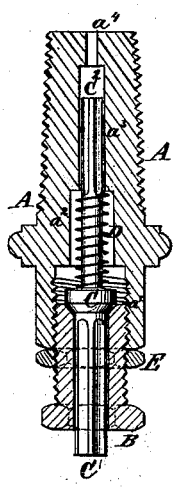
S. SMITH & I. S. COLLINS.

Air-Valve for Pumps.

No. 168,192. Patented Sept. 28, 1875.



WITNESSES:

A. W. Almqvist

A. F. Terry

INVENTOR:

Simon Smith and Isaac S. Collins

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SIMON SMITH AND ISAAC S. COLLINS, OF MAUCH CHUNK, PENNSYLVANIA.

IMPROVEMENT IN AIR-VALVES FOR PUMPS.

Specification forming part of Letters Patent No. **168,192**, dated September 28, 1875; application filed August 21, 1875.

To all whom it may concern:

Be it known that we, SIMON SMITH and ISAAC S. COLLINS, of Mauch Chunk, in the county of Carbon and State of Pennsylvania, have invented a new and useful Improvement in Air-Valve for Pumps, of which the following is a specification:

The drawing represents a longitudinal section of our improved device.

The object of this invention is to furnish an air-valve for the feed-pumps of locomotive-engines and other pumps, to prevent the pounding of the piston and valves, and which shall be simple in construction, inexpensive in manufacture, and effective in operation.

The invention consists in the combination of the plug, provided with the graduated perforation, the outer perforated plug, the valve provided with an outer valve-stem and an inner valve-stem, the spring, and the lock-nut, with each other, to adapt the device to be applied to a pump cylinder or chamber, as hereinafter fully described.

A represents the plug that is usually inserted in the pump-chamber to enable the water to be drawn out of the pump in cold weather to prevent it from freezing, and which may be a straight plug or a T or L plug, as may be desired or convenient. The plug A is perforated longitudinally. The outer part a^1 of said perforation is made large, and has a screw-thread cut in its surface to receive the plug B, which is also perforated to receive the outer stem c^1 of the valve C, and upon its inner end is formed the seat for the said valve C. The next part, a^2, of the perforation of the plug A is made smaller than the part a^1, and larger than the inner stem c^2 of the valve C, to serve as a chamber for the coiled spring D, that holds the valve C down to its seat. The third part a^3 of the perforation of the plug A is made smaller than the part a^2 of said perforation, being only large enough to receive the inner part of the inner valve-stem c^2. The fourth or inner part a^4 of the perforation of the plug A is made small, being only large enough for the passage of the air. The outer valve-stem c^1 and the inner part of the inner valve-stem c^2, that enters and works in the third part a^3 of the perforation, are grooved longitudinally to form passages for the air when the valve C is raised from its seat. The play of the valve C is regulated by screwing the plug B out and in. The plug B is locked in place when adjusted by a lock-nut, E, placed upon it, and which strikes and rests against the outer end of the plug A.

The plug A and its attachments may be placed in any convenient part of the pump cylinder or chamber where it will be most out of the way.

With this device, at each stroke of the piston the valve C will rise and admit a small quantity of air, the effect of which is to prevent the pounding of the piston and valves, by causing them to be more gentle in rising and falling with each stroke of the plunger, which will be a great saving to the valves, valve-seats, and branch-pipe joints. With this device a pump will last much longer with less repairing, and will keep the boiler better supplied with less feed-water than pumps generally do with full supply of feed-water.

Our object is to furnish air to the pump and relieve it of strain, so as to save wear on the valves, seats, and branch-pipe joints. The air-valve is worked by the stroke of the pump-plunger, which causes the valve to rise and fall. By the air admitted the valves of the pump are cushioned.

What we claim is—

The combination, with stem-grooved valve C c^1 c^2, seated in a perforated plug, B, of the plug A, having longitudinal perforation largest at a^1, diminished at a^2, further contracted at a^3, and made still smaller at a^4, as and for the purpose specified.

SIMON SMITH.
ISAAC S. COLLINS.

Witnesses:
ROBERT S. CALVIN,
JAMES BELFORD.