

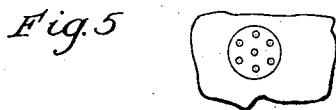
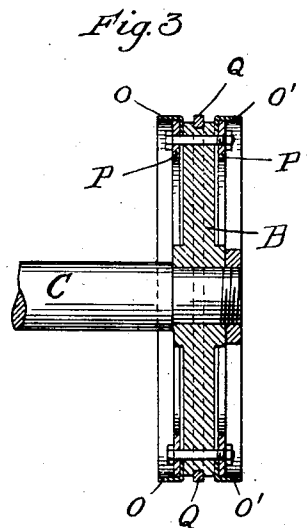
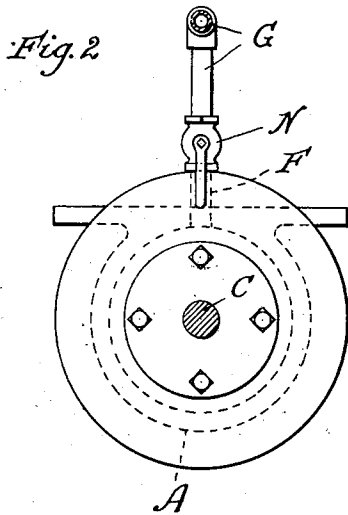
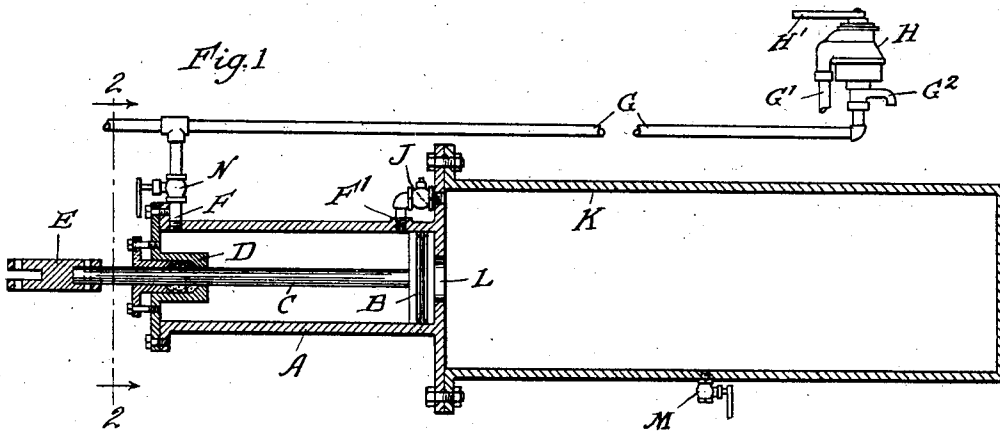
No. 761,216.

PATENTED MAY 31, 1904.

F. B. FLANDERS & C. J. CARLSON.
AUTOMATIC AIR BRAKE FOR RAILROADS.

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NO MODEL.



Witnesses:

Wm. Geiger
A. W. Munday

Inventors:

Freeman B. Flanders
Carl J. Carlson

By Munday, Evans & Adcock.
Attorneys

UNITED STATES PATENT OFFICE.

FREEMAN B. FLANDERS, OF SEATTLE, WASHINGTON, AND CARL J. CARLSON, OF THORNTON, ILLINOIS.

AUTOMATIC AIR-BRAKE FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 761,216, dated May 31, 1904.

Application filed December 21, 1903. Serial No. 186,000. (No model.)

To all whom it may concern:

Be it known that we, FREEMAN B. FLANDERS, a citizen of the United States, residing in Seattle, in the county of King and State of Washington, and CARL J. CARLSON, a citizen of the United States, residing at Thornton, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automatic Air-Brakes for Railroads, of which the following is a specification.

This invention relates to improvements in automatic air-brakes; and it consists in the novel parts and combination of parts and devices hereinafter set forth and claimed, and shown in the drawings which accompany this specification and form a part thereof.

In said drawings, Figure 1 is a longitudinal section of the apparatus; Fig. 2, an end view or section on the line 2 2 of Fig. 1, but upon a somewhat larger scale than said Fig. 1. Fig. 3 is a vertical section of the piston-head. Fig. 4 is a sectional view of the port opening from the cylinder to the reservoir, and Fig. 5 is a face view of same.

In said drawings, A is a cylinder containing the piston-head B and piston-rod C, the latter passing out to the open air through the stuffing-box D, the outer end of said piston-rod C being provided with a coupling device E for connecting it mediate or immediately with the brakes. Near the outer end of the cylinder A is the port F, connected to the train-line or compressed-air piping G, the latter constructed in the usual manner and connectible by a pipe G' with the usual compressed-air pump or its reservoir and by the pipe G² connectible with the outer air to exhaust. The usual three-way valve (indicated at H and having a handle H') is provided, so that the operator by turning said handle H' may admit compressed air into the piping G or open the exhaust G² or close the piping G against both admission and exhaust. Near the other end of the cylinder A and at a distance from said other end a little greater than the thickness of the piston B is a port F', always open for escape of air from the cylinder A when the piston B is at the extremity of its inward stroke. This port F' is piped

through a check-valve J into the large air-reservoir K, preferably several times in dimensions to the cylinder A and communicating with the latter by the open aperture L. This reservoir is provided with a tap-cock or bleeder M and the pipe of the port F with a cut-off cock N. The piston-head (shown in detail at Fig. 3) is packed by means of two leather rings O O', one at each side, held by a bolt-detained clamp P P', and additionally packed by the spring-metal ring Q, set in a peripheral groove in the body of the piston. We use this packing because it is especially durable and capable of holding out against considerable air-pressure for a long time, the combination of the two leather ring-flaps with the central spring-metal ring constituting an especially secure movable packing for the compressed air little affected by dust, changes in temperature, and hygrometric conditions.

The operation of our apparatus is as follows: Supposing the cock N in the pipe of the port F to be open, as indicated in the drawings, and the piston in the position therein indicated, the brakes being withdrawn, compressed air is turned onto the piping G and passes through the port F into the cylinder and through the cylinder to the port F' and through the check-valve J into the reservoir K until the full pressure of the air stands equally in the pipes, in the cylinder, and in the reservoir. In this condition the brake system is charged and ready for operation. To apply the brake, the operator now turns the valve H in such position that the exhaust G² is opened, and thereby lowers the pressure in the pipe system and in the cylinder A, whereupon as the air cannot escape from the reservoir K because of the check-valve J the pressure of the air in said reservoir is brought to bear upon the piston B through the aperture L, and said piston is moved in such manner as to project its piston-rod, and thereby to apply the brakes. As soon as the piston-head has traversed far enough to pass the port F' the retention of the air in the reservoir K is no longer dependent upon the security of the check-valve J, and if there be any leakage at said check-valve it does not affect the pressure in the reservoir,

for the pipe from the port F to the reservoir K is now included entirely within the air of said reservoir. It will thus be seen that the brakes when so applied will continue to hold
5 until the pressure in the pipe G is increased, as the only place for leakage is at the piston-packing itself, which is practically nothing. To release the brakes, the operator turns the three-way valve H in such position that the
10 exhaust G² is closed and the inlet from the pipe G' is opened, so that the pressure of the air-pump or its reservoir is brought again into the piping G and through the port F into the cylinder A, where it will be greater upon the
15 piston B than the back pressure from the reservoir upon said piston, because, it will be remembered, the air in the reservoir has expanded to produce the movement of said piston. The opening of the port F into the cyl-
20 inder is shown as made by a series of small holes, (see Figs. 4 and 5,) the purpose being to avoid wear of the piston-packing as much as possible.

The advantages of our apparatus consist in
25 the simplicity of the mechanism and also in the effectiveness of the braking action and the possibility of maintaining the brakes in an applied position for an indefinite length of time, thus overcoming one of the most seri-

ous defects in the ordinary automatic air- 30 brake.

We claim—

1. The combination in an automatic air-brake, of the cylinder A provided with the piston B, and connected at one end by the port 35 F with the compressed-air pipes, and connected at a point near the other end by the port F' with the reservoir K, said connection including the check-valve J; the reservoir K connected to the cylinder A by the opening L, 40 substantially as specified.

2. The combination in an automatic air-brake, of the cylinder A provided with the piston B, and connected at one end by the port F with the compressed-air pipes, and connect- 45 ed at a point near the other end by the port F' with the reservoir K, said connection including the check-valve J; the reservoir K connected to the cylinder A by the opening L, said piston being provided with a packing 50 consisting of a central metallic ring Q and two oppositely-flanged leather packing-rings O, O', substantially as specified.

FREEMAN B. FLANDERS.

CARL J. CARLSON.

Witnesses:

H. M. MUNDAY,

P. ABRAMS.