H. H. & T. C. OSGOOD.

Relief-Valves for Air-Brakes.

No. 212,972 Patented Mar. 4, 1879.

Fig. 1.

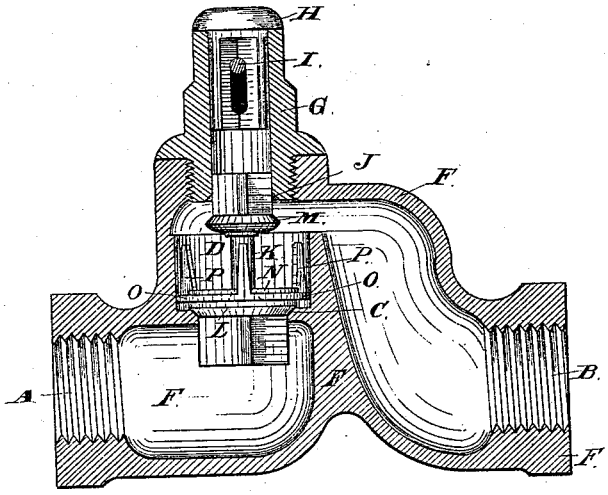


Fig. 3.

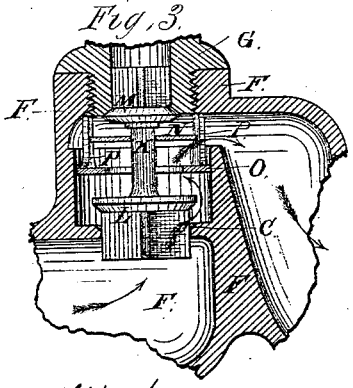
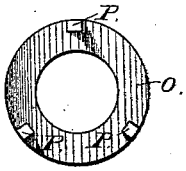


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY H. OSGOOD AND TUNIS C. OSGOOD, OF ADRIAN, MICH., ASSIGNORS OF ONE-THIRD THEIR RIGHT TO WESLEY SMITH, OF SAME PLACE.

IMPROVEMENT IN RELIEF-VALVES FOR AIR-BRAKES.

Specification forming part of Letters Patent No. **212,972**, dated March 4, 1879; application filed November 22, 1878.

To all whom it may concern:

Be it known that we, HENRY H. OSGOOD and TUNIS C. OSGOOD, both of Adrian, in the county of Lenawee and State of Michigan, have invented a certain new and useful Improvement in Relief-Valves for Air-Brakes, of which the following is a specification:

Our invention relates to relief-valves adapted to open automatically to discharge the pressure from the brake-cylinder the instant the cock is opened at the engine without compelling the air to traverse the connecting-pipes.

Our present improvement consists in providing a double check-valve, seated above and below, with a supplemental annular valve working within a cylinder adapted to close the passage around the lower valve instantaneously when the forward or upward pressure is removed, and thus insure the seating of the lower valve with greater promptness when the discharge-port is to be opened.

In order that our invention may be fully understood, we will proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of our improved relief-valve, showing the valves proper in elevation. Fig. 2 is a plan of the supplemental disk-valve. Fig. 3 is a section of the valve-seats and supplemental annular valve, showing the main valve open, as when pressure is applied to the brakes.

F represents the shell or casing, having an inlet at A from the engine-pump, and an outlet at B to the brake-cylinder. C is the seat of the valve proper, and J a valve-seat, of smaller diameter, above it. K is a double check-valve, fitted to close downward on the seat C and upward against the seat J, and having the customary guiding-wings working within the ports or openings of the said valve-seats.

The upper valve-seat, J, is formed in a tubular screw cap or plug, G, within which is the relief-port, closed by a gravitating check-valve, H, opening upward by the pressure of the escaping air, and serving to prevent the reflux of air, and also the entrance of dust. This check-valve is formed with guiding-wings within its port, slotted vertically to receive a pin, I, which prevents the blowing out of the valve while allowing the necessary play.

Above the valve-seat C the shell is formed with a cylinder, D, within which is loosely fitted an annular valve, O, having three or more vertical guiding-studs, P, which limit its ascent by contact with the crown of the shell.

Above the annular valve O, and within its guides P, is a disk, N, perforated to fit the stem of the check-valve K, on which it works, the opening in the annular valve O being of much larger size than the stem of the valve K, so that when the disk N is raised, as shown in Fig. 3, the air can pass freely around the lower member, L, of the valve K, within the valve O, and between its studs P.

When the disk N is allowed to fall it unites with the annular valve O to form a tight disk-valve within the cylinder D.

The relief-valve is supposed to be placed in connection with the branch pipe that runs from the main air-pipe to the air-cylinders under each car, with the receiving end A coupled to the branch pipe pointing toward the main pipe, and the delivering end B coupled to the branch pipe pointing toward the cylinder. When the brakes are to be applied the air is let on by the three-way cock at the locomotive, and the current of air in passing through the valve raises the double-ended check-valve K from its seat C, and closes the exit-port at the upper seat, J, and the current of air raises the annular valve O, which nearly fills the cylinder D, until the ends of the guides P strike the under side of the plug G, which gives it its proper lift, so as to form an air-space between the lower member of the check-valve L and the lower side of the annular valve O, and the air in passing through this space to the interior of the annulus O raises the small disk N, that slides on the stem of double-ended check-valve K. This makes a free access for the air to pass to the brake-cylinder and apply the brakes.

When the brakes are set and the air ceases to travel the air becomes dormant, and the disks N and O would naturally fall back to their seats; but if they should not, as soon as the three-way cock is opened at the locomotive, and the air commences to return, the cur-

rent of air will seat them at once, and cut off the air from going back from whence it came, and the combined cut-off disks N and O being of much larger diameter than the upper end of the check-valve M, there is a greater downward pressure on the disks N O than upward pressure on the check M; consequently, the disks being seated on top of the lower member, L, of the double check-valve, the pressure would bring said double-headed check-valve to its seat C, and allow the air to pass out of the relief-port at J, and relieve the air from the brake-cylinder and release the brakes at once.

It will be observed that the elevated cylinder D forms a partition within the shell F, between the inlet A and outlet B, in the manner of a goose-neck, said inlet and outlet being on a level, and adapted to form a direct line with the piping to which the valve is applied. We thus avoid the formation of an offset, within which water or sediment might collect.

Having thus described our invention, the following is what we claim as new and desire to secure by Letters Patent:

1. The combination of the annular valve O, guides P, and disk N with the check-valve K, as and for the purposes set forth.

2. The gravitating cap-check H, employed in combination with an automatic air-relief valve, constructed and arranged as shown, and for the purposes set forth.

3. The combination of the shell F and double-headed check-valve K and the gravitating cap-check H, slotted and confined by a pin, I, as described.

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TUNIS C. OSGOOD.

Witnesses:
CHAS. R. LUCE,
ALEX. THORN.