

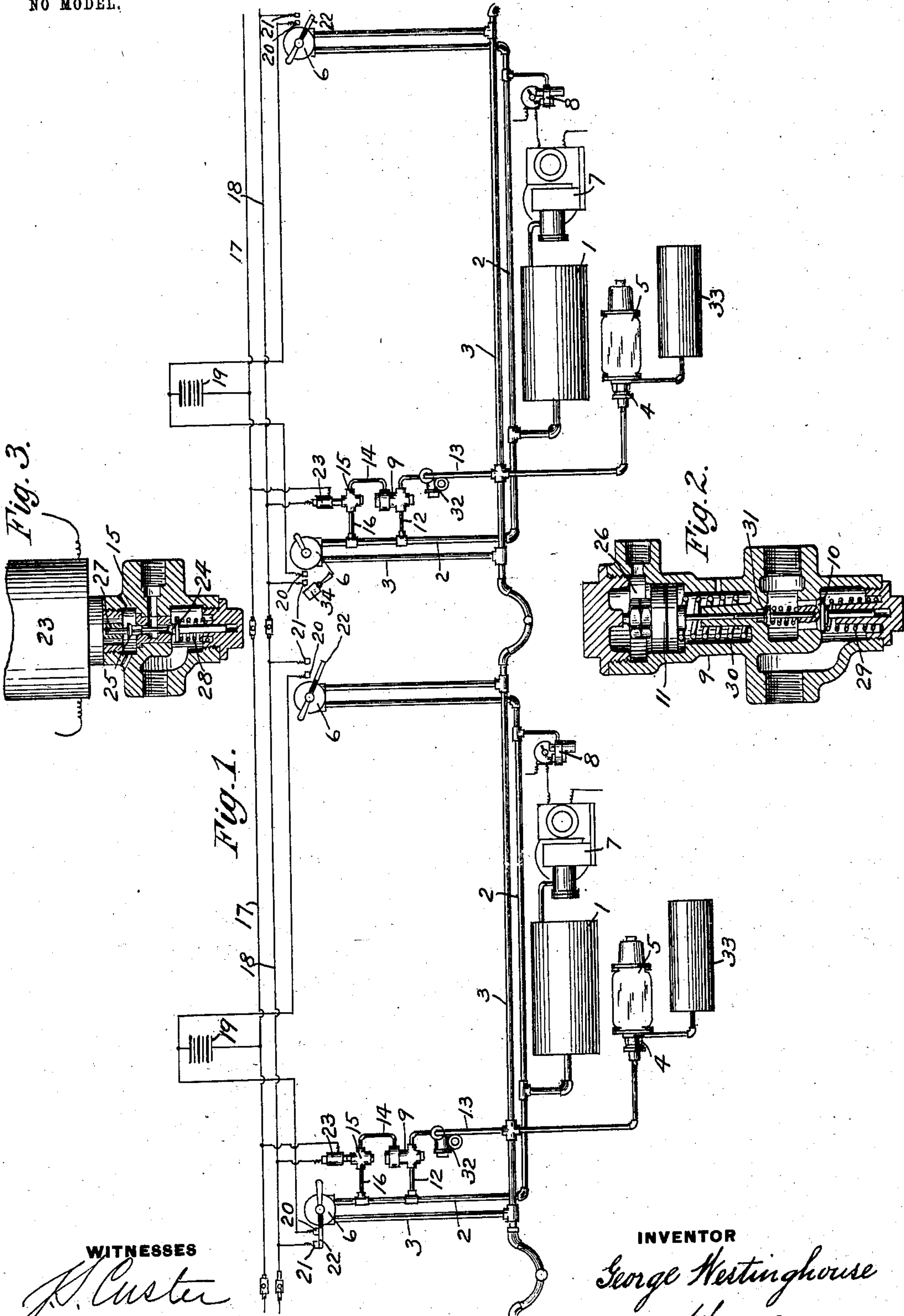
No. 750,010.

PATENTED JAN. 19, 1904.

G. WESTINGHOUSE.
AIR BRAKE.

APPLICATION FILED JUNE 2, 1903.

NO MODEL.



WITNESSES

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INVENTOR

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Att'y.

UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO
THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENN-
SYLVANIA, A CORPORATION OF PENNSYLVANIA.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 750,010, dated January 19, 1904.

Application filed June 2, 1903. Serial No. 159,744. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, a citizen of the United States, residing in Pittsburg, county of Allegheny, State of Pennsylvania, have invented a certain new and useful Improvement in Air-Brakes, of which improvement the following is a specification.

My invention relates to air-brakes, and more particularly to air-brake systems as applied to cars operated on the multiple-unit principle—that is, in which each car is supplied with a complete air-brake equipment and adapted to operate alone as a single car or to be coupled up with one or more other similarly-equipped cars in a train. Heretofore in the operation of two or more cars of this character in a train an additional main-reservoir pipe in addition to the regular train-pipe has been extended throughout the train for connecting up the main reservoirs of the several cars in order to utilize air from all the main reservoirs and air-pumps for assisting in the operation of the brakes, all the motormen's brake-valves, except the one on the head end of the train, being set in "lap" position with all ports closed. The additional pipe-couplings of the main-reservoir pipes between the cars has been found to be an objectionable feature; and the main object of my invention is to provide an electrically-operated release-valve device on each car adapted to be operated from the head end of any one of the cars to open communication from the main reservoir to the train-pipe, thereby dispensing with the additional coupling of the main-reservoir pipes between the cars, but at the same time utilizing the main reservoirs and air-pumps of all the cars to assist in the operation of the brakes.

In the accompanying drawings, Figure 1 shows in diagram the air-brake equipment of two cars coupled together and embodying one form of my invention; Fig. 2, a sectional view of the release-valve; and Fig. 3, a sectional view of the magnet-valve.

According to this construction each car is equipped with a main reservoir 1, main-reservoir pipe 2, train-pipe 3, auxiliary reservoir

33, triple valve 4, brake-cylinder 5, motorman's brake-valve 6, air pump or compressor 7, and pressure-governor 8, all of which may be of any desired standard construction. In addition to this equipment I provide a release-valve device located between the main reservoir and train-pipe, and electrically-actuated means controlled by the movement of the brake-valve handle for operating the release-valve. The release-valve casing 9, containing release-valve 10 and piston 11, is connected by pipe 12 with the main-reservoir pipe, by pipe 13 with the train-pipe, and by pipe 14 with the magnet-valve casing 15, which is also connected to the main-reservoir pipe by a pipe 16. Two electric wires or conductors 17 and 18 extend throughout the train, the terminals being coupled between the cars in the usual manner. On each car is carried a battery 19, one terminal or pole of which is connected to the wire 17, while the other pole is connected to a stationary contact-point 20, located near each of the motorman's brake-valves. Another stationary contact-point 21, connected with the other wire 18, is located in close proximity to contact 20, and the motorman's brake-valve handle is provided with a plate or bar 22, adapted to make the circuit connections between the contact-points when set in release position and to open said circuit when set in other positions. The terminals of the electromagnet 23 are connected to the respective circuit-wires 17 and 18, and the valve-casing contains the valves 24 for supplying air to the piston-chamber 26 of the release-valve and an exhaust-valve 25 for allowing the escape of air from said piston-chamber, both these valves being actuated by the movable core 27 of the magnet and the spring 28.

According to the form of release-valve device shown in Fig. 2 a spring 29 bears against the valve 10 and a spring 30 presses upon the back of piston 11, while a spring-pressed valve 31 is mounted on a section of the piston-stem for preventing leakage around the piston-stem when the parts are held in the normal position.

A pressure-reducing valve 32 set at normal

train-pipe pressure may be inserted in pipe connection 13 in order to prevent overcharging the train-pipe.

The operation of my improved device is as follows: Supposing two or more cars to be coupled up in a train, then the brakes will be operated by the motorman's brake-valve at the head end of the first car of the train, while all the other brake-valves are set in lap position. After the brakes have been applied in the usual manner and it is desired to release the same, the brake-valve at the head end of the train is turned to "release" position, as indicated at the left in Fig. 1, thus completing the magnet-circuit at the contacts 20 and 21 and energizing all the magnets 23 throughout the train. This causes the closing of the exhaust-valves 25 and the opening of the valves 24, thus supplying air to the pistons 11 and opening the release-valves 10 on all the cars of the train, thereby permitting air to flow from all the main reservoirs to the train-pipe to assist in the release of the brakes. When the motorman turns the brake-valve from its release position, the magnet-circuit is broken and the valves 24 are closed, while the exhaust-valves 25 are opened, thus allowing the escape of air from piston-chambers 26 and the closing of the release-valves. The pressure-reducing valves 32 prevent an overcharging of the train-pipe in case the motorman should hold his brake-valve in full release position for too long a period.

It will now be evident that by means of my improvement the main reservoirs and air-pumps of all the cars may be utilized in the operation of the brakes and that the objectionable couplings of the main-reservoir pipes may be dispensed with, and while I have described one preferred form of release-valve device for accomplishing this result it will be understood that my invention is not limited to this particular construction, but covers, broadly, any electrically-operated release-valve device for controlling communication from the main reservoir to the train-pipe. It will also be obvious that a separate switch, such as 34, located within reach of the motorman, but independent of the brake-valve, may be used for opening and closing the magnet-circuit, if desired, although it is preferable to operate the same directly by the movement of the brake-valve handle.

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

1. In an air-brake, the combination with a main reservoir and train-pipe, of an electrically-operated release-valve device for controlling communication from the main reservoir to the train-pipe and means within reach of the motorman for controlling the operation of said release-valve device.

2. In an air-brake, the combination with a main reservoir and train-pipe, of an electric-

ally-operated release-valve device for controlling communication from the main reservoir to the train-pipe, an electric circuit for said device and a switch within reach of the motorman for controlling said circuit.

3. In an air-brake, the combination on a plurality of cars, each having a main reservoir, train-pipe and an electrically-operated release-valve device for controlling communication from the main reservoir to the train-pipe, of an electric circuit for said release-valve devices and a switch within reach of the motorman for controlling said circuit.

4. In an air-brake, the combination with a main reservoir, train-pipe and brake-valve, of electrically-actuated means for opening communication from the main reservoir to the train-pipe when the brake-valve is moved to release position.

5. In an air-brake, the combination with a main reservoir, train-pipe and brake-valve, of a release-valve device for controlling communication from the main reservoir to the train-pipe, and electrically-actuated means operated by the movement of the brake-valve handle for controlling the release-valve device.

6. In an air-brake, the combination with a main reservoir, train-pipe and motorman's brake-valve, of an electrically-operated release-valve device for controlling a separate communication from the main reservoir to the train-pipe, and means actuated by the movement of the brake-valve to release position for closing the circuit of the release-valve device.

7. In an air-brake, the combination with a main reservoir, train-pipe and brake-valve, of a separate release-valve mechanism for controlling communication from the main reservoir to the train-pipe, an electrically-actuated device for governing the release-valve, and contact-points operated by the movement of the brake-valve handle for opening and closing the circuit of said electrically-actuated device.

8. In an air-brake, the combination with a main reservoir, train-pipe and brake-valve, of a separate release-valve for controlling communication from the main reservoir to the train-pipe, an electromagnet-valve for governing the action of the release-valve, and switch-contacts operated by the movement of the brake-valve for closing the circuit to said electromagnet when the brake-valve handle is in release position.

9. In an air-brake for a plurality of cars, each having a main reservoir, train-pipe, brake-valve and an electrically-operated release-valve device for controlling communication from the main reservoirs to the train-pipe, in combination with an electric circuit for said devices, and means operated by the movement of one of the brake-valves for controlling said circuit.

10. A valve device comprising a casing, a valve controlling a passage through the casing, a piston and stem for operating said valve,

and another valve on said stem for preventing leakage around the stem.

- 5 11. A valve device comprising a casing having a passage therethrough, a valve for controlling said passage, a piston having a sectional stem for operating said valve and a spring-pressed valve on one section of said stem for preventing leakage around the stem.

In testimony whereof I have hereunto set my hand, at New York, in the county and State of New York, this 26th of May, 1903.

GEO. WESTINGHOUSE.

Witnesses:

WM. H. CAPEL,
H. C. TENER.