W. V. TURNER.

UNIFORM RELEASE TRIPLE VALVE DEVICE.

APPLICATION FILED JULY 22, 1907.

1,055,373. Patented Mar. 11, 1913

Fig. 1.

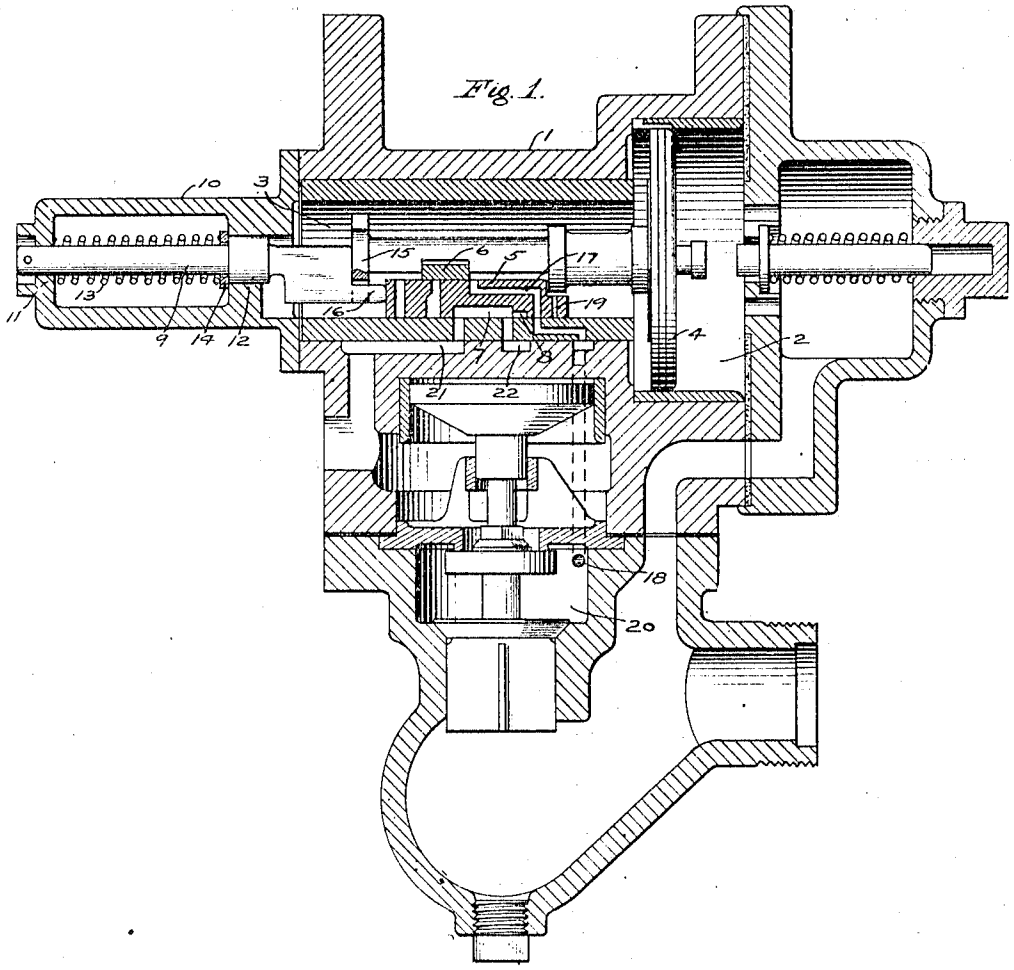
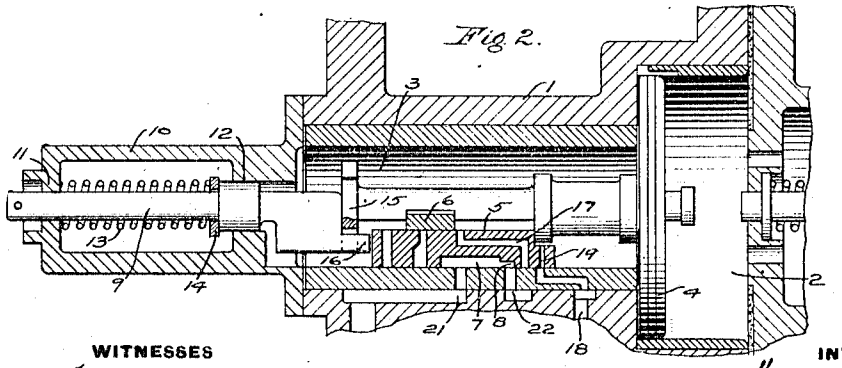


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER V. TURNER, OF EDGEWOOD, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

UNIFORM-RELEASE TRIPLE-VALVE DEVICE.

1,055,373. Specification of Letters Patent. Patented Mar. 11, 1913.

Application filed July 22, 1907. Serial No. 385,013.

To all whom it may concern:

Be it known that I, WALTER V. TURNER, a citizen of the United States, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Uniform-Release Triple-Valve Devices, of which the following is a specification.

This invention relates in general to fluid pressure brakes and more particularly to triple valve devices therefor.

In order to effect a substantially uniform or simultaneous release of the brakes on long trains, it has been proposed to retard the release of the brakes at the forward end of the train. A construction adapted for this purpose is disclosed in my Patent No. 920,504 of May 4, 1909, and comprises a valve for controlling the brake cylinder exhaust port, having a full release position and a retarded release position in which the exhaust opening is restricted, an actuating piston for the valve, operated by an increase in train pipe pressure for moving the valve from full release to retarded release position, and a yielding resistance means acting directly against the valve to oppose this movement and for returning the valve to full release position upon equalization of the fluid pressure. In this construction, as the piston moves the valve inwardly to the retarded release position, the yielding resistance spring necessarily opposes the movement of the valve, and acts directly upon the end of same, so that counter strains are set up in the valve, which tend to tip or lift the valve from its seat.

The principal object of my invention is to provide a yielding resistance means adapted to directly oppose the inward movement of the piston to the retarded release position, but which does not oppose the free inward movement of the valve, so that no strains are produced in the valve tending to tip or lift the same from its seat. The resistance means being adapted to return the valve and piston to full release position on equalization of pressures thereon.

Another object of my invention is to provide improved means for governing the recharging of the auxiliary reservoir in full release and retarded release positions.

In the accompanying drawings; Figure 1 is a central sectional view of a triple valve device embodying my improvements, with the parts in full release position, and Fig. 2 a similar view, in part, showing the parts in retarded release position.

As shown in the drawing, the triple valve device comprises a casing 1, having piston chamber 2, containing piston 4, valve chamber 3, containing main slide valve 5 and graduating valve 6. The main slide valve is provided with exhaust cavity 7, for connecting brake cylinder port 21 with exhaust port 22, in normal full release position, and having a restricted port 8, which registers with the exhaust port 22 in the retarded release position, all of which is similar to the prior construction. The yielding resistance device comprises a stem 9, mounted in guide bearings 11 and 12 in a cap 10, which may be secured to the auxiliary reservoir end of the triple valve casing 1. A resistance spring 13 is mounted on the stem 9 intermediate the bearing 11 and a collar 14 on the stem 9, and tends to force the stem outwardly to a position limited by the collar 14, engaging a fixed abutment. The outer end of the stem 9 is adapted to bear on the piston stem 15 of the piston 4, and is also provided with a projection 16 which at certain times engages the inner end of the main slide valve 5. The projection 16 is of such length as to permit of a slight clearance between the piston and the valve, when the resistance stem is in contact with the end of the piston stem 15 and the valve 5. Thus it will be seen that in the traverse of the parts between full release position and retarded release position, there will be a slight movement of the resistance device and piston relative to the main valve. Consequently, by reason of the slight clearance in the above traverse, the valve is unopposed and free in its movement and the tendency to lift or tip is obviated.

In addition to the usual feed groove around the triple valve piston, I may provide a through port 17 in the main slide valve, which registers in full release position with a port and passage 18 leading to the emergency check valve chamber 20, for quickly recharging the auxiliary reservoir in full release position, and a restricted port 19, adapted to register with said port 18 in the retarded release position, to slowly recharge the auxiliary reservoir, the usual feed groove being closed by the seating of

the piston 4 in this position, as shown in Fig. 2.

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

1. A triple valve device comprising a main valve controlling the brake cylinder exhaust, a graduating valve having a movement relative to the main valve, and a piston for operating said valves, said main valve having a normal full release position and a retarded release position for restricting the exhaust, and a yielding resistance means acting directly against the piston or stem to oppose the movement of the same to the retarded release position.

2. A triple valve device comprising a main valve controlling the brake cylinder exhaust, a graduating valve and piston for operating same, having a movement relative to the main valve, said main valve having a normal full release position and a retarded release position for restricting the exhaust, and a yielding resistance means acting directly against the piston or stem to oppose the movement of the same to the retarded release position and acting directly upon the main valve to return the same from retarded to normal or full release position.

3. A triple valve device comprising a main valve controlling the brake cylinder exhaust, a graduating valve and piston for operating same, having a movement relative to the main valve, said main valve having a normal full release position and a retarded release position for restricting the exhaust, and a yielding resistance means acting directly against the piston or stem to oppose the movement of the same from the normal to the retarded release position, the main valve being free from the action of the resistance means during this movement.

4. A triple valve device comprising a main valve controlling the brake cylinder exhaust, a graduating valve and piston for operating same, having a movement relative to the main valve, said main valve having a normal full release position and a retarded release position for restricting the exhaust, and a spring for returning said valve from retarded to full release position and adapted to be compressed by the direct action of the piston in moving from full to retarded release position.

5. A triple valve device comprising a main valve controlling the brake cylinder exhaust, a graduating valve and piston for operating same, having a movement relative to the main valve, said main valve having a normal full release position and a retarded release position for restricting the exhaust, and yielding resistance means for returning said valve and piston from retarded to full release position, said piston and resistance means having a movement relative to said valve in their traverse between said positions.

6. In a fluid pressure brake, the combination with a train pipe, brake cylinder, and auxiliary reservoir, of a valve for controlling the brake cylinder exhaust port and having a normal full release position and a retarded release position, and having a port for admitting fluid from the train pipe to the auxiliary reservoir in one position, and a restricted port for admitting fluid from the train pipe to the auxiliary reservoir in the other position.

7. In a fluid pressure brake, the combination with a train pipe, a brake cylinder, and auxiliary reservoir, of a valve for controlling the brake cylinder exhaust port and having a normal full release position and a retarded release position, and having a port for admitting fluid from the train pipe to the auxiliary reservoir in full release position, and a restricted port for admitting fluid from the train pipe to the auxiliary reservoir, in the retarded release position.

In testimony whereof I have hereunto set my hand.

WALTER V. TURNER.

Witnesses:
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EDITH B. MACDONALD.