

(No Model.)

H. E. JACOBS.

AUTOMATIC AIR PRESSURE REGULATOR FOR CAR VENTILATORS.

No. 350,309.

Patented Oct. 5, 1886.

Fig. 1.

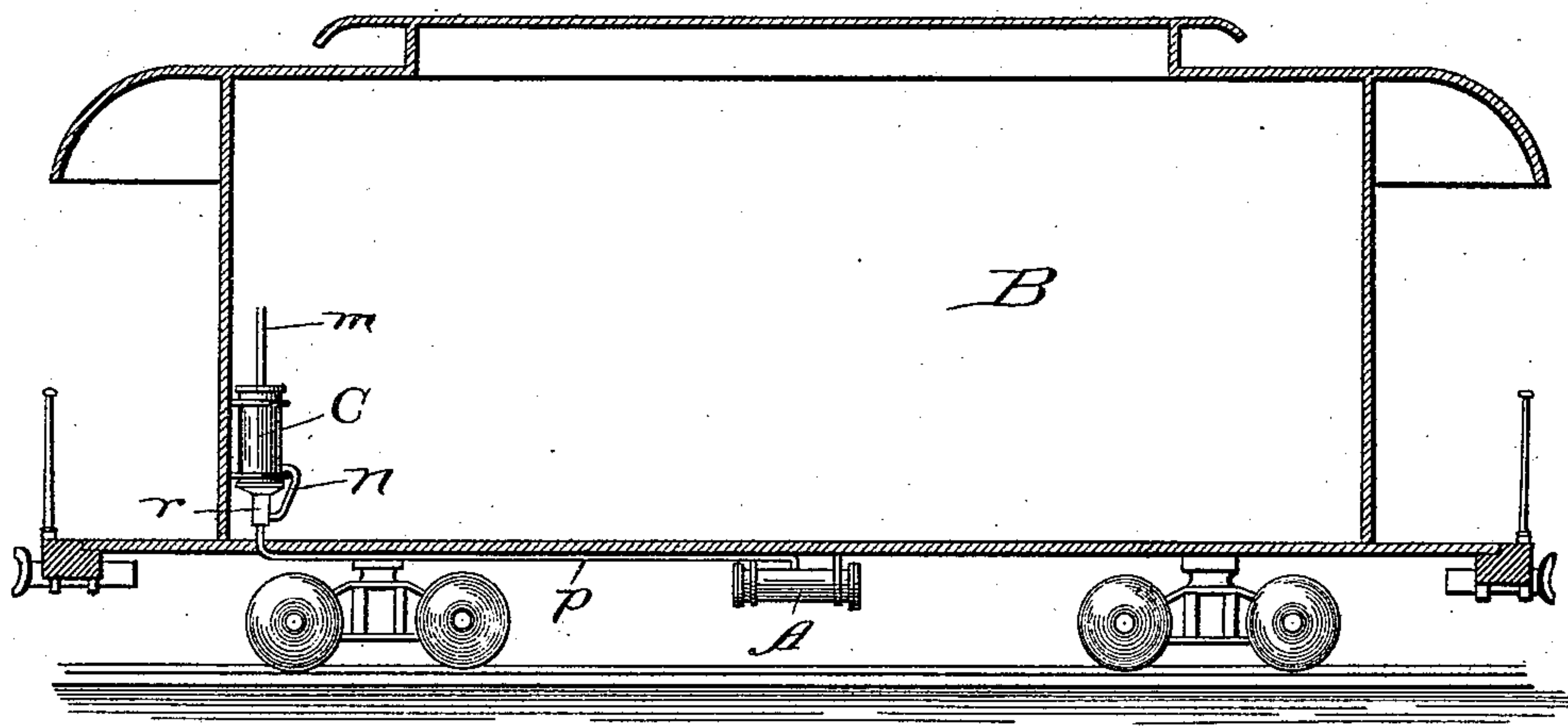
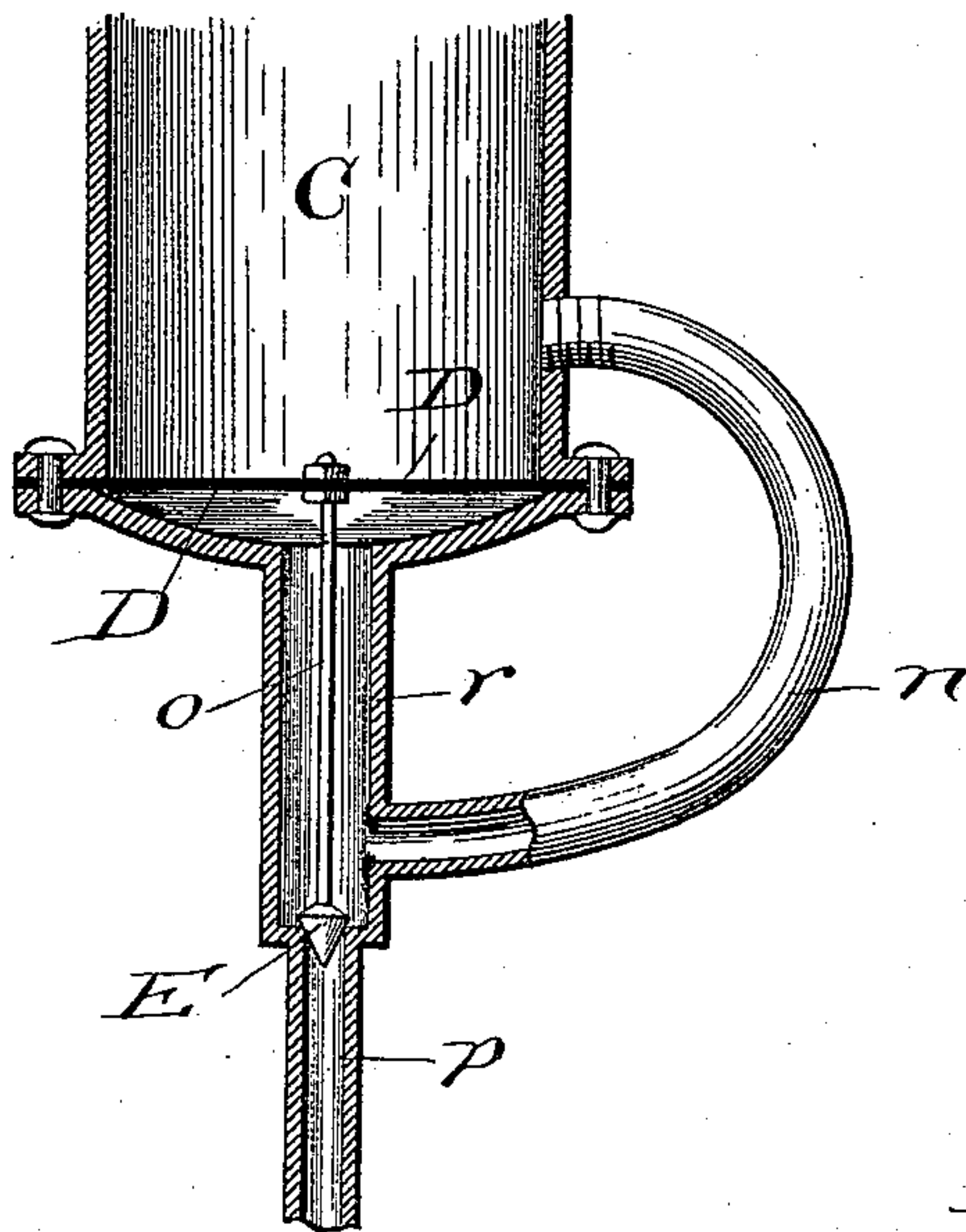


Fig. 2.



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AUTOMATIC AIR-PRESSURE REGULATOR FOR CAR-VENTILATORS.

SPECIFICATION forming part of Letters Patent No. 350,309, dated October 5, 1886.

Application filed July 26, 1886. Serial No. 209,059. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. JACOBS, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented a certain new and useful Automatic Device for Regulating the Air-Pressure Supply for Actuating Ventilators on Cars; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for use on cars provided with air-brake mechanism for automatically utilizing compressed air from the cylinder commonly provided below each car to actuate the brakes, to operate a valve to open and close a passage through which ventilation is provided to the interior of the car.

The form of valve with which my device is particularly designed to operate is the electric valve of any one of the various forms patented and intended for the automatic regulation of temperature in rooms, &c., and comprising a heat-measuring instrument—such as a thermometer or thermostat—serving at certain temperatures to open and close an electric circuit containing an electro-magnet having connected to its armature the valve which is actuated by the armature, owing to its position with relation to the inlet and exhaust passages for the compressed air, alternately to open and close the same, to admit, by the opening of the inlet-passage with a rise of temperature in the apartment, compressed air to a collapsible or expansible receiver or diaphragm connected with the main valve, which controls a steam or air passage, or to permit, by the closing of the inlet-passage for compressed air and simultaneous opening of the exhaust-passage produced by the opening of the circuit with a fall of temperature, the compressed air introduced into the expansible receiver or diaphragm to escape and thereby produce the collapse of the receiver and the consequent turning of the main valve in the opposite direction, to shut off the supply of steam or close the ventilating-passage.

One form of valve mechanism of the foregoing description, and for the purpose stated, forms the subject of Letters Patent for which I am about to make application.

My device affords merely an auxiliary to automatic temperature-regulating mechanism, having the functions above outlined, but which form no part of my present invention, and therefore do not require illustration nor more particular description. I design to apply such a temperature-regulator, which hitherto has been used in connection with rooms and incubators for regulating the supply of the heating-steam, or with boilers and in various connections other than the connection I propose, to cars for ventilating purposes, wherein the valve referred to as the main valve would be actuated electrically by the effect of the rise and fall of the temperature within them on the heat-measuring device to open and close communication through a passage with the external atmosphere.

It is my object to avoid the use of especial pumps for supplying the compressed air with which to actuate the main valve or valve controlling the ventilation, and thus prevent objectionable consequences of failure on the part of unreliable employes to work the pumps when required by utilizing the ever-present store of compressed air in the receiver or cylinder beneath each car, supplied automatically by the pump on the locomotive, and providing means whereby the necessary pressure for actuating the ventilator-valve shall be furnished automatically without diminishing the normal or required pressure in the brake-actuating air-cylinders.

To this end my invention consists in the general construction of my automatic device; and it also consists in certain details of construction and combinations of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 represents a railroad-car in sectional side elevation provided with my invention; and Fig. 2 is a broken portion of the pressure-regulator in sectional elevation, showing the automatic valve detail.

A is the cylinder, commonly provided on the bottom of railroad-cars B, to contain air at a normal pressure, usually of about eighty pounds, for affording the power to actuate the brakes, and supplied from the pump on the locomotive, which is automatic in its operation, in the sense that it operates whenever

the pressure within the cylinder A falls below the normal until raised to normal pressure.

C is a cylinder, preferably vertical, as shown, within the car, and provided at one end with a tubular extension, *r*, from which a tube, *p*, of small bore (the bore being considerably smaller than that of the extension) leads to the cylinder A, affording communication between the cylinders A and C. The cylinder C is covered at the end from which the tube *r* extends by a diaphragm, D, secured around its edge, as shown, within the cylinder, and carrying at its center a valve-stem, *o*, having a tapering valve, E, at its extremity, which valve is normally upon its seat, afforded by the mouth of the tube *p*, and thus closes the communication between the cylinders A and C, which, the latter being closed by the diaphragm, is effected from the extension *r* by an external passage afforded by a bent tube, *n*, leading into the cylinder C above the diaphragm D. The pressure required for actuating the main or ventilating valve, which pressure passes through the tubular communication *m*, controlled by an electrical contrivance of the description hereinbefore referred to, may be ten pounds, more or less, and the diaphragm D and valve E are regulated by test to permit the valve E to be raised whenever the required pressure within the cylinder shall have been reduced by exhaustion in operating the ventilator-valve, as aforesaid, and admit pressure to the normal degree into the cylinder C through the tube *n*, and to counteract, by the re-enforcement afforded by the normal pressure when introduced above the diaphragm D, the normal pressure against the valve E from the cylinder A. It will thus be seen that the device is thoroughly automatic and reliable in its operation and provides for the practically-continuous presence of the required normal pressure within the cylinder C.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a car, the combination, with the air-brake cylinder A and ventilating means, substantially as described, of a cylinder, C, controllably communicating with the cylinder A

and having a communication, *m*, for connection with such ventilating means, substantially as and for the purpose set forth.

2. In a car, the combination, with the air-brake cylinder A and ventilating means, substantially as described, of a cylinder, C, controllably communicating automatically with the cylinder A and having a communication, *m*, for connection with such ventilating means, substantially as and for the purpose set forth.

3. In a car, the combination, with the air-brake cylinder A and ventilating means, substantially as described, of a cylinder, C, having a tubular extension, *r*, communicating with it, and a diaphragm, D, secured within the cylinder to cover the same internally between the points of communication of the cylinder C and extension *r*, a tubular connection, *p*, between the cylinder A and extension *r* of smaller bore than the extension *r* and affording a valve-seat at its connection therewith, a valve, E, connected with the diaphragm and normally against the said valve-seat, and a tubular communication, *m*, for connection with such ventilating means, substantially as and for the purpose set forth.

4. In a car, the combination, with the air-brake cylinder A and ventilating means, substantially as described, of a cylinder, C, having a tubular extension, *r*, a diaphragm, D, secured around its edge within the cylinder to cover the same internally over the mouth of the extension *r*, an external tube, *n*, affording communication of the extension *r* with the cylinder C above the diaphragm D, a tubular connection, *p*, between the cylinder A and extension *r* of smaller bore than the extension and affording a valve-seat at its connection therewith, a valve, E, upon a stem, *o*, secured to the center of the diaphragm to maintain the valve normally against the said valve-seat, and a tube, *m*, leading from the cylinder C, for connection thereof with said ventilating means, substantially as and for the purpose set forth.

HENRY E. JACOBS.

In presence of—

HENRY HUDSON,
J. W. DYRENFORTH.