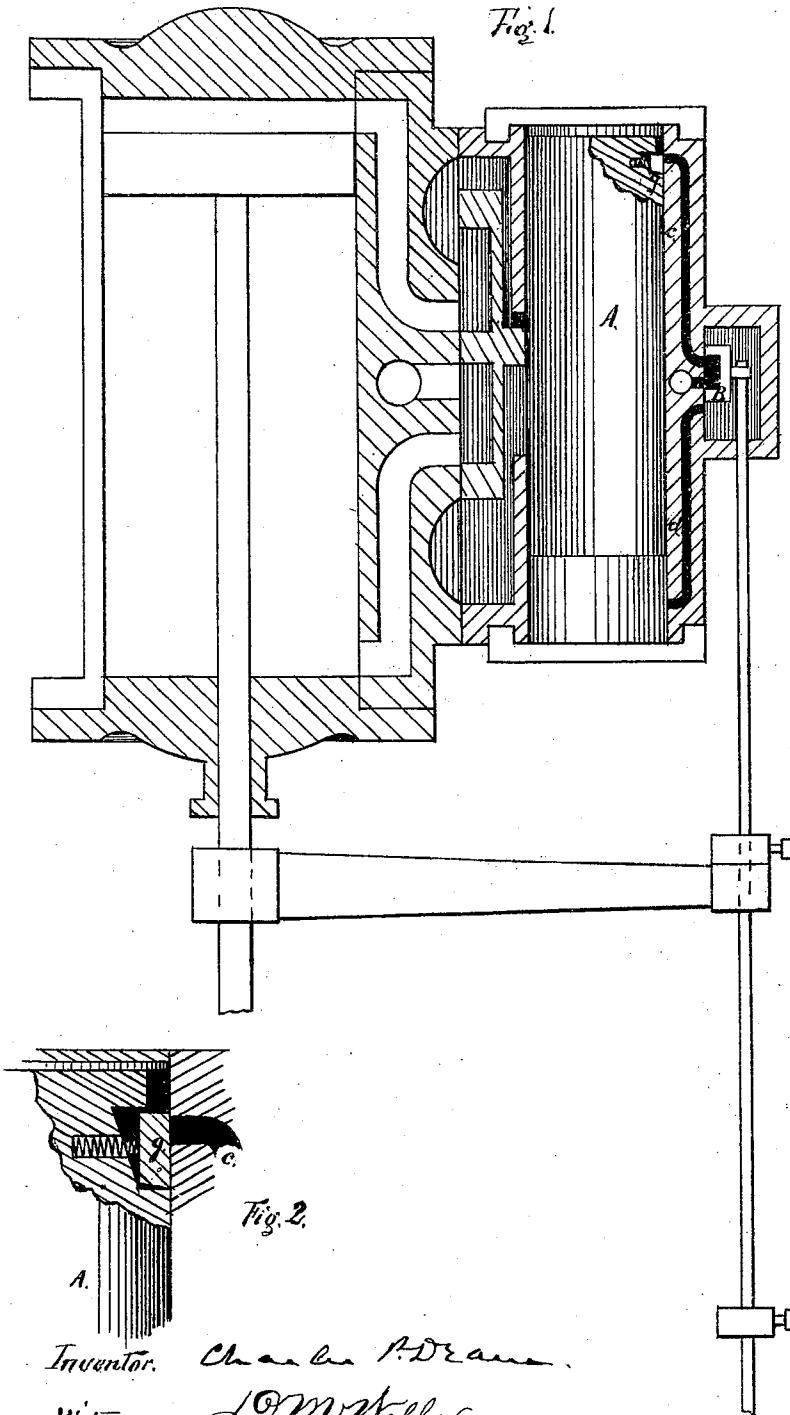


C. F. Deane,

Slide Valve.

No. 110,835.

Patented Jan. 10. 1871.



Inventor. Charles F. Deane.

Witnesses.

L. M. Keller
John J. Cassette

UNITED STATES PATENT OFFICE.

CHARLES P. DEANE, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN STEAM-ENGINE VALVES.

Specification forming part of Letters Patent No. **110,835**, dated January 10, 1871.

I, CHARLES P. DEANE, of Springfield, county of Hampden, Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam-Engines, of which the following is a specification:

My improvement consists in an improved method of cushioning pistons of steam-engines, especially applicable to the valve-pistons of direct-acting engines.

In the drawing, Figure 1 is a section of a direct-acting engine having my improved arrangement for cushioning the valve-piston A. Fig. 2 is an enlarged detail section of the cushioning device.

I will now describe my improvement.

B is a small slide-valve operating the valve-piston A by means of ports *c* *d*. This valve-piston A has arranged in each end a puppet-valve, *g*, which operates to cushion the valve-piston by closing the port *c* or the port *d*, when exhausting from their respective ends, at the

same time leaving the ports *c* and *d* free for the induction of steam by removing the puppet *g* from its seat.

By this means I accomplish a perfect cushion, for the valve-piston closes the exhaust-port by means of the puppet *g*, and the piston is arrested, although any pressure of steam in the port caused by the reversing of the slide-valve B removes the puppet *g* from its seat, and leaves the port open for the induction of steam to the end of the valve-piston.

I claim—

The arrangement of the puppet-valves upon the valve-piston A, and their operation in connection with it and with the ports *c* and *d*, substantially as specified.

CHARLES P. DEANE.

Witnesses:

J. B. GARDINER,
D. M. WELLS.