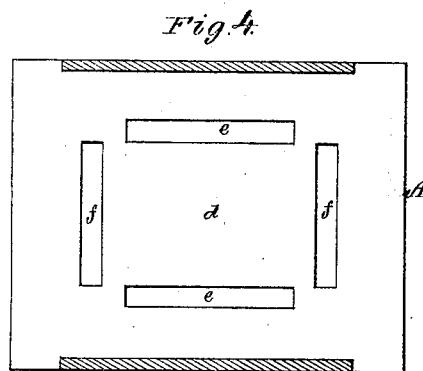
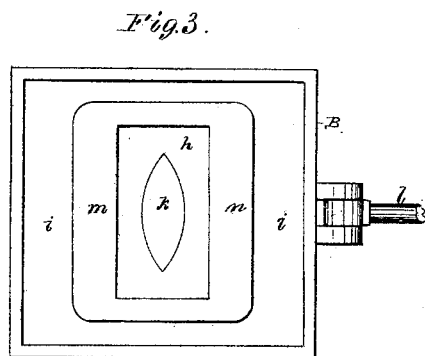
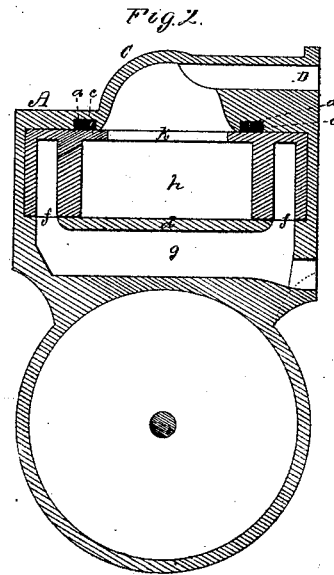
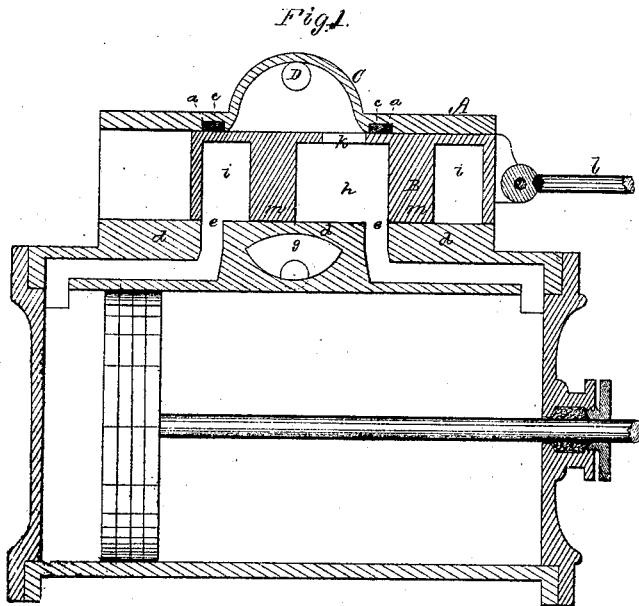


N. P. Stevens,

Slide Valve.

No. 113810.

Patented Apr. 18. 1871.



Witnesses.

S. N. Piper

L. N. Miller

N. P. Stevens.

by his attorney

R. H. Eady

United States Patent Office.

NATHAN PAGE STEVENS, OF HOPKINTON, NEW HAMPSHIRE.

Letters Patent No. 113,810, dated April 18, 1871.

IMPROVEMENT IN STEAM-ENGINE VALVES.

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

To all persons to whom these presents may come :

Be it known that I, NATHAN PAGE STEVENS, of Hopkinton, of the county of Merrimac, of the State of New Hampshire, have invented a new and useful Improvement in Steam-Engine Valves and their Chests; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figures 1 and 2 are vertical sections, taken in planes at right angles to each other, of my improved valve and its chest as applied to the cylinder of an engine.

Figure 3 is an under-side view of the valve.

Figure 4 is a top view of the valve-seat or the base-plates of the valve-chest.

The valve-chest A is made open at one or both opposite ends in manner so that the valve B may be introduced into and drawn out of the chest through the open end, the said valve being flat on its upper and lower faces, and the two being parallel.

The chest A is surmounted with a hollow dome, C, to open into it and to receive the steam through an induct, D, leading into such dome.

Encircling the base of the dome is a groove, *a*, made in the upper plate or top of the chest, such groove being arranged in manner as represented in figs. 1 and 2.

Within this groove is an annulus or ring-packing, *c*, of metal or other suitable material.

Furthermore, through the base-plate or valve-seat *d* of the chest are two parts, *ee*, to lead to the opposite ends of the cylinders.

Besides these parts there are two other openings, *ff*, made down through such base-plate and into a common exhaust-passage, *g*, the disposition or arrangement of such openings *ff* relatively to the parts *ee* being shown in fig. 4.

The valve B is a block of metal having its opposite upper and lower surfaces parallel.

The valve, has formed in it a receiving-chamber or space, *h*, and an encompassing channel or groove *i*, such chamber and groove opening through the base or lower face of the valve.

The chamber also has an opening, *k*, leading out of its top, all being arranged in manner as shown in the drawing, the valve-stem *l* being pivoted, or hinged, or otherwise properly fixed to the valve.

With the valve and chest so constructed steam, after entering the dome C, passes down through the valve-opening *k* into the receiving-chamber *h*.

During the reciprocating movements of the valve within its chest such chamber *h* will be moved alternately over the parts *ee*, each of which will be closed

by the valve while the other is open to the chamber.

Those portions of the valve which are to operate to close and open the parts *ee* are shown at *m m*.

While one of such parts *m* covers one part, the other part will be uncovered and in free communication with the passage or chamber *i*, the same being so as to cause the exhaust steam to pass into such channel, and from thence through the openings *ff*, and into the common escape-passage *g*.

I would remark that only one opening, *f*, into the exhaust-passage *g* is requisite, although it is better to have two, because they relieve the valve of the steam quicker and more evenly than one part only would.

It will be observed that in the said valve and chest the induction of the steam is through the valve, whereas in most if not all other slide valves the education takes place through them.

Some of the advantages incident to my construction of valve and chest are as follows:

First, the valve is substantially a "balanced valve."

Second, in case of leakage of steam from beneath the valve and its seat such waste of steam, instead of blowing out the side of the valve-chest, will pass directly into the channel *i*, from whence it will flow into the exhaust-passage.

Third, the valve can be removed from the chest, when necessary, without requiring any part or fixture of the chest to be previously removed from the rest.

Fourth, no stuffing-box to the valve-stem becomes necessary.

Fifth, the packing-ring over the valve will, by the steam that enters the groove for receiving such ring, be forced down upon the valve so as to produce a steam-tight joint around the valve-induction opening.

If desirable, there may be a passage leading into the packing-ring groove in order to render certain the entrance of the steam therein.

I make no claim to a packing-ring and groove in the abstract, or as ordinarily applied and used.

I claim as my invention the following, viz:

The valve as made, with the receiving-chamber *h* open at top and bottom, and with the encompassing exhaust-channel *i*, in combination with the main parts *ee* and the lateral exhaust-passage or passages *ff*, all arranged in or with respect to the chest in manner and to operate as specified.

NATHAN PAGE STEVENS.

Witnesses:

R. H. EDDY,
J. R. SNOW.