V. FORQUENOT.

Slide-Valve.

No. 161,498. Patented March 30, 1875.

Fig. 1.

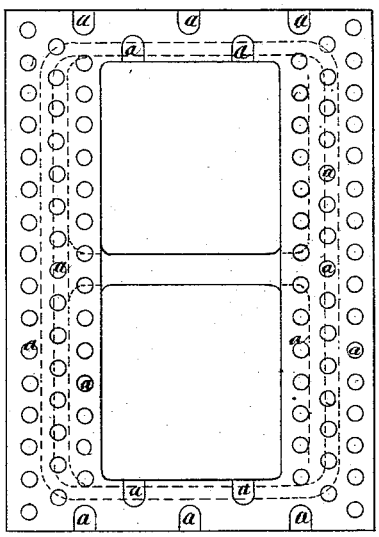


Fig. 2.

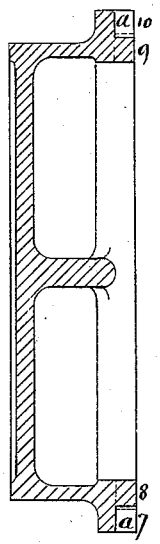


Fig. 3.

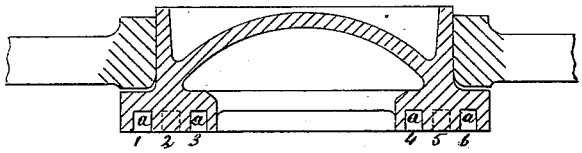


Fig. 4.

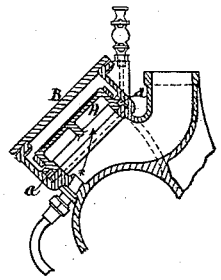
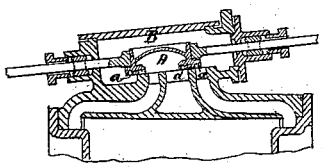


Fig. 5.



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UNITED STATES PATENT OFFICE.

VICTOR FORQUENOT, OF PARIS, FRANCE.

IMPROVEMENT IN SLIDE-VALVES.

Specification forming part of Letters Patent No. **161,498**, dated March 30, 1875; application filed December 24, 1874.

To all whom it may concern:

Be it known that I, VICTOR FORQUENOT, of Paris, France, have invented certain new and useful Improvements in Slide-Valves, of which the following is a specification:

It is well known that the employment of steam at a high pressure is the cause of considerable trouble in machines or engines where the steam is used. Slide-valves and their seats are especially liable to excessive wear, in consequence of the sticking of their surfaces of contact. Attempts have been made to remedy the above-named difficulty by improved modes of lubricating; but this is feasible only where the temperature of the steam is not sufficiently high to modify the constitution of the lubricants employed. In steam-engines, such as locomotives, &c., the rapidity of movement of the mechanism causes the valves and valve-seats to wear rapidly, especially the lateral faces, which are in continuous contact.

My improvements are designed to prevent any abnormal wear and to allow the frictional surface or surfaces of contact to attain a high degree of smoothness and polish, with consequent diminution of resistance to the movement of the valve.

I accomplish my object by the continuous interposition between the surfaces of contact of oil, steam, and water, which the latter carries with it, which result is attained by means of cells or pits formed in the frictional surfaces or under face of the valve, in which cells during the working of the engine steam, water, and oil lodge, and are thence distributed between the valve and seat.

The accompanying drawing represents the manner in which my invention is or may be carried into effect.

Figure 1 is a plan of the valve. Fig. 2 is a transverse section, and Fig. 3 is a longitudinal section, of the same. Fig. 4 is a longitudinal section, and Fig. 5 is a transverse section, of the valve, represented on a reduced scale in connection with a steam-chest, B.

a are the cells hereinbefore referred to, formed in the under face of the valve, both in the parts that cover the ports as well as in the lateral portions of the valve-face.

In Figs. 4 and 5 the valve A is placed in steam-chest B on its seat over the induction and exhaust ports. It is supposed to be in one of its extreme positions.

Referring to the ranges of cells *a*, marked 1, 2, 4, and 6 in Fig. 3, it will be seen that, when the valve is in the position shown in Fig. 5, they will be filled with steam obtained in part from the exhaust and in part from the steam-admission ports.

When the valve shifts or reverses its position, the ranges 3 and 5 of the cells will in turn be brought in place to receive a like supply.

The ranges 7 8 9 10 of cells in the lateral portions of the valve (see Fig. 2) are constantly kept filled with live steam on the one hand, and exhaust steam on the other.

The steam and particles of water and lubricant carried by the steam are, through the medium of these cells, distributed over the frictional surfaces of the valve and valve-seat, with the beneficial effects above set forth.

It will be understood that this improvement has nothing in common with valves in which live steam is admitted to the under face of the valve, or to under faces on the valve, for the purpose of equilibrating the pressure and balancing the valve.

The small cells with which the valve-face is fitted are simply vehicles to effect a more even, constant, and thorough distribution of lubrication between the surfaces of contact.

The arrangement of the cells may vary without departure from my invention.

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

In combination with the valve-seat, the steam-valve A, having that face which is in contact with the valve-seat fitted with numerous separate and independent cells *a*, which, while so formed and arranged as not to permit live steam to interpose and exercise material pressure between the valve and its seat, will take up particles of steam and convey them to the parts of the valve and seat to be lubricated, as shown and described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

V. FORQUENOT.

Witnesses:
EMILE BARRAULT,
AUG. VINCK.