

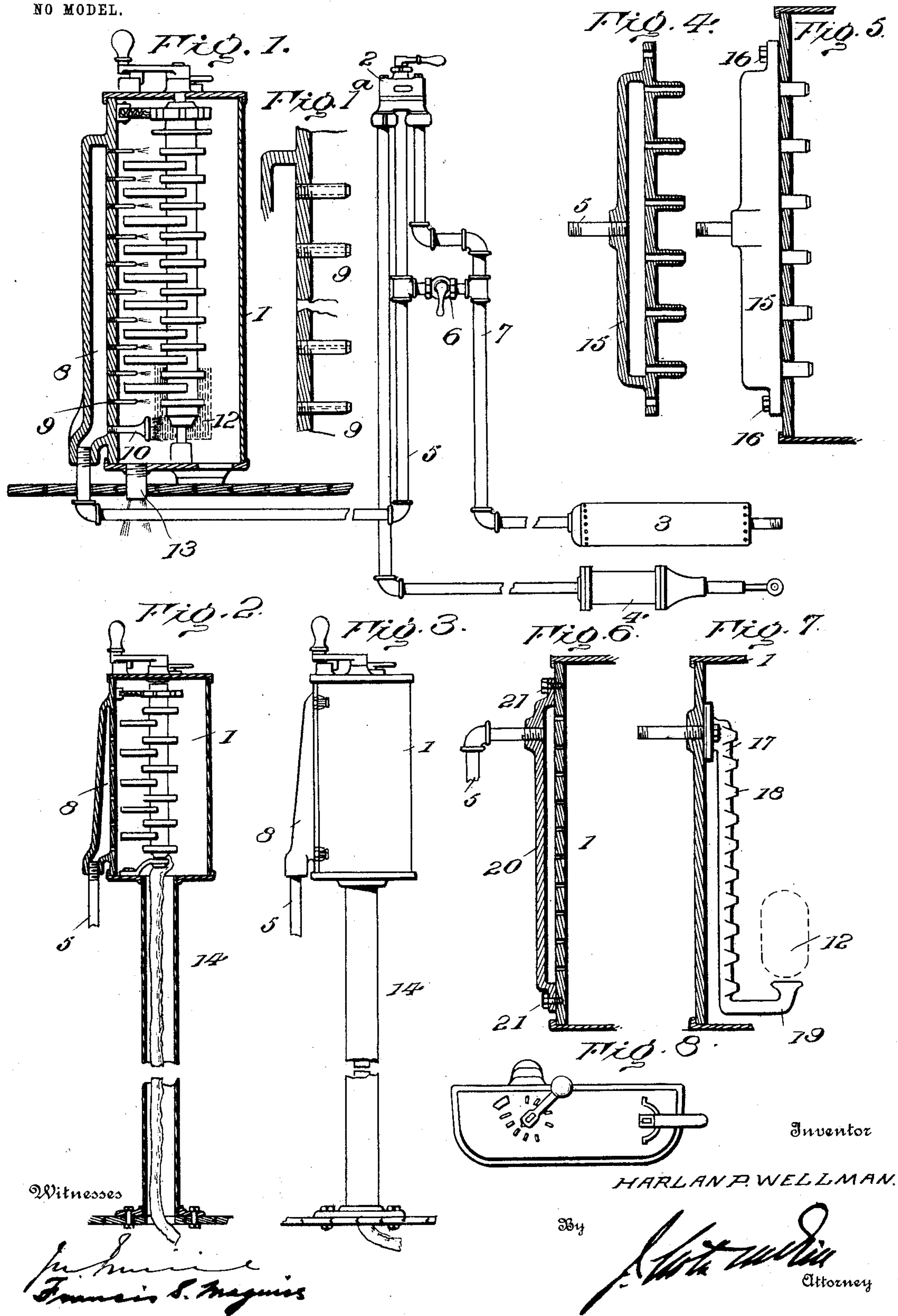
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PATENTED JAN. 19, 1904.

H. P. WELLMAN.  
ELECTRICAL CONTROLLER FOR RAILWAY CARS.

APPLICATION FILED NOV. 19, 1903.

NO MODEL.





# UNITED STATES PATENT OFFICE.

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## ELECTRICAL CONTROLLER FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 750,139, dated January 19, 1904.

Application filed November 19, 1903. Serial No. 181,843. (No model.)

*To all whom it may concern:*

Be it known that I, HARLAN P. WELLMAN, of Ashland, in the county of Boyd and State of Kentucky, have invented certain new and useful Improvements in Electrical Controllers for Railway-Cars; and I do hereby 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 primary object of this invention is to adapt the controller of an electric-railway car as a muffler for the air-brake exhaust upon releasing pressure from the brakes and at the same time to utilize such exhaust for freeing the vital and destructible parts of the controller of all foreign matter, the presence of which is liable to cause the burning out of the controller.

Further objects are to provide simple means for thus cleaning the controller when the car is not in use or the air-brakes are not being worked, to so locate the connection between the exhaust-pipe and the controller that it will be out of the way, and also to provide for ready and easy adaptation of the invention to controllers now in use.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 shows a controller and air-brake system, the controller-casing being in section. Fig. 1<sup>a</sup> is an enlarged sectional view of a portion of the controller-casing. Fig. 2 is a vertical section, and Fig. 3 a side elevation, of a different form of controller constructed in accordance with my invention. Fig. 4 is a vertical section of a form especially applicable to controllers now in use. Fig. 5 is a side view thereof attached to a casing, the latter being in section. Figs. 6 and 7 show other modifications. Fig. 8 is a plan view of the controllers of Figs. 1, 2, and 3.

Referring to the drawings, 1 designates the controller of an electric-railway car, 2 what is generally called the "engineer's brake-valve," 3 the air-reservoir, and 4 the air-brake cylinder, all connected up with proper piping. The exhaust-pipe 5 is carried to the controller-

casing, so that the exhaust from the brake-valve will be discharged into such casing against the vital parts of the controller, and thereby blow out all dirt, dust, metallic cuttings, &c., the presence of which is liable to cause short-circuiting, and hence the burning out of the controller. At the same time the controller-casing acts as a muffler, preventing the annoyance heretofore experienced by passengers, as well as pedestrians, and avoiding the consequence of terrifying horses. A valved by-pass 6, between the reservoir supply-pipe 7 and the exhaust-pipe 5, enables the controller to be thus cleaned of all foreign matter when the car is not in operation or the air-brakes are not in service.

According to the form shown in Figs. 1, 2, and 3 the exhaust-pipe 5 opens into a duct or channel 8, preferably formed integral with the controller-casing at the rear thereof, so as to be out of the way of the motorman. In that portion of the casing-wall inclosed by the duct or channel is formed a series of holes or ports, through which the exhaust enters into such casing. In Fig. 1 I have shown a series of small nozzles 9, secured in such ports, such nozzles extending toward the center of the controller in close proximity to the contact elements thereof. These nozzles are preferably made of insulating material—such as mica, fiber, wood, &c.—but may be made of metal. They are preferably graded, as far as their bores are concerned, with the smaller openings near the bottom or point of entrance of the exhaust-pipe, with the largest openings at the points farthest removed therefrom, thus allowing for an even blowing of the air into the controller and equalizing the normal pressure or stream of air therein. Beneath this series of nozzles is a nozzle 10, having a bell-mouth in proximity to the blow-out magnet-coil 12. (Shown in dotted lines in Figs. 1 and 7.) In Fig. 1 I have shown an outlet-pipe 13 extending from the bottom of the controller to a point beneath the car-floor. According to the form of controller of Figs. 2 and 3 no special pipe is necessary, as relief is had through the hollow stand 14, through which pass the wires and connections between the motor and the controller, sufficient space being left therein to allow of



the escape of the air. In these latter figures the duct or channel is shown as being gradually narrowed toward its upper end.

In Figs. 4 and 5 I have shown the duct or channel, formed in a separable casing 15, equipped with a series of nozzles designed to be projected through the openings in the controller-casing, to which latter the casing 15 is secured by bolts 16. This arrangement is especially applicable to controllers now in general use. Another form having substantially the same advantage is illustrated in Fig. 7, wherein the exhaust-pipe is shown as opening directly into a pipe 17, located within the controller-casing and formed with a series of discharge-nozzles 18, its lower end terminating in a bell-mouthed tubular extension 19, opening adjacent to the blow-out magnet-coil for directing a stream of the exhaust-air thereagainst for cooling purposes. In Fig. 6 the duct or channel is formed between an open-sided casing 20 and the controller-casing, such former casing being secured by bolts 21. According to this arrangement it is only necessary to drill the proper-sized holes in the rear wall of the controller-casing and secure the casing 20 thereover, suitable gaskets being employed to secure an air-tight fit.

It is well known that in the operation of electric-railway cars considerable annoyance is experienced by passengers, as well as pedestrians, by the noise consequent upon exhaust from the engineer's brake-valve, and, in addition, horses are frequently terrified, with most harmful results. By my invention this is avoided by utilizing the controller-casing as a muffler. It is also well known that electric-railway-car controllers frequently become short-circuited by foreign matter collecting on the insulated partitions and between the contact elements. By means of my invention the controller may be always kept free of such matter, even when the car is not in use or the brakes are not being worked. The exhaust from the brake-cylinder to the engineer's valve upon entering the duct or channel of the controller is subdivided into small streams or sprays and directed against the insulated partitions, terminals, and contacts of the controller, so as to thoroughly clean them of all dirt, metal cuttings, &c.

It will be seen that according to my invention not only is the annoyance consequent upon a direct exhaust into the atmosphere avoided, but the efficiency of the controller is maintained, and the danger of short-circuiting and of burn-outs is avoided by means both simple and highly efficient.

Although I have shown various forms for carrying out my invention, it is obvious that changes may be made in the construction and arrangement of parts, the invention itself not being confined in this particular.

I claim as my invention—

65 1. In an electric-railway car, in combination,

an electrical controller, an air-brake system carried by the car, and means for injecting air therefrom against the parts of such controller.

2. In an electric-railway car, in combination, an electrical controller and casing therefor, a fluid-pressure brake system, a valve for the latter, and an exhaust-pipe leading from such valve to said casing for discharging the exhaust fluid thereinto. 75

3. In an electric-railway car, in combination, an electrical controller and casing therefor, a fluid-pressure brake system, a valve therefor, the exhaust-pipe leading from said valve to said casing, and means for discharging the exhaust from said valve into the casing in the form of sprays, as set forth. 80

4. In an electric-railway car, in combination, an electrical controller and casing therefor, a duct or channel communicating with the interior of said casing at different points longitudinally thereof, a fluid-pressure brake system, a valve therefor, and an exhaust-pipe leading from said valve into said duct or channel, as set forth. 90

5. In an electric-railway car, in combination, an electrical controller, a casing therefor having a series of openings in one of its walls, a duct or channel into which such openings extend, nozzles extending through said openings, a fluid-pressure brake system, a valve therefor, and an exhaust-pipe leading from said valve into said duct or channel. 95

6. In an electric-railway car, in combination, an electrical controller having its casing formed with a series of openings, a second casing removably secured to said former casing over said openings, a fluid-pressure system, a valve therefor, and an exhaust-pipe leading from said valve into said second casing. 100

7. In an electric-railway car, in combination, an electrical controller having its casing formed with a series of openings, a second casing removably secured to such former casing and having a duct or channel, and a series of nozzles extending therefrom through said openings, a fluid-pressure brake system, a valve therefor, and an exhaust-pipe leading from said valve into said second casing. 110

8. In an electric-railway car, in combination, an air-brake system having an exhaust-pipe, an electrical controller into whose casing said exhaust-pipe enters, said casing forming a muffler for such exhaust, and an outlet for such exhaust leading from said casing, as set forth. 115

9. In an electric-railway car, in combination, an electric controller, a fluid-pressure brake system having a pipe opening into said controller, and a valve for controlling communication between said system and said controller, as set forth. 120

10. In an electric-railway car, in combination, an electric controller, a fluid-pressure brake system having a reservoir, brake-cyl- 125 130

inders, engineer's valve, pipes between said reservoir and valve and the valve and brake-cylinder, and an exhaust-pipe leading from said valve into said controller, and a valved  
5 by-pass between said exhaust-pipe and the pipe connecting the reservoir and engineer's valve.

10 11. In an electric-railway car, in combination, an air-brake system having an exhaust-pipe, a controlling-valve from which such pipe extends, and an electrical controller into

whose casing said exhaust-pipe discharges, said casing forming a muffler for such exhaust, as set forth.

In testimony whereof I have signed this 15 specification in the presence of two subscribing witnesses.

HARLAN P. WELLMAN.

Witnesses:

R. O. FISHER,

W. C. RICHARDSON.