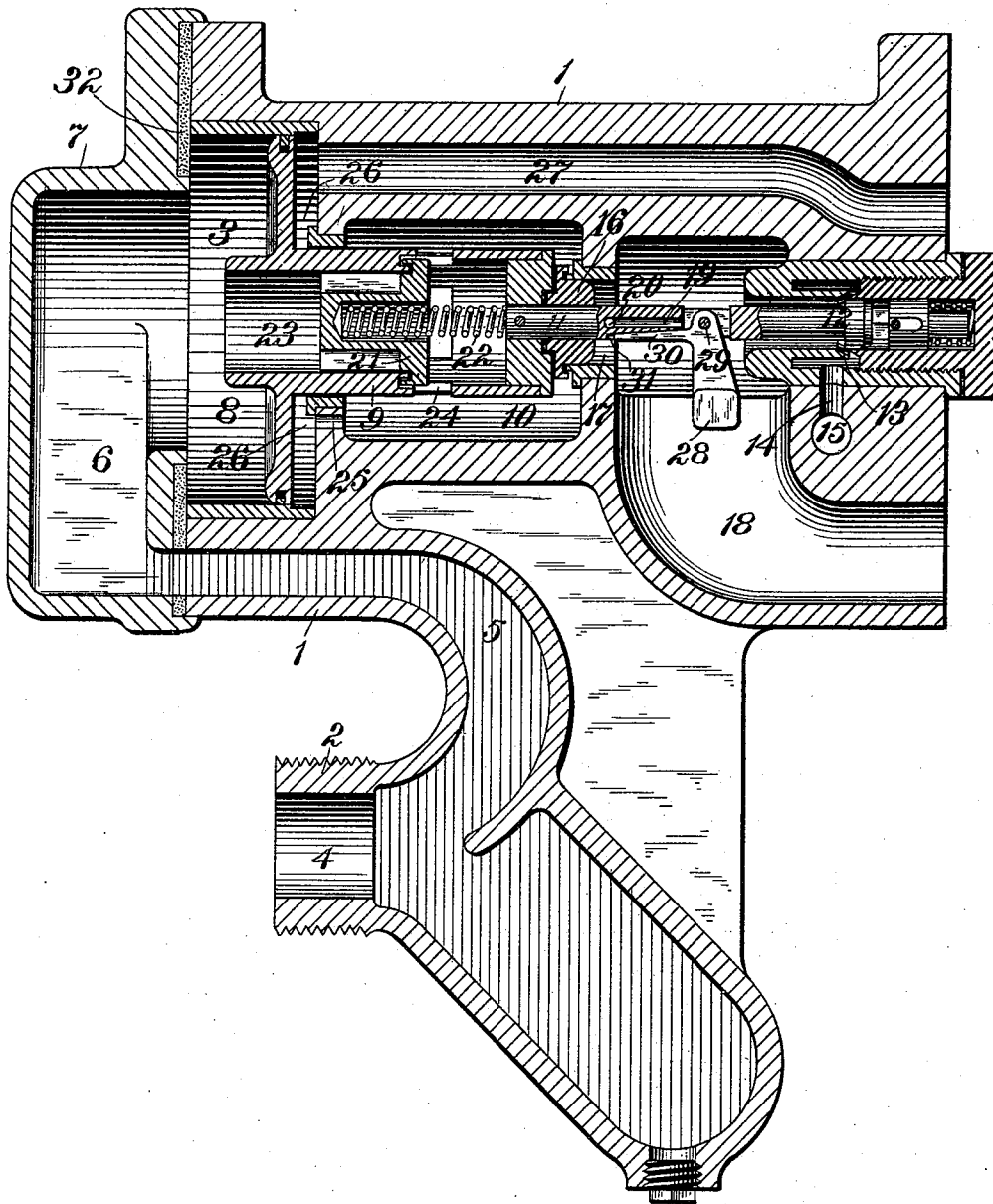


(No Model.)

R. A. PARKE.
FLUID PRESSURE BRAKE APPARATUS.

No. 550,561.

Patented Nov. 26, 1895.



WITNESSES:

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Att'y.

UNITED STATES PATENT OFFICE.

ROBERT A. PARKE, OF NEW BRIGHTON, NEW YORK, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENNSYLVANIA.

FLUID-PRESSURE BRAKE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 550,561, dated November 26, 1895.

Application filed May 28, 1895. Serial No. 550,942. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. PARKE, a citizen of the United States, residing at New Brighton, in the county of Richmond and State of New York, have invented or discovered a certain new and useful Improvement in Fluid-Pressure Brake Apparatus, of which improvement the following is a specification.

The object of my invention is to provide an improvement in fluid-pressure brake apparatus for railway-cars; and to this end my invention consists in means for effecting emergency applications of the brakes by a rapid movement only of a movable abutment or piston, which causes the action on an emergency-valve of an inertia device which is inoperative on the valve when the movement of the abutment is comparatively slow, and my invention further consists in the combination of such inertia device with means for releasing fluid under pressure from the train-pipe in emergency applications of the brakes and with a triple-valve device for applying and releasing the brakes in both service and emergency applications.

The improvement claimed is hereinafter fully set forth.

The accompanying drawing is a central longitudinal section through a triple-valve device, showing an application of my improvement.

As shown in the drawing, the casing 1 of the triple-valve device is provided with a screw-threaded nozzle 2, which is adapted to be connected to the train-pipe or to a branch therefrom, and the piston-chamber 3 is at all times in open communication with the train-pipe through the passages 4 and 5 and the chamber 6, which is formed in the cap or bonnet 7.

The triple-valve piston 8 is provided with a tubular extension 9, which projects into a chamber 10 and is connected to a stem 11, having an exhaust-valve 12 at or near one end for controlling the release of fluid from the brake-cylinder to the atmosphere through the ports and passages 13, 14, and 15.

The stem 11 is adapted to slide through a valve 16, which controls a port or passage 17, opening into the passage 18, which leads to the brake-cylinder. A transverse passage 20

extends through the stem 11 and connects with a longitudinal passage 19 in the stem, which is always open at one end, to the brake-cylinder passage 18.

A check or non-return valve 21 controls a comparatively-large passage 23 through the tubular extension 9 of the triple-valve piston 8, and a spring 22 tends to hold the valve 21 to its seat. The space in the tubular extension 9 to the right of the valve 21 communicates with the chamber 10 through the passages or openings 24 and the chamber 10 communicates with the auxiliary reservoir through a small passage 25 through the space 26 to the right of the piston 8 and through a passage 27, which is always in communication with the auxiliary reservoir. A feed-groove may be provided to admit fluid from the train-pipe around the piston 8 to the auxiliary reservoir through the passage 27 and to the chamber 10 through the passage 25, or the fluid from the train-pipe may lift the valve 21 and pass through the openings 24 in the chamber 10 and from the chamber 10 through the passage 25, space 26, and passage 27 to the auxiliary reservoir.

In addition to the construction already described I employ an inertia device which is adapted to be operated in emergency applications by a sudden movement of the triple-valve piston, so as to unseat the valve 16, but which is inoperative to move the valve in service applications or when the triple-valve piston is moved more slowly. As shown in the drawing, a weight 28 is pivoted to the stem 11, to the right of the valve 16, by means of a pin 29, and an arm 30 projects from the weight and is normally held in a slot or recess 31 in the under side of the stem 11 by the gravity of the weight 28. The normal position of the arm 30 relative to the stem 11 is such that the lower edge of the arm does not extend below the lower part of the stem 11, but is far enough within the stem to permit the arm 30 to pass into the opening through the valve 16 when the piston 8 and the stem 11 are moved slowly to the left. In order to insure that the arm 30 will be held in this position, the center of gravity of the weight 28 should be to the right of a vertical line passing through the center of the pivot

29. When a comparatively slow and gradual reduction of train-pipe pressure is made for the purpose of effecting a service application of the brakes, the abutment or piston 8 and the stem 11 will be moved slowly to the left until the piston 8 bears against the gasket 32. The stem 11 and the arm 30 of the inertia device will slide through the valve 16, the exhaust-valve 12 will be moved to the left of the port 13, so as to cut off communication between the brake-cylinder passage 18 and the atmosphere, and the transverse port or passage 20 will be moved to the left of the valve 16 and permit auxiliary-reservoir fluid to flow from the chamber 10 through the passages 20 and 19 and through the passage 18 to the brake-cylinder.

When the pressure in the auxiliary reservoir is reduced by expansion into the brake-cylinder to such an extent that the pressure on the right of the piston 8 is somewhat less than that on the left, the train-pipe pressure will move the piston 8 and the stem 11 to the right and cut off communication between the chamber 10 and the brake-cylinder.

During a service application of the brakes the valve 16 will be held to its seat by the pressure in the chamber 10.

When a sufficiently great and sudden reduction of train-pipe pressure is made for the purpose of causing an emergency application of the brakes, the piston 8 and the stem 11 will be suddenly moved to the left, and the inertia of the weight 28 will cause the arm 30 to move downward, so as to bring the end of the arm 30 into position to abut against the valve 16 and unseat the valve.

The opening of the comparatively-large passage 17 will permit a quick exhaust of fluid from the chamber 10 to the brake-cylinder, and the great reduction of pressure in the chamber 10 and on the back of the valve 21 will permit the train-pipe pressure to lift the valve 21 from its seat, and fluid from the train-pipe will flow through the passage 23, ports or openings 24, chamber 10, and passages 17 and 18 to the brake-cylinder. When the pressure in the brake-cylinder has nearly equalized with that in the train-pipe, the valve 21 will be seated by the pressure of the spring 22 and fluid from the auxiliary reservoir will continue to flow through passage 27, space 26, passage 25, chamber 10, and passages 17 and 18 to the brake-cylinder until the brakes are fully applied.

The piston of the triple-valve device has the same traverse in both service and emer-

gency applications, and the operation of the emergency-valve is dependent only on the rapidity of movement of the triple-valve piston, which by the inertia of the weight 28 causes a movement of the arm 30 relative to the stem 11.

I claim as my invention and desire to secure by Letters Patent—

1. In a fluid pressure brake apparatus, the combination with a valve for releasing fluid under pressure from the train pipe, of a movable abutment, or piston, and an inertia device which is connected to the piston, or its stem, and which is immovable relative thereto when the piston moves slowly, but which on a rapid movement of the piston is moved into position to open the valve, substantially as set forth.

2. In a triple valve device, the combination, with a comparatively large passage for the release of fluid from the train pipe and a valve controlling the passage, of a contracted passage through which fluid is admitted from the auxiliary reservoir to the valve and to the large passage, a piston which has the same traverse in service and emergency applications of the brakes, and means whereby the valve is opened by the movement of the piston when the piston is operated by a sudden reduction of train pipe pressure, substantially as set forth.

3. In a fluid pressure brake apparatus, the combination with a passage through which fluid is released from the train pipe, of a valve controlling the passage, a movable abutment or piston, and an inertia device which is connected to the piston, or its stem, and which is inoperative to move the valve when the piston moves slowly, but which, upon a rapid movement of the piston, engages and opens the valve, substantially as set forth.

4. In a triple valve device, the combination, with a passage through which fluid is released from the train pipe, of a valve controlling the passage, a movable abutment, or piston, an inertia device pivoted to the stem of the piston, and an arm on the inertia device which is adapted to be moved into position to open the valve when a sudden reduction of train pipe pressure is made, substantially as set forth.

In testimony whereof I have hereunto set my hand.

ROBERT A. PARKE.

Witnesses:

A. B. DAVIS,

W. L. MURRAY.