No. 845,500. PATENTED FEB. 26, 1907.

R. J. WILSON.

AIR BRAKE APPARATUS.

APPLICATION FILED NOV. 16, 1905.

2 SHEETS—SHEET 1.

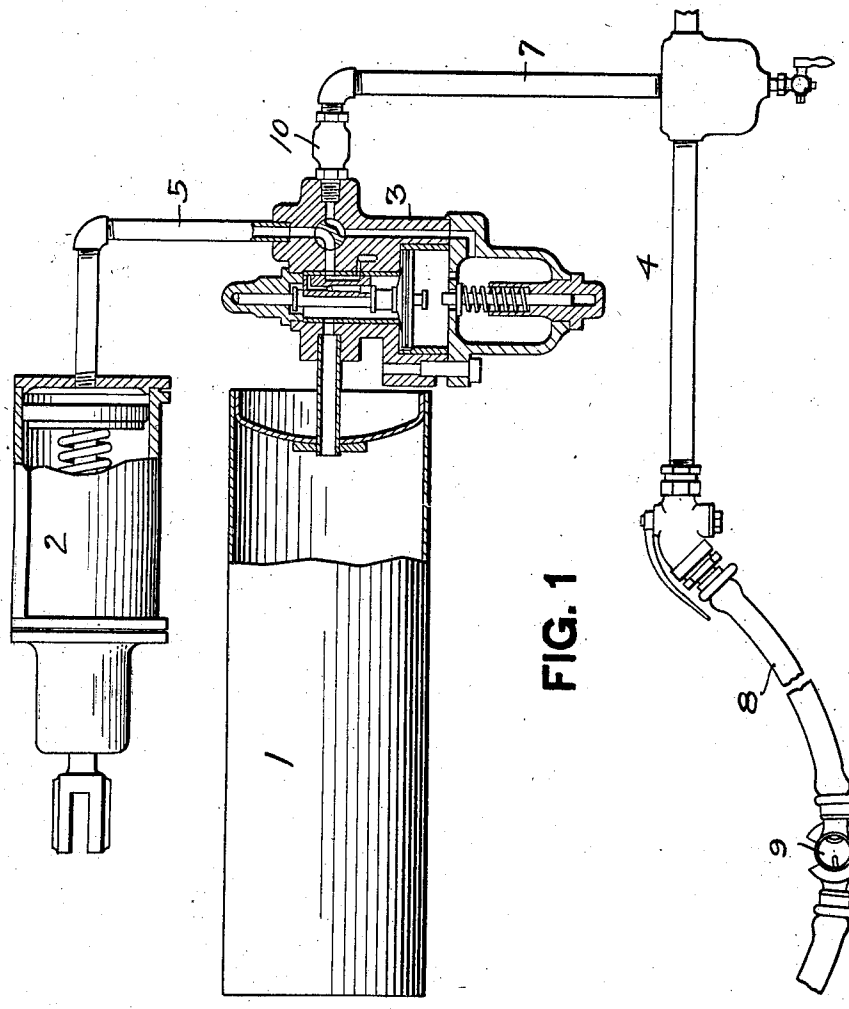


FIG. 1

WITNESSES.

J. R. Kellen

Robert C. Totten

INVENTOR.

Robert J. Wilson

By Kay Totten & Winter

attorneys

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2 SHEETS—SHEET 2.

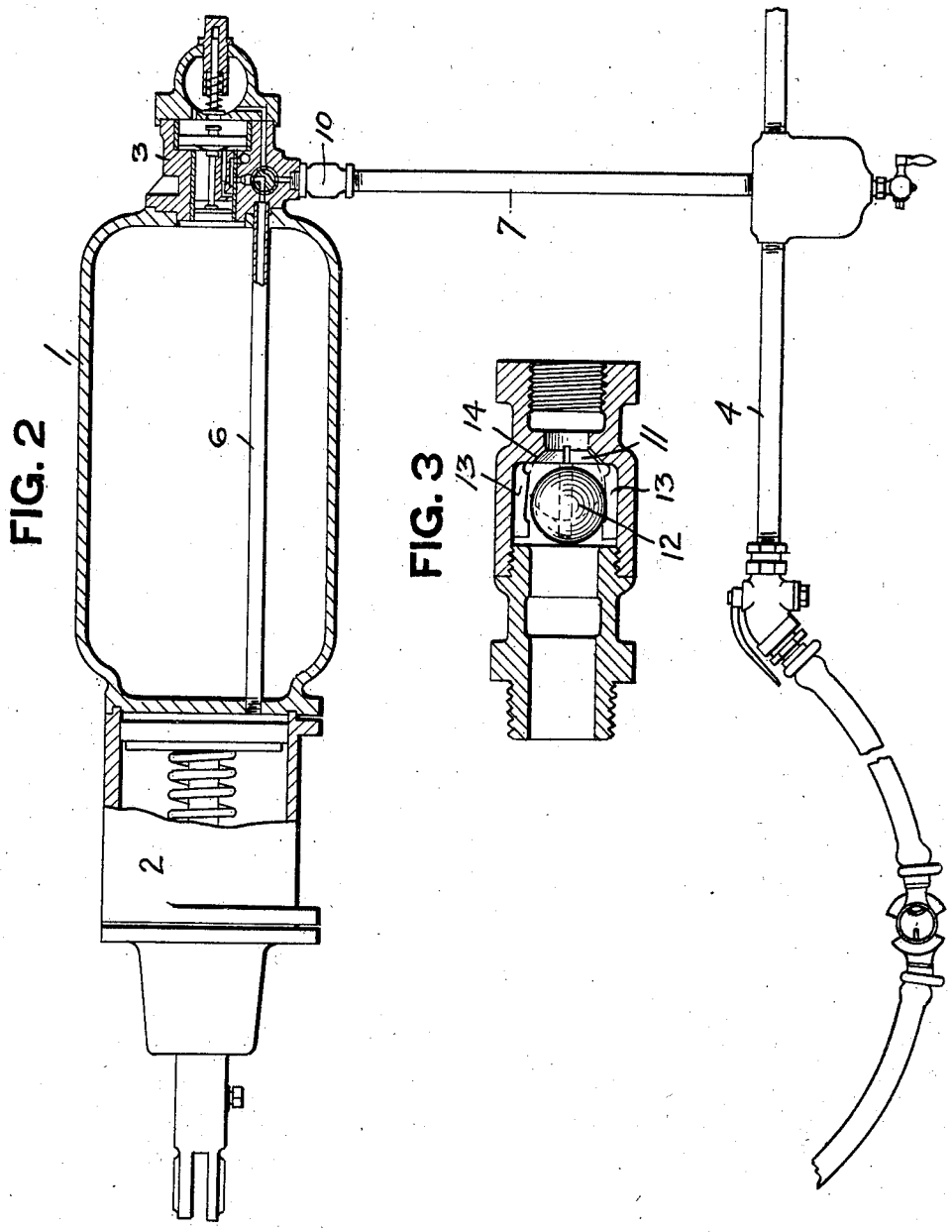


FIG. 2

FIG. 3

WITNESSES.

J. R. Keller

Robert C. Lotten

INVENTOR.

Robert J. Wilson

By Kay Lotten & Winter

Attorneys

UNITED STATES PATENT OFFICE.

ROBERT J. WILSON, OF PITTSBURG, PENNSYLVANIA.

AIR-BRAKE APPARATUS.

No. 845,500. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed November 16, 1905. Serial No. 287,665.

To all whom it may concern:

Be it known that I, ROBERT J. WILSON, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Air-Brake Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof.

This invention relates to air-brake systems, and has for its object to prevent wrecks and other evils due to the severe application of the brakes when the train pulls apart or the train-pipe or hose bursts or becomes ruptured from any cause.

In all automatic air-brake systems the brakes are applied by reducing the pressure in the train-pipe, the severity of the application of the brakes depending upon the rapidity of reduction of the train-pipe pressure. When the train pulls apart or the train-pipe or hose bursts or becomes ruptured from any cause, the air escapes very rapidly, thus causing the triple valve to move instantaneously to emergency position and causing a very severe application of the brakes. As a consequence the cars adjacent to the break or rupture are checked very rapidly, thus causing the other cars in the train to jolt against the same, causing the train to buckle and frequently throwing the cars from the track and causing a wreck.

The object of my invention is to prevent the severe application of the brakes, with the disastrous consequences which may follow whenever the train pulls apart or the train-pipe or hose breaks or becomes ruptured from any cause. This object is obtained by placing in the train-pipe or train-pipe connection on each car a valve which acts automatically upon an excess rush of air out of the train-pipe to throttle said train-pipe or train-pipe connection, thus preventing the quick reduction of pressure in the train-pipe and the emergency application of the brakes.

In the accompanying drawings, Figure 1 is a diagrammatic view showing a passenger-car equipment containing my improvement. Fig. 2 is a similar view of a freight-car equipment with my improvement applied thereto, and Fig. 3 is a sectional view of the regulating check-valve.

The drawings illustrate a standard Westinghouse air-brake system having an auxiliary reservoir 1, brake-cylinder 2, triple valve 3, and train-pipe 4. My invention, however, is applicable to any other automatic air-brake system. The passenger-car equipment, as shown, has the brake-cylinder connected to the auxiliary reservoir by a pipe 5, located externally of these parts, while the freight-car equipment has the auxiliary reservoir connected to the brake-cylinder by means of a pipe 6, extending through the auxiliary reservoir. In all cases, however, the triple valve 3 is connected to the train-pipe by means of a pipe 7. The train-pipe itself is connected at the ends of the cars by means of the usual hose 8 and coupling member 9.

In carrying my invention into effect it is not necessary to change the construction, connection, or mode of operation of any of the parts so far described. It is necessary merely to add to this system an automatic throttling-valve 10, located anywhere between the triple valve and the hose 8 and so arranged as to throttle the train-pipe connection whenever an excess rush of air out of the train-pipe occurs, as is the case when the train pulls apart or the hose bursts. Preferably this valve will be located in the connection 7 between the train-pipe proper and the triple valve, for the reason that in such location only a single valve for each car need be supplied, whereas if the valve were placed in the train-pipe proper it would be necessary to supply two valves for each car, one between each end of the train-pipe and the connection 7. The valve must be so arranged that when normal reductions of train-pipe pressures are made in order to apply the brakes in the usual way the valve will remain open, so as not to interfere with the usual application of the brakes. When the train-pipe becomes ruptured and a sudden rush of air out of the same takes place, this valve will close or partially close the connection to the triple valve, so that the latter cannot move instantaneously to emergency position, and in that way preventing the severe application of the brakes.

In Fig. 3 I have shown a check-valve comprising a suitable casing having a seat 11 and a ball-valve 12, cooperating with the seat. This valve is guided by suitable taper guides or ribs 13, which are so arranged that the ball rests on an inclined support, so that normally it will not rest against the seat 11, leaving around the same a passage of sufficient dimension to allow for the outward flow of the requisite amount of air in all ordinary applications of the brakes; but when

the train-pipe bursts there will be a sudden rush of air out of the train-pipe. This rush of air will carry the ball 12 against the seat 11, thus checking the outward flow of air from the triple valve. A suitable by-pass will be provided around the valve, such as the grooves 14 in the valve-seat, which will permit the air to escape from the outer side of the triple-valve piston with the requisite speed, so that the triple valve will move over as in ordinary service applications and the brakes will be applied only lightly, thus preventing wrecks and other evils.

It will be seen that by the use of the valve specified the sudden rush of air from the train-pipe which takes place when the latter breaks from any cause cannot extend to the triple-valve chamber, but, on the contrary, only a gradual reduction of pressure will be effected in the triple-valve chamber. As a consequence said valve will be moved to service-application position only and the brakes will be applied only with a service application.

What I claim is—

1. In an air-brake system, the combination of an auxiliary reservoir, brake-cylinder, triple valve and train-pipe, and an automatically-acting ball-valve for throttling the train-pipe.

2. In an air-brake system, the combination of an auxiliary reservoir, brake-cylinder, triple valve and train-pipe, and a ball-valve operable on an excess rush of air and serving to throttle the train-pipe connection.

3. In an air-brake system, the combination of an auxiliary reservoir, brake-cylinder, triple valve and train-pipe, and a ball-valve between the triple valve and train-pipe couplers and seating away from the triple valve, said valve being arranged to remain open normally and to move toward closed position on an excess rush of air out of the train-pipe.

4. In an air-brake system, the combination of an auxiliary reservoir, brake-cylinder, triple valve and train-pipe, and a ball-valve in the train-pipe and arranged to partially close said connection on a sudden rush of air out of the train-pipe.

5. In an air-brake system, the combination of an auxiliary reservoir, brake-cylinder, triple valve and train-pipe, and a check-valve between the triple valve and train-pipe couplers and seating away from the triple valve, said check-valve being arranged to automatically open under the influence of gravity and to move to closed position on an excess rush of air out of the train-pipe.

In testimony whereof I, the said ROBERT J. WILSON, have hereunto set my hand.

ROBERT J. WILSON.

Witnesses:
ROBERT C. TOTTEN,
J. R. KELLER.