oscillating steam engine cylinder pivotally supported upon the trunnions 2 and 3, and 4 represents the steam chest which is formed integral with one side of the cylinder 1, and which supports one of the trunnion sockets as clearly shown in Fig. 1 of the drawings. The trunnions 2 and 3 are composed of hollow tubing, the former acting as the steam inlet to the steam chest 4, and the latter as the exhaust as is common in such engines.

5 is what is known as a D-shaped slide valve which reciprocates within the steam chest 4, over the steam ports 6 and 7, which governs the action of the steam within the cylinder, and the exhaust port 8 which extends from the steam chest to the opposite side of the cylinder through the hollow exhaust belt 9, and thence through the exhaust trunnion 3. The entrance to the ports 6, 7 and 8 is arranged transverse the cylinder which is different from the ordinary custom and the valve stem 10 extends laterally through the chest cover 11, in which a tight

joint is effected by means of a suitable stuffing gland 12, and is operated by means of a suitable lever connection to one end of the cylinder 1, which is described as follows: A U-shaped yoke 13 is attached to the outer end of the steam chest through which the valve stem 10 extends and which acts as a support for the stem. Intermediate the yoke and the steam chest is securely attached to the stem 10 a suitable hub 14 having radial trunnions 15, extending therefrom and which carry the forked end of the pitman 16, the opposite end 17 of the pitman being adjustably attached in any desired manner to the slotted quadrant 18, pivotally mounted at 19 upon a fixed support 20. The lower end 21 of the quadrant 18 is elongated and extends to a point about opposite the lower end of the cylinder where it is attached to one end of the rod 22, the opposite end of said rod being pivotally connected to the lower end of the depending arm 23, which is attached to one edge of the steam chest, preferably under one foot of the yoke 13, or the rod 22 may be directly connected to the cylinder 1; thus it is evident a reciprocating motion is imparted to the valve 5 by the action of the cylinder when oscillating, which motion may be accurately governed by the adjustment of the outer end of the pitman 16 upon the quadrant 18, or the action of the engine may be reversed by adjusting the pitman to the opposite end of the quadrant, which is well understood in engineering practice.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. The combination of an oscillating cylinder, of a slide valve mounted transverse the cylinder, the valve stem carried by the valve and extending out through the cylinder, a yoke carried by the outer face of the cylinder through which the valve stem passes, a segmental member intermediately pivoted to a support independent of the engine cylinder, said segmental member having a segmental slot, a link adjustably secured in said segmental slot and having a bifurcated end straddling the yoke and adjustably secured to the valve stem, substantially as shown and described.

2. The combination with an oscillating engine cylinder, of a slide valve mounted transverse the cylinder, a valve stem carried by the valve and extending beyond the cyl-

inder, a yoke carried by the cylinder and through which the outer end of the valve stem passes, a segmental member intermediately pivoted to a support independent of the cylinder and having a segmental slot therein, a link adjustably secured to said segmental member within the slot and having a bifurcated inner end straddling the yoke and adjustably secured to the valve stem, and a link pivotally connected to the lower end of the said segmental member and the cylinder, whereby the valve is reciprocated by the oscillation of the cylinder.

3. The combination with an oscillating engine cylinder, of a slide valve mounted transverse the cylinder, a valve stem carried by the valve and extending out through the cylinder, a yoke carried by the cylinder and through which the valve stem passes, a segmental member intermediately pivoted to a support independent of the cylinder and having a segmental slot, a link adjustably secured in said segmental slot and having a bifurcated inner end straddling the yoke, a collar adjustably mounted upon the valve stem within the yoke and pivotally connected to the bifurcated ends of the link, a downwardly extending arm carried by the said segmental member, a downwardly extending arm carried by the cylinder adjacent the yoke, a link pivotally connecting

the two downwardly extending arms whereby the valve is reciprocated transverse the cylinder by the oscillation of the cylinder.

4. The combination with an oscillating engine cylinder, of a slide valve mounted transverse the cylinder, a valve stem carried by the valve and extending out through the cylinder, a yoke carried by the cylinder and through which the valve stem passes, a segmental member having its concaved portion facing the cylinder and having its outer convex face at the center intermediate its ends, said segmental member having a segmental slot, a link pivotally mounted in said segmental slot and adapted to be adjusted therein, the opposite end of the link being bifurcated, the inner end straddling the yoke and pivotally connected to the valve stem, a downwardly extending arm rigidly carried by said segmental member, and a link pivotally connecting the lower end of the arm and the cylinder, whereby the valve is reciprocated transverse the cylinder by the oscillation of the cylinder.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JAMES FITZGERALD.

Witnesses:

NORMAN E. LAMOND,
S. GEO. STEVENS.