(No Model.)

W. E. ANTONE & J. E. McALLISTER.

TRIPLE VALVE MECHANISM FOR AIR BRAKES.

No. 584,619. Patented June 15, 1897.

Fig. 1.

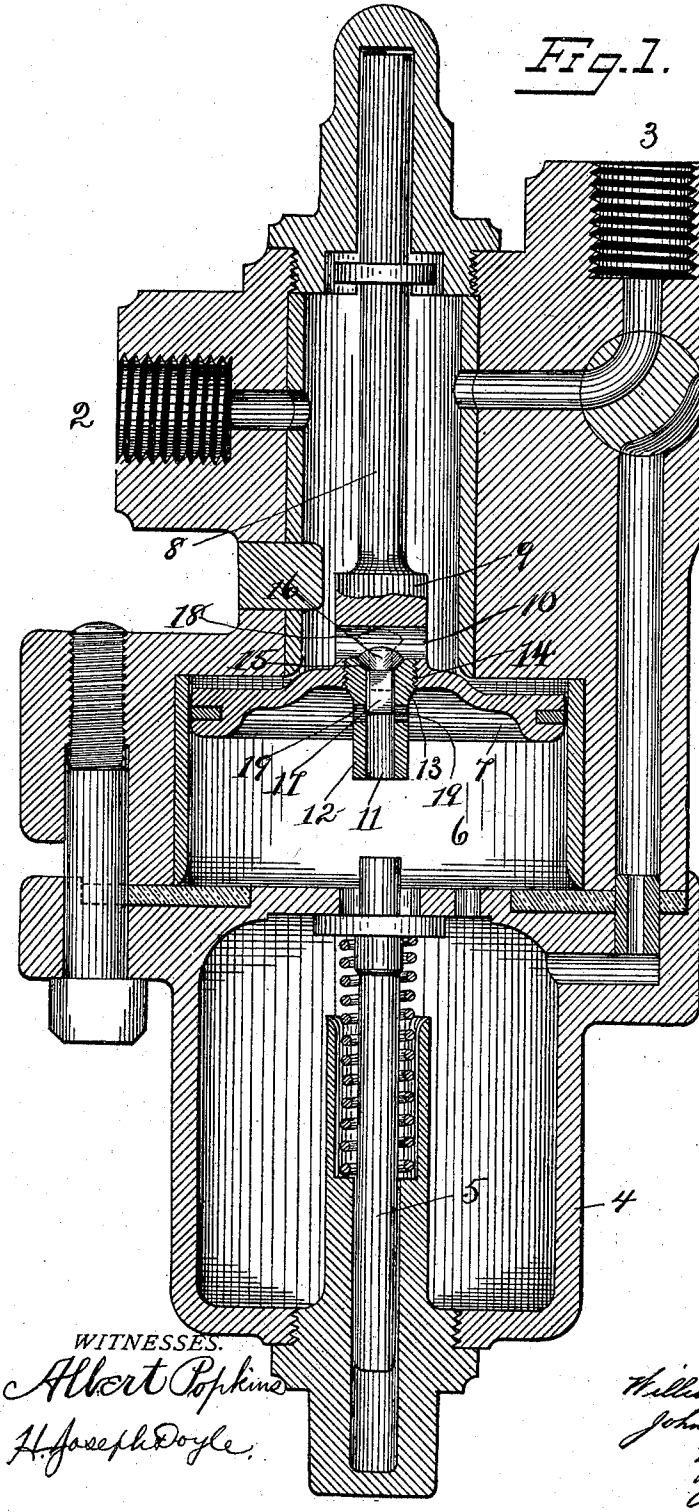

Fig. 2.

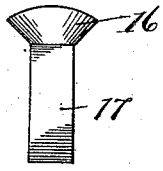

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM E. ANTONE AND JOHN E. McALLISTER, OF MANCHESTER, VIRGINIA.

TRIPLE-VALVE MECHANISM FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 584,619, dated June 15, 1897.

Application filed April 7, 1897. Serial No. 631,124. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. ANTONE and JOHN E. McALLISTER, citizens of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented certain new and useful Improvements in Triple-Valve Mechanism for Air-Brakes; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to triple regulating-valves for automatic air-brakes, and is an improvement on the Westinghouse regulating-valve of the type shown in Letters Patent No. 220,556, dated October 14, 1879.

Our improvement consists in the means hereinafter fully described for replenishing the auxiliary reservoir and brake-cylinder of an automatic brake with air from the main reservoir and train-pipe while the brakes are set and without releasing the brakes.

In the accompanying drawings, Figure 1 is a vertical sectional view of a Westinghouse triple regulating-valve with our improvement applied thereto. Fig. 2 is an elevation of the gravity-valve of the device detached, and Fig. 3 is a horizontal section of a modified form of valve.

The reference-numerals 1, 2, and 3 indicate, respectively, the connections for the train-pipe, the auxiliary reservoir, and the brake-cylinder.

4 is the drip-chamber; 5, the graduating-stem arranged therein.

6 is the piston-cylinder, and 7 the piston.

All of the above-named parts, as well as the other elements, except those now to be described and subsequently claimed, are of the well-known construction found in the Westinghouse triple valve.

The piston 7 is provided with the rod or stem 8, formed just above its junction with the piston with an annular enlargement 9, which is transversely bored to form a horizontal air-passage 10, which communicates with a vertical duct or passage 11, formed by a depending tube 12. This tube 12 is provided at its upper end with an annular collar 13, which is externally threaded to fit removably within an internally-threaded opening 14, formed centrally through the piston. The upper end of the tube 12 is of concave form to constitute a seat 15 for a conical valve 16, provided with a stem 17, adapted to fit loosely within the tube 12. This stem maintains the valve 16 in its normal or closed position and guides its movement. The upper wall 18 of the horizontal air-passage forms a stop to limit the upward movement of the valve. The tube 12 is also provided with diametrically opposite openings 19, which permit the entrance of air laterally to the tube as well as vertically.

It will be understood that the depending tubular portion 12 of the piston is removable for the purpose of admitting the valve 16, said valve being located within its seat 15 before the tube 12 is secured to place.

The operation of the device is as follows: When pressure is reduced in the train-pipe in the usual manner by the engineer, the piston 7 descends, owing to the preponderance of the pressure in the auxiliary reservoir, and the air-pressure is directed through the brake-cylinder in the well-known manner. In descending long grades the pressure in the auxiliary reservoir frequently becomes insufficient and it is necessary to restore or replenish its pressure. This we accomplish without releasing the brakes by permitting air from the train-pipe below the piston to raise the valve 16, thus opening communication with the auxiliary reservoir and brake-cylinder through the passage 10. We thus secure an equalization of pressure throughout the entire regulating-valve without raising the piston 7.

It will be apparent that when the brakes are to be applied only a short time replenishing the air in the auxiliary reservoir will not be required, in which event the piston 7 with our improved valve device will operate in the usual way without the necessity of operating the valve 16.

In Fig. 3 we have shown a cross-section of a modified form of stem for the valve 16, on which said stem is reduced in diameter to permit the passage of air between it and the walls of the tube 12. We therefore do not

limit ourselves to the precise construction illustrated in the drawings, but reserve the right to make all such detail changes as may properly fall within the scope of the following claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a triple regulating-valve for air-brakes, the combination with the piston provided with a threaded central opening, and a valve-seat, of a piston-rod having a horizontal air-passage above and communicating with the opening in the piston, a tube depending from said piston-opening and secured therein removably, and a valve seated in said valve-seat and provided with a stem extending into said tube.

2. In a triple regulating-valve for air-brakes, the combination with a piston having a central screw-threaded opening, of a piston-rod having a horizontal air-passage above said piston-opening, a threaded tube removably secured within the piston-opening and provided with a valve-seat at its upper end, and a valve supported by said tube.

3. In a triple regulating-valve for air-brakes, the combination with the piston having a central opening, of a tube removably secured within said opening and provided with a valve-seat and with lateral air-openings; a valve seated in said tube, and a piston-rod having a transverse air-passage communicating with said tube, and constituting a stop to limit the upward movement of the valve.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM E. ANTONE.
JOHN E. McALLISTER.

Witnesses:
CHAS. BURKERT,
H. N. TENNILLE.