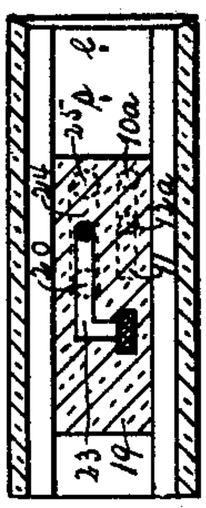
No. 606,708. Patented July 5, 1898.

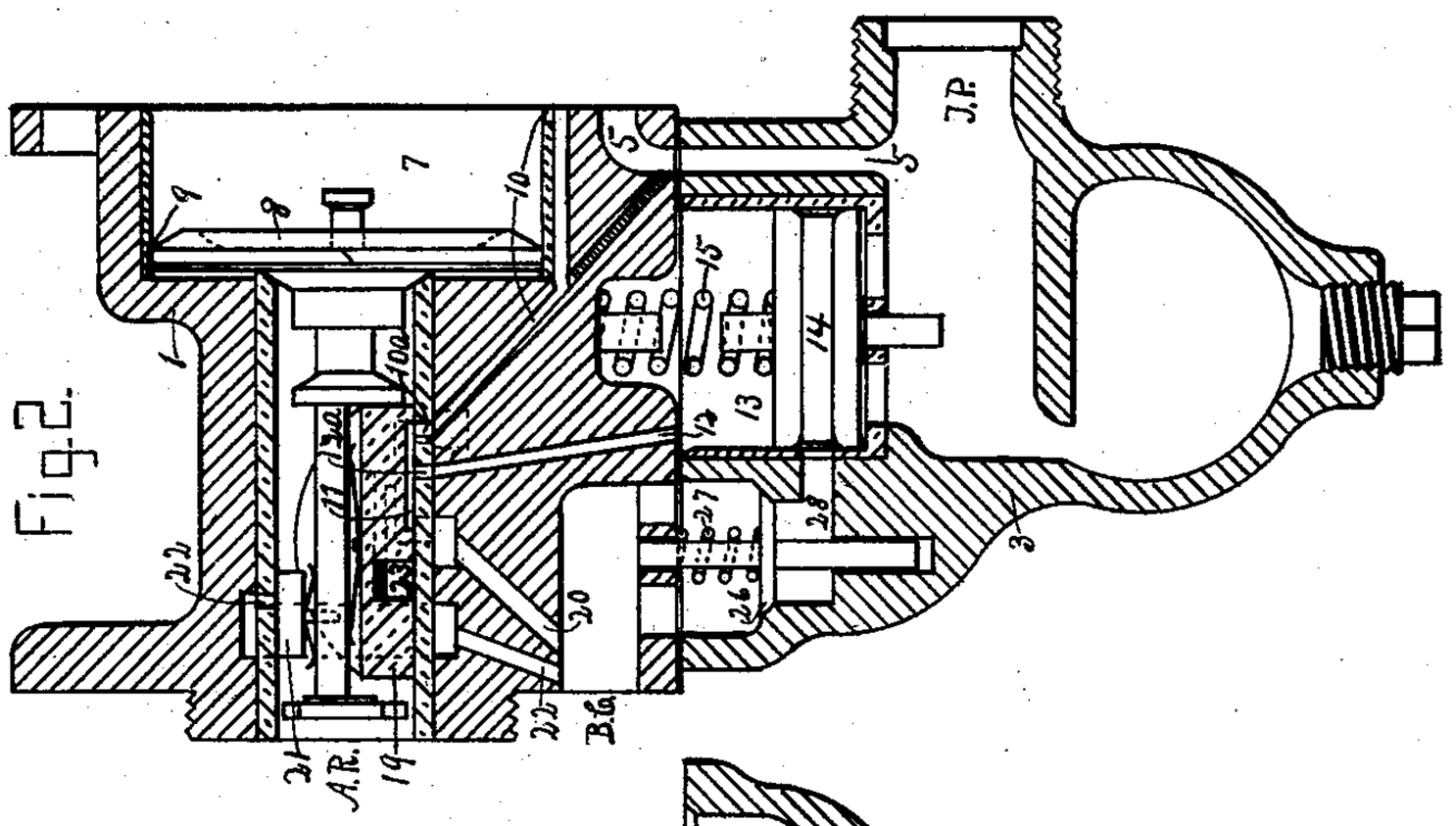
M. CORRINGTON.

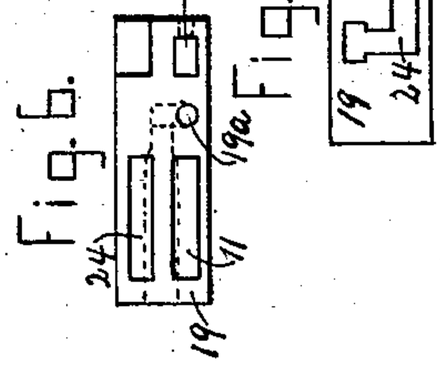
AIR BRAKE.

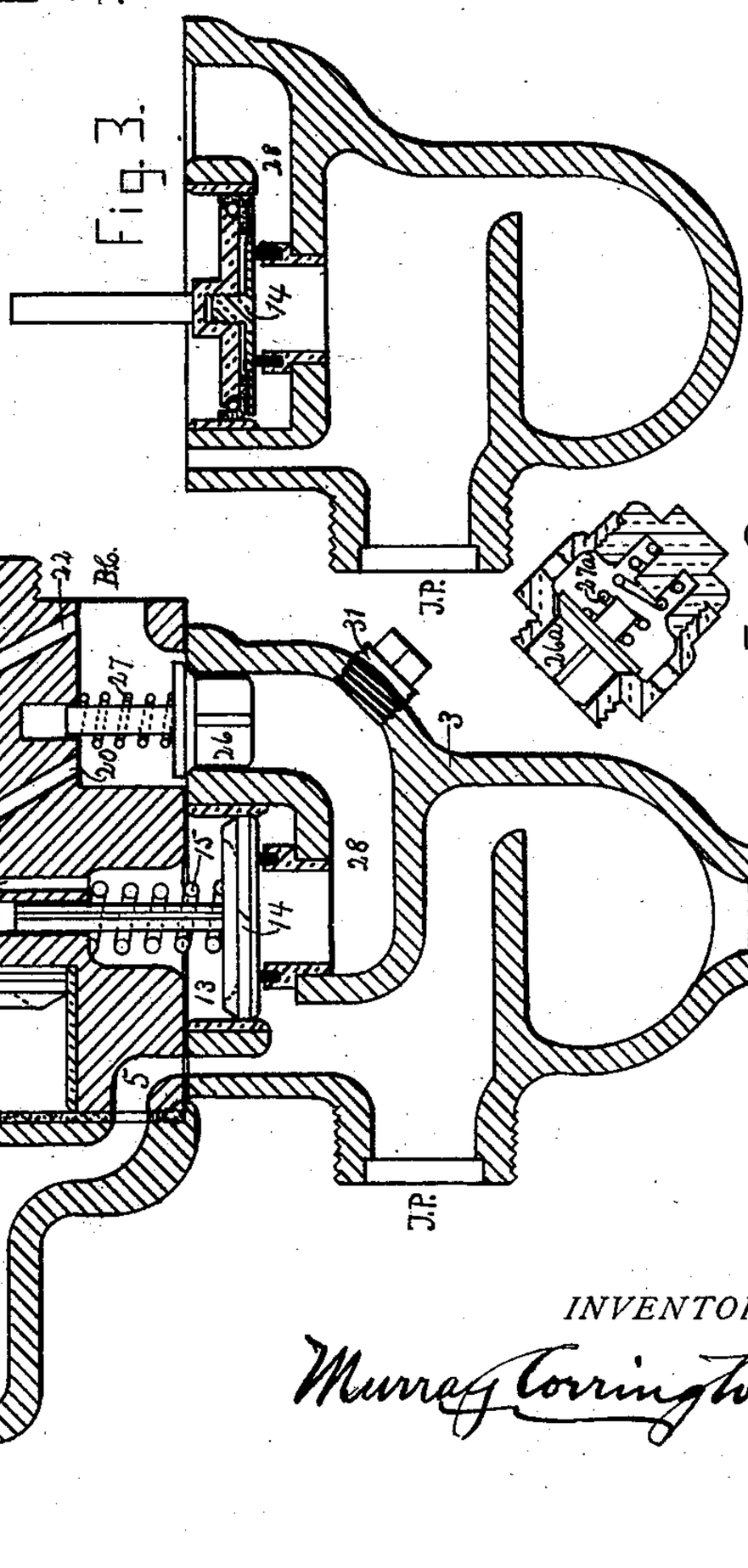
(Application filed Feb. 19, 1898.)

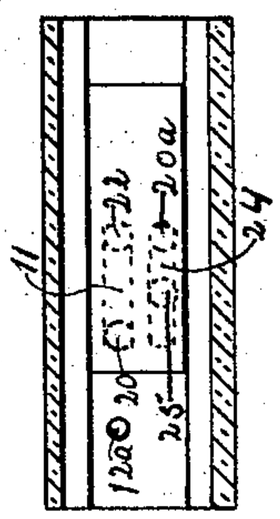
(No Model.)











WITNESSES:
Maurice Spillane
Fred'k C. Herrick

INVENTOR.
Murray Corrington

UNITED STATES PATENT OFFICE.

MURRAY CORRINGTON, OF NEW YORK, N. Y.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 606,708, dated July 5, 1898.

Application filed February 19, 1898. Serial No. 670,918. (No model.)

To all whom it may concern:

Be it known that I, MURRAY CORRINGTON, a citizen of the United States, residing at New York city, (borough of Manhattan,) in the county and State of New York, have invented new and useful Improvements in Air-Brakes, of which the following is a specification.

My invention relates to a novel form of construction of a quick-acting triple valve, and has for its primary object to control the emergency-passage through which the air is vented from the train-pipe in the emergency operation by a piston supplemental to the triple-valve piston without the aid of a valve operated by said supplemental piston, as is the common practice.

Referring to the accompanying drawings, Figure 1 is the usual vertical section through a triple valve and its casing and illustrating one form of constructing my improvement in connection therewith. Fig. 2 is a similar section through a triple valve and its casing, illustrating another manner of constructing my improvement. Fig. 3 is a similar section of a portion of a triple-valve casing, showing a modification. Fig. 4 is a plan view of the main-valve seat of Fig. 2 and a view of the main valve in section thereon. Fig. 5 is a plan or top view of a modified way of constructing the main valve and its seat. Fig. 6 is an inverted view of the main valve of Fig. 5. Fig. 7 is a bottom view of a modified construction of a main valve which may be used, and Fig. 8 is a section of a valve device which may be employed to control the vent-passage to the atmosphere.

Referring first to Figs. 1 and 2, I employ a main-valve casing 1 for the triple valve, having two additional parts 2 and 3 fastened thereto, as shown, Fig. 1, with the usual train-pipe, auxiliary reservoir, and brake-cylinder connections. The triple-valve cap 2 and its contained parts shown in Fig. 1 are omitted from Fig. 2; but it is understood that identically the same apparatus may be used with the latter figure. The usual passage 5 and ports 6 lead from the train-pipe to the triple-valve piston-chamber 7, in which the piston 8 operates. The air flows through said passage 5, ports 6, chamber 7, and the usual charging-port 9 into the slide-valve chamber and to the auxiliary reservoir to charge the same in the usual manner. The main valve 19 operates in the usual chamber, and both the valve 19 and the graduating-valve 21 are operated by the piston 8. The graduating-valve 21 controls the passage 22 for the admission of reservoir-pressure to the brake-cylinder in the usual manner of triple valves. The graduating-stop 17 and spring 18 serve the usual purpose.

In the construction of my improvement, referring first to Fig. 1, I arrange a chamber 13 and a supplemental piston 14 therein in any convenient part of the casing and allow the train-pipe pressure to bear directly against its under side, while a passage 12 and port 12^a, being normally open between the chamber 13 and the main slide-valve chamber, allow the reservoir-pressure to be exerted normally on the upper side of said piston. The stem of the piston 14 may be made with wings, as shown, and thus allow a sufficient communication between the port 12^a and the chamber 13 without the passage 12. A spring 15 also tends to hold said piston 14 in the position shown, so that its under side will close the mouth of the emergency-passage 28, through which the air is vented from the train-pipe. The main slide-valve 19 controls the exhaust-port 25, leading to the atmosphere, the port or passage 20, leading to the brake-cylinder, as well as the port 12^a. An extra port 22^a may also be so arranged that it may be uncovered by the main valve 19 when it is drawn through its full traverse to the left in emergency actions, thereby permitting a rapid admission of reservoir-air to the brake-cylinder. A check-valve 26, seated by a spring 27, may be arranged in the passage 28.

In the operation of the apparatus for service applications the usual reductions of train-line pressure cause the triple valve to move to the left against the graduating-stop and the valve 21 to open the passage 22 to the brake-cylinder, and these operations are repeated in the usual manner. In emergency actions the quick reductions in the train-line pressure cause the triple-valve piston to move through the full traverse of its chamber to the left, whereupon the cavity 11 connects the port 12^a and passage 12 with the passage

20. The air above the piston 14 will thereupon be exhausted to the brake-cylinder and permit the air on the under side of said piston to lift the same up and flow by the passage 28 past the check-valve 26 to the cylinder. The reservoir air will also flow to the cylinder until complete equalization is effected. As the parts remain in the position just described a part of the air flowing from the auxiliary reservoir to the brake-cylinder will take back through the passage 20, cavity 11, port 12^a, and passage 12 to the upper side of the piston 14, permitting the piston to move down and close the mouth of the passage 28, so that the check-valve 26 is not a necessity.

In Fig. 2 is shown a modification the purpose of which is principally to have train-pipe pressure normally exerted against both sides of the emergency-piston. In the preferred construction I arrange a passage 10, leading from a convenient part of the train-pipe through the bushing of the main-valve chamber by the port 10^a, another port 12^a and passage 12 through said bushing to the chamber 13 on the upper side of the piston 14, and a cavity 11 in the slide-valve normally connecting the ports 10^a and 12^a. This cavity 11 is made long enough, preferably, to keep the ports 10^a and 12^a in communication while the triple valve is operated for the usual service applications. The passage 10 is kept free from communication with the auxiliary reservoir. The slanting portion of the passage 10 may be drilled from the passage 5, while the casings 1 and 3 are disconnected, and the lower part of the hole then plugged, as illustrated.

The arrangement just described keeps the piston 14 normally exposed on both sides to train-pipe pressure. A supplemental passage 23 runs through the slide-valve and connects with the cavity 24 in said valve, the latter cavity normally connecting the brake-cylinder passage 20 and the exhaust-port 25. (See Figs. 2 and 4.)

When this apparatus is operated for service, the ports 10^a and 12^a remain in communication and keep the pressure on both sides of the piston 14. When the triple valve moves through its full traverse to the right in emergencies, the ports 10^a and 12^a are no longer in communication, but the cavity 23 registers with the port 12^a and passage 12, so that the pressure above the piston 14 is exhausted through passage 12, port 12^a, cavity 23 into cavity 24, and thence through the exhaust-port 25 to the atmosphere. The pressure on the under side of piston 14 thereupon lifts the piston up and flows out of the train-pipe through the passage 28. In Fig. 4 the points *s* and *e* indicate essentially the positions to which the slide-valve will be drawn in service and emergency applications, respectively.

Fig. 7 shows a modified form of slide-valve. In this valve the cavity 11 remains the same; but the two cavities 23 and 24 of Fig. 4 are united in one cavity, 24, made L-shaped, on the face of the slide-valve.

In Fig. 1 also is shown a port leading from the passage 28 to the atmosphere, which is closed by the plug 31. It is evident that if the plug 31 is removed the air may be exhausted through the passage 28 into the atmosphere instead of into the brake-cylinder. Again, instead of the plug 31 the device shown in Fig. 8 may be inserted in the casing, the port being made of the proper size to accommodate it. In that event the air may be exhausted into the atmosphere through Fig. 8 past the valve 26^a, which may be held on its seat by the spring 27^a, and this in turn may be adjusted to retain any desired pressure—say from ten to forty pounds, more or less—in the train-pipe after the emergency-passage is opened. A like result may be effected by adjustment of the spring 15 to the proper strength. If the train-pipe air is to be exhausted wholly to the brake-cylinder, the plug 31 may be employed to stop the vent to the atmosphere. If the air is to be exhausted wholly to the atmosphere, the plug 31 may be removed with or without the insertion of the device of Fig. 8 and the brake-cylinder passage stopped. This latter may be effected in one way simply by making the spring 27 stout enough to hold the valve 26 permanently closed. If Fig. 8 is inserted in place of the plug 31, the air may be made to flow from the passage 28 partly past the valve 26 to the brake-cylinder and partly past the valve 26^a to the atmosphere. This arrangement of an emergency-passage having a double terminus to both the brake-cylinder and the atmosphere by which the train-pipe air may be vented to either or both during emergency actions is essentially the same as in my prior patent, No. 594,464, dated November 30, 1897, and I do not claim it herein.

In Fig. 3 the piston 14 has a leather packing-ring instead of a metallic ring, as in Fig. 1, and it is constructed in the familiar manner for pistons having such a packing-ring. In this figure also the central portion of the under side of the piston is exposed to air-pressure instead of the outside portion, as in Fig. 1. This device may have auxiliary-reservoir pressure or train-pipe pressure on the upper side of the piston 14.

In Fig. 2 the piston 14 has two leather rings, as shown in outside view.

Figs. 5 and 6 represent modifications of a main valve and its seat, which may be employed, if desired. In these figures the main valve has two cavities 11 and 24. The cavity 24 controls the ports 20^a to the brake-cylinder and exhaust-port 25, through which the brakes are released, and the cavity 11 controls the port 12^a to piston-chamber 13 and ports 20 and 22 to the brake-cylinder. The port 22 to the brake-cylinder is located so that graduating-port 19^a in the valve 19 will register therewith during service and port 19^b will register therewith during emergency

applications. It is evident that the valve 19 may be short enough so that in emergency operations the end of the valve will uncover either or both ports 20ª and 22; but these matters relate to details of construction merely. Fig. 6 will be readily recognized by those skilled in the art as a main slide-valve adapted to be employed with the standard Westinghouse graduating-valve, the place for which is shown in said Fig. 6 in dotted lines.

It will be apparent that I may effect the control of the emergency-passage by a piston supplemental to the triple-valve piston acting alone without the aid of a valve operated by said supplemental piston; that I may construct said piston in any one of several ways; that I may keep the same normally exposed wholly or partially on its opposite sides to pressure, which may be train-pipe pressure on both sides, or reservoir pressure on one side and train-pipe pressure on the other; that I may exhaust the pressure from one side of said piston either to the atmosphere or to the brake-cylinder to cause it to open the emergency-passage, and that I may vent the train-pipe air either to the atmosphere or to the brake-cylinder, or to both, in emergency operations.

I am aware that it has been proposed heretofore to employ a piston supplemental to a triple-valve piston and a valve operated by said supplemental piston to control the emergency-passage for venting the air from the train-pipe, and such construction I do not claim.

I claim—

In an automatic fluid-pressure brake system, the combination, with a triple valve, of an emergency-passage for venting the air from the train-pipe, a piston, one of whose sides closes the mouth of said passage and normally having its sides partly or wholly exposed to fluid under pressure, and a passage opened by a part of the triple valve for releasing the pressure from one side of said piston, whereby the same may be moved by the pressure on its other side away from its position of rest to open said emergency-passage.

MURRAY CORRINGTON.

Witnesses:
MAUCE. SPILLANE,
FREDK. M. HERRICK.