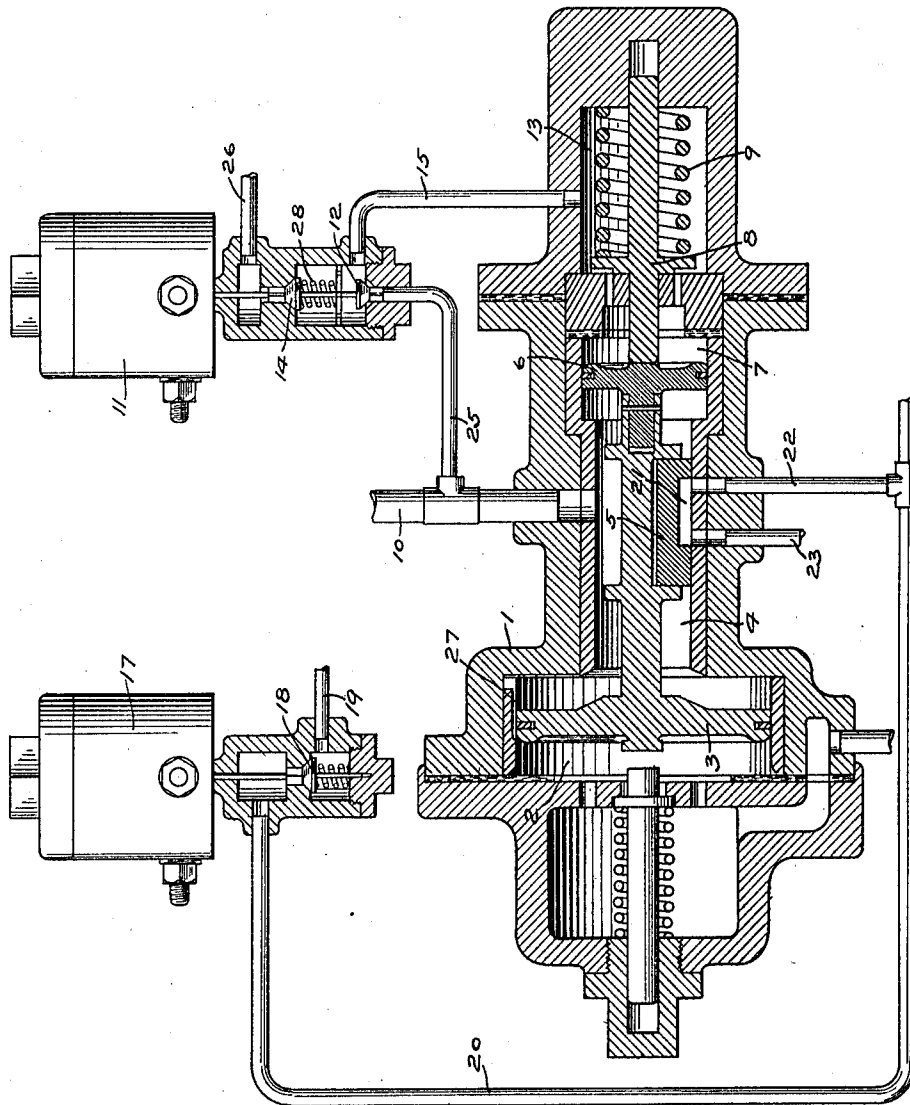


W. V. TURNER.
 FLUID PRESSURE BRAKE.
 APPLICATION FILED OCT. 17, 1908.

1,004,111.

Patented Sept. 26, 1911.



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER V. TURNER, OF EDGEWOOD, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FLUID-PRESSURE BRAKE.

1,004,111.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed October 17, 1908. Serial No. 458,269.

To all whom it may concern:

Be it known that I, WALTER V. TURNER, a citizen of the United States, residing at Edgewood, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Fluid-Pressure Brakes, of which the following is a specification.

This invention relates to fluid pressure brakes, and more particularly to apparatus in which the brakes may be either controlled automatically according to variations in brake pipe pressure or by a supplemental means such as an electrically controlled mechanism.

With a construction of the above character upon supplying air to the brake cylinder by means of the supplemental apparatus it is necessary that the brake cylinder exhaust port controlled by the automatic valve means be closed, otherwise the fluid admitted to the brake cylinder would escape through the open exhaust port.

It is one object of my present invention to provide an improved means for closing the brake cylinder exhaust upon operating the supplemental means for supplying air to the brake cylinder.

Another object of my improvements is to provide an improved apparatus of simple construction for controlling the brakes either automatically or by a supplemental means and wherein the moving parts are positive in their action.

In the accompanying drawing, the single figure of the drawing is a view mainly in vertical section of a construction embodying my improvements.

In a preferred construction of my improvements, as shown in the single figure of the drawing, a triple valve casing 1 is provided having piston chamber 2 containing triple piston 3 and valve chamber 4 containing slide valve 5 adapted to be controlled by said piston and having a normal release position in which the brake cylinder port 22 is connected to the usual exhaust port 23 by cavity 21 in the valve, and also having an

inner position in which the exhaust from the brake cylinder is cut off. For controlling the movement of the valve 5 from release position to its inner position an additional movable abutment 6 operating in piston chamber 7 is provided and a spring stop 8 subject to the pressure of a coil spring 9 is adapted to bear against abutment 6 and tends to move the valve from its extreme inner position to the normal release position. The pressure of fluid at the outer face of abutment 6 is controlled by a valve mechanism having a valve 12 for controlling the admission of fluid under pressure from a suitable source, such as the auxiliary reservoir, to which the supply pipe 25 leads, to a pipe 15 leading to spring chamber 13 which is in open communication with piston chamber 7. A valve 14 is also provided for controlling the release of air through pipe 15 to an atmospheric exhaust port 26. Both valves are connected to the same stem and are preferably controlled by an electromagnet 11. The supplemental means for supplying air to the brake cylinder may also be an electrically controlled valve 18 adapted to govern the admission of air from a suitable source of fluid pressure, connected to pipe 19, to a pipe 20 which is in open communication with the brake cylinder pipe 22.

Air being supplied to the brake pipe in the usual manner the triple piston assumes normal release position, as shown in the drawing, the spring stop 8 resisting any further inward movement of the parts and the fluid under pressure from the brake pipe flows through the feed groove 27 around the triple piston 3 and thereby charges the auxiliary reservoir connected to pipe 10 to standard pressure. In automatic release position the electric circuits to the magnets 11 and 17 are open, so that spring 28 acting on valve 14 opens the valve 12 and closes valve 14. Air from valve chamber 4 may therefore flow through pipes 25 and 15 and charge the space at the outer face of abutment 6 to the standard pressure of the brake system.

If it is desired to operate the brakes pneumatically, the brake pipe pressure is reduced in the usual manner and thereby the triple piston is moved outwardly to service position and valve 5 uncovers port 22 so that fluid from the auxiliary reservoir is supplied to the brake cylinder. As soon as the pressure in the auxiliary reservoir has fallen by flow to the brake cylinder to a point slightly below the brake pipe pressure, the parts are moved back to lap position. The brakes may be released pneumatically by increasing the brake pipe pressure, which shifts the slide valve 5 to full release position and fluid in the brake cylinder is released, as will be clear.

In order to operate the brakes electrically, any form of apparatus may be provided whereby the various electric connections are made to the electromagnets 11 and 17, and if it is desired to apply the brakes electrically, the electric controlling handle is turned to application position, the contacts being engaged in this position so as to supply current to both magnets. The energization of magnet 11 causes the valve 12 to close and valve 14 to open, thereby venting fluid from chamber 13 and the outer face of abutment 6, the moving parts are thereupon shifted so that the abutment 6 engages its seat and valve 5 moves and cuts off communication from the brake cylinder passage 22 to the exhaust. The application valve 18 is also opened by the energization of magnet 17, so that fluid under pressure is admitted through pipe 20 directly to the brake cylinder. Upon obtaining the desired pressure in the brake cylinder the controlling handle is moved to electric lap position in which the circuit for magnet 17 is opened, but the circuit for magnet 11 is maintained closed. Consequently further flow of air to the brake cylinder is cut off, but as chamber 13 remains open to the atmosphere, valve 5 is held over in position closing the brake cylinder exhaust and the brake cylinder pressure is retained. The handle may be again turned to electric application position to supply additional fluid to the brake cylinder as desired, or the brakes may be released by moving the handle to release position in which the circuits to both magnets 11 and 17 are broken. The valve 14 then closes the exhaust and valve 12 opens so that fluid is admitted to chamber 13 and upon the fluid pressures equalizing on the abutment 6 the triple valve parts are shifted by the spring 9 to full release position and the fluid in the brake cylinder is released, as will be clear.

Other means, such as a manually operated brake valve may be employed for controlling the variations in pressure on the abutment 6 and the direct supply of air to the brake cylinder.

Having now described my invention, what

I claim as new and desire to secure by Letters Patent, is:—

1. In a fluid pressure brake, the combination with a triple valve for controlling the brake cylinder exhaust port and the supply of air from the auxiliary reservoir to the brake cylinder, of a supplemental means for operating said triple valve to close the brake cylinder exhaust port and a valve means for supplying air directly to the brake cylinder.

2. In a fluid pressure brake, the combination with a piston operated by variations in brake pipe pressure and valve means operated by said piston for controlling the brake cylinder exhaust port and the supply of air from the auxiliary reservoir to the brake cylinder, of electrically controlled means for operating said triple valve to close the brake cylinder exhaust and an electrically controlled valve mechanism for supplying air directly to the brake cylinder.

3. In a fluid pressure brake, the combination with a piston subject to the opposing pressures of the brake pipe and auxiliary reservoir and valve means operated by said piston and having a brake cylinder release position and an inner position in which the exhaust from the brake cylinder is closed, of a supplemental abutment normally subject to opposing fluid pressures and operating upon releasing fluid from one side to shift said valve means to its inner position and means for supplying air directly to the brake cylinder.

4. In a fluid pressure brake, the combination with a triple valve for supplying and releasing air to and from the brake cylinder and having an inner position in which the exhaust from the brake cylinder is closed, of electrically controlled means for shifting said triple valve to its inner position closing the exhaust and for supplying air directly to the brake cylinder.

5. In a fluid pressure brake, the combination with a piston subject to the opposing pressures of the brake pipe and auxiliary reservoir and valve means operated thereby and having a position for supplying air to the brake cylinder, a normal release position in which the brake cylinder exhaust port is open, and an inner position in which the brake cylinder exhaust port is closed, of a supplemental abutment adapted to shift said valve means from normal release position to said inner position and electrically controlled means for varying the pressure on one side of said abutment to shift said valve means and close the brake cylinder exhaust and supply air directly to the brake cylinder.

6. The combination with a triple valve device for supplying air from the auxiliary reservoir to the brake cylinder and having a release position in which the exhaust port from the brake cylinder is open and an inner position in which said exhaust port is

closed, of electrically controlled means for
shifting said valve means to its inner posi-
tion closing the brake cylinder exhaust and
for supplying air directly to the brake cylin-
5 der and a yielding resistance means tending
to return said valve means to its release posi-
tion.

In testimony whereof I have hereunto set
my hand.

WALTER V. TURNER.

Witnesses:

WM. M. CADY,
A. M. CLEMENTS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
