J. Smart,

Slide Valve.

No. 110300. Patented Dec. 20. 1870.

Fig. 3.

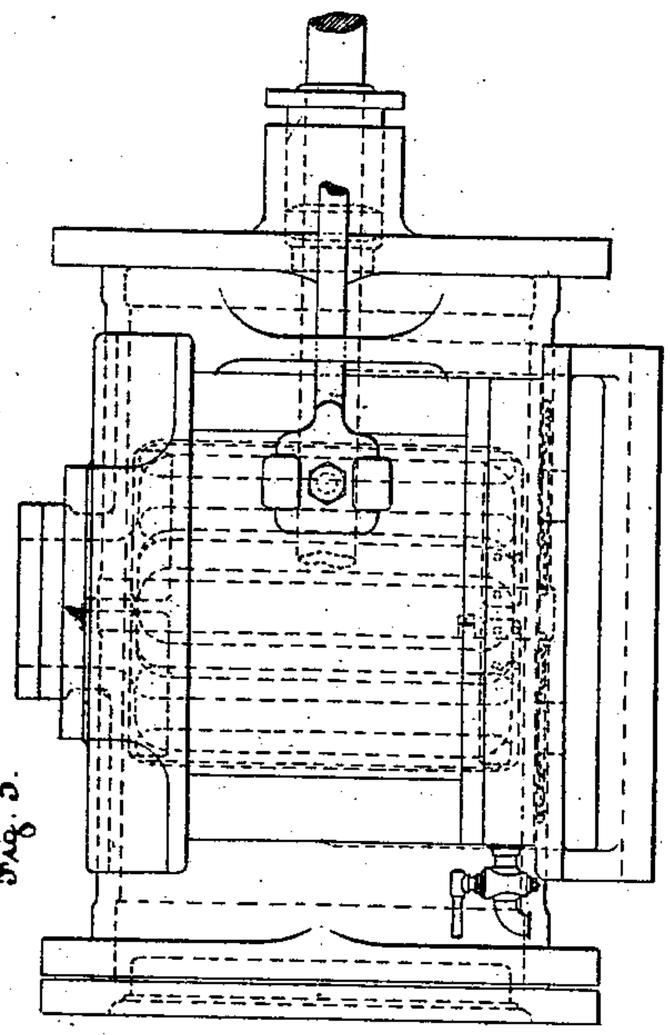


Fig. 7

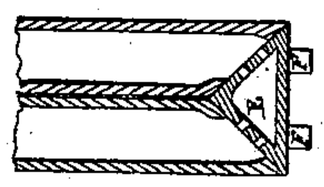


Fig. 5.

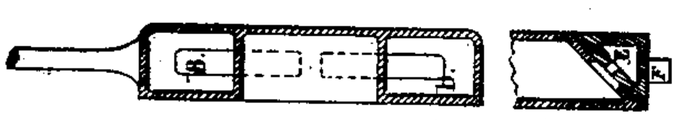


Fig. 4.

Fig. 6.

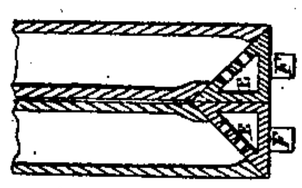


Fig. 1.

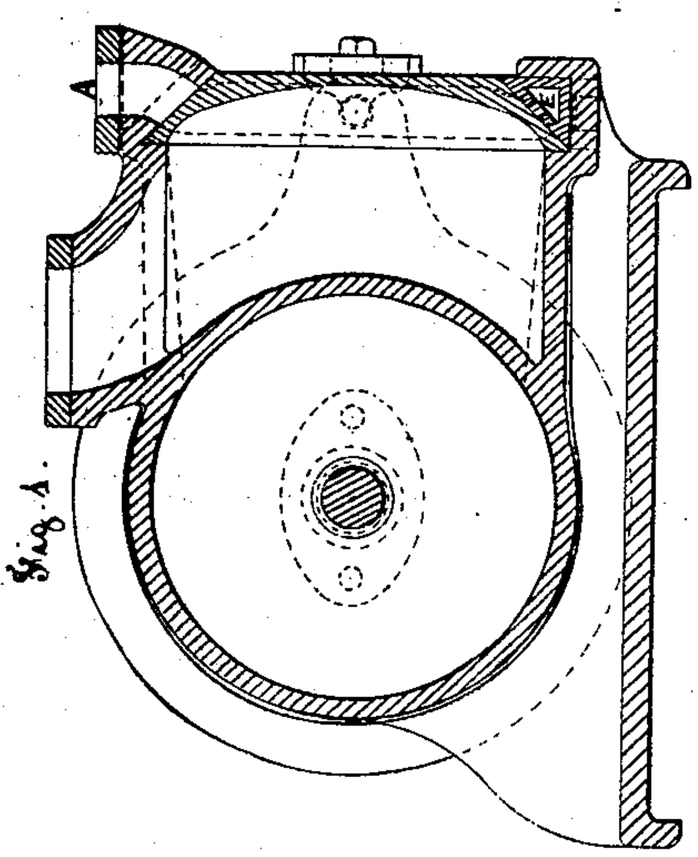
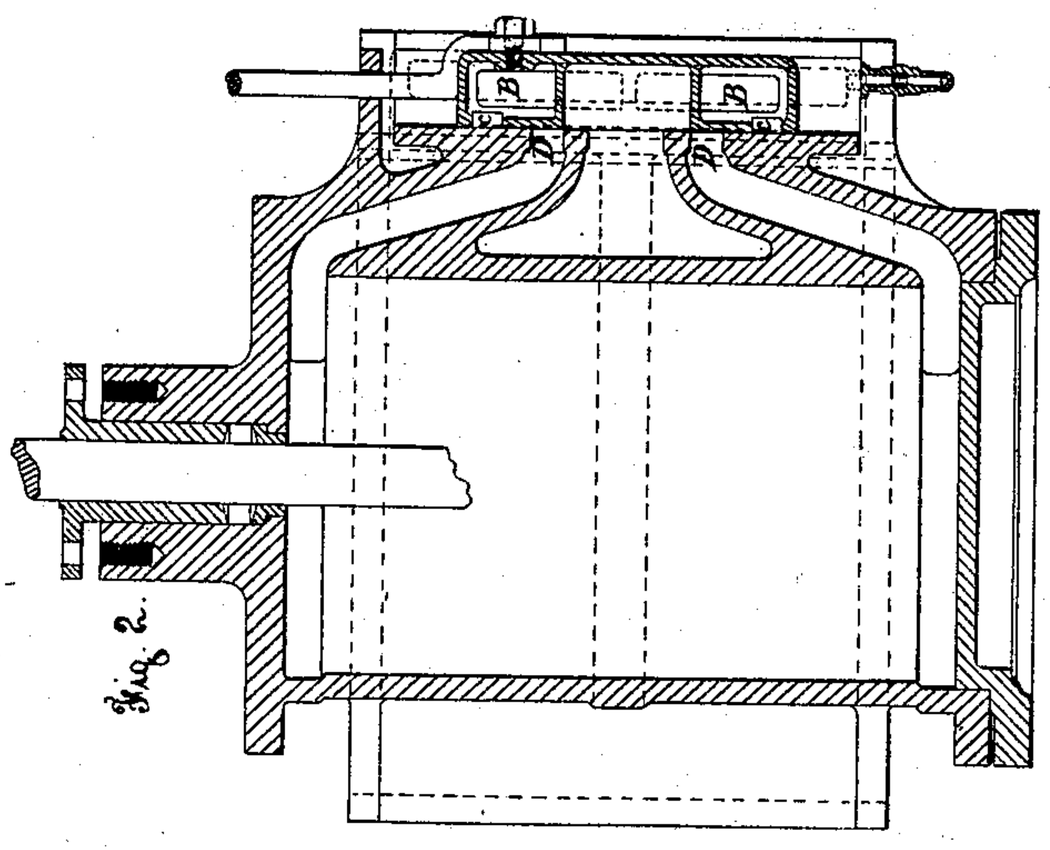


Fig. 2.



James Smart

Lemuel W. Serrell

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Witnesses

Chas H. Smith

Geo. D. Walker

United States Patent Office.

JAMES SMART, OF STRATFORD, ENGLAND.

Letters Patent No. 110,300, dated December 20, 1870.

IMPROVEMENT IN SLIDE-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES SMART, of Stratford, Essex, England, have invented certain new and useful "Improvements in Slide-Valves;" and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The slide-valve is made hollow, the steam passing from one side of the valve through the same, and then through the ports on the cylinder face.

The steam-receiving side of the valve works steam-tight against a corresponding face having an oblong hole, through which the steam enters the valve.

The opposite side of the valve also works steam-tight against a face, and has one or more port-like openings, (but without corresponding ports in the face it works against,) the object of these openings being to relieve the pressure or friction against that face.

The other side may also have such false ports, in addition to the real ports.

Both sides of the valve are formed sloping upward and inward toward the middle.

The side having the false ports has an adjustable surface for it to work against, whereby the valve is made sure to run steam tight on both sides.

The accompanying drawing represents the valve in some of its applications.

Figure 1 is a transverse section of a steam-cylinder fitted with the improved slide-valve.

Figure 2 is a longitudinal horizontal section of the same; and

Figure 3, a side elevation of the same.

The principle will be clearly understood by reference especially to figs. 1 and 2.

The steam enters from the steam-pipe at A, passes through the spaces B and B, and the openings C and C to the top or bottom part D D on the face of the cylinder, which is made of any ordinary construction, the valve being adapted to the same.

The opposite, in this case the lower, side of the valve has false ports of about the same area as the ports on the other side of the valve, as shown in the dotted lines in figs. 1 and 3. This lower side of the valve works against a hollow V-shaped facing-piece, E, shown in outside view in fig. 4. It may be adjusted or pressed against the valve by means of screws or springs.

The condensed water passes into the interior of the adjustable face, thus relieving the valve from water, and consequent pressure. It is drawn off from there by cocks or valves in the ordinary way.

This valve being a perfect equilibrium valve, as practice has shown, and no steam passing from the interior to the back of it, there is no need for the ordinary slide-jacket and cover, a light casing being sufficient to keep the heat in.

Stuffing-boxes and glands are also dispensed with, as shown, and there is no loss of steam outside the valve.

The slide-valve is also easily removed when required.

The steam likewise takes the shortest and most direct rout to the cylinder.

Figure 5 is a section of a valve cast in steel or gun metal, in one, with its spindle.

Figures 6 and 7 show the valve applied to inside cylinders, locomotives, or other steam-engines having one common steam-chest for two cylinders.

The adjustable facing in fig. 6 is the former shown in two pieces, and in fig. 7 in one.

In all cases it is advisable that the facing should be kept in position by projecting lugs F F fitting into corresponding holes or recesses.

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

1. The construction of a slide-valve, having ports or openings on two opposite sides, through which the steam is admitted to the interior of the valve, or through the ports on one side only, the said valve being formed with a chamfer on one or both such sides, substantially as described and illustrated by the accompanying drawing.

2. The construction and arrangement of the hollow steam-chamber, against which the slide-valve works.

3. The arrangement of a hollow facing, against which the slide-valve works, for the purpose of adjustment and draining; and

4. The combination of the slide-valve, steam-chamber, and hollow adjustable facing, substantially as described and illustrated.

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Witnesses:

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