3 Sheets--Sheet 1.

# H. P. JONES.

## Oscillating Steam-Valve.

No. 163,497. Patented May 18, 1875

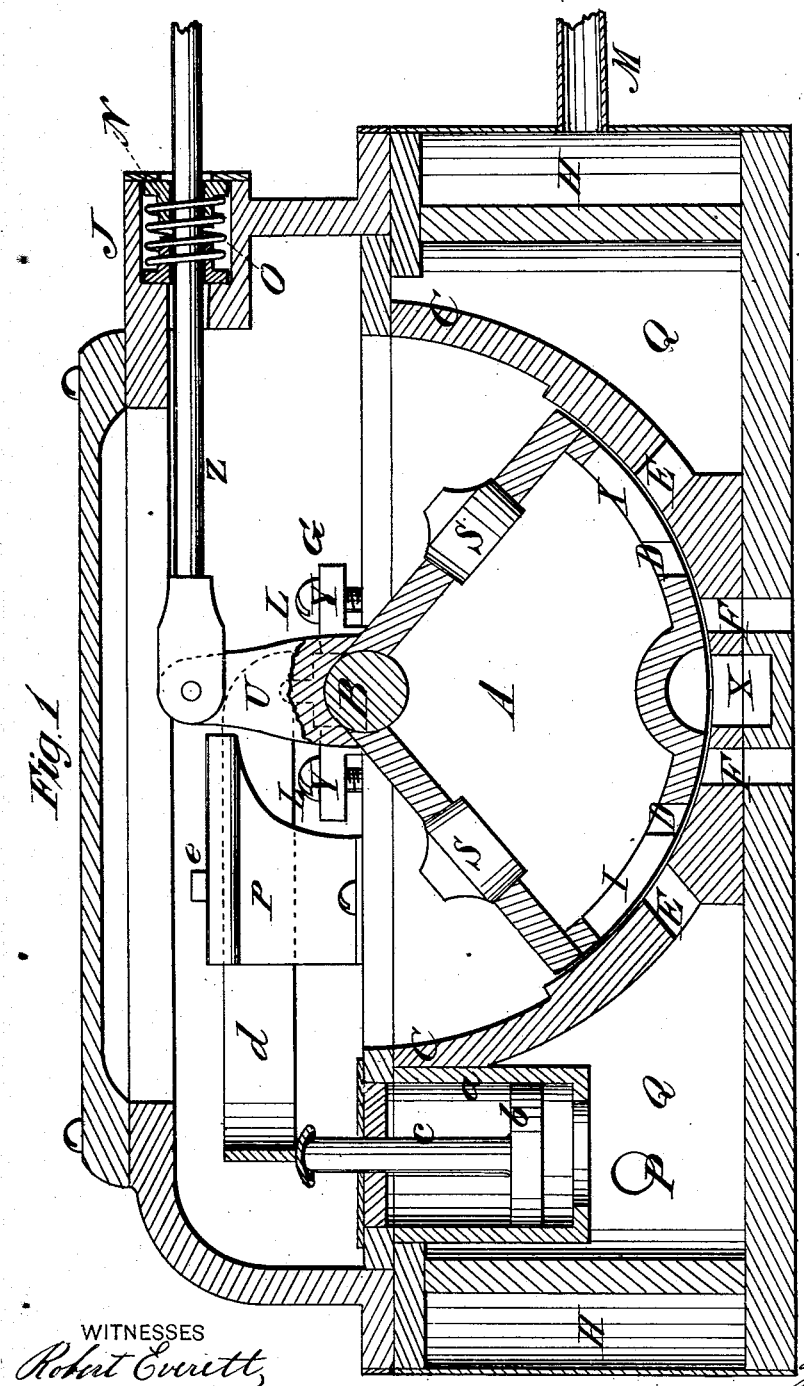

Fig. 1.

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## Oscillating Steam-Valve.

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*Fig. 2*

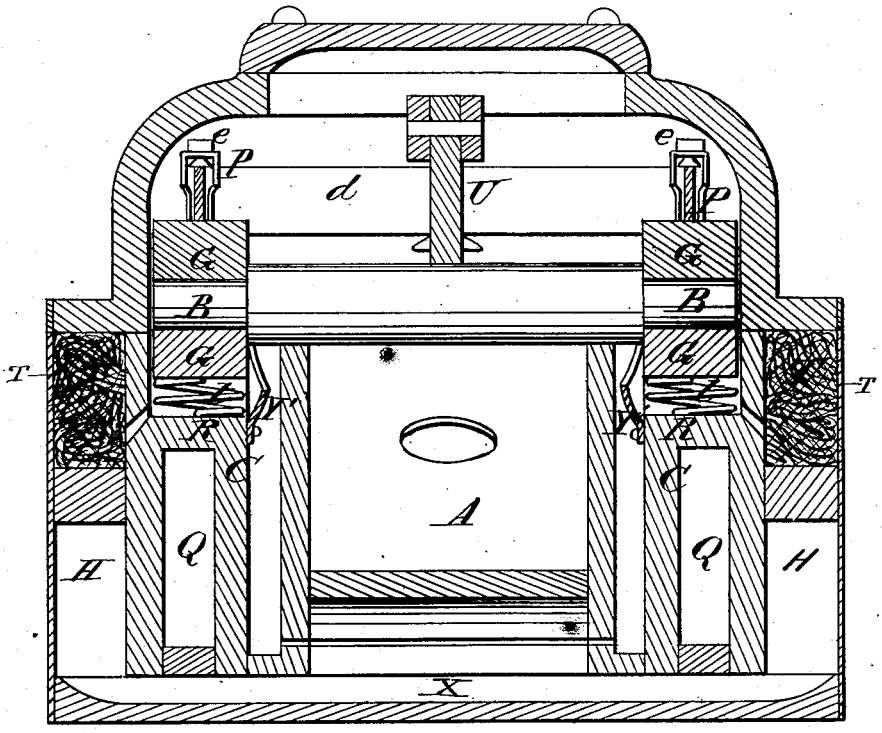
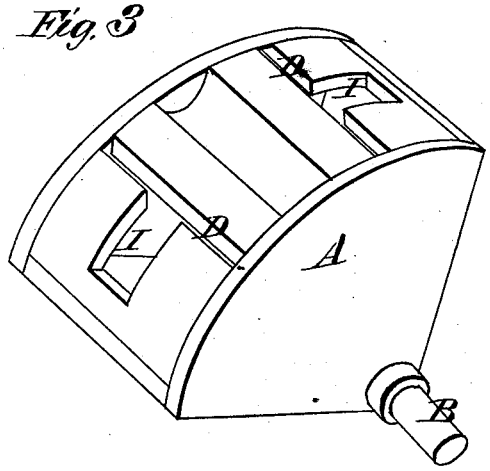



*Fig. 3*

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# H. P. JONES.

## Oscillating Steam-Valve.

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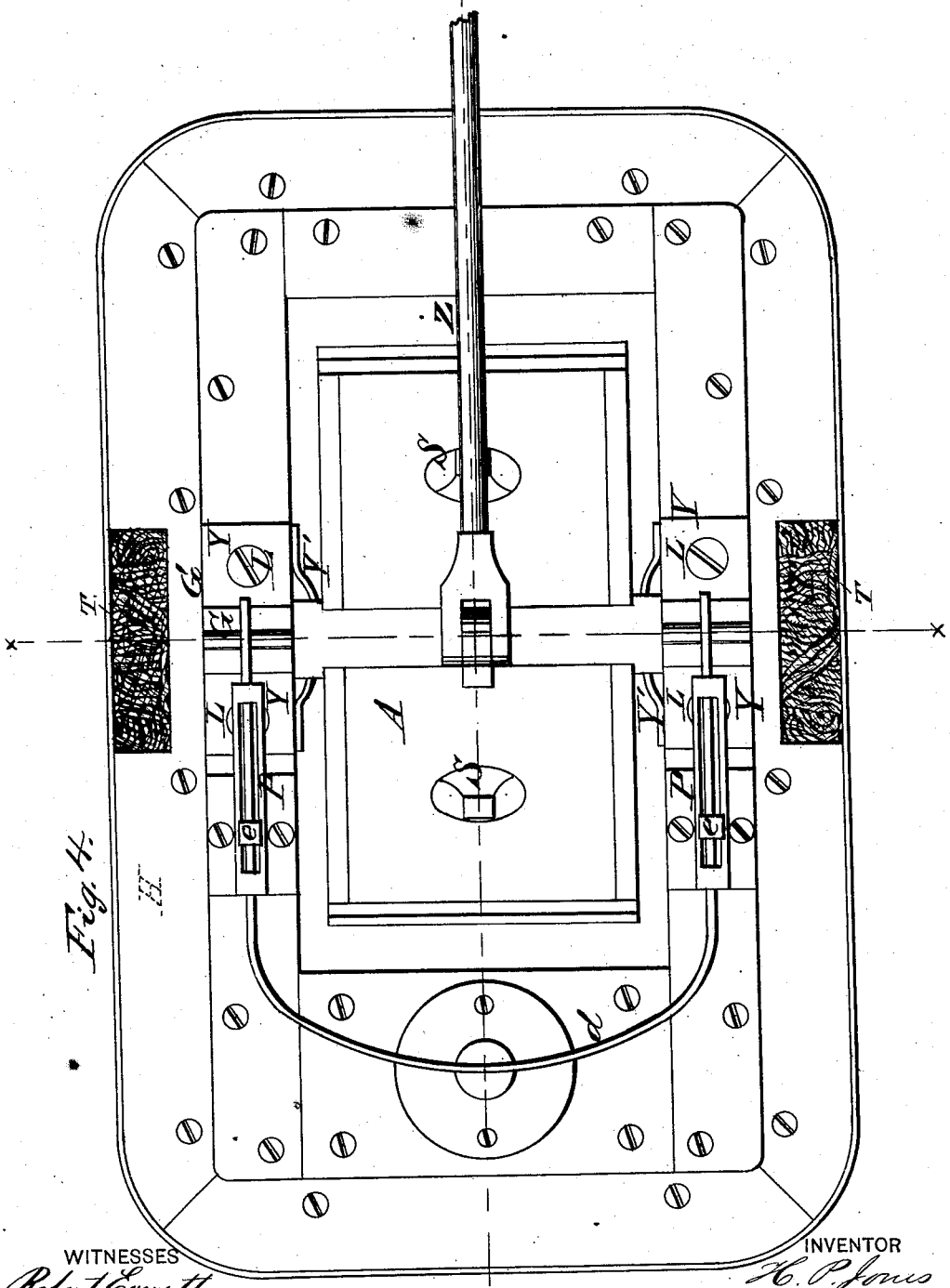

Fig. 4.

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# UNITED STATES PATENT OFFICE.

HARVEY P. JONES, OF KEOKUK, IOWA, ASSIGNOR OF ONE-HALF HIS RIGHT TO WOLF H. ANDERSON, OF ROCK ISLAND, ILLINOIS.

## IMPROVEMENT IN OSCILLATING STEAM-VALVES.

Specification forming part of Letters Patent No. **163,497**, dated May 18, 1875; application filed April 3, 1875.

*To all whom it may concern:*

Be it known that I, HARVEY P. JONES, of Keokuk, in the county of Lee and State of Iowa, have invented a new and valuable Improvement in Steam-Valves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a longitudinal vertical section of my device. Fig. 2 is a transverse vertical sectional view of the same, and Fig. 3 is a detail view. Fig. 4 is a plan view.

The object of my invention is to improve the steam-valve, for which Letters Patent of the United States were granted to me on the 9th day of September, 1873; and the nature of my invention consists in a novel contrivance for adjusting the valve to its seat as the degree of expansion of these parts requires; also, in a steam-lever arrangement for holding the valve-steam tight on its seat, and taking up lost motion in the journal-boxes of the valve trunnions, as will be hereinafter explained.

In the annexed drawings, A designates a valve of quadrantal form, having trunnions B B, which support it within the box C. This valve is made hollow in order to serve as a reservoir for supplying the cylinder with steam, and this valve has two inlet-ports, D D, from which slots I I extend at right angles, as shown in Figs. 1 and 3, the required distance on the face of the valve, which slots give the ports the form of the letter T. The object of the slots I I is that the steam may not be prevented from entering the hollow valve A through the steam-ways E E when this valve is oscillating. The valve A supplies the cylinder of the engine with steam from the ports D D, the steam passages F F taking the steam alternately from these ports D D. Passages E E connect the valve-chamber with the hollow-walled box C, and this box receives steam from the boiler through steam-pipe P. The box C allows the steam to circulate on all sides of the valve-seat in order to cause this seat to expand equally in all of its parts in the same manner as the valve does by reason of the introduction of steam into its interior. This uniform expansion of the parts causes the valve to work without binding on the seat. The hollow-walled box C has two hollow spaces; the space Q, which surrounds the valve and seat, holds live steam received from the boiler, and the outside space H is for receiving the exhaust steam, which is conducted through the passages *x* from beneath either end of the valve into the exhaust-chamber H, the steam circulating on all sides of the box C by means of this chamber H, thus preventing the live steam from condensing. The hollow space H serves as a receptacle for arresting grit or dirt of any kind, and preventing it from being drawn back into the cylinder or under the valve when steam is shut off and the piston still continues to move. As the grit or dirt of any kind enters the space H through the exhaust-pipe M, it strikes against the end of the inside partition, where it is checked and caused to fall. When the exhaust takes place the grit is swept out by the steam.

The box C has square pillow-blocks R R cast in the upper edge, of suitable size for receiving the valve-journal adjustable boxes G G. These boxes are so constructed and arranged that the lower boxes receive the upper halves of the boxes, and hold them in place on the valve-journals B B. Said under boxes are provided with flanges Y Y, and through these flanges pass set-screws L L, for the purpose of adjusting the lower halves of the boxes G to the under sides of the valve-journals, and thus regulating the valve on its seat. The bottoms of the pillow-block R, in the edges of the hollow-wall box C, slant outward, for the purpose of carrying the oil-drippings off the journals to the outside waste-cups T, and the flanges Y′, which surround the valve-journals on the inside of box C, serve for guiding the waste oil from the journals to the bottoms of the pillow-block R. I thus keep the valve-seat free from gummy oil. The valve A has an arm, U, rising centrally from its top, for the purpose of having pivoted to it the valve-stem Z, by which the valve is oscillated. The two plug-holes in the sides of the valve, which are closed with plugs S S, afford an opportu-

nity to see how to set the valve. The top part of the valve-box has an improved stuffing-box, J, in one end, of suitable size and shape to admit a two-part spool-shaped follower, N. This spool, being of two parts, admits of the use of a spiral spring, O, between the end flanges, as shown in Fig. 1, which spring forces the sections of the spool against the ends of the stuffing-box, and thus excludes grit or other foreign substance from the valve-chamber. The valve-stem is allowed to receive a slight vibratory motion in the stuffing-box, in order that it may accommodate itself to the movements of the valve.

I will now describe the construction of my steam lever equalizer. A cylindrical piston-shell, *a*, is cast in one end of the hollow-wall box C, for receiving a piston, *b*, on which is a stem, *c*. The lower end of the shell *a* opens into chamber Q, so that the pressure of steam therein will operate to force up the piston. The stem *c* of piston *b* extends up against a bow-shaped lever, *d*, the notched ends of the two arms of which lie upon ridges formed on the upper boxes G G of the valve-trunnions B. P P are two slotted keepers, which are rigidly secured to the top edges of box C, and through which the arms of lever *d* pass freely. The keepers serve to hold lever *d* in place, and also to receive T-shaped fulcrum-pins *e e*, which are adjustable in the slots of the keepers for changing leverage, and which have nuts on them for securing them when properly adjusted.

When the valve is filled with steam, the pressure tends to lift it from its seat; but, by reason of a counteracting pressure on the trunnions of the valve, produced by the upward pressure of steam against the piston *b*, the valve will be held steam-tight upon its seat under all heads and variations of steam, and when steam is cut off the steam-valve is left free to move without binding or chafing the seat, for the reason that springs *t t* will lift it from its seat when the steam-pressure is removed.

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

1. The oscillating valve A, of quadrantal form, having slots D I in its periphery, substantially as described.

2. The adjustable boxes G for journals B, combined with pillow-block R, leading from cups Y into oil-receivers T, substantially as described.

3. Stuffing-box J, combined with the two-part spool N, spring O, and valve-rod Z, substantially as described.

4. The lever *d* and piston *b*, combined with the adjustable boxes G and valve-trunnions B, substantially as described.

5. The adjustable fulcrums *e e* and the keepers P P, combined with valve A, piston *b*, and lever *d*, operated as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HARVEY P. JONES.

Witnesses:

W. C. STRIPE,

BRANCH RAILEY.