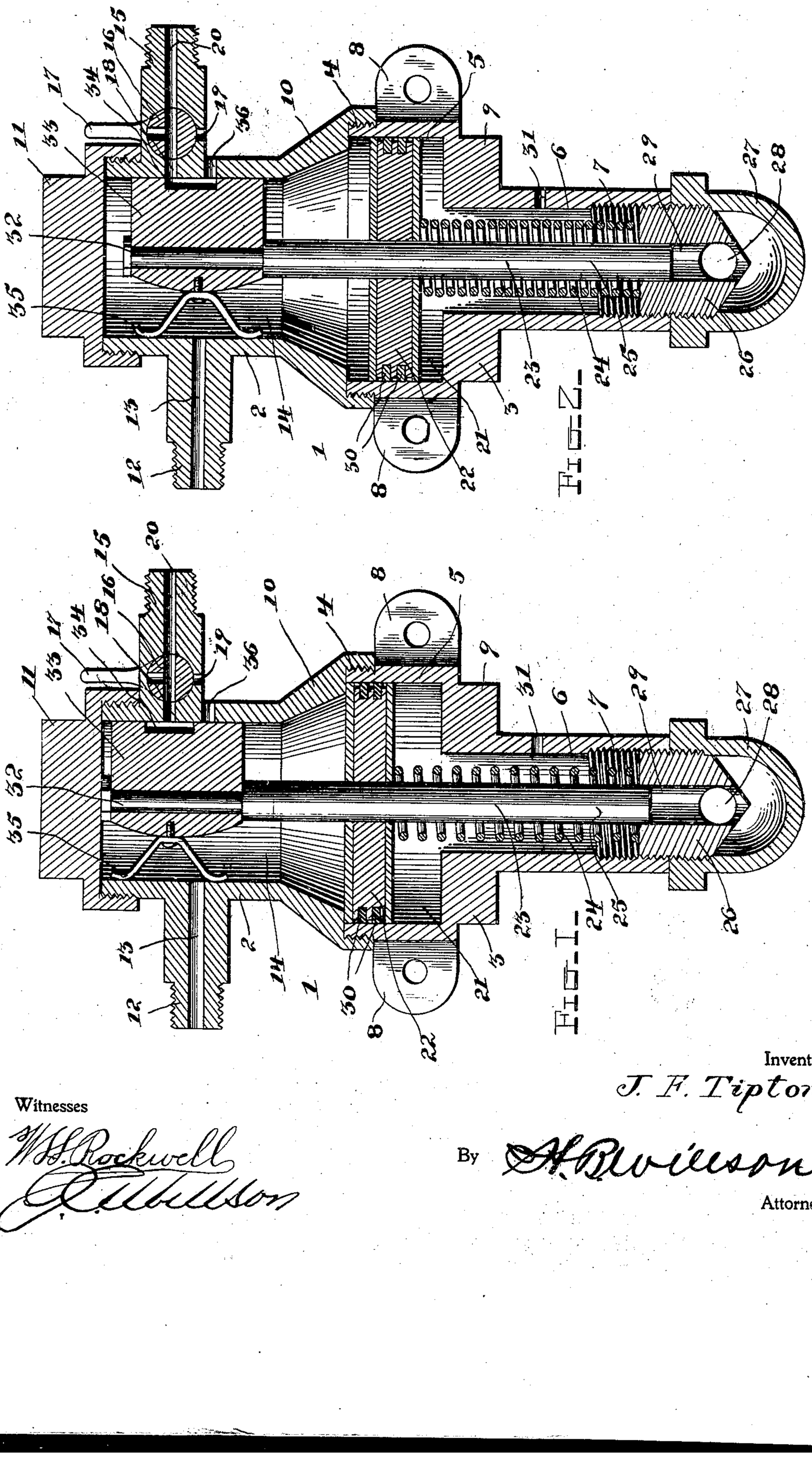
No. 768,639. PATENTED AUG. 30, 1904.

J. F. TIPTON.

AIR BRAKE.

APPLICATION FILED JAN. 7, 1904.

NO MODEL.



Witnesses

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No. 768,639. Patented August 30, 1904.

UNITED STATES PATENT OFFICE.

JOSHUA F. TIPTON, OF BALTIMORE, MARYLAND.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 768,639, dated August 30, 1904.

Application filed January 7, 1904. Serial No. 188,069. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA F. TIPTON, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Air-Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in automatic fluid-pressure or air brake apparatus, and more particularly to an automatic pressure-retaining device by means of which the pressure in the brake-cylinder may be maintained to hold the brakes applied while the pressure in the auxiliary reservoir is being restored, the device being controlled by the pressure in the auxiliary reservoir and serving as a governor for the exhaust of the triple valve.

The object of my invention is to provide a device of this character which will be simple in construction, durable in use, efficient and automatic in operation.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangements of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a sectional view through my improved pressure-retainer valve, the parts being in a position to close the exhaust of the triple valve, and thereby retain the pressure in the brake-cylinder while the auxiliary reservoir is being recharged. Fig. 2 is a similar view of the same, showing the parts in the position they assume when the pressure in the auxiliary reservoir has been restored, the exhaust of the triple valve being opened to release the brakes.

Referring to the drawings by numeral, 1 denotes a casing composed of upper and lower members 2 and 3, having a screw-threaded engagement with each other, as at 4. The lower member 3 comprises a cylindrical upper portion 5 and a reduced tubular portion 6, depending from the bottom of said cylindrical portion and having its lower end internally screw-threaded, as at 7. The cylindrical portion 5 is formed with projecting lugs or brackets 8, by means of which the device may be secured to a car or the like, and the tubular portion 6 is formed with a polygonal portion 9, which serves as a nut to permit the lower member to be held stationary while the upper member is being attached thereto or detached therefrom. The upper member 2 is substantially cylindrical in form, having a polygonal portion 10, similar to the portion 9 on the lower member, and having its upper open end closed by a screw-threaded cap-nut 11.

Upon one side of the upper member 2 is a connection or nipple 12, the port 13 in which is adapted to afford communication between the chamber 14 in the member 2 and the auxiliary reservoir through a pipe or other suitable connection. (Not shown.) Upon the opposite side of the member 2 is a connection or nipple 15, in which a three-way rotary plug-valve 16 is mounted and adapted to be operated by a handle 17. Said nipple or connection 15 is formed with three ports 18, 19, and 20, with which the three ways or passages in the valve coact. The port 18 opens into the chamber 14, the port 19 opens to the atmosphere, and the port 20 is adapted to communicate with the exhaust-port of the usual triple valve through a pipe or other suitable connection. (Not shown.)

Slidably mounted in the chamber 21, which is formed in the cylindrical portion 5 of the member 3, is a piston 22, secured to a stem or rod 23, projecting up into the chamber 14 of the upper member and down into the tubular portion 6 of the lower member. Said piston is actuated by either the pressure in the chamber 14, which is the same as in the auxiliary reservoir, or by the tension of a coil-spring 24, surrounding the lower end 25 of said stem or rod 23 and confined between the under side of the piston and an adjusting nut or plug 26, which is screwed into the internally-threaded portion 7 of the lower member of the casing. By operating the nut or plug 26 the tension of the spring may be readily adjusted to vary the operation of the

device according to the pressure it is desired to normally maintain in the auxiliary reservoir, and in order to secure the said nut or plug in its adjusted position a lock-nut 27 in the form of a screw-cap is provided. Said nut is internally screw-threaded to engage the external screw-threads on the projecting end of the nut or plug 26 and is adapted to engage the lower end of the tubular portion 6 of the casing, as shown. The nut or plug 26 is formed with a transverse opening 28, in which a pin or key may be inserted to enable it to be readily turned, and also with a longitudinal opening 29, into which the end 25 of the rod 23 projects and is guided in its sliding movement with the piston. The piston has its periphery provided with suitable packing-rings 30 to prevent the escape of air around the same; but if this should occur all air-pressure beneath the piston will be relieved by a port 31, formed in the tubular portion 6 of the lower member 3 of the casing. Upon the top and bottom of the piston are gaskets of rubber or other suitable material adapted to serve as cushions for the same, as shown.

The upper portion of the stem or rod 23, which projects into the chamber 14 of the casing member 2, is formed with a reduced portion 32, upon which a slide-valve 33 is secured. Said valve is in the form of a block having a groove or recess 34 in one face, which is held firmly against the inner side of the member 2 by a flat spring 35. The recess or valve-passage 34 coacts with the port 18 and a port or opening 36, formed in the member 2 and communicating with the atmosphere, and when operated by the piston is adapted to assume either of the positions shown in the two figures of the drawings.

The operation of the invention is as follows: When the pressure in the auxiliary reservoir is reduced, the tension of the spring 24 will overcome the pressure above the piston 22 and elevate the same, together with the slide-valve 33, to the position shown in Fig. 1. In this position the slide-valve will close the port 36 and also the port 20, which latter communicates with the exhaust of the triple valve through which the exhaust of the brake-cylinder must pass. Thus the pressure in the brake-cylinders will be maintained and the auxiliary reservoir may be recharged. As soon as the pressure in the auxiliary reservoir has been restored the pressure above the piston 22 will overcome the resistance of the spring 24, and thereby move the piston and valve to the position shown in Fig. 2. In this position the recess or passage 34 in the valve affords communication between the ports 18 and 36, thereby opening the exhaust from the triple valve to release the pressure in the brake-cylinder, and hence to release the brakes. By operating the plug-valve 16 the device may be thrown out of operation, or the exhaust of the triple valve may be controlled by hand instead of automatically, as just described.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a pressure-retainer for air-brakes, the combination of a casing, a piston slidably mounted in said casing and dividing the same into two chambers, a spring in one of said chambers adapted to actuate said valve, a connection between the other of said chambers and the auxiliary reservoir whereby the pressure in said reservoir will actuate said piston against the tension of said spring, a connection between the latter-mentioned chamber and the exhaust of the triple valve, a release-port in the latter-mentioned chamber and a slide-valve carried by said piston and adapted to establish and close communication between said release-port and said connection from the exhaust of the triple valve, substantially as described.

2. In a pressure-retainer for air-brakes, the combination of a casing comprising upper and lower members, said lower member having a cylindrical portion and a reduced tubular portion and said upper member having a chamber provided with a release-port, a connection between the chamber in said upper member and the auxiliary reservoir, a connection between the chamber in said upper member and the exhaust of the triple valve, a piston slidably mounted in the cylindrical portion of the lower member, a stem carried by said piston projecting down into the tubular portion of said lower member and up into the chamber of the upper member, a screw plug or nut in the lower end of the tubular portion of the lower member having an opening to receive and guide said stem, a coil-spring upon said stem between said piston and said screw plug or nut, and a slide-valve upon said stem in the chamber of the upper member adapted to establish and cut off communication between said release-port and the said connection with the exhaust of the triple valve, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSHUA F. TIPTON.

Witnesses:
HOWARD M. TOWLES,
EUGENE L. THOMPSON.