

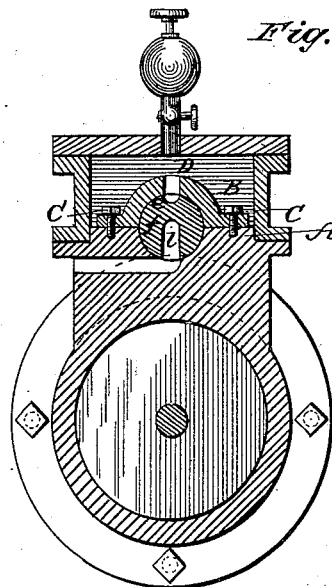
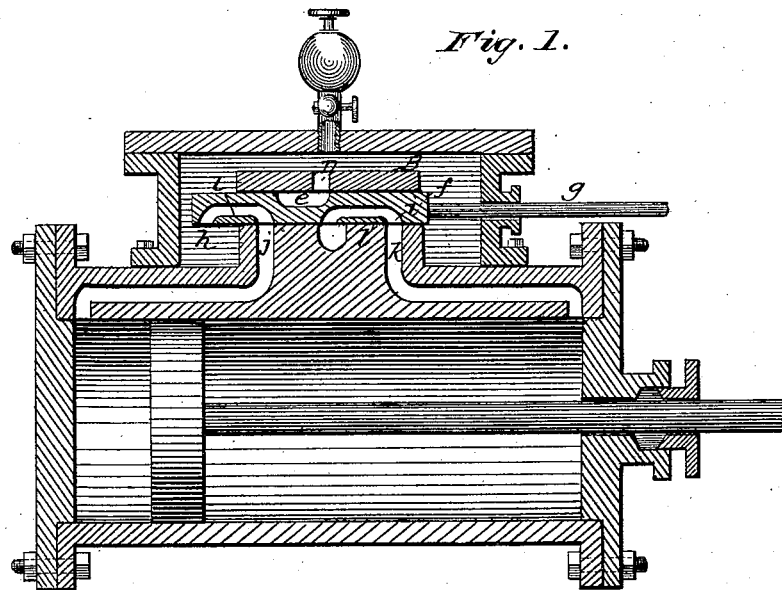
(No Model.)

W. S. ALTER & M. H. IRVIN.

BALANCED VALVE.

No. 266,068.

Patented Oct. 17, 1882.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM S. ALTER AND MATTHEW H. IRVIN, OF FREEPORT, PA.

BALANCED VALVE.

SPECIFICATION forming part of Letters Patent No. 266,068, dated October 17, 1882.

Application filed February 25, 1882. (No model.)

To all whom it may concern:

Be it known that we, WM. S. ALTER and MATTHEW H. IRVIN, of Freeport, in the county of Armstrong and State of Pennsylvania, have
5 invented a new and useful Improvement in Valves for Steam-Engines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of
10 reference marked thereon.

Our invention relates to an improvement in valves for steam-engines; and it consists in making said valve cylindrical, with steam and exhaust ports, said valve being incased in a tubular casing constructed in two parts, and of
15 less length than the valve, and arranged in a fixed position in the steam-chest of the steam-cylinder, the lower half of said casing furnished with openings communicating with the ordinary steam-ports and exhaust-openings of the
20 cylinder, and the upper half of said casing having an opening in it communicating with a steam-space in the upper side of the cylindrical valve, through the medium of which
25 opening and steam-space the upward pressure of the valve is balanced, the whole so constructed and arranged that the valve can be fitted by the turning process and the casing fitted to it by the boring process, well understood by the machinist.
30

To enable others skilled in the art with which our invention is most nearly connected, we will proceed to more fully describe its construction and operation.

35 In the accompanying drawings, which form part of our specification, Figure 1 is a vertical and longitudinal section of the steam-cylinder with its steam-chest and our improvement in valves. Fig. 2 is a vertical and transverse section of same at line *y* of Fig. 1.
40

The cylinder and steam-chest is of ordinary construction, except that the lower half, A, of the casing takes the place of the ordinary valve-

seat of the common form of flat-faced slide-valves. The upper part, B, of the casing is
45 secured to the lower half, A, by means of screw-bolts C, and is furnished with an opening at D, which communicates with the steam-space *e*, made in the upper side of the cylindrical valve *f*, to which is imparted a reciprocating
50 motion through the medium of the valve-stem *g*, which is connected to the usual operating-gear of the engine. In the lower side of the valve are steam-ports *h* and *i*, which alternately communicate with the steam-ports *j* and
55 *k* of the steam-cylinder. On the under side of the cylindrical valve is also exhaust-ports *l*, which are so arranged with relation to the steam-ports of the valve that the exhaust of the steam-cylinder will occur at each movement
60 of the cylindrical valve *f*.

It will be observed that the steam-cylinder takes steam by the valve and its steam-ports projecting beyond the end of the casing. In all other respects the valve works as the ordinary slide-valve.
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The advantages growing out of our arrangement consist in ease and simplicity of construction and its balancing property and facility of repair.
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Having thus described the nature, construction and operation of our improvement, what we claim is—

The cylindrical valve *f*, having steam-ports *h i*, steam-space *e*, and inclosed in a tubular
75 case constructed in two parts, A B, having open ends, and an opening, D, said steam-ports *h i* communicating at each alternate movement of the cylindrical valve *f* with the steam-ports of the cylinder and the exhaust-port *l*, substantially as and for the purpose set forth.
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Witnesses:

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