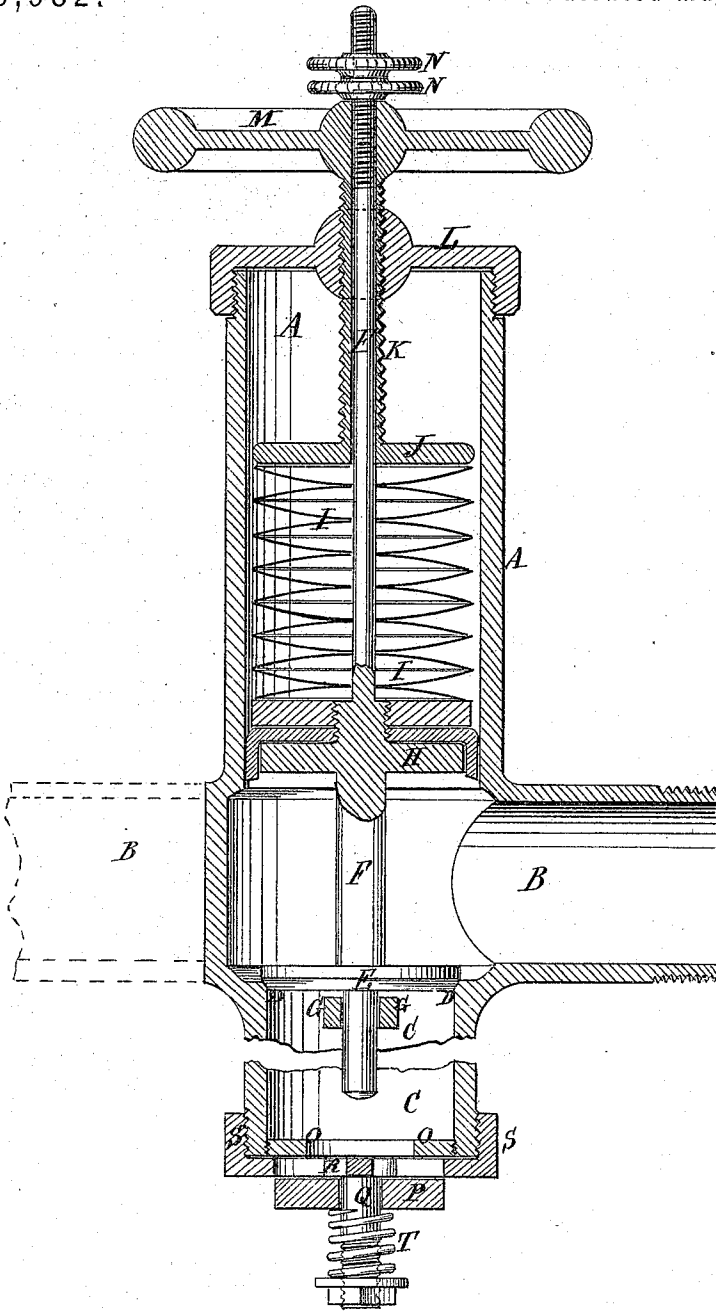


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Improvement in Circulating-Valves for Steam Fire-Engines, &c.  
No. 126,982.

Patented May 21, 1872.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CIRCULATION-VALVES FOR STEAM FIRE-ENGINES, &c.

Specification forming part of Letters Patent No. 126,982, dated May 21, 1872.

Specification describing a new and useful Improvement in Circulation-Valve for Steam Fire-Engines and Pumps, invented by ROBERT PALLET, of New York, in the county of New York and State of New York.

The figure is a detail sectional view of my improved device.

My invention has for its object to enable the man at the end of the hose of a fire-engine or of the discharge-pipe of a pump to shut off the discharge at any time without endangering the mechanism of the engine or pump, and without its being necessary to stop the pump; and it consists in the construction and combination of various parts of the device, as hereinafter more fully described.

A is a chamber to receive the plunger and other mechanism, and which is connected with the pump above the valves by the pipe or passage B, which passage may be the discharge-pipe of the engine or pump, as indicated in dotted lines, or it may be the discharge-chamber of the pump, its position depending upon the character of the pump to which it is to be applied. C is a passage leading from the passage B into the receiving-chamber of the pump below the pump-valves, and which may be inside or outside of the pump, or through the partition that separates the receiving and discharge chambers of the pump. In the pipe or passage C is formed a valve-seat, D, into which is fitted the valve E, attached to or formed upon the stem F. The inner end of the stem F may project beyond the valve E and pass through a guide-hole in a cross-bar, G, when the arrangement is such as to allow it. To the stem F, at the other side of the passage or chamber B, is attached a plunger, H, of larger diameter than the valve E, and which works in the chamber A, and may be provided with leather or other packing, as may be desired. Upon the stem F, above the plunger H, is placed a spring or series of springs, I, the construction of which is immaterial, and which should have a tension capable of resisting the excess of pressure upon the face of the plunger H over that upon the face of the valve E when the pump is working at the ordinary rate, so that the valve E may remain in its seat D when the pump is discharging water. The lower end of the spring I rests against the plunger H and its upper end against a disk

or follower, J, formed upon or attached to the lower end of the hollow stem K, through which the stem F passes. The hollow stem K has a screw-thread formed upon its outer surface, which fits into the thread of a screw-hole formed in the center of the cap L, which is screwed upon and closes the outer end of the chamber A, so that by turning the stem K up and down the tension of the spring I may be adjusted as desired. The stem K is turned by a hand-wheel, M, formed upon or attached to its upper end. The stem K is locked, when the tension of the spring I has been properly adjusted, by the jam-nuts N, screwed upon the upper end of the stem F, and which rest against the end of the said stem K, so that the valve E may be raised from its seat by hand and without disturbing the adjustment of the spring I by screwing out the stem K. The jam-nuts N are turned up from the stem K when the valve is to be operated by the pressure of the water.

By this construction, when the hoseman, however distant he may be from the engine, desires to stop the discharge, he does it at once, without sending word to the engineer. The increased pressure thus produced raises the plunger H against the tension of the spring I, and thus lifts the valve E from its seat D, opening the passage C, and allowing the water from the discharge-chamber of the pump to be thrown back into the receiving-chamber of said pump, so that the engine may continue to work without bursting the hose or breaking any part of the pump. When the hoseman again opens the discharge the valve E drops back to its seat, and everything works as before.

When the valve E is raised from its seat, the pressure of the water upon its upper and lower faces is nearly equal, and the spring I is compressed, and the valve E held up from its seat by the pressure of the water upon the face of the plunger H. If, now, the discharge from the passage C were left free, the valve E would open and close at each stroke of the pump. To prevent this and cause the engine to run steady, I reduce the discharge from the passage C. This reduction may be made by a flange, O, or flanged cap screwed into or upon the discharge of the passage C, the effect of which is to cause a back pressure in said

passage C, which assists in compressing the spring I and holding the valve E open. This reduction may also be attained by a disk, P, of rubber or metal, connected with the discharge C by a stem, Q, cross-bar R, and screwing cap S, as shown in the figure, said disk P being held up to its place by a spring, T, placed upon the stem Q, and which is compressed, allowing the disk P to move back from the discharge C by the pressure of the water.

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

1. The combination of a plunger, H, and spring I with the relief-valve F of a steam

fire-engine or pump, substantially as herein shown and described, and for the purpose set forth.

2. The combination of the plunger J, hollow screw-stem K, and lock-nuts N with the stem F, spring I, plunger H, and valve E, substantially as herein shown and described, and for the purpose set forth.

3. In a regulating-valve for pumps, the flange O, cross-bar R, disk, P, stem Q, spring T, and screw-cap S, constructed and arranged as and for the purpose specified.

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Witnesses:

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