(Model.)

W. S. HUGHES.

Slide Valve.

No. 240,719. **Patented April 26, 1881.**

Fig. 1.

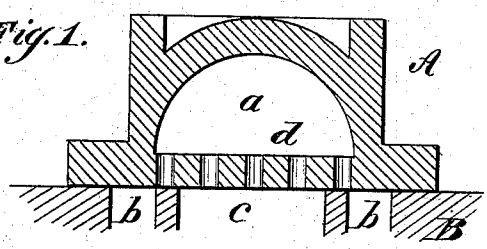


Fig. 2.

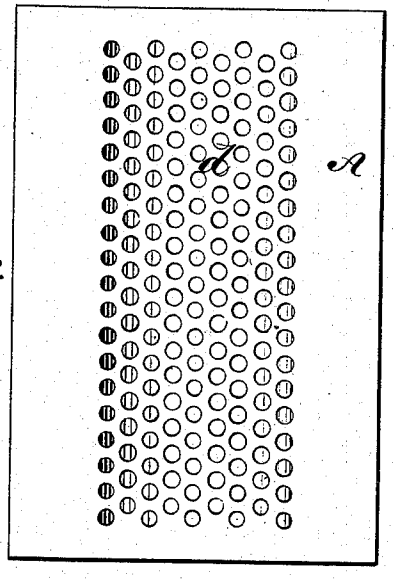
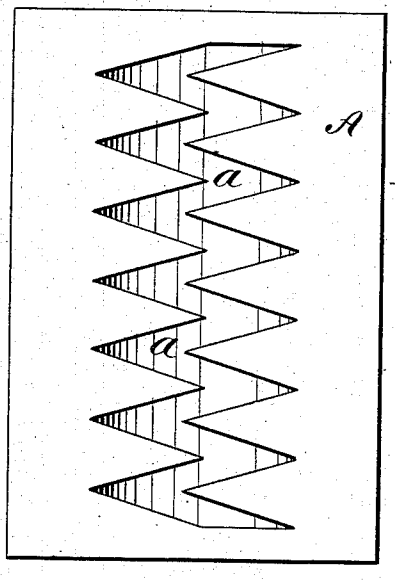


Fig. 3.



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SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 240,719, dated April 26, 1881.

Application filed January 17, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM S. HUGHES, of Long Island City, in the county of Queens and State of New York, have invented a new and useful Improvement in Slide-Valves, of which the following is a full, clear, and exact description.

The main object of my invention is to reduce or prevent the noise made by the exhaust-steam of engines, which has heretofore been attempted by the use of muffles and similar devices. This I accomplish by the valve in the steam-chest, which is constructed to wire-draw the steam or break it up into fine streams as it leaves the cylinders, thus controlling each exhaust separately instead of the combined exhaust, securing freedom from dirt and other matters liable to clog the device, and further obtaining a steady continuous draft in the smoke-stack instead of a series of explosions, as heretofore.

My invention consists in a slide-valve constructed to receive the steam by a gradually-increasing opening or openings, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical transverse section of a valve embodying my invention. Fig. 2 is a face view of the same. Fig. 3 is a face view of a third modification.

Similar letters of reference indicate corresponding parts.

A is the slide-valve, having the exhaust-cavity *a* on the under side.

B in Fig. 1 is the valve-seat, having steam-ports *b b* and exhaust-port *c*, as usual.

In Fig. 1 the cavity is covered by a perforated diaphragm, *d*, that forms a portion of the valve-face. The perforations are to be as numerous as required, and are placed in rows lengthwise of the ports *b*, and the valve and perforations are proportioned so that when both steam-ports are covered the first row of perforations shall be in position for receiving the exhaust-steam.

In operation, the valve being in the middle position, the exhaust-steam passes through the rows of perforations as they come successively over the port *b* into the exhaust-cavity *a*, and to the exhaust-port *c* through the middle rows of perforations. The steam is thus cut up into small streams, first very finely and then larger, as the perforations come fully over the port *a* instead of being suddenly admitted through a single opening the full length of the valve, as is usually the case. The exhaust, instead of being an explosion, thus becomes an almost noiseless passage of steam to the exhaust-port and smoke-stack, insuring a steady draft in the stack. There is a great advantage in the continuous blast thus obtained by the exhaust-steam, for the reason that the consumption of fuel will be uniform, and sparks and cinders will not be thrown from the chimney.

Other modifications may be possible. In those shown and others the first opening for escape of steam is small, and should increase sufficiently before the valve admits live steam to the cylinder to allow free escape of the exhaust without back-pressure.

The invention may be applied to locomotive, stationary, and other engines.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a slide-valve having exhaust-cavity *a* and valve-seat having ports *b b c*, and the valve-face so extended that the exhaust-cavity is partially cut off during the movement of the valve, substantially as shown and described.

2. The slide-valve A, having exhaust-cavity *a*, covered by a perforated diaphragm, *d*, substantially as and for the purposes set forth.

WILLIAM S. HUGHES.

Witnesses:
GEO. D. WALKER,
C. SEDGWICK.