(No Model.)

A. B. WOOD.

OSCILLATING STEAM ENGINE.

No. 251,669. Patented Dec. 27, 1881.

Fig. 1.

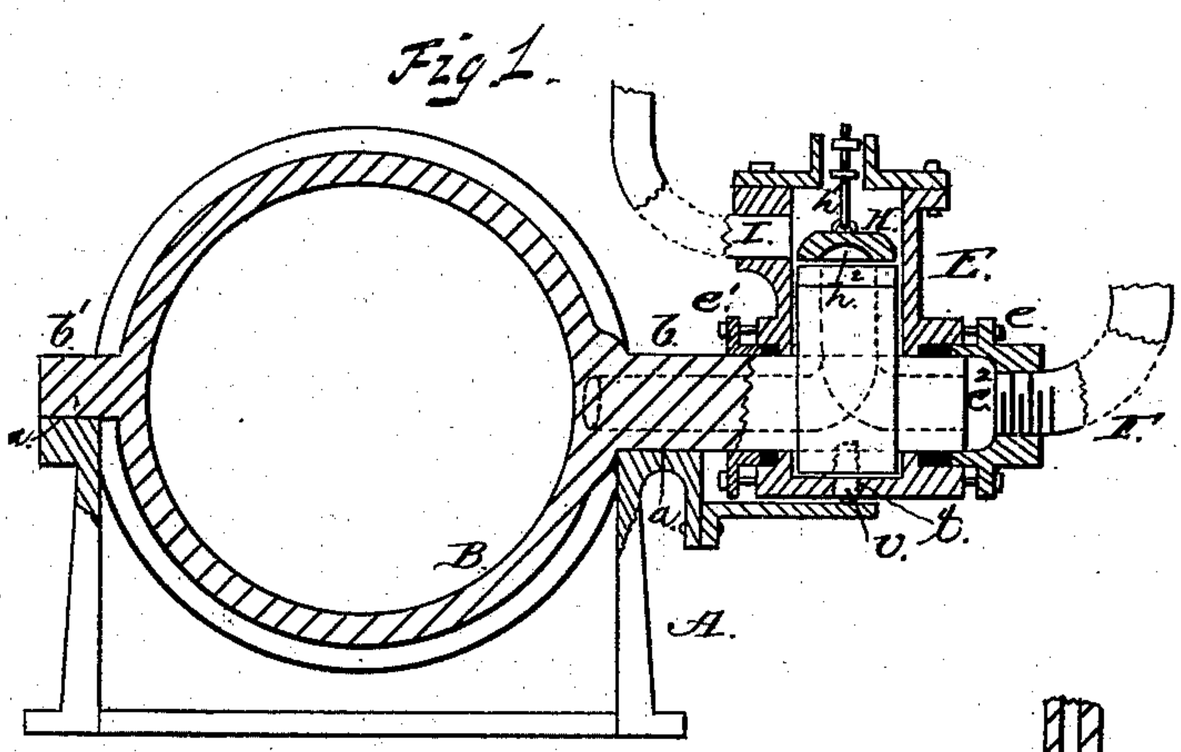


Fig. 3.

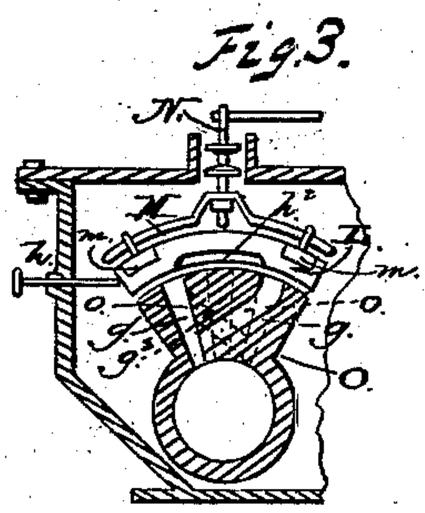


Fig. 5.

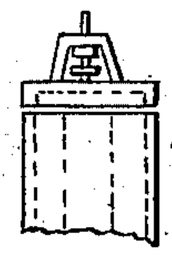


Fig. 4.

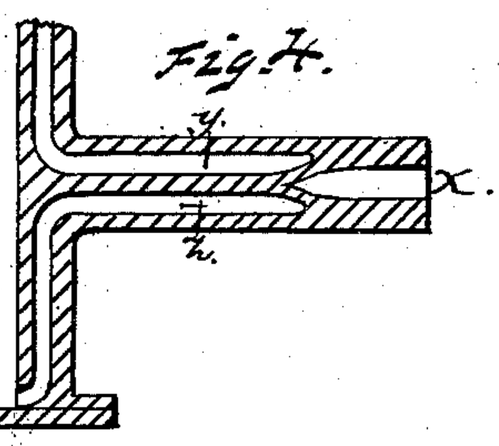


Fig. 2.

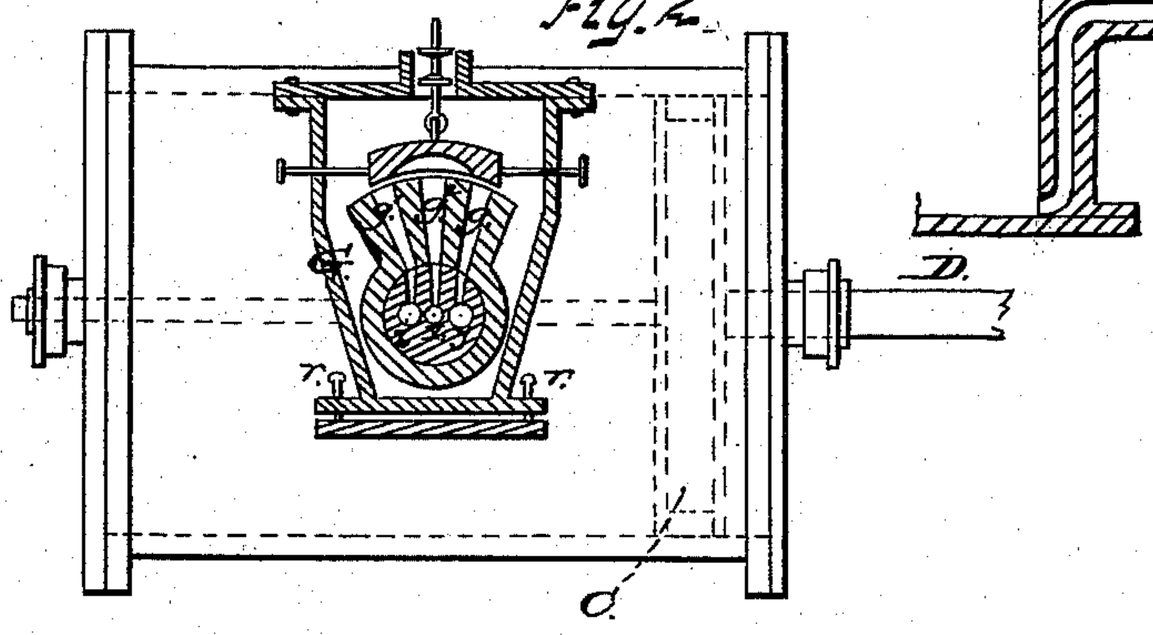
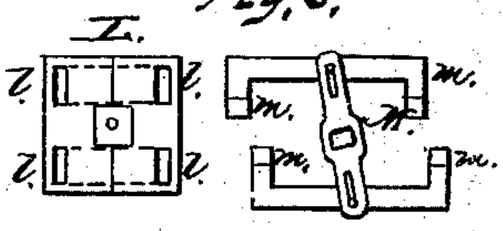


Fig. 6.



WITNESSES
E. F. Bates
Philip. C. Wilcox.

INVENTOR
A. B. Wood,
by Anderson & Smith
his ATTORNEYS

UNITED STATES PATENT OFFICE.

AUGUSTUS B. WOOD, OF FOUNTAIN HILL, ARKANSAS.

OSCILLATING STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 251,669, dated December 27, 1881.

Application filed May 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, A. B. WOOD, a citizen of the United States, resident at Fountain Hill, in the county of Ashley and State of Arkansas, have invented certain new and useful Improvements in Oscillating Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a transverse section through the cylinder and chest. Fig. 2 is a longitudinal section of the valve-seat and accompanying parts. Fig. 3 is a modification of the seat and parts. Figs. 4 and 5 are details. Fig. 6 is a modification of the valve.

This invention consists in the construction and novel arrangement of parts, as hereinafter set forth.

In the annexed drawings, A is the supporting-frame for the cylinder B, the trunnions *b* *b'* of which bear in seats *a* of the frame.

C is the piston-head, and D the piston running into the cylinder through stuffing-boxes, and connected to the crank at the other end. At the trunnion side *b* of the cylinder are the ports, and in said trunnion there are passages *z y*, which lead to the ports, and also an exhaust, *x*. This trunnion *b* passes through a stationary steam-chest, E, provided with packing and glands *e e'*, the former having a recess, e^2, into which the exhaust *x* opens, and from which the pipe F leads to the condenser. Secured upon this trunnion *b* within chest E is the sector-shaped valve-seat G, having the three channels *g g'* g^2 leading from its curved edge to its center and communicating with passages *z y* and exhaust *x*, respectively.

H is a stationary valve adjustable by screws *h h*, held by set-screw *h'*, running from the top of the chest, and provided with the recess h^2, long enough to span two of the channel-openings. This set-screw *h'* passing through the top of the chest has threaded upon it the nuts h^3, between which is the packing. The valve with its stem thus forms a balance-valve. The mouth of the port leading to the cylinder being larger than the opening at the top of the chest, the valve is kept down by the pressure.

A screw, *v*, may be used to secure the sector to the trunnions, passed up through an opening, *t*, in the bottom of the chest, serving also to carry off the water of condensation, and it may be closed by a drain-cock attached to the cylinder frame. The chest is made adjustable in the bracket by screws *r*.

I is the induction-pipe for the steam-chest.

The operation of this device is obvious. Steam entering the port passes alternately into channels *g g'*, into the cylinder operating the piston, out through the other channel, into the valve, down the channel g^2, and out the exhaust *x*, through pipe F, to the condenser, the cylinder rocking as the piston travels. This is for a single-acting engine. To reverse I use the construction shown in Figs. 3 and 4.

The valve L, stationary as before, has the same recess, h^2, but is provided with four openings, *l l'* l^2 l^3, two at each end. These openings are controlled by valves *m m*, operated by bar M, having the handle N.

The valve-seat O is provided with the three channels *g g'* g^2, as before; but while g^2 occupies its same position, the other two are not all across, but at diagonal corners, and oblique channels *o o'* run from the other corners down through the cut, connecting with the bottom of the channels *g g'* at the other end of the cut from that at which the oblique channels open, so that the said channels *g g'* communicate with both ends of the cut at its curved edge.

In this construction, as the engine is being driven in one direction by steam admitted into the valve-seat on one side, it may be admitted on the other side by operating the valves *m*, which cuts off the steam from the direct channel, causing it to flow through the oblique to the bottom of the other direct channel, and entering the cylinder from the other end, reversing the motion.

Instead of the single valve, the double or D valve shown in Fig. 6 may be used.

I claim—

1. In an oscillating steam-engine, the combination of the cylinder, one of the trunnions of which is provided with two eduction-pas-

sages and an exhaust, a steam-chest, a valve-seat in said chest affixed to said trunnion, and provided with channels leading to the eduction-passages and exhaust, and a stationary valve, as set forth.

2. In an oscillating steam-engine, the combination of the cylinder, one of the trunnions of which is provided with two eduction-passages and one exhaust, a steam-chest, a valve-seat in said chest affixed to said trunnion and provided with direct and oblique channels leading to the eduction-passages, an exhaust, and a stationary valve having openings governed by slide-valves, whereby the engine can be reversed, as set forth.

3. In an oscillating steam-engine constructed substantially as shown, a steam-chest having an opening at the top smaller than the port leading to the cylinder, in combination with a balanced valve the adjusting-rod of which passes through the opening in the top, as set forth.

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

AUGUSTUS BALDWIN WOOD.

Witnesses:
W. W. WOOD,
WM. HUGHES.