No. 894,677. PATENTED JULY 28, 1908.

N. P. MATLOCK.

FIRE EXTINGUISHER.

APPLICATION FILED SEPT. 11, 1907.

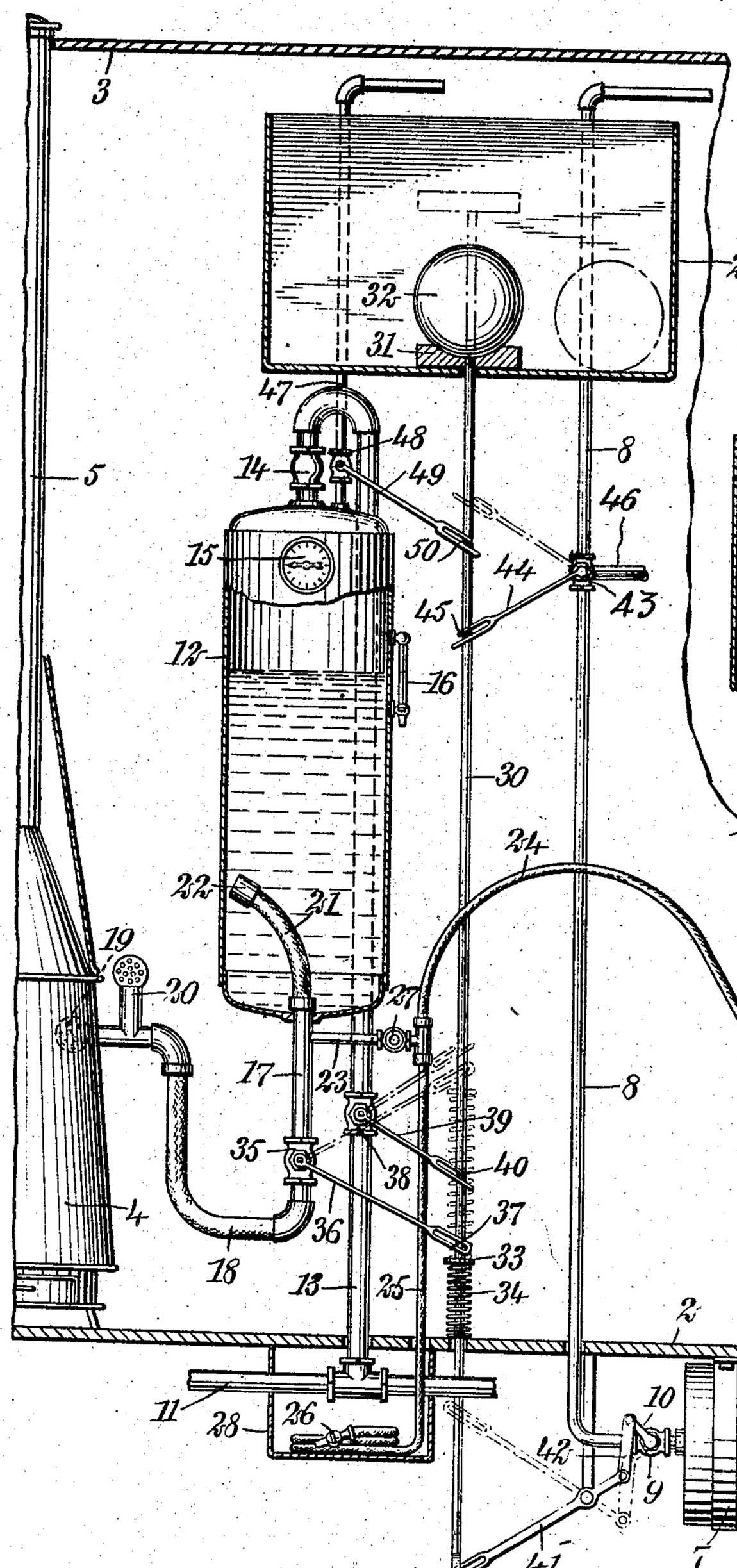
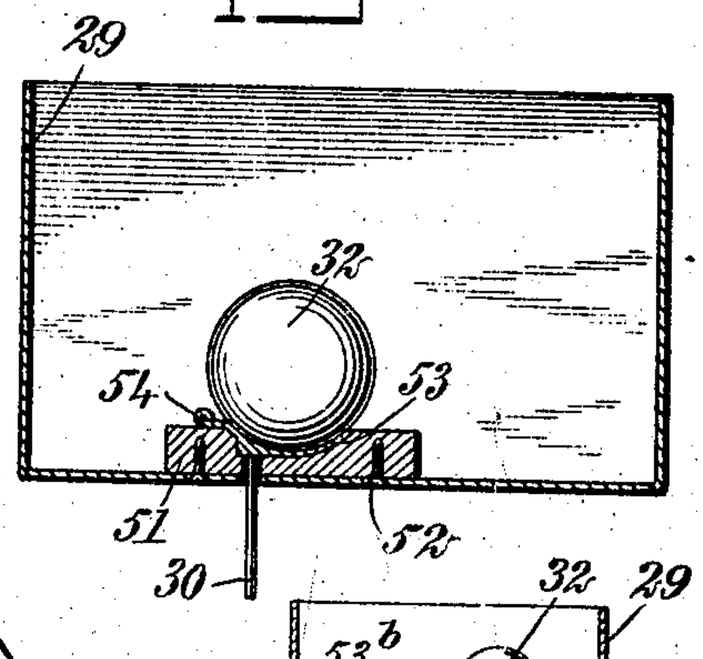


Fig. 1

Fig. 2



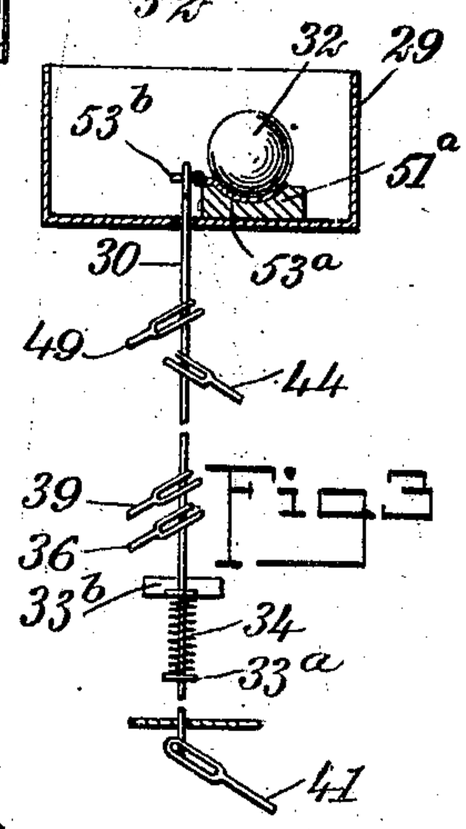


Fig. 3

WITNESSES

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FIRE-EXTINGUISHER.

No. 894,677. Specification of Letters Patent. Patented July 28, 1908.

Application filed September 11, 1907. Serial No. 392,300.

To all whom it may concern:

Be it known that I, NORRIS P. MATLOCK, a citizen of the United States, and a resident of Chickasha, in District 19, Oklahoma, have invented a new and Improved Fire-Extinguisher, of which the following is a full, clear, and exact description.

This invention relates to fire extinguishers and more particularly to that class of fire extinguishers used in connection with railway coaches and the like.

The object of the invention is to provide a simple, strong and efficient fire extinguisher, adapted to be used in railway passenger coaches, cars and the like, by means of which fires in the stoves of the coaches are instantly extinguished in case of accident, and by means of which gas or oil lamps in the coaches are extinguished.

A further object of the invention is to provide a device of the class described which extinguishes fires in the stoves of passenger coaches and cars, puts out gas or oil lamps, and at the same time automatically sets the emergency air brakes.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and directly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which

Figure 1 is a vertical longitudinal section of the fire extinguisher, showing the device applied to a railroad coach, Fig. 2 is a vertical longitudinal section of a detail of a modified form; and Fig. 3 is a similar view showing details of a further modified form.

Before proceeding with a more detailed explanation, it should be understood that in a large percentage of railroad accidents the coaches and cars are destroyed by fire due to the scattering of glowing embers from the stoves within the coaches or from the gas or oil lamps within the same. The incineration of the demolished rolling stock not only entails additional loss of life but as well causes endless destruction of property. To prevent the scattering of embers from the stoves within the coaches, I provide a fire extinguisher, which becomes operative as soon as the coach leaves a substantially normal position upon the track, the fire extinguisher discharging water into the body of the stove and at the same time shutting off the supply of gas to the gas lamps or extinguishing the oil lamps by means of a strong blast of air. I make use of a reservoir to contain the water or other extinguishing liquid, which is in communication with the main pipe of the air brake system, whereby the liquid in the tank is under pressure of approximately seventy pounds per square inch. This insures the instant discharge of the liquid from the reservoir when the outlets are opened. Furthermore, I provide means for instantly setting the emergency air brakes when the car leaves a normal position, whereby the brakes are set, if this has not been effected prior thereto. My fire extinguishing device also cuts off the supply of gas from the gas tank and opens the gas conducting system of pipes leading from the tank to the lamps, so that the pressure is instantly relieved therein and the gas lamps go out automatically. In case oil lamps are used instead of gas lamps, I provide an attachment by means of which a strong current of air is introduced to the chimney of each lamp from a pipe communicating with the reservoir, the air pressure in the reservoir being used for this purpose. To insure maintaining of the air pressure in the tank constant, I provide a valve preventing the escape of the air therefrom back to the main line, so that when the pressure in the air brake system is reduced in the operation of the same, the air can nevertheless not escape from the reservoir. The valve is opened when the pressure in the main pipe exceeds the pressure within the reservoir, whereby the latter always approximates the maximum pressure occurring in the air brake pipe.

Referring more particularly to the drawings, 1 represents the body of a railroad coach or car having a floor 2 and a roof 3. Arranged in the usual manner upon the floor of the car is a coal or wood stove 4, for the purpose of heating the interior of the car, and having a chimney 5 extending through a suitable opening in the roof. Under the floor of the car is a gas tank 6 carried by the usual hangers 7, and supplying gas under compression to the illuminating burners through a pipe 8. Adjacent to the tank 6 is a valve 9, by means of which the pipe can be closed to prevent the flow of gas from the tank therethrough. The

valve is preferably of the one-quarter turn type and is controlled by an arm 10. Extending under the car is the main pipe 11 of the air brake system. Within the car is arranged a reservoir 12 to contain water or other preferred or common fire extinguishing liquid, and communicating by means of a pipe 13 with the main pipe 11. The pipe 13 has a non-return valve 14 to prevent the return of air from the reservoir 12 to the main pipe 11. The reservoir 12 is provided with a pressure gage 15 of suitable form and a gage 16 for estimating the level of the fire extinguishing liquid there-within. The reservoir 12, preferably at the lower end, has an outlet pipe 17 communicating by means of a flexible connecting tube 18 with a spray 19 discharging within the stove and a spray 20 discharging at a point adjacent to the stove. The outlet tube 17 has at the inner end a flexible tube 21 within the reservoir 12 and having at the extremity a weight 22. The purpose of the flexible weighted tube 21 is to insure that the discharge opening of the outlet is located adjacent to the underside of the reservoir, so that if the car is upset and the reservoir assumes a horizontal position, the flexible member nevertheless permits the discharge opening to assume a position adjacent to the under side of the reservoir. The outlet pipe 17 communicates by means of a connecting pipe 23 with fire hose 24 and 25, adapted to be manually operated by the train hands or passengers. The fire hose have the usual nozzles 26, and the connecting tube 23 has a throttle valve 27, by means of which the flow of liquid through the hose may be regulated. The hose 24 is arranged preferably within the body of the car and the hose 25 is carried in a suitable casing 28 underneath the car, the hose passing through an opening therefor in the floor. Within the body of the car is a casing 29 having an opening in the bottom thereof in which is slidably located a movable rod 30. The rod 30 is substantially vertical and extends through an opening therefor in the floor of the car. The rod 30 has at its upper end a rigid plate 31, upon which is arranged a removable weight 32, preferably spherical in form, and seating in a recess of the plate 31. The rod 30 has a rigid collar 33. Between the floor and the collar 33 a spiral spring 34 is arranged upon the rod and normally forces the same upward against the gravitational action of the weight 32. The weight 32 is of sufficient size to hold the rod 30 in a depressed condition, as is shown in Fig. 1. If the car is displaced from a substantially normal position upon the track, for instance, if it is upset, the weight 32 will, of course, fall from the plate 31, and the spring 34 will immediately drive the rod in the direction of the casing 29, as indicated by the dotted positions of certain of the parts. The outlet tube 17 has a valve 35 controlled by an arm 36. The arm 36 has a slotted end engaging a pin 37 carried by the rod 30. When the rod 30 is operated by the spring the valve 35 is opened and the extinguishing liquid instantly flows from the reservoir 12 into the stove. Similarly a valve 38 controllable by an arm 39 and having a slotted end engaging a pin 40 of the rod 30, is fully opened by the upward movement of the rod, whereby the pressure in the main pipe of the air brake system is reduced and the brakes are instantly set, if this has not already been effected. The valve 38 is normally partially open to permit the discharge of air from the main pipe into the reservoir. It will be understood that when the valve 38 is completely opened by the upward movement of the rod 30, pressure in the air brake system is instantly reduced and the emergency brakes are applied at once. The lower end of the rod 30 engages the slotted extremity of a pivoted lever 41, carried at the under side of the car and pivoted to a link 42 connected with the arm 10 of the valve 9. Thus as the rod is forced upwardly by the spring the supply of gas from the gas tank is shut off, and at the same time a valve 43 in the lighting circuit is opened by means of an arm 44 having a slotted end in operative engagement with a pin 45 carried by the rod 30. By opening the valve 43, the gas in the circuit which is under a certain pressure can escape through an escape pipe 46, thereby instantly extinguishing the lights.

In case oil lamps are used, I provide a tube 47 communicating with the reservoir 12 and having openings at the burners of the oil lamps. A valve 48 controlled by an arm 49 having a slotted end in engagement with a pin 50 carried by the rod 30, is opened when the rod is operated thereby, permitting the air under pressure to escape through the tube to the burners and extinguishing the flames in the same by the rush of air therethrough.

In Fig. 2 is illustrated a modified form of the means for acting on the controlling weight 32 in the casing 29. A block 51 is rigidly secured upon the bottom of the casing by means of screws 52, and has a recess and an opening therethrough. A cup 53 is arranged in the recess and is pivotally secured at one end by a hinge 54 to the block 51. The rod 30 extends through an opening in the block and engages the underside of the cup. The weight 32 is located in the cup and holds the rod 30 secured in a depressed condition. When the weight is displaced from its normal position, the rod is forced upwardly by the spring and thrusts aside the cup, swinging the same about its hinge, so that the rod can pass freely through the opening to operate the fire extinguisher.

In the normal and inoperative position of the actuating rod 30, the valve 9 is open, and the remaining valves 43, 48, and 35 are

closed, and 38 partly closed. When the weight is displaced from the normal position, the rod 30 is operated by the spring 34 and the valves are operated, 9 being closed to prevent the further exit of gas from the tank, 43 being opened to permit the escape of gas from the lighting circuit to extinguish the lamps, 35 being opened to permit the discharge of the extinguishing liquid from the tank into the stove and at the outside of the latter, and 38 being opened to decrease the pressure in the main pipe of the air brake system, thereby instantly setting the emergency brakes. At the same time the arrangement for blowing out oil lamps is employed, the valve 48 is opened and the lamps are extinguished.

In the further modified form shown in Fig. 3, a cup 53^a is suitably mounted in a recess of a block 51^a arranged in the casing 29. The cup 53^a is pivotally carried upon the block and has an arm 53^b extending beyond the hinged connection with the block. The end of the rod 30 is laterally disposed and hooks over the arm 53^b, the latter holding the rod against downward movement. In this modified form the operation of the parts is reversed. That is, the various valves are operated by a downward movement of the rod 31 and are arranged in accordance with this mode of operation. The rod 30 has a collar 33^a and passes through a suitable bracket 33^b which is rigid with the car. A spring 34 is arranged upon the rod 30 between the collar 33^a and the bracket 33^b and forces the rod downward when the weight 32 is removed from the cup. When this occurs the latter swings upward about its pivotal point and permits the rod 30 to slide from engagement with the arm 53^b.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a device of the class described, a reservoir containing a fire extinguishing liquid and normally communicating with the main pipe of the air brake system, whereby said reservoir is maintained at all times under air pressure said reservoir having a normally closed outlet.

2. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating at all times with the main pipe of the air brake system, a movable member normally held in an inoperative position, means controlled by said member for discharging said reservoir, and means controlled by said member for decreasing the pressure in the main pipe of the air brake system.

3. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating at all times with the main pipe of the air brake system, a movable member held in an inoperative position by the gravitational action of an imposed weight, resilient means for operating said member when said imposed weight is removed, means controlled by said member for discharging said reservoir, and means for opening the main pipe of the air brake system.

4. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating with the main pipe of the air brake system, a valve permitting the entrance of air into said reservoir from the main pipe and preventing the return of the same, a further valve between said reservoir and the main pipe and normally partially open, a movable member held in an inoperative position by an imposed weight adapted to be displaced when said member is laterally displaced from a normal position, means controlled by said member for discharging said reservoir, and means controlled by said member for further opening said valve to set the emergency brakes.

5. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating with the main pipe of the air brake system, a movable member held in an inoperative position by an imposed weight, a spring operating said member when said imposed weight is displaced, a valve controlling the discharge of the liquid from said reservoir, means for operating said valve by the movement of said member, a second valve for opening the main pipe of the air brake system into said reservoir, and means for controlling said second valve by the movement of said member.

6. In a device of the class described, a movable member held in an inoperative position by means of an imposed weight, means for operating said movable member, a tank containing gas for the illuminating system, a pipe conducting the gas from said tank to said illuminating system, an outlet pipe communicating with said first pipe, means controlled by the movement of said member for preventing the escape of gas from said tank into said first pipe, and means controlled by said member for effecting communication between said first pipe and said outlet pipe.

7. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating at all times with the main pipe of the air brake system, a valve regulating the flow of air from the main pipe to said reservoir, said valve being normally partly open, a movable member held in an inoperative position by an imposed weight, and means controlled by the movement of said member for fully opening said valve, said reservoir having a normally closed outlet controlled by said member.

8. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating with the main pipe of the air brake system, a valve regulating the

flow of air from the main pipe to said reservoir, said valve being normally partly opened, a valve regulating the discharge of liquid from said reservoir, a movable member, a weight holding said member normally in an inoperative position, resilient means for operating said member when said weight is displaced, means controlled by the movement of said member for fully opening said first valve, and means controlled by the movement of said member for operating said discharge valve.

9. In a device of the class described, a reservoir containing a fire extinguishing liquid and means for placing said liquid under pressure, a movable member held in an inoperative position by a removable weight, means controlled by said member for discharging said reservoir, a tank adapted to contain illuminating gas, an outlet pipe for said tank, a discharge pipe, means controlled by said member for closing said outlet pipe at a point adjacent to said tank, and means controlled by said member for effecting communication between said outlet pipe and said discharge pipe.

10. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating with the main pipe of the air brake system, a valve controlling the discharge from said reservoir, a valve controlling the flow of air from said main pipe to said reservoir, a tank adapted to contain illuminating gas, an outlet pipe connecting said tank and the illuminating system, a valve adjacent to said tank and controlling the flow of gas therefrom into the said outlet pipe, a discharge pipe, a valve controlling the flow of gas from said outlet pipe to said discharge pipe, a movable member held in an inoperative position by means of a removable weight, a spring for operating said member, and means controlled by the movement of said member for operating said various valves.

11. In a device of the class described, the combination with an illuminating system and a gas reservoir therefor, of independent means for shutting off the escape of gas from said reservoir to said system, and means for opening said system to the atmosphere, said means being simultaneously operable.

12. In a device of the class described, a reservoir containing a fire extinguishing liquid and communicating at all times with the main pipe of the air brake system, whereby said reservoir normally contains air under pressure, an outlet pipe for conducting the air from said reservoir to a lamp, a movable member, and means controlled by the movement of said member for opening said outlet pipe and for discharging said liquid from said tank.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NORRIS P. MATLOCK.

Witnesses:
ED A. F. JOHNS,
ROY MAXEY.