No. 803,930. PATENTED NOV. 7, 1905.

H. W. SHORT & G. A. CASEY.

AUTOMATIC RETAINING VALVE.

APPLICATION FILED MAR. 3, 1905.

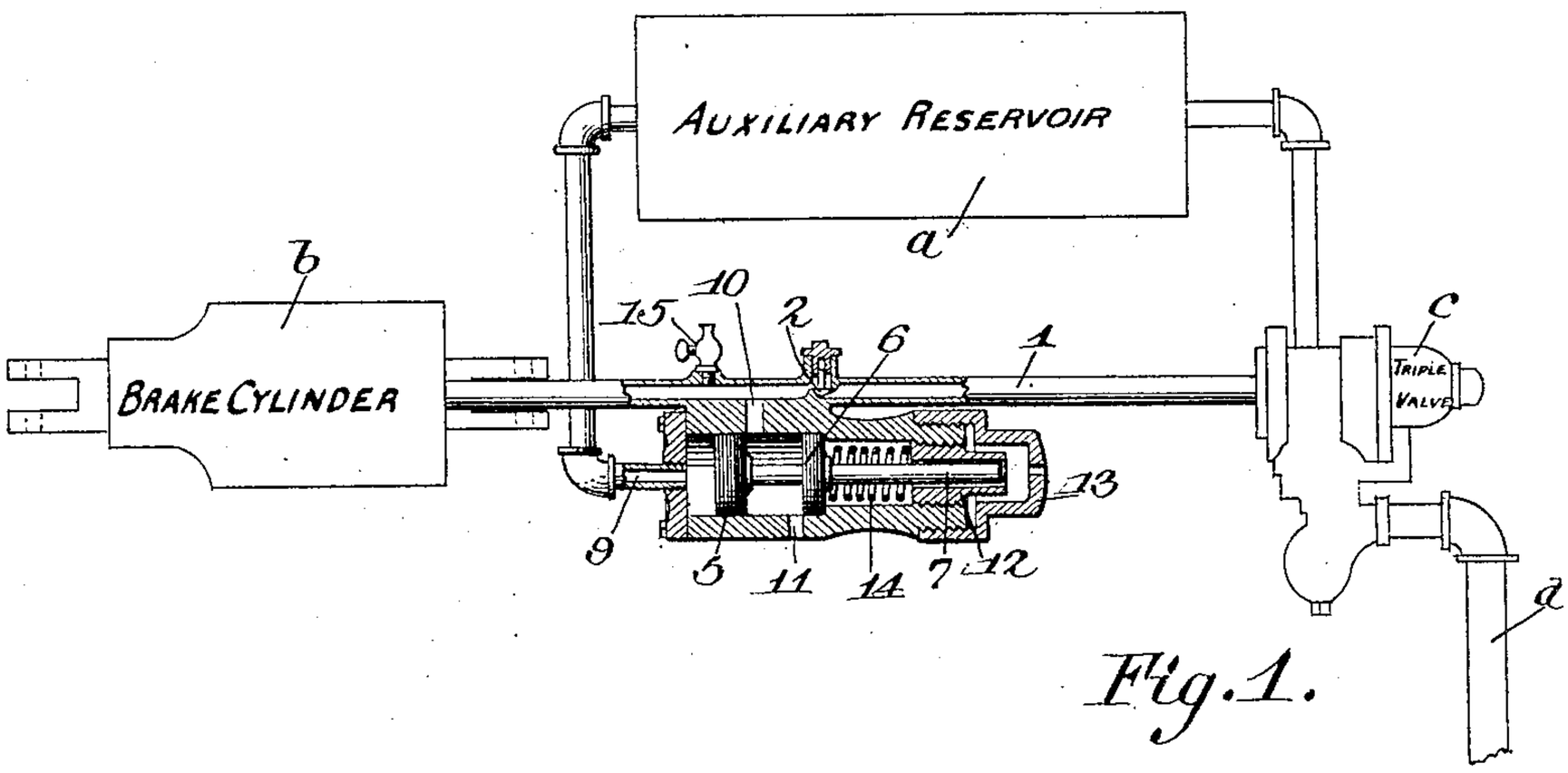

Fig. 1.

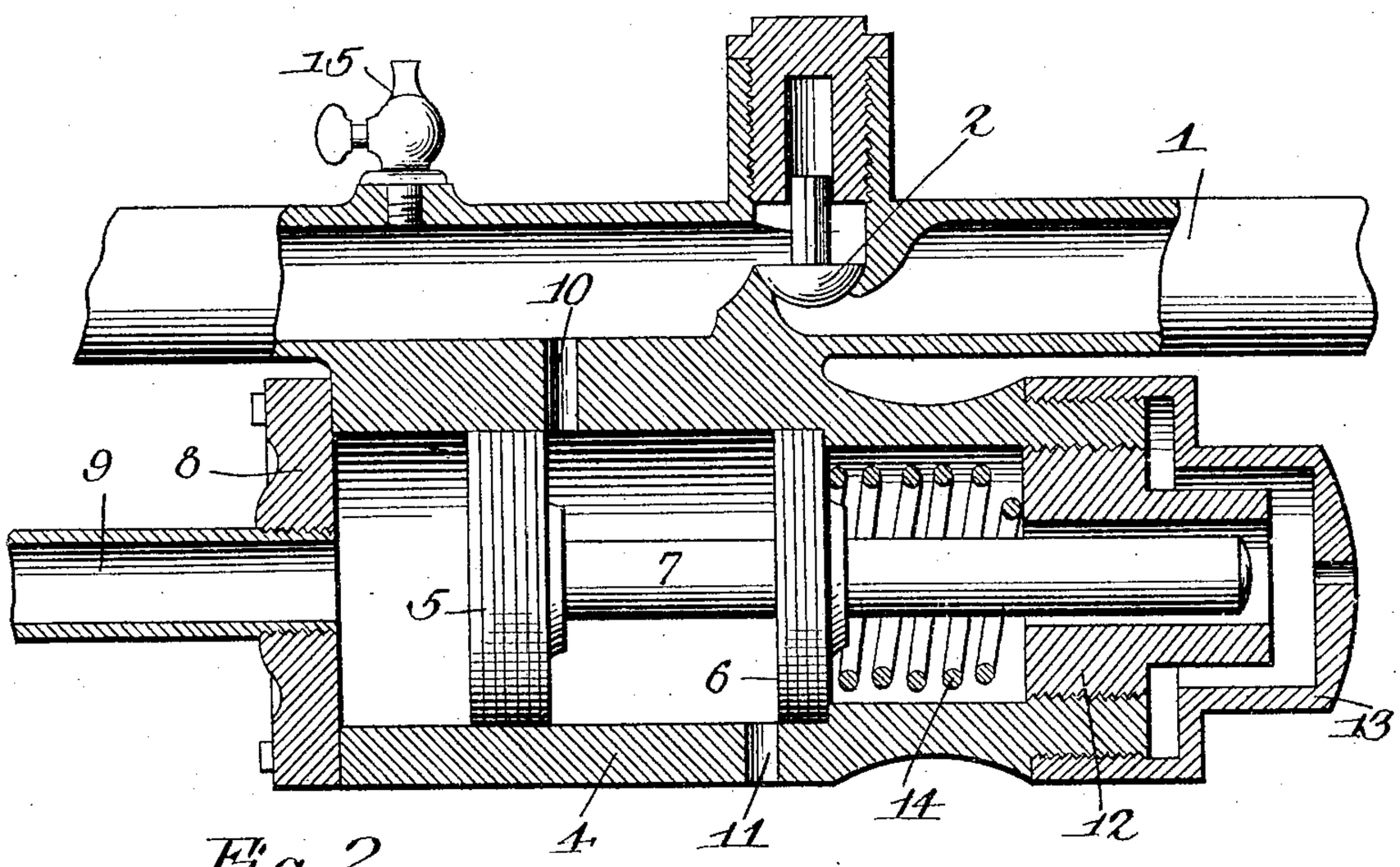

Fig. 2.

Witnesses
E. F. Stewart
Jno. E. Parker

Harry W. Short and
George A. Casey, Inventors.
by Church & Co
Attorneys

UNITED STATES PATENT OFFICE.

HARRY W. SHORT AND GEORGE A. CASEY, OF SOUTHFORK, PENNSYLVANIA.

AUTOMATIC RETAINING-VALVE.

No. 803,930. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed March 3, 1905. Serial No. 248,262.

To all whom it may concern:

Be it known that we, HARRY W. SHORT and GEORGE A. CASEY, citizens of the United States, residing at Southfork, in the county of Cambria and State of Pennsylvania, have invented a new and useful Automatic Retaining-Valve, of which the following is a specification.

This invention relates to air-brakes, and has for its principal object to provide a means whereby the auxiliary reservoir may be recharged while the brakes are set.

In air-brakes of the type in use at the present time it is necessary to release the brakes before the auxiliary reservoir can be recharged, and in many cases there is not sufficient air at the command of the engineer for a fresh application of the brakes immediately after they have been released. The present invention aims to overcome this difficulty by providing means whereby the brakes will be automatically held set until the pressure in the auxiliary reservoir is sufficient to make a fresh application.

A further object of the invention is to provide a device of this character which may be used in connection with the triple valve, auxiliary reservoir, and brake-cylinder now in common use.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a view in the nature of a diagram, illustrating the principal portions of the brake mechanism of the car and showing a retaining device constructed in accordance with the invention. Fig. 2 is a sectional view of the retaining device on an enlarged scale.

Similar numerals and letters of reference are employed to indicate corresponding parts throughout both figures of the drawings.

In carrying out the present invention the auxiliary reservoir *a*, brake-cylinder *b*, triple valve *c*, and train-pipe *d* are all of the construction ordinarily employed with the exception of slight changes in the connections of the triple valve, as hereinafter described.

Instead of placing the brake-cylinder close to the end of the triple-valve casing, as usual, it is connected thereto by a pipe 1, and in said pipe is a check-valve 2, opening in the direction of the brake-cylinder and permitting the passage of air under pressure through the triple-valve casing to the brake-cylinder to apply the brakes. When the valve is moved to brake-releasing position, communication with the auxiliary reservoir is cut off and back pressure on the valve 2 will close the same and all of the air will be retained in the brake-cylinder, holding the brakes applied. Connected to the pipe 1 at a point between the valve 2 and the brake-cylinder is a cylindrical casing 4, counterbored for the reception of a pair of pistons 5 and 6, that are connected by a stem 7. One end of the cylinder is formed by a removable head 8, to which is connected a pipe 9, leading from the auxiliary reservoir, so that the outermost piston 5 is always subjected to pressure and will normally be held in the position shown in Fig. 2. At one side of the cylinder is a port 10, leading between the pipe 1 and the cylinder at a point between the two pistons, and in the opposite side of said cylinder is an exhaust-port 11, leading to the atmosphere, the two ports 10 and 11 being normally in communication with each other to permit the free escape of air from the brake-cylinder. The opposite end of the cylindrical casing is formed of a threaded plug 12, recessed for the reception of the end of the stem 7, and over this plug is placed a cap-nut 13 of ordinary construction. Surrounding the chamber 7 at a point between the piston 6 and plug 12 is a helical compression-spring 14, which may be adjusted to balance the pressure in the auxiliary reservoir, but yielding when the auxiliary reservoir is at its normal pressure, so that the two pistons will remain in the normal position shown.

When the triple valve is moved to apply the brakes either for a graduated or an emergency application, the air flows from the auxiliary reservoir through the triple-valve casing and pipe 1 to the brake-cylinder. This will reduce the pressure in the cylindrical casing 4, and the two pistons 5 and 6 are pushed to the left by the spring 14 until the piston 6 stands in a position between the two ports 10 and 11

and prevents the escape of any air from the pipe 1 through the port 10, cylinder 4, and exhaust-port 11. As soon as the brakes have been applied the engineer may move his brake-valve to release position, and air under pressure will again flow through the train-pipe to the triple valve, moving the latter to release position; but the air is prevented from escaping from the brake-cylinder by reason of the check-valve 2, and it is only after the pressure in the auxiliary reservoir reaches the normal or a certain predetermined point that the two pistons 5 and 6 move to the right to again allow the ports 10 and 11 to communicate with each other and permit the free escape of air from the brake-cylinder and the release of the brakes.

On the brake-cylinder pipe 1 is arranged a small release-cock 15, by which the pipe may be opened to release the brakes by hand when necessary.

It will be observed that with a device of this character the usual auxiliary-reservoir brake-cylinder and triple valve may be employed, it being only necessary to couple the pipe 1 and the check-valve and cylinder and to place the latter in communication with the auxiliary reservoir.

Having thus described the invention, what is claimed is—

1. In air-brake mechanism, a pipe connecting the triple-valve casing to the brake-cylinder, a check-valve in said pipe for preventing the exhaust of air from the brake-cylinder, and an auxiliary valve operable by auxiliary-reservoir pressure for permitting discharge of the air from the brake-cylinder.

2. In air-brake mechanism, a pipe connecting the triple-valve casing to the brake-cylinder, a check-valve in said pipe, a cylinder connected to the pipe, an exhaust-port leading from said cylinder, a pair of connected pistons movable to control communication between the pipe and the exhaust-port, a connection between the cylinder and the auxiliary reservoir, and a spring acting on the piston and tending to resist movement thereof under auxiliary-reservoir pressure.

3. In air-brake mechanism, a pipe connecting the triple-valve casing to the brake-cylinder, a check-valve in said pipe, a cylinder communicating with the pipe at a point between the check-valve and the brake-cylinder, an exhaust-port leading from said cylinder, a pair of pistons mounted in said cylinder, a stem rigid with both pistons, an auxiliary-reservoir connection leading to the cylinder and tending to move said piston in one direction, and a spring surrounding the stem and tending to resist movement of said pistons under auxiliary-reservoir pressure.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HARRY W. SHORT.
GEORGE A. CASEY.

Witnesses:
C. G. STUTLER,
M. L. CLOSSON.