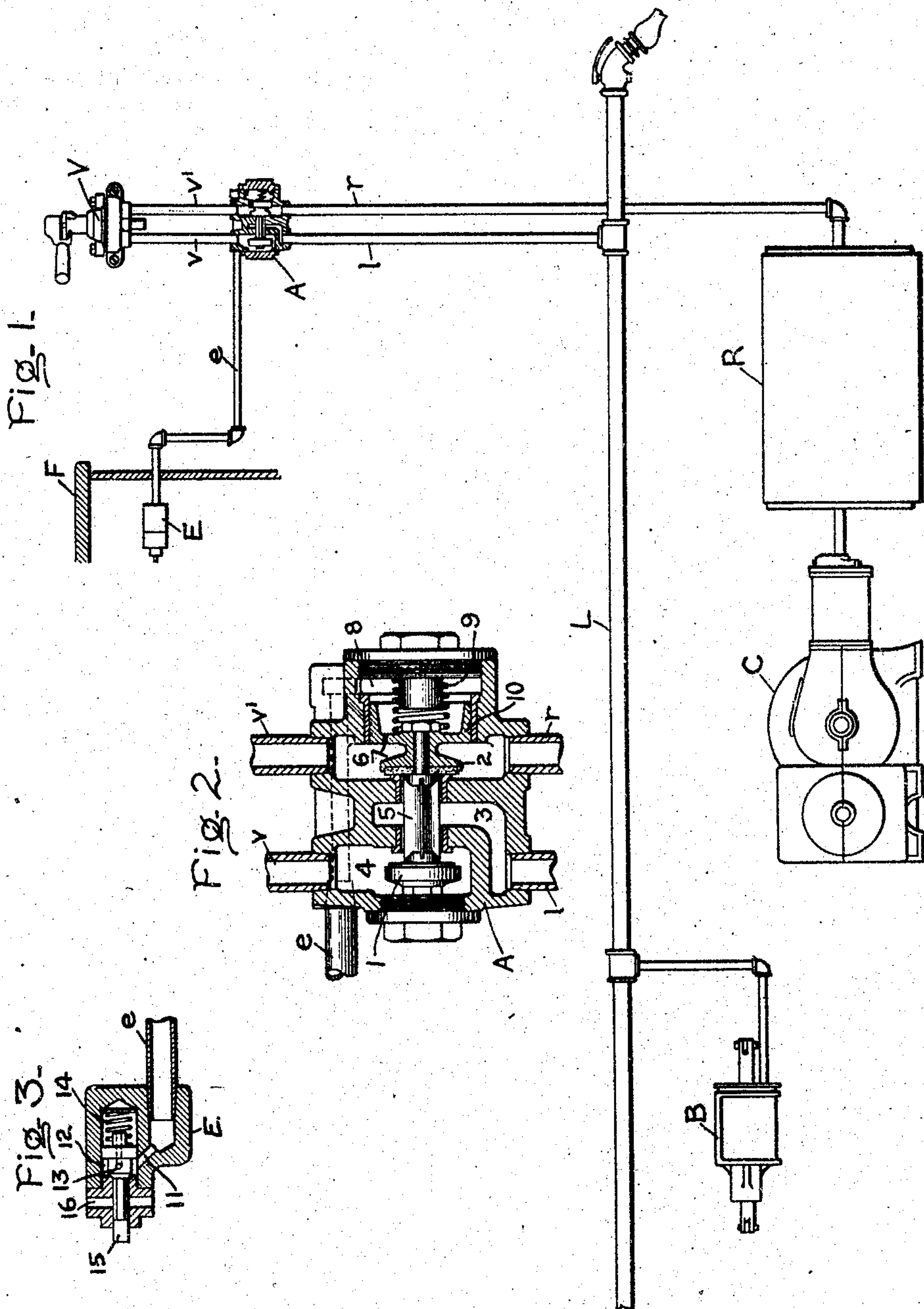


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F. B. COREY.  
EMERGENCY BRAKE VALVE.  
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Witnesses.

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# UNITED STATES PATENT OFFICE.

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## EMERGENCY BRAKE-VALVE.

\* SPECIFICATION forming part of Letters Patent No. 786,955, dated April 11, 1905.

Application filed August 15, 1904. Serial No. 220,738.

*To all whom it may concern:*

Be it known that I, FRED B. COREY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Emergency Brake-Valves, of which the following is a specification.

My invention relates to improvements in means for automatically controlling power-actuated brakes in case of an emergency, and is intended for use especially in connection with electrically-propelled vehicles or trains equipped with what is known as the "straight" air-brake system. In a straight air-brake system, in which the brakes are applied by increasing the pressure of the air in the train-pipe, in contradistinction to "automatic" systems, in which the brakes are applied by the reduction of pressure in the train-pipe, means other than the engineer's or motorman's valve have heretofore been employed by which the brakes may be applied in case of an emergency. In a so-called "straight" air-brake system such a mechanism is liable to be rendered ineffective if the motorman's valve is accidentally or intentionally left in the "quick-release" position, in which the train-pipe is connected directly to atmosphere through a wide opening.

In United States Patent No. 755,750, issued to me March 29, 1904, I disclosed means for guarding against the possibility of the automatically-actuated emergency mechanism being rendered ineffective if operated when the motorman's valve is left in a certain position. The invention disclosed in the above patent consists of the combination, with an emergency-valve, which is operated to apply the brakes whenever the operator becomes incapacitated, of a motorman's valve so constructed and arranged that it will move automatically from a position which renders the operation of the emergency-valve ineffective into another position which will not interfere with the effective operation of said emergency-valve.

My present invention consists in an improved arrangement for accomplishing the same end. By my present invention instead

of modifying the motorman's valve in any way so as to cause it to return to a certain position I provide an auxiliary valve mechanism controlled by an emergency-valve, which acts not only to connect the train-pipe to a source of pressure to apply the brakes, but also disconnects the train-pipe from the motorman's valve, so that the position in which the motorman's valve is left is immaterial as regards the operation of the emergency system.

My invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 shows diagrammatically a straight air-brake system arranged in accordance with my invention. Fig. 2 represents the auxiliary valve mechanism which acts to connect train-line to reservoir and to disconnect train-line from the motorman's valve, and Fig. 3 shows the emergency-valve which controls the auxiliary valve mechanism shown in Fig. 2.

Referring first to Fig. 1, V represents the motorman's valve connected to train-line L and to reservoir R and arranged in the usual manner to connect train-line either to reservoir for applying the brakes or to atmosphere for releasing the brakes. C represents a compressor for charging the reservoir R. B represents a brake-cylinder connected to the train-line L. A represents the auxiliary valve mechanism comprising two valves inserted in the connections from the motorman's valve V to train-line L and to reservoir R, respectively. The auxiliary valve mechanism A is connected to train-line L through the pipe *l*, to reservoir R through the pipe *r*, and to the motorman's valve V through the two pipes *v* and *v'*. It is also operatively connected to the emergency-valve E through the pipe *e*. The emergency-valve E is shown mounted in the controller-casing F.

Referring now to Fig. 2, the casing of auxiliary valve mechanism contains two valves 1 and 2, connected by the spindle 5, which is channeled as indicated in the drawings. Rigidly connected to valves 1 and 2 is the piston 10. The piston and valves are normally held pressed in the position shown by the springs



9. With the valves in this position a connection is established from the reservoir-pipe *r* through chamber 6 to pipe *v'*, leading to the motorman's valve. A connection is also  
 5 established from the train-line pipe *l*, through chamber 3, through the channels in spindle 5, and through chamber 4 to the pipe *v*, leading to the motorman's valve. A connection also exists from reservoir-pipe *r* and cham-  
 10 ber 6, through the restricted passage 7, to chamber 8, which is connected to the pipe *e*, leading to the emergency-valve. The pipe *e* is connected in the emergency-valve, as shown in Fig. 3, through a channel 11, to a chamber  
 15 12, in which is a valve 13, normally pressed upon its seat, as shown, by the spring 14. The valve 13 carries a spindle 15, a portion of which is channeled, as shown, and thereby connects chamber 12 to the passage 16, which  
 20 leads to atmosphere, when valve 13 is lifted from its seat against the pressure of spring 14. Spindle 15 projects beyond the casing of emergency-valve E, so as to be engaged by the controller operating mechanism whenever  
 25 the controller-handle is released by the motorman. The connection between spindle 15 and the controller-handle is not shown, since it is clearly described in Patent No. 755,750, above referred to, and since the specific form  
 30 of connection employed forms no part of the present invention. It is sufficient for the present invention if it be understood that when the controller-handle is released by the motorman the spindle 15 is pushed inward,  
 35 connecting chamber 12, through passage 16, to atmosphere.

The operation is then as follows: When chamber 12 is connected to atmosphere upon the release of the controller-handle, the pres-  
 40 sure in pipe *e*, and consequently in chamber 8 of valve A, is lowered. The restricted passage 7 is too small to admit air to chamber 8 fast enough to equalize the pressure. The reservoir-pressure in chamber 6 consequently  
 45 acts to move piston 10 to the right, compressing spring 9, lifting valve 2 from its seat, and seating valve 1. With the valve thus moved a connection is established from the reservoir-pipe R, through chamber 6, through  
 50 the channels in spindle 5, and through chamber 3, to train-line pipe *l*, thereby admitting air from reservoir to train-line and applying the brakes. At the same time the closing of valve 1 breaks the connection between cham-  
 55 bers 3 and 4, and consequently between train-line pipe *l* and the pipe *v*, leading to the motorman's valve. Thus it is immaterial as regards the emergency system in what position the motorman's valve is left, and the emer-  
 60 gency system is always operative regardless of the position of the motorman's valve.

Many modifications may be made in the construction and arrangement of parts without departing from the spirit of my inven-  
 65 tion, and I aim in the appended claims to

cover all such modifications. I do not, however, claim, broadly, in this application an emergency-valve operative upon the release of a controlling-handle to establish braking  
 70 connections. Such a valve adapted and arranged for operation in connection with an automatic braking system forms the subject-matter of a prior application, Serial No. 148,902, filed by me March 21, 1903. My  
 75 present invention relates only to straight air-brake systems and valves adapted and arranged for use therewith to disconnect train-line from the motorman's valve and to connect it to reservoir.

What I claim as new, and desire to secure 80 by Letters Patent of the United States, is—

1. In a "straight" air-brake system, an emergency device comprising a valve mechanism adapted and arranged to disconnect train-  
 85 line from motorman's valve and to connect train-line to reservoir, and means actuated upon the release of a controlling-lever for causing said valve mechanism to operate.

2. In a "straight" air-brake system, in combination with a motor-controller, a valve 90 mechanism controlled from the controller operating means and adapted and arranged to disconnect train-pipe from motorman's valve and to connect train-pipe to reservoir.

3. In a "straight" air-brake system, means 95 independent of the motorman's valve for connecting train-pipe to reservoir and at the same time disconnecting train-pipe from motorman's valve.

4. In a "straight" air-brake system, in combination with a motor-controller, means actu- 100 ated upon the release of the controller-handle by the motorman and adapted to disconnect train-pipe from motorman's valve and to connect it to reservoir to apply the brakes. 105

5. In a "straight" air-brake system, in combination with a motor-controller, a valve mechanism independent of the motorman's valve and controlled from the motor-controller operating means adapted to disconnect 110 train-pipe from motorman's valve and to connect it to reservoir.

6. In a "straight" air-brake system, in combination with a motor-controller, an automatic valve mechanism located between the 115 motorman's valve and the train-pipe and adapted to disconnect train-pipe from motorman's valve and at the same time connect train-pipe to reservoir, and a valve operatively connected with the motor-controller 120 operating means for controlling the operation of said automatic valve.

7. In a "straight" air-brake system, in combination with a motor-controller, an auto- 125 matic valve mechanism located between the motorman's valve and the train-pipe and adapted to disconnect train-pipe from motorman's valve and at the same time connect train-pipe to reservoir, and a valve arranged to be actuated upon the release of the con- 130



troller-handle by the motorman and controlling the operation of said automatic valve.

5 8. In a "straight" air-brake system for vehicles, a valve mechanism adapted and arranged to disconnect train-line from motorman's valve and to connect train-line to reservoir, and means normally under control of the motorman in the operation of the vehicle for controlling the operation of said valve  
10 mechanism.

9. In a "straight" air-brake system for vehicles, a valve adapted and arranged to disconnect train-line from motorman's valve and to connect train-line to reservoir, a controlling-lever, and operative connections between  
15 said lever and said valve.

10. In a "straight" air-brake system for vehicles, a valve mechanism adapted and arranged to disconnect train-line from motorman's valve and to connect train-line to res-  
20

ervoir, and an automatic controlling device adapted to be normally held in a position to prevent the operation of said valve mechanism and arranged to cause the said mechanism to operate when it is released. 25

11. In a "straight" air-brake system for vehicles, an automatic valve mechanism adapted and arranged to disconnect train-line from motorman's valve and to connect train-line to reservoir, and an automatic controlling device adapted to be normally held in a position  
30 to prevent the operation of said automatic valve mechanism and arranged to permit the said mechanism to operate when it is released.

In witness whereof I have hereunto set my  
hand this 13th day of August, 1904. 35

FRED B. COREY.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.