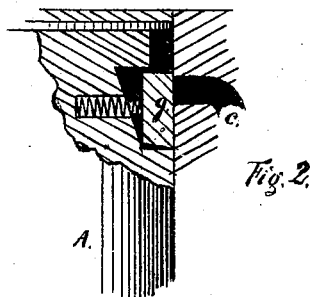
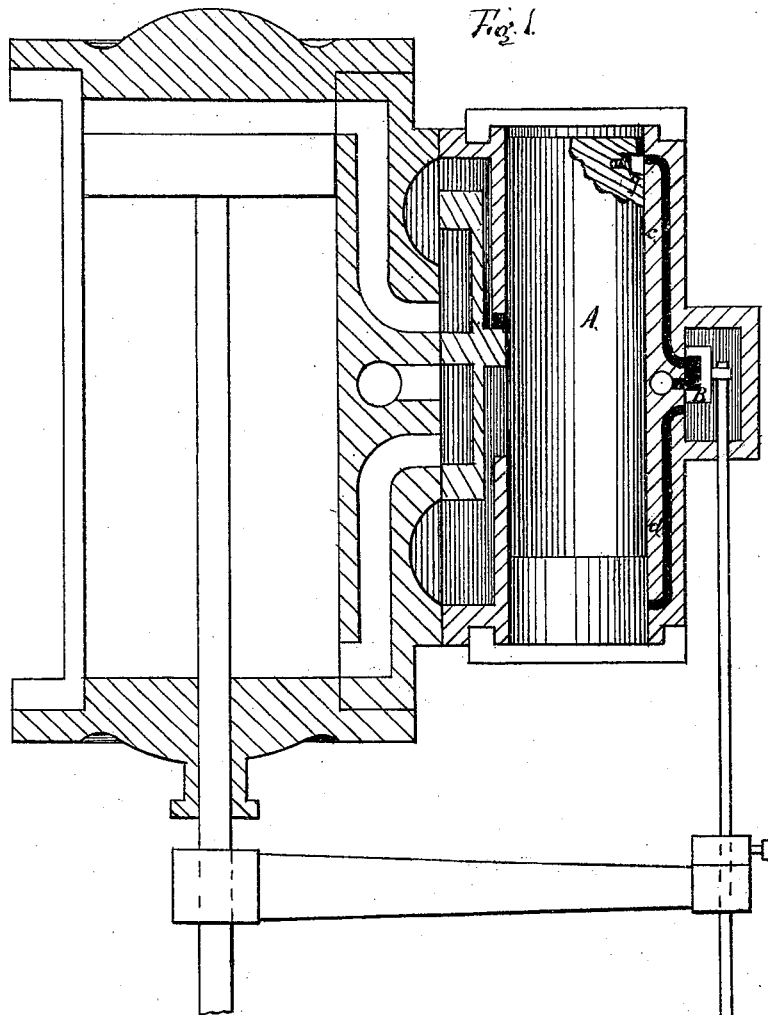


C. F. Deane,

Slide Valve.

No. 110,835.

Patented Jan. 10. 1871.



Inventor. Charles F. Deane.

Witnesses.

L. M. Keller
John J. Cassito

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

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.