No. 811,064. PATENTED JAN. 30, 1906.

E. T. HUGHES.

AIR BRAKE.

APPLICATION FILED OCT. 9, 1905.

Fig. 1.

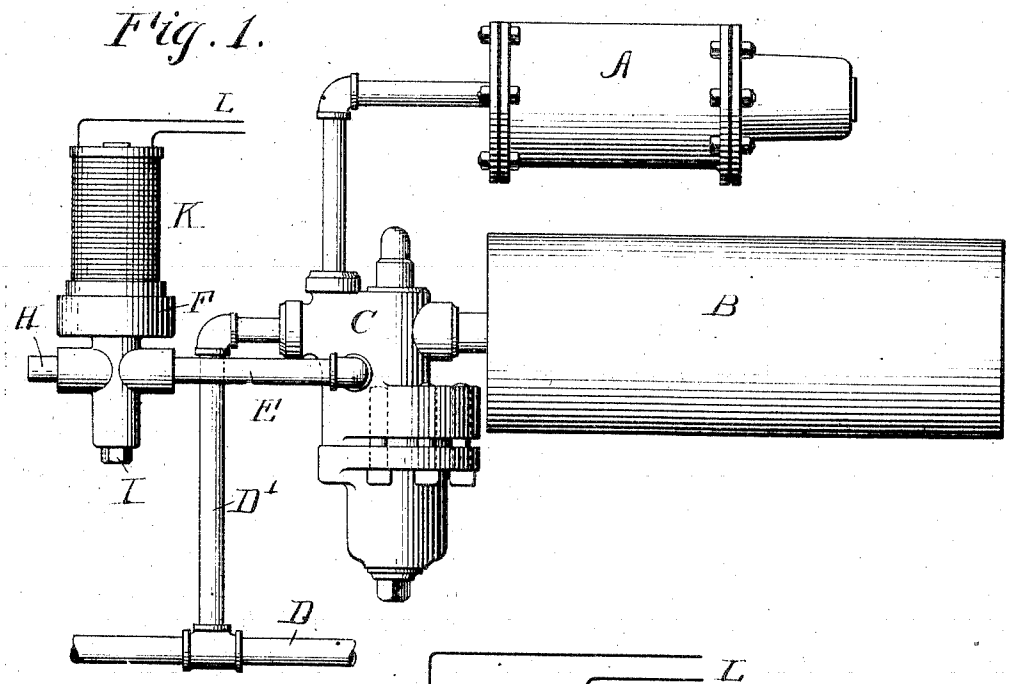
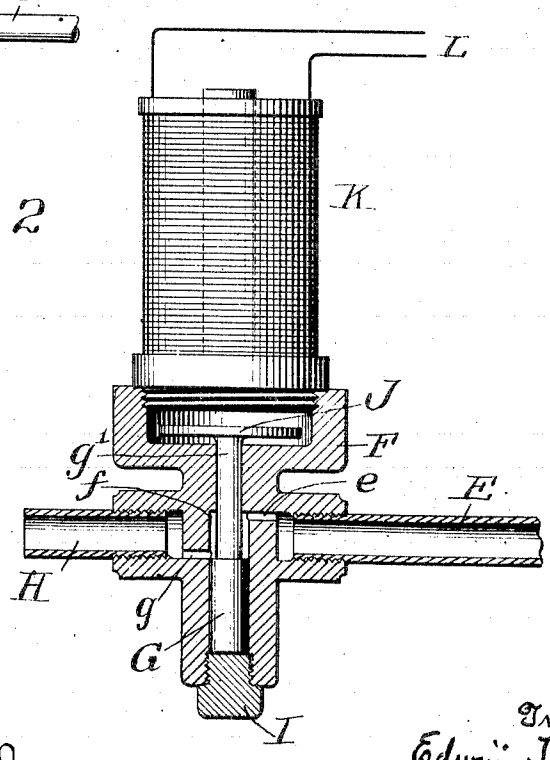


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN T. HUGHES, OF GLADSTONE, COLORADO, ASSIGNOR OF ONE-FOURTH TO VINCENT J. O'BRIEN, ONE-FOURTH TO WILLIS Z. KINNEY, AND ONE-FOURTH TO JAMES M. ROGERS, OF SILVERTON, COLORADO.

AIR-BRAKE.

No. 811,064. Specification of Letters Patent. Patented Jan. 30, 1906

Application filed October 9, 1905. Serial No. 281,912.

To all whom it may concern:

Be it known that I, EDWIN T. HUGHES, a citizen of the United States, residing at Gladstone, in the county of San Juan and State of Colorado, have invented certain new and useful Improvements in Air-Brakes, of which the following is a specification.

My invention relates particularly to the system of air-brakes known as the "Westinghouse" system, in which a separate brake-cylinder and an auxiliary reservoir are provided for each car and are connected with a train-pipe running to the locomotive and are controlled by a triple valve, the brakes being applied by a transfer of pressure from the auxiliary air-reservoirs to the brake-cylinders. This transfer of pressure is effected by a reduction of pressure in the train-pipe by means of valve mechanism in the locomotive. The application of the brakes reduces the air-pressure in the auxiliary reservoirs, and when the brakes are released the air is discharged from the brake-cylinders to the atmosphere before the pressure is restored in the auxiliary reservoirs. In this system the recharging of the auxiliary reservoirs proceeds slowly, and if for any reason a second application of the brakes is required immediately after the brakes are released there is only a low pressure in the auxiliary reservoirs to rely upon, and a proper application of the brakes cannot be effected. In other words, after the brakes have been applied and released it is necessary to wait some considerable time before they can be again applied. Attempts have been made to overcome these difficulties; but, so far as I am aware, devices for this purpose have never been put into extensive use.

According to my invention I provide simple and efficient devices by means of which the pressure in the brake-cylinders may be retained while the auxiliary reservoirs are being recharged, or, in other words, devices by means of which the auxiliary reservoirs may be recharged without releasing the brakes, so that immediately after the brakes are applied and while they are still on the auxiliary reservoirs may be recharged and sufficient pressure obtained to apply the brakes a second time, if necessary, immediately after they have been released.

In order to accomplish the object of my invention without modifying in any way the mechanism of air-brakes as ordinarily employed, I apply to the exhaust-pipe of each triple valve an electrically-operated valve, which is arranged to open and close the exhaust-pipe and which may be controlled by the engineer or by attendants at various points on the train.

In the accompanying drawings, Figure 1 is a diagram illustrating my improvements applied to brake mechanism of the Westinghouse type. Fig. 2 is a detail view, partly in section, of the valve which I employ for controlling the exhaust.

The brake-cylinder A and the auxiliary air-reservoir B are connected with a triple valve C, constructed and operated in the ordinary way. The train-pipe D is connected by branch pipe D′ with the triple valve, and to the exhaust-port of the triple valve is attached an exhaust-pipe E. This pipe connects with a valve-casing F, (shown most clearly in Fig. 2,) containing a valve G, adapted to open and close communication between the exhaust-pipe E and the exit-pipe H, which really forms part of the exhaust-passage. The valve G has an enlarged lower end, which when the valve is open rests on an adjustable plug I, allowing a communication from the exhaust-pipe E through passages *e f g* to the exit-pipe H. The valve-stem *g′* is of a smaller diameter than the lower portion of the valve and it carries at its upper end a disk J, which constitutes the armature of an electromagnet K, provided with circuit-wires L, which may extend to the locomotive and other parts of the train. When the electromagnet is deënergized, the valve is in its lowermost position, or that shown in Fig. 2; but when the electromagnet is energized it acts on the armature J and raises the valve, causing the enlarged portion thereof to completely cut off communication between the pipes E and H.

It is obvious that a single electric circuit may be made to control all the escape-valves or pressure-retaining valves in the train and that this circuit may be opened and closed at various points on the train.

It is obvious that the system may operate in the usual way, the devices which I have

added interfering in no way with the proper and usual operation of the mechanism in the Westinghouse system. In fact, the devices which I have described may be applied to other air-brake systems without changing their normal operation, except that I provide improved means by which the pressure may be retained in the brake-cylinders while the auxiliary reservoirs are being recharged, or, in other words, improved means by which the auxiliary reservoirs may be recharged immediately after the pressure therein has been reduced to apply the brakes.

It has heretofore been suggested that pressure may be retained in the brake-cylinders while the auxiliary reservoirs are being recharged; but mechanism for this purpose has involved changes in the construction or operation of the mechanism ordinarily used, while the devices which I employ may be applied to apparatus already in use.

In my system the valves G are normally open, and the pressure from the auxiliary reservoirs does not tend to either open or close them. Should the electromagnetic devices be out of order or not used, the system will operate in the usual way.

I claim as my invention—

The combination with a triple valve of the Westinghouse air-brake, a train-pipe connected therewith through which air is supplied to the triple valve and in which the pressure is at times reduced and which is the sole means for establishing and cutting off communication between the auxiliary reservoir and the brake-cylinder; an exhaust-passage leading from the said triple valve; a valve-casing applied thereto, a valve for opening and closing said exhaust-passage without in any way affecting the passage between the auxiliary reservoir and brake-cylinder, and electromagnetic devices for operating said exhaust-valve.

In testimony whereof I have hereunto subscribed my name.

EDWIN T. HUGHES.

Witnesses:
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