

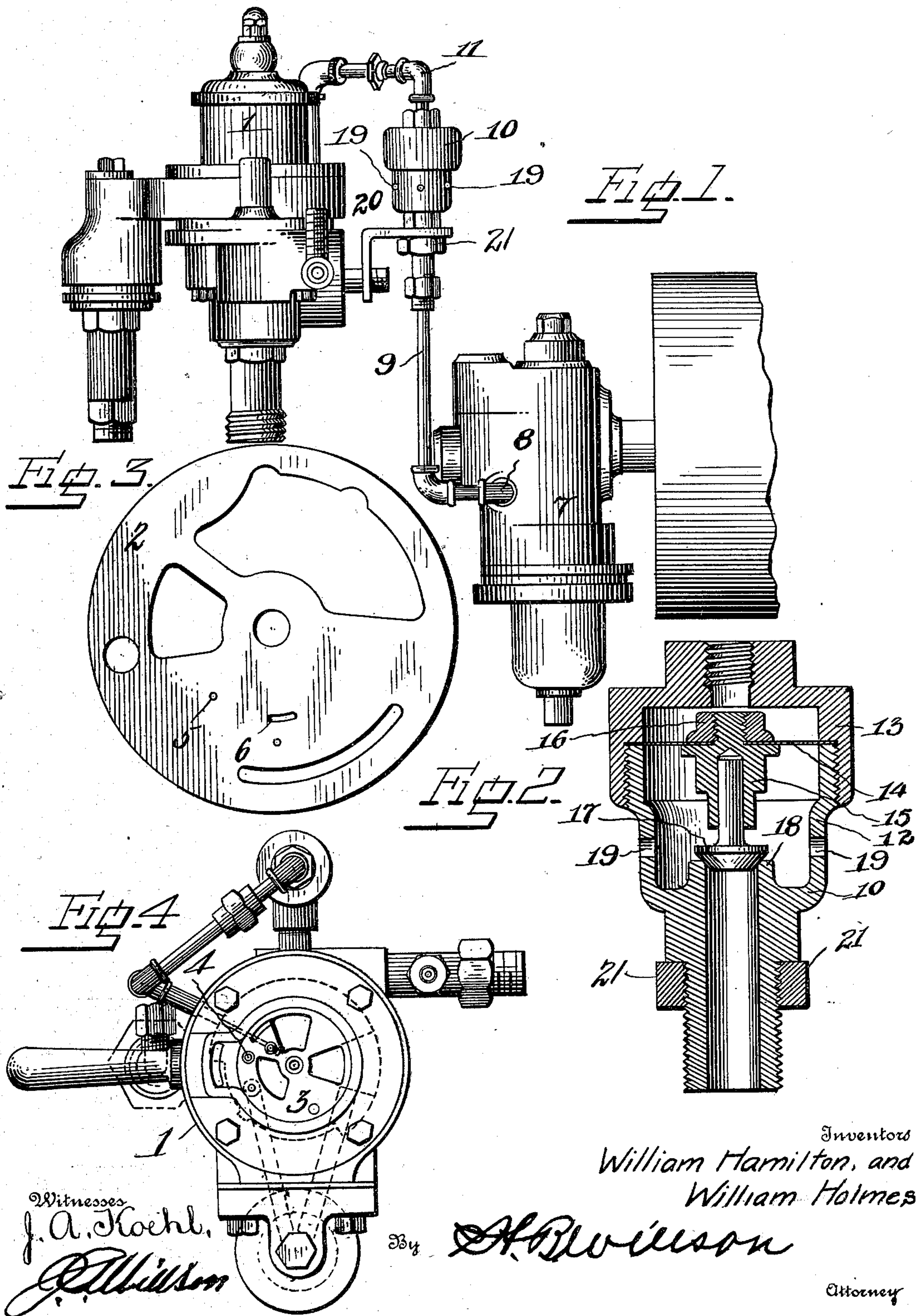
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PATENTED JULY 28, 1903.

W. HAMILTON & W. HOLMES.  
AUTOMATIC DRIVER BRAKE RETAINER.

APPLICATION FILED APR. 3, 1903.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

WILLIAM HAMILTON, OF STRATFORD, AND WILLIAM HOLMES, OF  
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## AUTOMATIC DRIVER-BRAKE RETAINER.

SPECIFICATION forming part of Letters Patent No. 734,859, dated July 28, 1903.

Application filed April 3, 1903. Serial No. 151,006. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM HAMILTON, residing at Stratford, county of Perth, and WILLIAM HOLMES, residing at Montreal, in the Province of Quebec, Dominion of Canada, subjects of the King of Great Britain, have invented certain new and useful Improvements in Automatic Driver-Brake Retainers; and we 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.

The invention relates to an automatic brake-retainer designed for use upon air-brake systems.

The object of the invention is to provide means for maintaining the driver-brakes in operation after the train-service brakes have been released; and it consists in providing an improved engineer's brake-valve and certain additional connections between the essential elements of an air-brake system located upon the locomotive whereby the brakes upon the same may be operated independently of those upon the balance of the train.

When the brakes upon a train in which the driver and train-service brakes are operated simultaneously are released, the engine and forward part of the train, being released more quickly than the rear portion, will have a tendency to run away from the rear part, and thereby cause a severe strain upon the couplings, and perhaps a separation of the train, owing to the fact that the forward end of the train obtains an accelerated motion due to the slack in the couplings before the rear end is fairly released and under way. When our automatic brake-retainer is employed, the brakes upon all the cars of the train are released, while the driver-wheels upon the engine are held fast. Thus the train is kept together or bunched until the cars are fully released, so that the driver-brakes may then be released without causing the shock which would otherwise occur.

Our invention, consists, further in the construction, combination, and arrangement of parts hereinafter fully described, claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatical view showing

an engineer's brake-valve, a triple valve, the retainer-valve, and connections between said parts. Fig. 2 is a vertical sectional view through our retainer-valve. Fig. 3 is a plan view of the valve-seat of an engineer's brake-valve of well-known construction, showing our improvement applied thereto; and Fig. 4 is a bottom plan view of the rotary element or valve proper, showing our improvements thereto.

While we illustrate and will describe our invention applied to the well-known Westinghouse air-brake system, we do not limit ourselves to any particular apparatus.

Referring more particularly to the drawings, the numeral 1 denotes the shell or casing of an engineer's valve of well-known construction, (the Westinghouse type,) consisting of the usual and ordinary parts, including the rotary valve 2 and seat 3. Our improvement to this valve consists in providing in the valve-seat a passage 4, which is preferably formed by drilling a small hole vertically down through the seat 3 and another horizontally through the shell 1 to communicate with the bottom of the vertical passage. The rotary valve 2 is provided, in addition to its usual ports, with the port or opening 5, which is adapted to register with the passage 4 in the valve-seat when the valve is in the well-known position of "full release." The rotary valve 2 is also provided with a groove 6 upon its under face, which is adapted to afford communication between the passage 4 in the seat and the main exhaust of the valve when the latter is in the "running" position.

7 denotes the ordinary Westinghouse type of triple valve, the exhaust-port 8 of which is connected by the pipe or connection 9 to the lower end of the retainer-valve 10. A pipe or other connection 11 is tapped into the horizontal portion of the passage 4 in the engineer's valve and communicates with the top of said valve 10.

The retainer-valve 10 comprises the body portion or shell 12 and the screw-cap 13, between which is held the diaphragm 14, to which the stem or guide-sleeve 15 is attached by the nut 16. Said sleeve 15 guides the upper end or stem of a valve 17, which is adapted to coact with the valve-seat 18, formed in the lower portion of the body, and to control the



exhaust of the triple valve through the pipe 9. The compartment or chamber in the body 12 of the retainer-valve below the diaphragm and above the valve 17 is in communication 5 with the atmosphere through the openings or apertures 19 in said body portion. The compartment in the cap above the diaphragm is in communication with the passage 4 of the engineer's valve through the pipe 10. The 10 retainer-valve may be attached to the engineer's valve in any desired manner, but preferably, as shown in the drawings, by providing an angle-bracket 20, which is secured to a stud or connection upon the engineer's valve, 15 and by forming the lower end of the body of the retainer-valve with a threaded end, which passes through an aperture in the bracket and is locked upon the same by the nut 21.

In the operation of the invention when the 20 handle of the engineer's valve is turned to the full-release position port 5 in the rotary valve 2 will register with the passages 4 in the valve-seat 3, and thereby permit the air from the main reservoir to pass through the 25 pipe 11 to the retainer-valve 10, above the diaphragm 14, in order to hold the valve 17 upon its seat 18, and thus retain the pressure in the driver-brake cylinders by preventing the exhaust from the triple valve, and consequently 30 hold the brakes on the engine set while the train-service brakes are being released in the usual way when the engineer's valve is in this position of full release. In order to release the driver-brakes, the handle of the engineer's 35 valve is turned so that the rotary valve 2 is in the running position, when the groove 6 upon the same will afford communication between the passage 4 and the main exhaust of the engineer's valve in order to permit the 40 air in pipe 11 and in the compartment above the diaphragm 14 to exhaust and thereby release the valve 17. The exhaust from the triple valve 7 will then pass through the pipe 9, valve 17, and out through the openings 19 45 to the atmosphere, and the driver-brakes will be thereupon released.

The advantages attending the use of our invention are numerous. It will be seen that since the train can be kept bunched, with the 50 couplings slack, the starting of the train will be much easier and with less strain. With the train thus bunched a second application of the brake may be made without a disagreeable shock. Upon mountainous roads with 55 steep grades the auxiliary reservoirs need recharging, and this can be done while the driver-brakes are set, so that the engineer is at no time without a brake upon his engine.

From the foregoing description, taken in 60 connection with the accompanying drawings, it is thought that the construction, operation,

and advantages of our invention will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, 55 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 particularly described our in- 70 vention, what we claim, and desire to secure by Letters Patent, is—

1. In an air-brake system, the combination of a triple valve, a retainer-valve controlling the exhaust of said triple valve, and an en- 75 gineer's valve having ports and passages adapted to afford communication between the retainer-valve and the main reservoir of the system when the engineer's valve is in the "full-release" position, and to permit the re- 80 tainer-valve to exhaust when the engineer's valve is in the "running position," substantially as described.

2. In an air-brake system, the combination of a triple valve, a retainer-valve closing the 85 exhaust of said triple valve and provided with a controlling-diaphragm, and an engineer's valve having a passage in its seat in communication with the retainer-valve above its diaphragm and having its rotary element 90 formed with a port adapted to open communication between the main reservoir and the said passage, whereby, when the engineer's valve is in the position of "full release," the retainer-valve will be held closed, said rotary 95 element also having a groove adapted to open communication between said passage and the main exhaust when the engineer's valve is in the "running position," whereby the retainer- 100 valve may be released to permit the exhaust of the triple valve, substantially as described.

3. A retainer-valve comprising a body or shell provided with a threaded stem having a passage adapted to communicate with the ex- 105 haust of a triple valve, said body being formed with a valve-seat upon the upper end of said passage, and with exhaust-openings, a screw-cap for said body having an opening for con- 110 nection with a controlling-valve, a diaphragm interposed between said body and cap, a guide-sleeve, attached to said diaphragm, and a valve coacting with said seat and hav- 115 ing its stem guided in said sleeve, substantially as described.

In testimony whereof we have hereunto set 115 our hands in presence of two subscribing witnesses.

WILLIAM HAMILTON.  
WILLIAM HOLMES.

Witnesses:

J. C. MAKINS,  
E. M. BARLOW.