

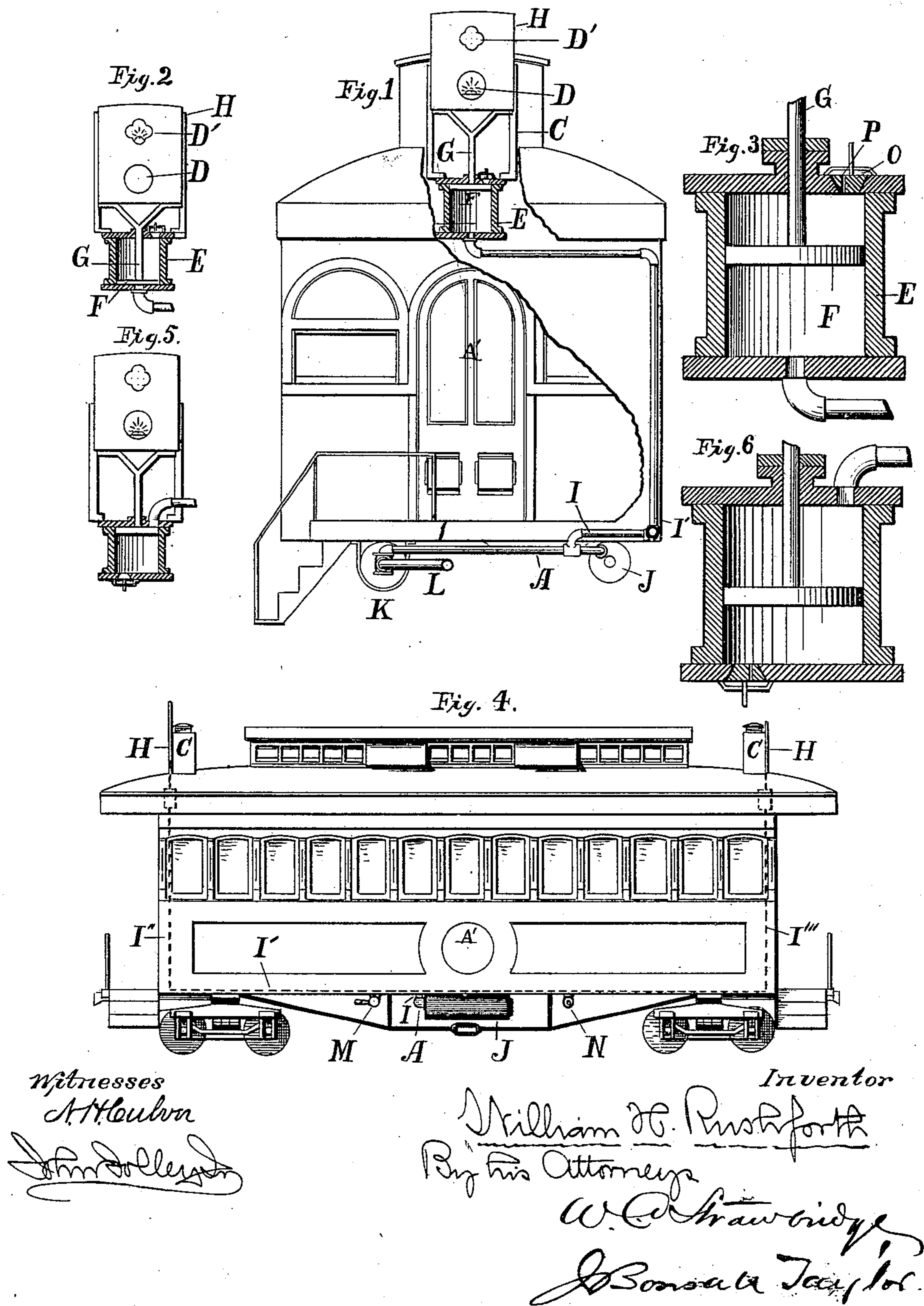
(No Model.)

W. H. RUSHFORTH.

CAR SIGNAL.

No. 282,570.

Patented Aug. 7, 1883.



UNITED STATES PATENT OFFICE.

WILLIAM H. RUSHFORTH, OF CAMDEN, NEW JERSEY.

CAR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 282,570, dated August 7, 1883.

Application filed March 4, 1882. Renewed May 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RUSHFORTH, of Camden, in the State of New Jersey, have invented an Improvement in Automatic Safety Car-Signals, of which the following is a specification.

My invention relates to means for protecting standing trains from collision from the rear.

As is well known, upon the unexpected stoppage of a train during the night, it is necessary that a brakeman should proceed some distance to the rear of the train and display a danger-signal lantern. In the event of failure to perform this duty the standing train is exposed to the risk of collision by following trains, and to such extent is at the mercy of the brakeman.

The object of my invention is to provide an automatically-operating device which upon the stoppage of the train shall occasion the display of the danger-signal upon the rear of the train.

Hereinafter I have fully described and claimed my invention.

In the accompanying drawings, Figure 1 represents an end elevation of a railroad-car to which is shown applied an apparatus embodying my invention in the position which the parts occupy when the danger-signal is exposed. Fig. 2 is a similar view of the same representing the parts in the opposite position, or when the danger-signal is not exposed. Fig. 3 is a sectional elevational detailed view of a pump-cylinder, which I find it convenient to employ. Fig. 4 represents a side elevation of the car and apparatus shown in Fig. 1. In Figs. 1 to 4 air-brake mechanism is assumed to be employed. Fig. 5 is a view representing the position of parts when the danger-signal is exposed and when said signal is operated by mechanism connected with a vacuum-brake system. Fig. 6 is a sectional elevational detailed view of a pump-cylinder, which I find it convenient to employ in connection with the devices shown in Fig. 5, and in connection with the vacuum-brake system.

Similar letters of reference indicate corresponding parts.

My invention consists in a danger-signal applied to the end of a car and connected with air or vacuum brake systems under the con-

trol of the engineer, and which is also capable of being operated by the breaking of the hose-brake coupling, the arrangement being such that upon the stoppage of the train by the application of the brakes by the engineer or by the breaking of a car-coupling, the power which has been utilized for the application of the brakes is also utilized through any suitable connecting instrumentality to operate and display a danger-signal applied to the rear of the train.

Many convenient means of effecting the connection between the brake-motor and the signal-light, of constructing the signal-light itself, and of obscuring and exposing said light may be resorted to without departing from the invention proper, as above set forth. I have, however, devised the following means of connection and construction, which I recite as suitable to carry my invention into practice.

In the drawings, A' represents the end of the car to which are shown applied my improvements.

C is a signal-lantern conveniently erected upon the upper end of a car and provided with a red bull's-eye or other transparent medium, D, of a character agreed upon, to indicate danger, and with a white bull's-eye, D', to indicate safety. In this signal-lantern a light is after dark kept constantly burning.

E is an air-pump cylinder fixedly applied preferably to the end of a car, either inside or outside, as convenience of arrangement may dictate, and fitted internally with a piston, F, from which is erected a stem, G, which is bifurcated at its upper extremity, and to the arms of which is connected a bull's-eye plate, H.

The stem of the piston is in alignment with the bull's-eye light, and when the parts are in the position indicated in Fig. 1, or the piston at the upper extremity of its stroke, the stem is elevated so as to present the bull's-eye danger-light to view. When the piston is in the position represented in Fig. 2, or down within its casing, the white bull's-eye or safety-light is presented to view.

The head-plate of the cylinder E is provided with an ordinary puppet-valve, O, suitably applied and set for action, and perforated by one or a series of apertures, P.

K is the auxiliary reservoir in a system of

air-brakes. J is the brake-cylinder, and A' the pipe leading from the auxiliary reservoir to said brake-cylinder.

L is the hose-coupling leading from one car to the next.

I is a pipe leading from the pipe A', at a point between the auxiliary reservoir and the brake-cylinder, to a pipe, I', which latter pipe extends the entire length of the car and terminates at each of its ends respectively in vertical pipes I'' and I''', which lead to pump-cylinders E at either end of the car.

Such being the construction of my device, it is obvious that when air is forced into the pump-cylinder E, either by the direct operation of the air or vacuum brakes from the engine or by the breaking of a hose-coupling, the piston F will be forced or drawn upward and the danger-signal be thereby displayed. So long as the air or vacuum pressure remains applied the piston will remain in this elevated position and the danger-light will be displayed. Upon the relief of pressure the piston will gradually descend as the air gradually enters the space above the piston through the aperture P in the valve O, the said valve being arranged to itself operate only upon the upward forcing of the piston. By the regulation of the number and size of the apertures P the rapidity of the descent of the piston, and the consequent length of time before the bull's-eye light is obscured, can be regulated with exactness.

The above is simply one of many methods whereby my invention can be carried into practice.

It will be now understood that my device is wholly under the control of the engineer upon the application of the brakes, and that a train equipped with my improvement is, upon stoppage, at once guarded from the rear by the signal.

In freight-trains my device is, of course, to be applied to the caboose alone; but in passenger-trains it is of advantage to apply a signal-lantern to both ends of every car, and to connect them all with the brakes, as it is impossible to determine which car will be at the rear of the train.

In Fig. 4, M and N are cocks by which the connection of the air or vacuum brake system may be cut off from either signal at will.

When the train is made up, however, light is only required to be burning in the lantern which is on the end of the last car.

I am aware that it is not new to operate signals of various kinds by connecting them with the air-brakes; that it is not new to display danger-signals from cars in such a manner that the signal shows whether the train is in motion or standing still; and that it is not new to connect a cylinder with the air-brakes for the purpose of operating a station-indicator, and all these I disclaim.

Having thus described my invention, I claim—

1. The method of automatically displaying a danger-signal from the end of the train, which consists in connecting a danger-signal with a system of pneumatic brakes adapted to be operated from the engine or by the breaking of a hose-brake coupling, whereby, upon the application of the brakes from the engine or the stoppage of the train by reason of the breaking of a hose-coupling, the danger-signal is automatically exposed.

2. In a railroad-train, in combination, a system of air or vacuum brake tubes, a fixed danger-signal applied to the end of a car, a device which, when the train is in motion, obscures the light of said signal, and means, substantially as described, for connecting the obscuring device with the system of air or vacuum brake tubes, whereby, upon the application of the brakes from the engine or upon the breaking of a coupling, the air is enabled to operate the signal.

3. In a railroad-train, the combination of a system of air or vacuum brake tubes, a fixed signal-lantern applied to the end of a car, an obscuring-plate or kindred obscuring device connected with a piston playing in a pump-cylinder, and adapted, when the train is in motion, to obscure the light, a pump-cylinder, also applied to the car, and connecting-tubes for conveying the pressure from the air or vacuum brake tubes into the cylinder for operation of the piston and signal.

In testimony whereof I have hereunto signed my name this 27th day of February, A. D. 1882.

WILLIAM HENRY RUSHFORTH.

In presence of—

J. BONSALE TAYLOR,

WM. C. STRAWBRIDGE.