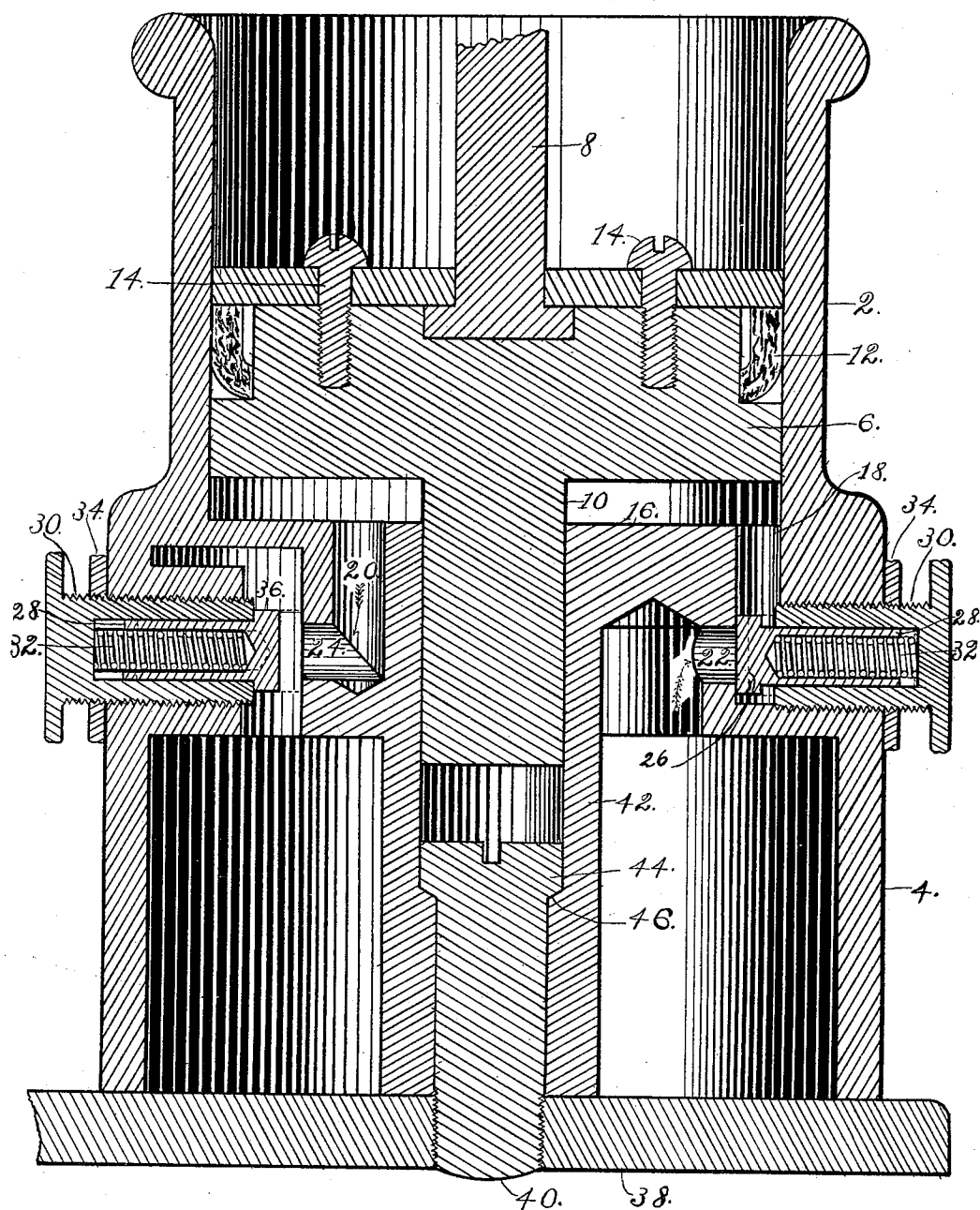


(No Model.)

E. C. FLAGG.
DASH POT.

No. 463,382.

Patented Nov. 17, 1891.



Witnesses:-

F. G. Bradbury.

A. Max Walch:

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per Paul Muenin
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UNITED STATES PATENT OFFICE.

ELLIS C. FLAGG, OF ST. PAUL, MINNESOTA, ASSIGNOR TO THE SCRIBNER
LIBBEY COMPANY, OF SAME PLACE.

DASH-POT.

SPECIFICATION forming part of Letters Patent No. 463,382, dated November 17, 1891.

Application filed June 13, 1891. Serial No. 396,106. (No model.)

To all whom it may concern:

Be it known that I, ELLIS C. FLAGG, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Dash-Pots, of which the following is a specification.

My invention relates to improvements in dash-pots for steam-engines, its object being to obviate the noise produced by the ordinary form of dash-pot in which air is employed for the cushion of the piston, caused by the escape of the air from the cylinder, while at the same time operating efficiently to arrest the movement of the piston.

To this end my invention consists in providing a cylinder with an enlarged bottom, serving as an inclosed air-chamber, having ports connecting it with the part of the cylinder in which the piston moves. A partial vacuum is therefore caused within the cylinder by the lifting of the piston, which when released is thrust downward by the atmospheric pressure above. The construction is therefore very simple, no spring nor other device being required to actuate the piston, and the operation is noiseless, there being no opportunity for the outlet or inlet of air.

My invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawing, forming part of this specification, the figure is a central vertical section of my improved vacuum-pot, wherein 2 represents the cylinder, in which the piston 6 works, and 4 the enlarged portion beneath, forming an air-chamber.

8 is the stem of the piston, connecting it with the valve-gear of the engine. The piston-head is provided with a downwardly-projecting stem 10, extending into the partition 16 between the cylinder 2 and chamber 4, and held in the tubular guide 42, so as to steady the motion of the piston.

The bottom 38 of the pot is secured upon it by means of the screw 40, held in the guide 42 and threaded into the base, the head 44 of the screw bearing upon the shoulder 46 of the narrowed part of the guide. The piston is fitted to work tightly in the cylinder, preferably by means of the packing 12, compressed

between the piston-head 6 and the top plate 7 by means of the screws 14. The air-chamber 4 communicates with the cylinder 2 by means of passages 18 and 20, through the wall or partition 16, having ports 22 and 24. The port 22 is closed by means of the valve 26, seated upon the cylinder side of the port, while the port 24 is closed by means of the valve 36, seated upon the air-chamber side of the port. While any suitable construction of valve may be employed for this purpose, I prefer to use that shown in the drawing, in which the valve-stem 28 is made hollow to receive the spring 32, the stem being held by and sliding in a sleeve 30, which is screw-threaded into the wall of the pot, and may be adjusted by being screwed in and out to limit the movement of the valve, the head of the valve striking against the end of the sleeve in opening, and the spring 32 bearing upon the bottom of the socket in the sleeve and tending to close the valve. The sleeve is fixed in adjusted positions by means of the set-nut 34, threaded upon the sleeve and bearing against the outside of the wall of the pot. The piston, when fitted in place in the pot, is so adjusted that when in its lowest position the exterior and interior pressure upon it are at equilibrium. In operation, therefore, as the piston is lifted by the valve-gear a partial vacuum is immediately formed in the chamber underneath the piston and the pressure of the air in the chamber forces open the valve 26, allowing the air to escape into the cylinder, thereby creating a partial vacuum in the chamber and tending to equalize the density of the air in the chamber and in the cylinder beneath the piston. The flow of the air from the chamber to the piston, however, is regulated by the adjustment of the sleeve 30, determining the amount of movement of the valve 26. When the piston is released by the tripping of the valve-gear, it is forced downward again to its normal position by the atmospheric pressure upon it, and the air in the cylinder beneath the piston finds its way back to supply the partial vacuum in the air-chamber through the passage 20 and the port 24, the valve 36 opening to permit its inlet to the air-chamber. The adjustment of this

valve is the same as of the valve 26, to determine the rapidity of the flow of the air, which, being gradual, checks the downward movement of the piston, the air confined in the cylinder serving as a cushion for it. It will thus be seen that when the piston is lifted by the valve-gear a partial vacuum is formed beneath it, which in turn draws it downward to its normal position when released from the valve-gear. The air being confined in the pot without inlet or outlet, the action is perfectly noiseless, while the construction is simple, all springs or other devices for carrying the piston downward being dispensed with.

15 I claim—

1. In a vacuum-pot, the combination, with the cylinder and its piston, of the air-chamber beneath said cylinder, communicating therewith by means of inlet and outlet ports, with the cylinder beneath the piston, and spring-controlled adjustable valves for closing said ports, substantially as and for the purposes set forth.

2. In a device of the class described, the combination, with the cylinder and its piston, of an inclosed air-chamber, inlet and outlet valves between said chamber and said cylinder beneath the piston, and means for adjusting said valves to determine the flow of air therethrough, substantially as and for the purposes set forth.

3. The combination, with the cylinder and its piston, of an inclosed air-chamber, ports opening from said chamber to said cylinder, valves seated, respectively, on opposite sides of said ports, springs for actuating said valves,

and adjustable stops limiting the movement of said valves, substantially as and for the purposes set forth.

4. The combination, with the cylinder and its piston, of an air-chamber having inlet and outlet ports communicating with said cylinder, a valve closing each of said ports, a sleeve threaded into the wall of the cylinder and inclosing the valve-stem and serving as a stop for said valve, and a spring in said sleeve for actuating said valve, substantially as and for the purposes set forth.

5. The combination, with the cylinder 2, of the piston 6 fitted therein, the chamber 4 beneath said cylinder and separated therefrom by the partition 16, the guide-stem 10 upon said piston, its guide 42, inlet and outlet ports in said partition 16 between said chamber and said cylinder, and spring-controlled adjustable valves closing said ports, substantially as and for the purposes set forth.

6. The combination, with the cylinder 2, the air-chamber 4, having a dividing partition 16, and the communicating ports 22 and 24, of the piston 6, the valves 26 and 36, seated upon said ports 22 and 24, the adjustable sleeves 30, inclosing and guiding the valve-stems, and the springs 32 within said sleeves for actuating said valves, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand this 9th day of June, 1891.

ELLIS C. FLAGG.

In presence of—

T. D. MERWIN,

A. MAE WELCH.