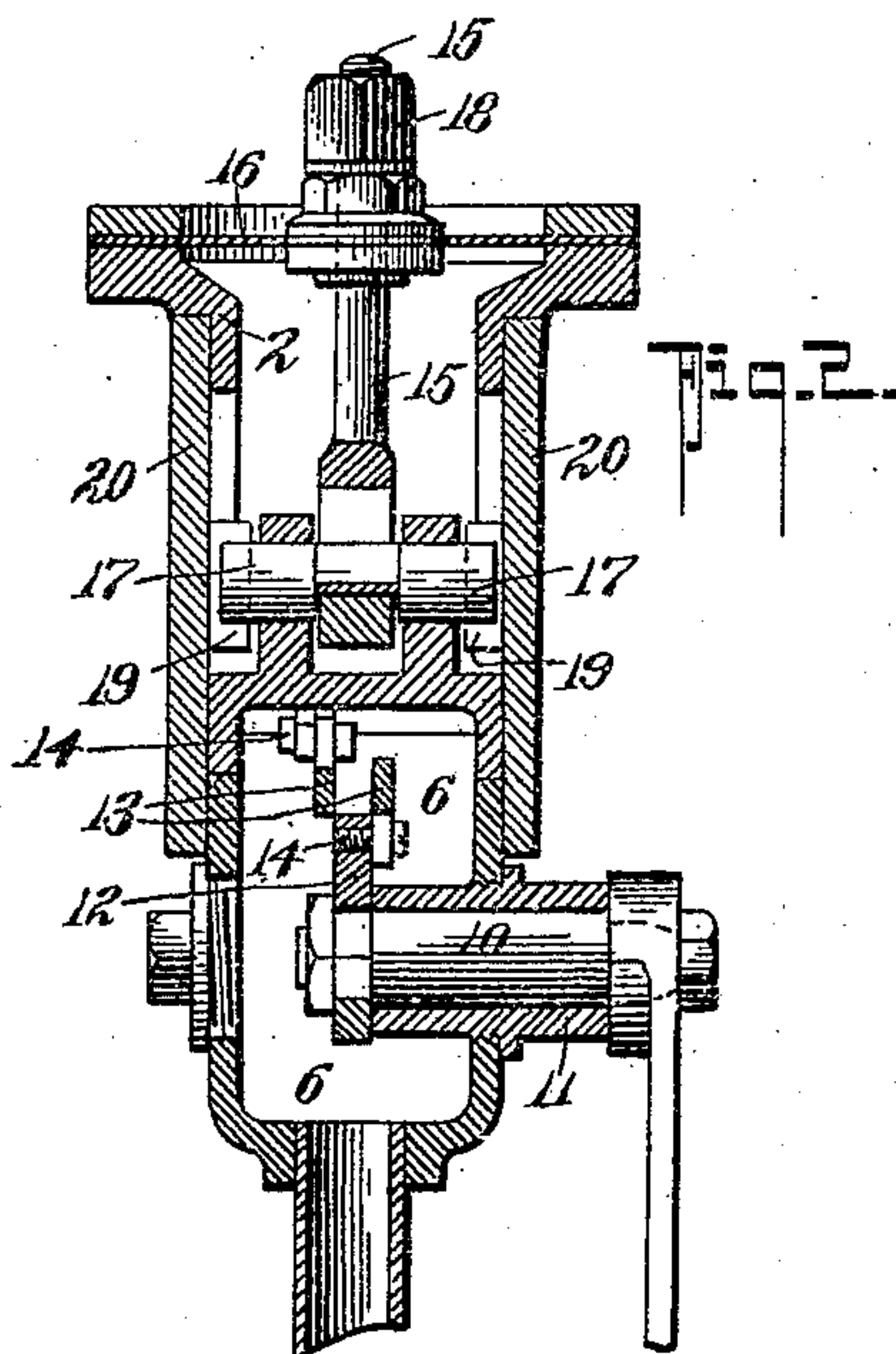
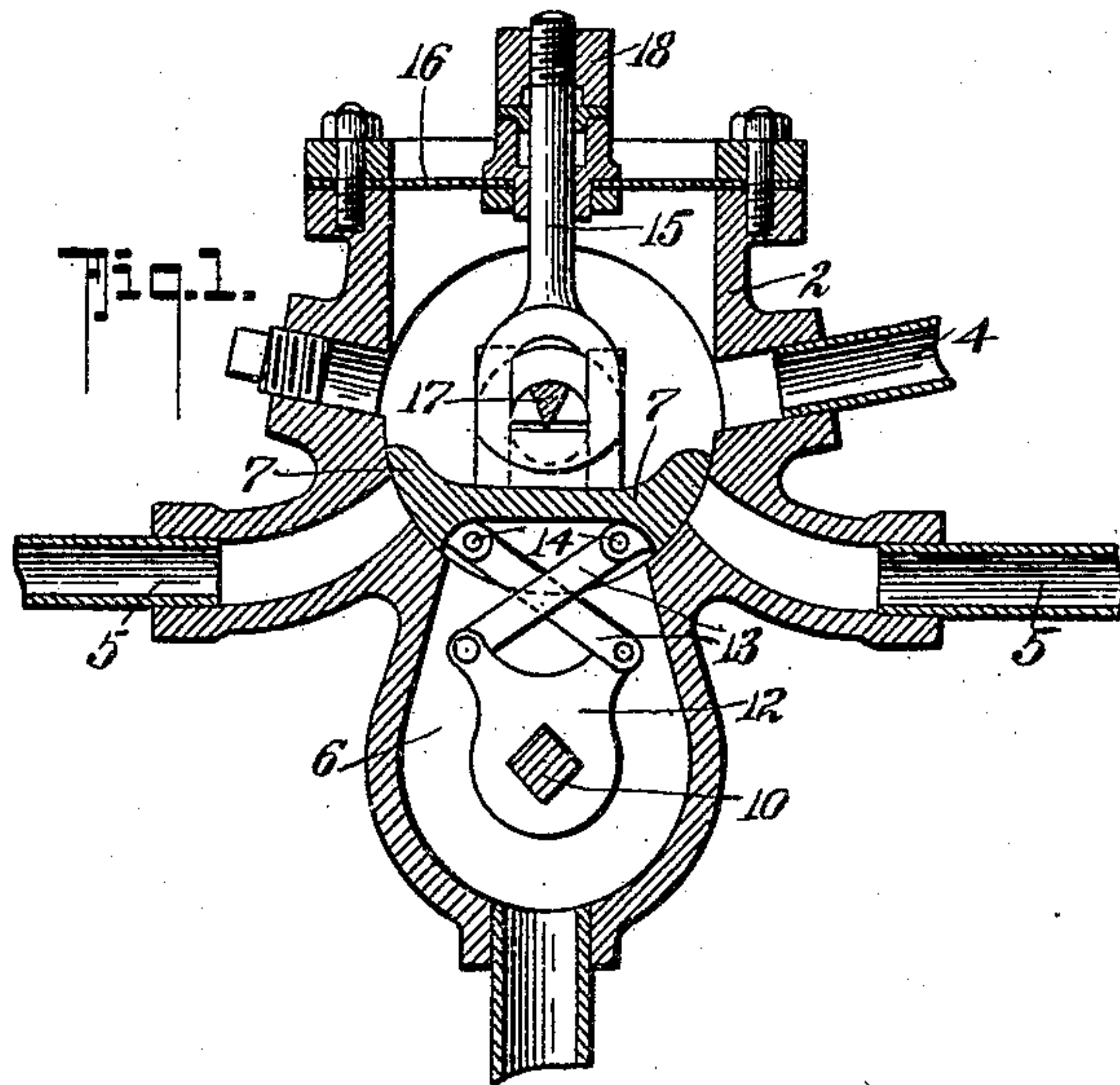


J. M. SISSONS.
 FLUID PRESSURE VALVE.
 APPLICATION FILED SEPT. 18, 1908.

929,033.

Patented July 27, 1909.



WITNESSES:

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JONATHAN M. SISSONS, OF CRANBROOK, BRITISH COLUMBIA, CANADA.

FLUID-PRESSURE VALVE.

No. 929,033.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed September 18, 1908. Serial No. 453,695.

To all whom it may concern:

Be it known that I, JONATHAN M. SISSONS, a citizen of the Dominion of Canada, residing at Cranbrook, in the Province of British Columbia, Canada, have invented a new and useful Fluid-Pressure Valve, of which the following is a specification.

This invention relates to an improvement in steam engine valves of that class wherein a valve having a face forming a segment of a cylinder or slightly tapered cone is oscillated on a corresponding port face, to admit steam or other fluid pressure to an engine cylinder or to exhaust it therefrom; and the improvement is directed to the means whereby the valve is operated from the exhaust side instead of from within the steam exposed side of the valve, to the means whereby the valve is supported within the valve chamber and to the means whereby the pressure of the steam on the valve against the port face is counterbalanced, all of which features reduce the frictional resistance of operation of the valve.

The invention is fully described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a section of a valve and its associated parts on a plane across the axis of oscillation, and Fig. 2, a section on a plane parallel to the same indicated by the line A A in Fig. 1.

In these drawings 2 represents the casing of the valve, which may form a part of the casting of the engine cylinder or be separate therefrom and connected to each end by the steam pipes 5, 3 is the valve chamber, 4 the steam admission pipe, 5 the steam ports to each end of the engine cylinder, 6 the steam exhaust port and 7 the oscillating valve which by uncovering either steam port 5 admits steam to one end of the engine cylinder or the other, or by connecting either of the steam ports 5 to the exhaust port 6 permits the release of the steam from the cylinder. Instead of the spindle 10 by which the valve 7 is operated being connected to it on the side of the valve exposed to the steam pressure, as is the usual manner, that spindle is passed through a bearing 11 into an enlargement of the exhaust port 6 adjacent to the valve, and secured to the inner end of this spindle 10 is a short double ended lever 12, the ends of which are cross connected to the valve 7 in its exhaust recess by links 13 and pins 14. By this means the valve may

be oscillated on its seat to admit or release steam to or from the cylinder and the necessity is avoided of providing a tightly packed gland for the operating spindle 10 as the bearing through which it passes is merely required to stand the slight pressure of the exhaust.

To sustain the valve 7 against the action of the steam on its area pressing it tightly on its port face, the valve is connected by a stirrup bolt 15 to a flexible metal diaphragm 16 which is exposed to the pressure of the steam in the opposite direction to that acting on the valve, and the area of the diaphragm is proportioned to the area of the valve over its ports so that the pressures approximately counterbalance.

As shown in Fig. 1, the attachment of the stirrup bolt 15 to the diaphragm 16 is made in a manner that will permit of adjustment of the distance from the diaphragm to the axis of oscillation by means of an external nut 18 threaded on the bolt.

In order to allow freedom of movement of the valve 7 on its axis with a minimum of friction the connection of the valve 7 to the stirrup bolt 15 is made by a pin 17 secured to the back of the valve and having a V edge contact bearing in the eye of the stirrup, and to avoid the possibility of distortion of the valve on its seat during adjustment by the nut 18 the ends of the pin 17 are produced laterally to engage projections 19 from the inside of the covers 20 which close the valve chamber 3. By this manner of construction the necessity of a tightly packed gland for the valve operating spindle 10 is dispensed with and the consequent friction avoided. The friction of the valve on its seat is also reduced to a minimum as the pressure of the steam on its back is counterbalanced by that in the opposite direction on the diaphragm, and the V contact of the bearing in the connection between diaphragm and valve is such as to offer no frictional resistance to the oscillation of the valve.

The valve is not only applicable for use on a steam engine or pump, but where the valve requires to be operated by hand power as in a steam hammer or the like, the advantage of an easy working valve will be manifest.

Having now particularly described my invention and the manner of its application, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. In an oscillating fluid pressure valve, means for oscillating said valve over its admission and exhaust ports said means comprising a stem passing from the outside to
5 within the exhaust cavity, a double ended lever secured to the inner end of said stem, and links connecting the ends of this lever to the walls of the exhaust cavity of the valve.
- 10 2. In an oscillating fluid pressure valve, means for relieving said valve of the pressure on its back pressing it to its port face, said means comprising a flexible diaphragm on which the fluid pressure can act to counter-
15 balance that pressing the valve to its seat, and means for connecting said diaphragm to said valve.
3. In an oscillating valve, means for relieving the valve of the pressure pressing it
20 against its port face, said means comprising a flexible diaphragm against which the fluid

pressure can act in a direction opposite to that on the valve and means for connecting the diaphragm to the valve said means having a V bearing on the axis of oscillation. 25

4. In an oscillating valve, means for operating it from within the exhaust and means for relieving the valve of the pressure on its port face, said means comprising a flexible diaphragm against which the fluid pressure
30 can act in a direction opposite to that on the valve, means for connecting the diaphragm to the valve and means external to the valve casing for adjusting such connection.

In testimony whereof I have signed my
35 name to this specification in the presence of two subscribing witnesses.

JONATHAN M. SISSONS.

Witnesses:

ARCHIE McDONELL,
W. H. TAYLOR.