(No Model.)

A. P. MASSEY.

AUTOMATIC BRAKE VALVE.

No. 523,773. Patented July 31, 1894.

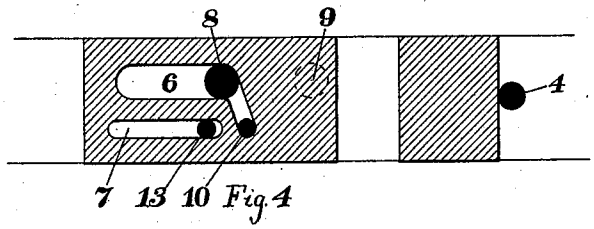

Fig. 4

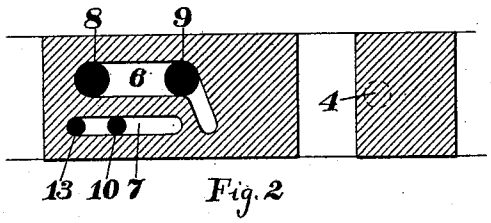

Fig. 2

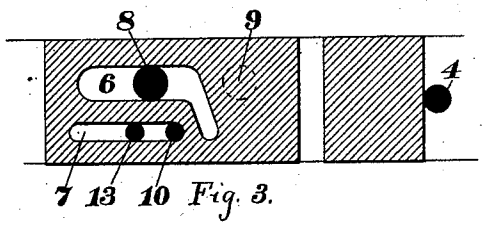

Fig. 3.

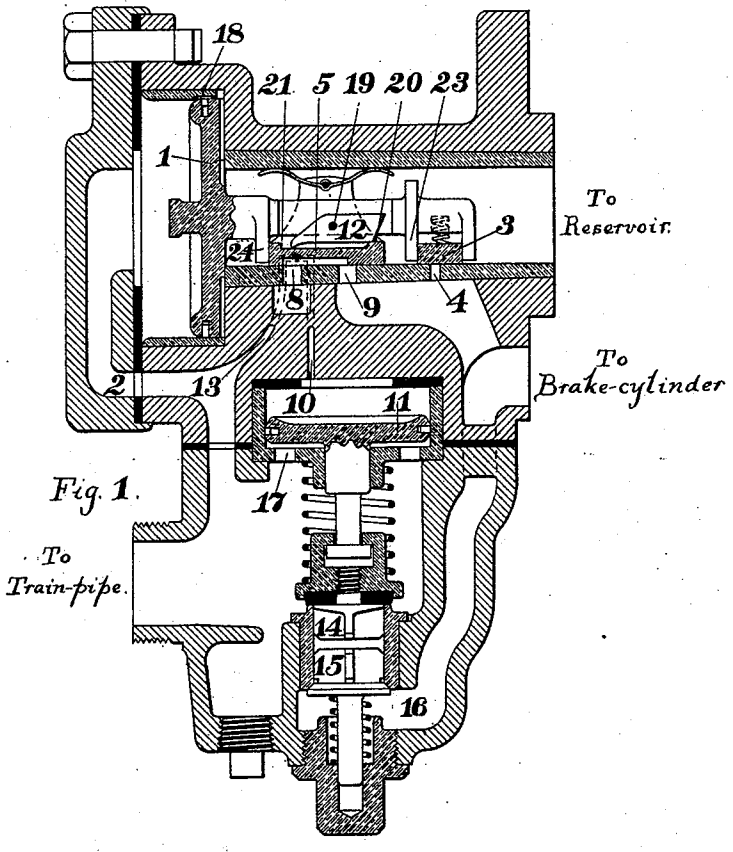

Fig. 1.

WITNESSES:

F. L. Massey.

M. J. Mordin

INVENTOR

Albert P. Massey

UNITED STATES PATENT OFFICE.

ALBERT P. MASSEY, OF WATERTOWN, NEW YORK.

AUTOMATIC BRAKE-VALVE.

SPECIFICATION forming part of Letters Patent No. 523,773, dated July 31, 1894.

Application filed February 10, 1894. Serial No. 499,714. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. MASSEY, a citizen of the United States, and a resident of the city of Watertown, county of Jefferson, State of New York, have invented a new and useful Improvement in Automatic Brake-Valves, of which the following is a specification.

The object of my invention is to obtain all the functions of a quick action automatic brake with an apparatus in which the piston of the triple valve has the same travel for either slow or quick action applications. The speed of the piston determines whether the port to the "emergency piston" shall be opened or not.

Figure 1 is a longitudinal section of the apparatus complete. Fig. 2 shows the position of the two slide valves in normal or release position, sectioned to show the two cavities on the under side of the main valve. Fig. 3 shows the position of the two slide valves for a slow application of the brakes. Fig. 4 shows the position of the two slide valves for a quick application of the brakes.

The general casing shown in Fig. 1 has three connections respectively to train pipe, to auxiliary reservoir and to brake cylinder.

1 is a piston located in a cylinder, one side of which is exposed to train pipe pressure through passage 2, and the other side exposed to auxiliary reservoir pressure. This piston actuates a slide valve 3 controlling a passage 4 between the auxiliary reservoir and the brake cylinder, also a slide valve 5 containing two cavities 6 and 7. The cavity 6 serves to connect the exhaust port 8 with 9, an outlet from the brake cylinder when the valve is in the normal or running position, as shown in Fig. 2; and connects the same exhaust port 8 with a passage 10 leading from the chamber above piston 11 when the valve is in the quick action position, as shown in Fig. 4. A gravity latch 12 actuates valve 5 in certain cases as hereinafter described. The cavity 7 when the valve 5 is in its normal position connects the passage 10 with the passage 13, as shown in Fig. 2, thus connecting the train pipe with the chamber above the piston 11, but in the quick action position the cavity is cut off from passage 10, which is then in connection with the cavity 6.

14 is a valve controlling an opening between the train pipe and the brake cylinder.

15 is a check valve to prevent the return flow of fluid pressure through the same opening.

16 is a passage leading from the check valve to the brake cylinder chamber.

The piston 11 is always exposed to train pipe pressure on its under side through passages 17. A charging groove 18 allows air under pressure to pass from the train pipe to the auxiliary reservoir until both are equal. When there is any reduction of pressure on the train pipe side of the piston 1, the preponderance of pressure in the auxiliary reservoir will move the piston its full stroke. The position to which the piston will carry the valve 5 depends on the rapidity with which it moves. This result is obtained by means of the gravity latch 12. This latch is nearly balanced on the pin 19 with a preponderance of weight on the right hand end. In the normal position the right hand end is supported on a shelf or boss 20 on the top of the slide valve 5, the left hand end, or hook, is depressed in front of a projection 21 on the left end of the slide valve, but at a distance back from the projection somewhat greater than the lap of the right hand end on the shelf at that end of the valve. If the piston is moved with a moderate motion, the preponderance of weight of the right hand of the latch will depress that end after it leaves the shelf 20 and lift the hook above the projection 21, the valve 5 will then be moved to the position shown in Fig. 3 by the abutment 23 on the piston stem. If the piston is moved rapidly the latch is so nearly balanced that it will not have time to drop before the hook has engaged the projection 21, the latch will therefore carry the valve with it until the piston completes its stroke when the slide valve 5 will be in the position shown in Fig. 4. On the return movement the valve 5 is moved by abutment 24 and the right hand end of the latch is raised to its normal position on the shelf by sliding up the incline thereof.

In the process of applying brakes in the ordinary automatic brake systems, the operator reduces the pressure in the train pipe slowly, if he wishes a moderate application, and very quickly if he wishes a quick application. A slow reduction of the pressure on the train

pipe side of the piston 1, will cause a slow motion of the piston and the latch 12 will not move valve 5. Therefore valve 5 will be moved by abutment to position shown in Fig. 3 and valve 3 will uncover port 4 allowing air to pass from the reservoir to the brake cylinder making a moderate application. But a quick reduction causes piston 1 to move with great rapidity and the latch will carry valve 5 to the position shown in Fig. 4. This opens the chamber above piston 11 to the atmosphere, through passage 10, cavity 6 and exhaust 8, whereupon the train pipe pressure beneath piston 11 will raise it instantly and open valve 14 thereby allowing air from the train pipe to flow past valves 14 and 15 to the brake cylinder, the result being to reduce quickly the pressure in the train pipe to actuate the brakes on the succeeding cars, as well as to obtain a quicker application in the brake cylinder attached.

What I claim as new, and desire to secure by Letters Patent, is—

In an automatic brake system normally operated by a triple valve the combination of a valve controlling a direct opening from the train pipe to the brake cylinder, a separate piston to actuate said valve, a passage leading from the chamber on one side of the separate piston to a slide valve, a cavity in said slide valve to connect said passage with a source of air under pressure, another cavity in said slide valve to connect said passage with the exhaust port and a latch attached to the stem of the triple valve piston, which may actuate said slide valve or not, depending on the speed with which the triple valve piston is moved, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 7th day of February, 1894.

ALBERT P. MASSEY.

Witnesses:
MICHAEL J. MORKIN,
MAXWELL F. LINDNER.