J. R. SNYDER.

RELEASE VALVE FOR TRIPLE VALVE MECHANISM.

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1,185,947. Patented June 6, 1916.

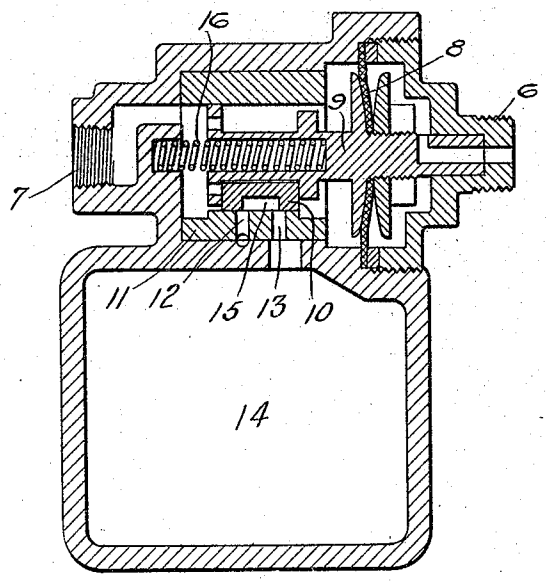


FIG. 2

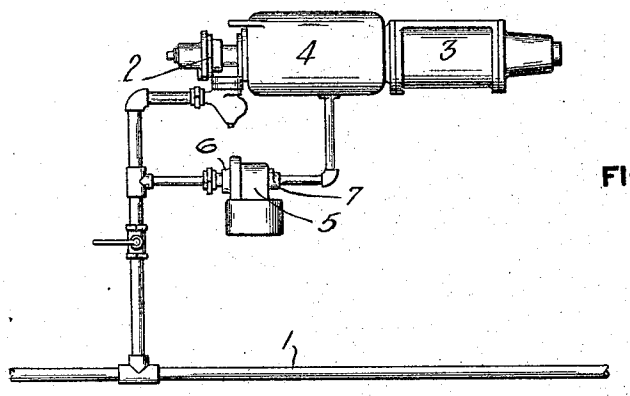


FIG. 1

WITNESSES

H. T. Holman

Glenn N. Leresche

INVENTOR

Jacob Rush Snyder.

By Fred'k W. Mueller

Attorney.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JACOB RUSH SNYDER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO PERCY E. DONNER, OF PITTSBURGH, PENNSYLVANIA.

RELEASE-VALVE FOR TRIPLE-VALVE MECHANISM.

1,185,947. Specification of Letters Patent. Patented June 6, 1916.

Application filed August 4, 1915. Serial No. 43,569.

To all whom it may concern:

Be it known that I, JACOB RUSH SNYDER, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Release-Valves for Triple-Valve Mechanism, of which the following is a specification.

This invention relates to air brake systems for railway trains, and more particularly to means for insuring the release of triple valves after an application of the brakes.

It frequently happens that after an application of the brakes, it is impossible to get the triple piston and slide valve to assume release position upon increase of train pipe pressure. This is due to various causes, such as imperfect lubrication, corrosion, a defective packing ring, or other causes tending to make the triple valve stick.

The present invention has for its object to provide supplementary means for suddenly reducing the pressure on the auxiliary reservoir side of the triple valve piston, upon increase of brake pipe pressure, and thereby insure the triple valve going to release position.

The invention comprises a supplementary valve mechanism constructed and arranged as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a diagrammatic view of the essential parts of an air brake equipment on a car, showing the supplementary valve in its relation to the other parts; and Fig. 2 is a sectional view through the supplementary valve mechanism.

In the drawings, 1 represents the train pipe, 2 the triple valve, 3 the brake cylinder and 4 the auxiliary reservoir, all of which may be of the usual or desired construction and connected and operating in the usual way of air brake equipment.

5 indicates the supplementary valve mechanism having a connection at one end, as at 6, to the train pipe and at its opposite end, as at 7, to the auxiliary reservoir or to any point on the auxiliary reservoir side of the triple valve piston. This supplementary valve mechanism comprises a movable abutment 8, shown as a diaphragm, which is constantly subject on one face to train pipe pressure and on its opposite face to auxiliary reservoir pressure, and provided with a stem 9 arranged to actuate a slide valve 10 coöperating with a suitable seat 11 provided with port leading to the atmosphere and port 13 leading to a measuring chamber 14. Preferably a light spring 16 is provided for normally holding the diaphragm 8 toward train pipe pressure.

The operation of this valve mechanism is as follows: Normally, that is, upon a substantially balanced pressure between the auxiliary reservoir and the train pipe, the valve is in the position shown in Fig. 2 with the cavity 15 in slide valve 10 connecting measuring chamber port 13 with exhaust port 12. Upon an increase of train pipe pressure, such as is effected in order to release the brakes after an application, the diaphragm 8 is moved inwardly, carrying with it the valve 10 sufficiently far to break the connection between ports 13 and 12, and also sufficiently far to uncover port 13 so as to directly admit auxiliary reservoir pressure into the measuring chamber 14, and permitting the auxiliary reservoir to equalize with said chamber 14. This causes a sudden reduction of pressure on the auxiliary reservoir side of the triple valve piston, to produce a sufficient differential between the pressures on the opposite side of said triple valve piston to insure the triple valve going to release position, even if it has a tendency to stick. After release, when the auxiliary reservoir pressure is again built up to equalize with train pipe pressure, the supplementary valve mechanism moves back to normal position, and breaks the connection between the auxiliary reservoir and the measuring chamber 14, and at the same time connects said measuring chamber with the atmosphere so as to empty said chamber and leave it in depleted condition for again receiving a measured charge of air from the auxiliary reservoir side of the triple valve piston for the next release of the brakes.

The valve mechanism described is of very simple construction and insures the reproduction of a sufficient differential on the opposite sides of the triple valve piston when releasing the brakes to cause said triple valve to move to release position. At each release of the brakes a certain amount of air is, of course, wasted, but this is only a small amount. The capacity of the measuring chamber 14 will be so chosen as to give just sufficient space for equalization of the

auxiliary pressure to produce the necessary reduction on the auxiliary side of the triple valve piston.

What I claim is:—

1. In an air brake system, the combination with the train pipe, auxiliary reservoir, brake cylinder and triple valve connected in the usual way, of supplementary valve mechanism comprising a movable abutment subject on one face to train pipe pressure and on its opposite face to auxiliary reservoir pressure, and a valve operated by said movable abutment and arranged on increase of train pipe pressure after application of the brakes to release pressure from the auxiliary reservoir side of the triple valve piston.

2. In an air brake system, the combination with the train pipe, auxiliary reservoir, brake cylinder and triple valve connected in the usual way, of supplementary valve mechanism comprising a movable abutment subject on one face to train pipe pressure and on its opposite face to auxiliary reservoir pressure, and a valve operated by said movable abutment and arranged upon increase in train pipe pressure after application of the brakes to release a measured quantity of pressure from the auxiliary reservoir side of the triple valve piston.

3. In an air brake system, the combination with the train pipe, auxiliary reservoir, brake cylinder and triple valve connected in the usual way, of supplementary valve mechanism comprising a movable abutment subject on one face to train pipe pressure and on its opposite face to auxiliary reservoir pressure, and a valve operated by said movable abutment and arranged on increase of train pipe pressure after application of the brakes to vent the auxiliary reservoir side of the triple valve piston to a closed chamber.

4. In an air brake system, the combination with the train pipe, auxiliary reservoir, brake cylinder and triple valve connected in the usual way, of supplementary valve mechanism comprising a movable abutment subject on one face to train pipe pressure and on its opposite face to auxiliary reservoir pressure, and a valve operated by said movable abutment and arranged on increase of train pipe pressure after application of the brakes to vent the auxiliary reservoir side of the triple valve piston to a closed chamber and upon equalization of auxiliary reservoir and train pipe pressures to exhaust said chamber.

In testimony whereof, I have hereunto set my hand.

JACOB RUSH SNYDER.

Witnesses:

GLENN H. LERESCHE,

EMMA K. CUNNINGHAM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."