

J. S. CUSTER.
PRESSURE RETAINING VALVE.
APPLICATION FILED SEPT. 13, 1909.

1,025,381.

Patented May 7, 1912.

Fig. 1.

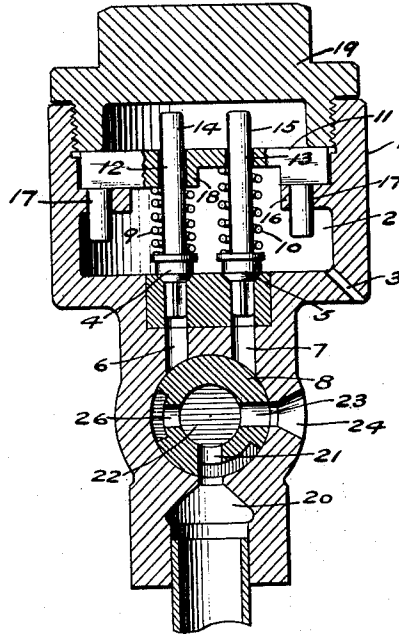


Fig. 2.

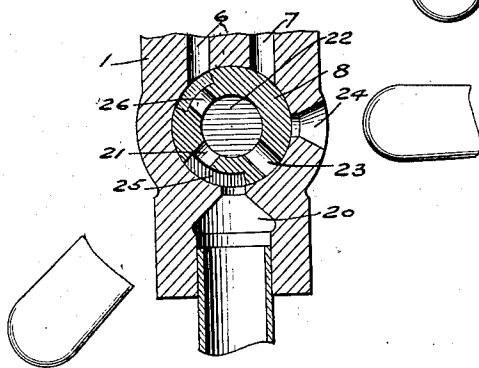
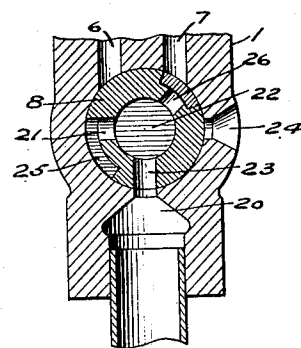


Fig. 3.



WITNESSES

Wm. M. Brady
A. M. Clements.

INVENTOR

John S. Custer
by E. Wright
Att'y.

UNITED STATES PATENT OFFICE.

JOHN S. CUSTER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PRESSURE-RETAINING VALVE.

1,025,381.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed September 13, 1909. Serial No. 517,434.

To all whom it may concern:

Be it known that I, JOHN S. CUSTER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Pressure-Retaining Valves, of which the following is a specification.

This invention relates to retaining valve devices such as employed on railway cars in connection with an automatic fluid pressure brake system for controlling the triple valve exhaust from the brake cylinder.

In certain classes of railway service, more especially in the handling of heavy freight on grades, it has heretofore been proposed to employ a pressure retaining valve device adapted to retain any one of two or more different degrees of pressure in the brake cylinder, so that on loaded cars the retaining valve may be adjusted to one degree of pressure while on light cars the retaining valve may be adjusted to a lower degree of pressure.

With retaining valve devices of the above type where springs are employed for loading the valves, it has heretofore been the practice to provide an adjusting nut or plug for setting each spring so as to exert a certain desired pressure on the corresponding valve. There has been some trouble experienced with such retaining valves on account of the liability of the brakeman or other person to inaccurately adjust the springs and by so doing render it impossible to retain uniform pressures in the brake cylinders on all the cars of the train according as the car is light or loaded.

The principal object of my invention is to provide an improved retaining valve device of the above character, in which, while the retaining valves are subjected to different relative degrees of spring pressure, the springs cannot be individually adjusted, so that a fixed predetermined difference in the amount of the load on the valves may always be maintained.

In the accompanying drawing, Figure 1 is a sectional view of a retaining valve device embodying my improvement; Fig. 2 a fragmentary sectional view showing the controlling cock of the retaining valve device in the high pressure load position; and Fig. 3 a similar view showing the cock in the light load position.

According to the preferred construction, a casing 1 is provided having a chamber 2 with an atmospheric vent port 3. Valves 4 and 5 are mounted within the chamber 2 and control the respective passages 6 and 7 leading to a controlling cock 8. The valves 4 and 5 are provided respectively with springs 9 and 10 held under compression by means of a pressure plate or abutment 11 having apertures 12 and 13 through which the respective stems 14 and 15 of the valves 4 and 5 are adapted to extend. A seat is provided for the pressure plate 11 on a ledge 16 of the casing 1, the ledge having suitable openings for guide pins 17 secured to the plate 11 for the purpose of insuring the proper positioning of the plate.

The pressure plate 11 is arranged to compress the various load springs different amounts, being preferably provided with a thickened portion 18 adapted to bear on one of the springs 9, so that when the plate 11 is placed in position seating on the ledge 16, the spring 9 will be compressed to a greater extent than the spring 10 and thereby the valve 4 is subjected to a greater spring load than the valve 5.

The screw cap 19 may conveniently be employed to force the pressure plate 11 to its seat, for, the cap being in engagement with the plate, by screwing the cap home, the plate 11 is forced to its seat on the ledge 16, compressing the springs 9 and 10 different predetermined amounts.

The controlling cock 8 is provided with ports 21, 23, and 26 opening into a common central cavity 22, and when turned to the position shown in Fig. 1, the port 21 registers with inlet passage 20 connected by a pipe to the triple valve exhaust port and port 23 registers with an atmospheric exhaust port 24, so that in this position the exhaust is free.

If it is desired to set the retaining valve device to hold the lower pressure in the brake cylinder, the cock is turned to the position shown in Fig. 3, in which port 23 registers with the inlet port 20 and port 26 with the passage 7 leading to the low pressure valve 5. In the heavy load position, shown in Fig. 2, a port extension 25 of port 21 registers with port 20 while port 26 registers with passage 6 leading to the high pressure retaining valve 4.

It will now be seen that a simple means

is provided for setting the load springs of the retaining valves to different degrees of pressure, neither requiring nor permitting the individual adjustment of the springs, 5 while causing the positive adjustment of the springs to apply relatively different loads on the retaining valves.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a pressure retaining valve device, the combination with a plurality of valves and springs for loading the valves, of non-adjustable means adapted to compress said 15 springs different relative amounts.

2. In a pressure retaining valve device, the combination with a plurality of retaining valves and a spring adapted to act on each valve, of means for simultaneously 20 setting the springs to apply different loads on the respective valves.

3. In a pressure retaining valve device, the combination with a high and a low pressure retaining valve and springs adapted to load the valves, of a pressure plate 25 having means for compressing the springs different relative amounts to thereby cause

the springs to exert different relative pressures on said valves.

4. In a pressure retaining valve device, 30 the combination with a plurality of valves each having a spring for loading the valve, of a pressure plate having its engaging surfaces for said springs at different heights, to thereby compress the springs different 35 amounts.

5. In a pressure retaining valve device, the combination with two valves each having a load spring, of a pressure plate for compressing the springs to exert pressure 40 on said valves, said plate having a thickened portion for engaging one of the springs.

6. A pressure retaining valve device comprising a plurality of valves each provided 45 with a load spring and a single means for compressing said springs to thereby apply a load to the valves.

In testimony whereof I have hereunto set my hand.

JOHN S. CUSTER.

Witnesses:

WM. M. CADY,

A. M. CLEMENTS.