

No. 658,256.

Patented Sept. 18, 1900.

J. GEORGOFF.
REGULATOR FOR ATMOSPHERIC CAR BRAKES.

(Application filed Mar. 29, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

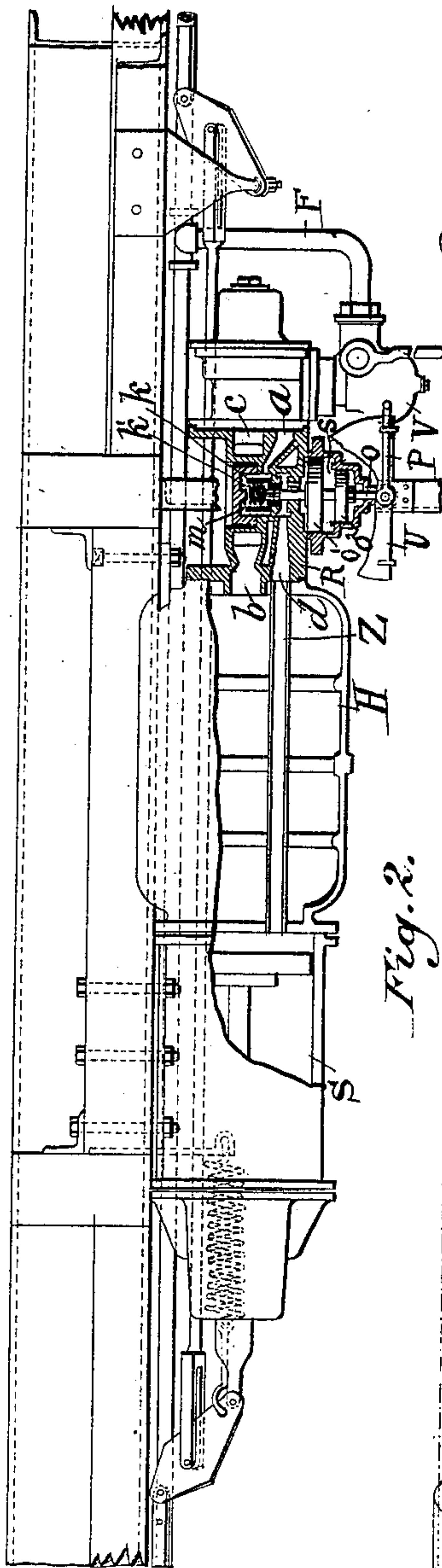
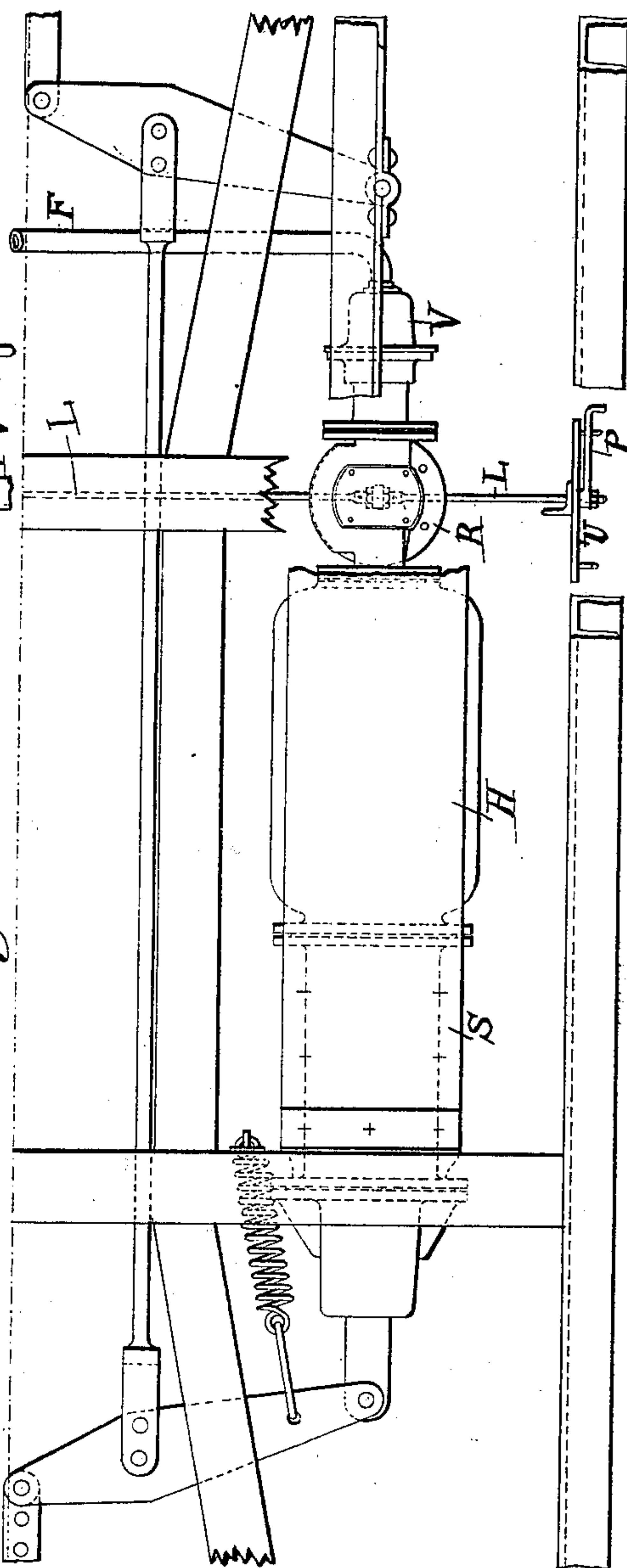


Fig. 2.



Attest.

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Fig. 3.

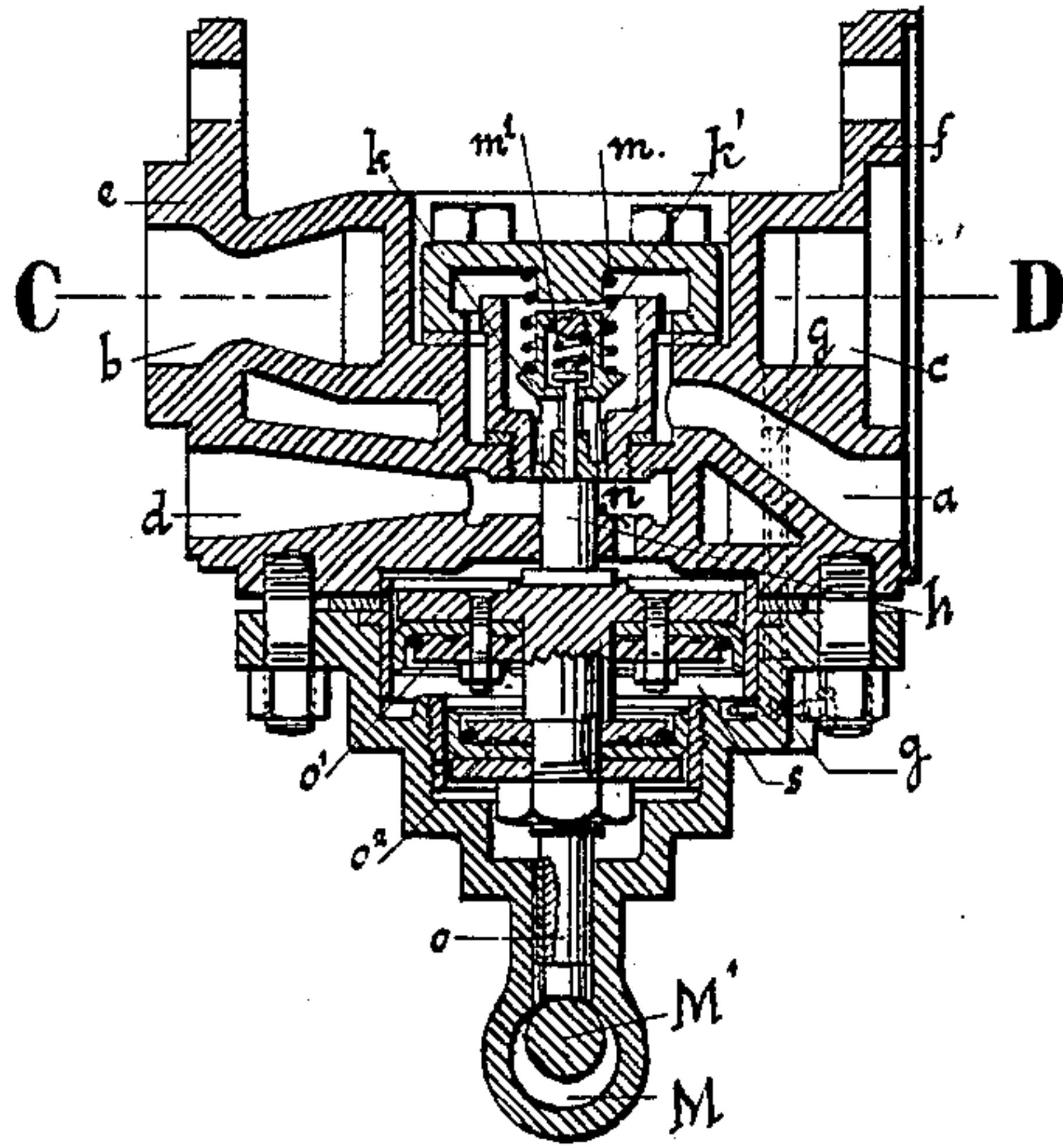
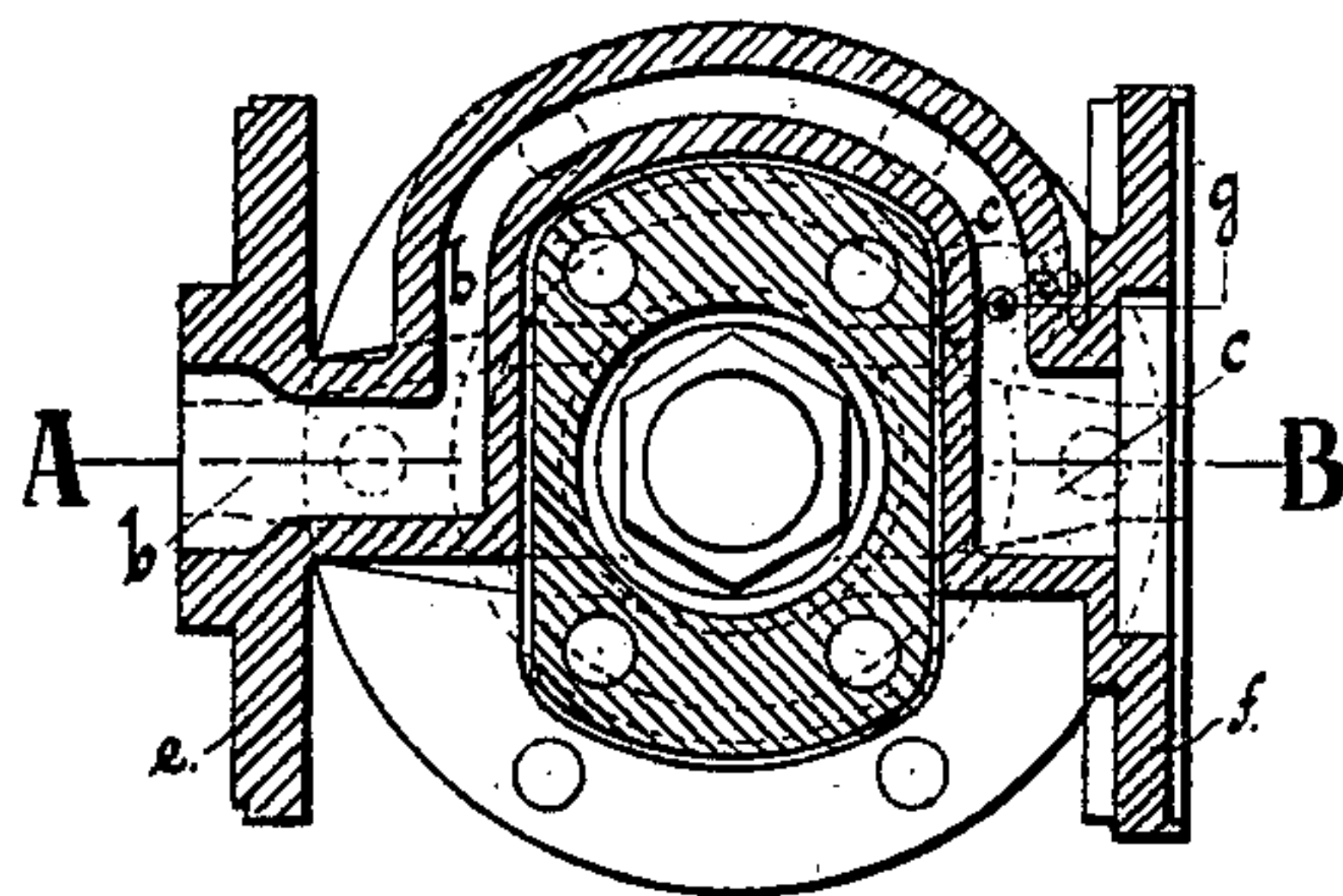


Fig. 4.



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UNITED STATES PATENT OFFICE.

JORDAN GEORGOFF, OF ST. PETERSBURG, RUSSIA.

REGULATOR FOR ATMOSPHERIC CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 658,256, dated September 18, 1900.

Application filed March 29, 1900. Serial No. 10,697. (No model.)

To all whom it may concern:

Be it known that I, JORDAN GEORGOFF, a subject of the Emperor of Russia, residing at Krukoff Canal No. 7/2, St. Petersburg, Russia, have invented certain new and useful Improvements in Regulators for Atmospheric Car-Brakes, of which the following is a full, exact, and clear description.

This invention relates to means for regulating the maximum pressure that shall be exerted on the brake-piston of car-brakes by the air from the auxiliary reservoir.

The object of my invention is to provide a device on each car, either freight or passenger, that may be set or adjusted by the brakeman so that either the full effective force of the air in the auxiliary cylinder will act on the brake-piston, as usual, or a certain less pressure of air only will be exerted, as is desirable when some of the cars composing the train are empty or only partly filled.

My invention consists, broadly, in having in the passages from the three-way valve to the brake-cylinder a valve, preferably a check-valve, that can be acted upon by a pair of differential pistons, so that upon a certain maximum pressure being attained in the brake-cylinder this valve will operate and restrict or close the passage to the brake-cylinder, preventing any greater braking force from being exerted, or the said valve may be secured in an open position.

My invention consists, further, in such other details of construction and arrangement separately or in combination as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 shows the lower portion of a car-body with the usual automatic air-brake apparatus in plan, my new attachment being shown in section. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section of my new regulating device on the line A B of Fig. 4. Fig. 4 is a section on the line C D of Fig. 3.

In the several views, which show an apparatus embodying my invention, F represents the main air-pipe, and V the three-way valve employed in the Westinghouse air-brake system, H, the auxiliary air-pressure cylinder, and S the brake-cylinder, all of which oper-

ate in the usual manner well known in the art. Interposed between the three-way valve and the said cylinders is my improved regulating device R. A suitable housing is connected between the three-way valve and the auxiliary cylinder, which housing has a passage-way *b c* leading from the said valve into the auxiliary cylinder. This passage-way is curved, as shown in Fig. 4. The housing has another passage-way *a d* leading from the said three-way valve to the pipe Z, that communicates with the brake-cylinder. In this latter passage-way is arranged a suitable check-valve *k*, controlled, as usual, by a spiral spring *m*, which valve will act when closed to prevent the air from passing into the brake-cylinder from the three-way valve, but which will open and allow the air to pass out of the brake-cylinder when the pressure is relieved in the usual manner by the operation of the three-way valve. If desired, this check-valve *k* may have a supplementary check-valve *k'*, having a spiral spring *m'* in it to more quickly act to relieve the pressure in the brake-cylinder. To the lower part of the housing is connected a pair of concentric communicating cylinders of different diameters, as shown in Fig. 3. These cylinders contain pistons *o' o''*, that are both secured to a common piston-rod *o*. Between the upper piston and the larger check-valve is interposed a rod *h*, sliding freely in a vertical aperture in the casing that when the pistons are in the upper position serves to retain the check-valve open, but when the pistons are in the lower position allows the check-valve to be seated and close the passage-way in the brake-cylinder.

The extremity of the piston-rod *o* is in engagement with an eccentric or crank-pin *M'*, mounted on a shaft *M*. When the crank-pin is in the position as shown in Fig. 3, the piston-rod and pistons are forced upwardly, and consequently the rod *h* will retain the check-valve open; but when the crank-pin is in the lower position the pistons and their connected parts are left free to operate. The upper part of the larger cylinder communicates with the passage-way *d* through a passage-way *n*. While the space between the two pistons is in communication with the passage-way *b c*

by means of a passage-way *g*, the space below the piston *o*² communicates with the atmosphere.

The shaft *M* can be turned from the one position to the other by means of rod *L*, extending from one side of the car to the other and provided with crank-arms *P*, that slide in sectors *U* on each side of the car, as shown in Figs. 1 and 2. These sectors are provided with suitable inscriptions—as, for example, “empty” and “loaded”—to indicate which position to turn the crank-arm in order to free the check-valve or to secure it in the open position.

The operation of my device is as follows: When the car is loaded and it is desired to have the air-pressure in the brake-cylinder act with full force, as usual, the crank *P* is turned to the position marked “loaded,” when the eccentric, the piston-rod, and the rod *h* will rise and retain the check-valve in the open position, as shown in Fig. 3; but when the car is empty or only partly filled the said crank is turned to the position marked “empty,” which will place the eccentric in the lower position, thus leaving the several parts free to act. Now while there is a pressure of air in the passage-way *b c* from the auxiliary cylinder, but no pressure in the passage-way *d*, leading to the brake-cylinder, there will be a pressure exerted in the space *s*, between the two pistons, through the passage-way *g*; but no pressure will be exerted through the passage-way *n* on the upper surface of the larger piston. Consequently the piston will be forced upwardly and retained in this upper position, thus securing the check-valve *k* in the open position; but when the three-way valve operates to open communication from the auxiliary cylinder through the passage-way *b c* into the passage-way *a* and a certain pressure is exerted on the upper part of the larger piston through the passage-way *n* the pistons will be forced downwardly and allow the check-valve to seat itself. Upon this pressure in the passage-way *a* being relieved by the three-way valve the check-valve *k* and also its supplementary valve *k'* will rise, and thus reduce the pressure in the brake-cylinder. The pressure of air through the passage-way *n* being thus relieved, while that through the passage-way *g* being at the same time increased, the pistons will again rise and will retain the check-valve in the open position.

The amount by which the braking force of the air in brake-cylinder is restricted or reduced depends upon the difference between the area of the two pistons. The less the difference in the said areas the greater will be the reduction of the braking force exerted on the car-wheels.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a car-brake, with means for communication between the three-

way valve and the auxiliary reservoir, and means for communication between the said three-way valve and the brake-cylinder, of means for restricting the said means for communication between the three-way valve and the brake-cylinder, means for controlling said restricting means by a predetermined difference of pressure between the air in the two said communicating means, and means for securing said restricting means in an unrestricting position.

2. The combination in a car-brake, with means for communication between the three-way valve and the auxiliary reservoir, and means for communication between the said three-way valve and the brake-cylinder, of a check-valve located in the said means of communication between the three-way valve and the brake-cylinder and arranged so that when closed it will prevent air from passing to the brake-cylinder, a check-valve mounted on said check-valve and also acting to close the passage of air into the brake-cylinder, and means for controlling said former check-valve by a predetermined difference of pressure between the air in the two said communicating means.

3. The combination in a car-brake, with means for communication between the three-way valve and the auxiliary reservoir, and means for communication between the said three-way valve and the brake-cylinder, of means for restricting the said means of communication between the three-way valve and the brake-cylinder, a pair of concentric communicating cylinders of different diameters, a piston working in each of said cylinders, a common piston-rod attached to said piston, means of communication between the space between the said pistons and the said means of communication with the auxiliary reservoir, means of communication between the other end of the larger cylinder and the said means of communication with the brake-cylinder, and means for causing said piston-rod to operate said restricting means.

4. The combination in a car-brake, with means for communication between the three-way valve and the auxiliary reservoir, and means for communication between the said three-way valve and the brake-cylinder, of means for restricting the said means of communication between the three-way valve and the brake-cylinder, a pair of cylinders of different diameters, a piston working in each of said cylinders, a common piston-rod attached to said pistons, means of communication between one of said cylinders and the said means of communication with the brake-cylinder, means of communication between the other said cylinder and the said means of communication with the auxiliary reservoir, means for causing said piston-rod to operate said restricting means, and means for securing said piston-rod in position to hold the said restricting means in the open position.

5. The combination of a housing having

two separate passages leading therethrough,
a check-valve located in one of said passages,
a pair of concentric communicating cylinders
of different diameters connected with said
5 housing, a piston working in each of said cyl-
inders, a common piston-rod attached to said
pistons, a rod interposed between said larger
piston and said check-valve, said housing
having also a passage communicating the
10 said passage-way containing the check-valve
with the end of the larger cylinder that is not
communicating with the smaller cylinder,
said housing having another passage - way

communicating the space between the said
pistons with said other separate passage-way, 15
and an eccentric bearing on the extremity of
said piston-rod for causing the said rod to re-
tain said check-valve in the open position.

In testimony that I claim the foregoing as
my invention I have signed my name in pres- 20
ence of two subscribing witnesses.

JORDAN GEORGOFF.

Witnesses:

M. BREITFUSS,
W. STEINMYER.