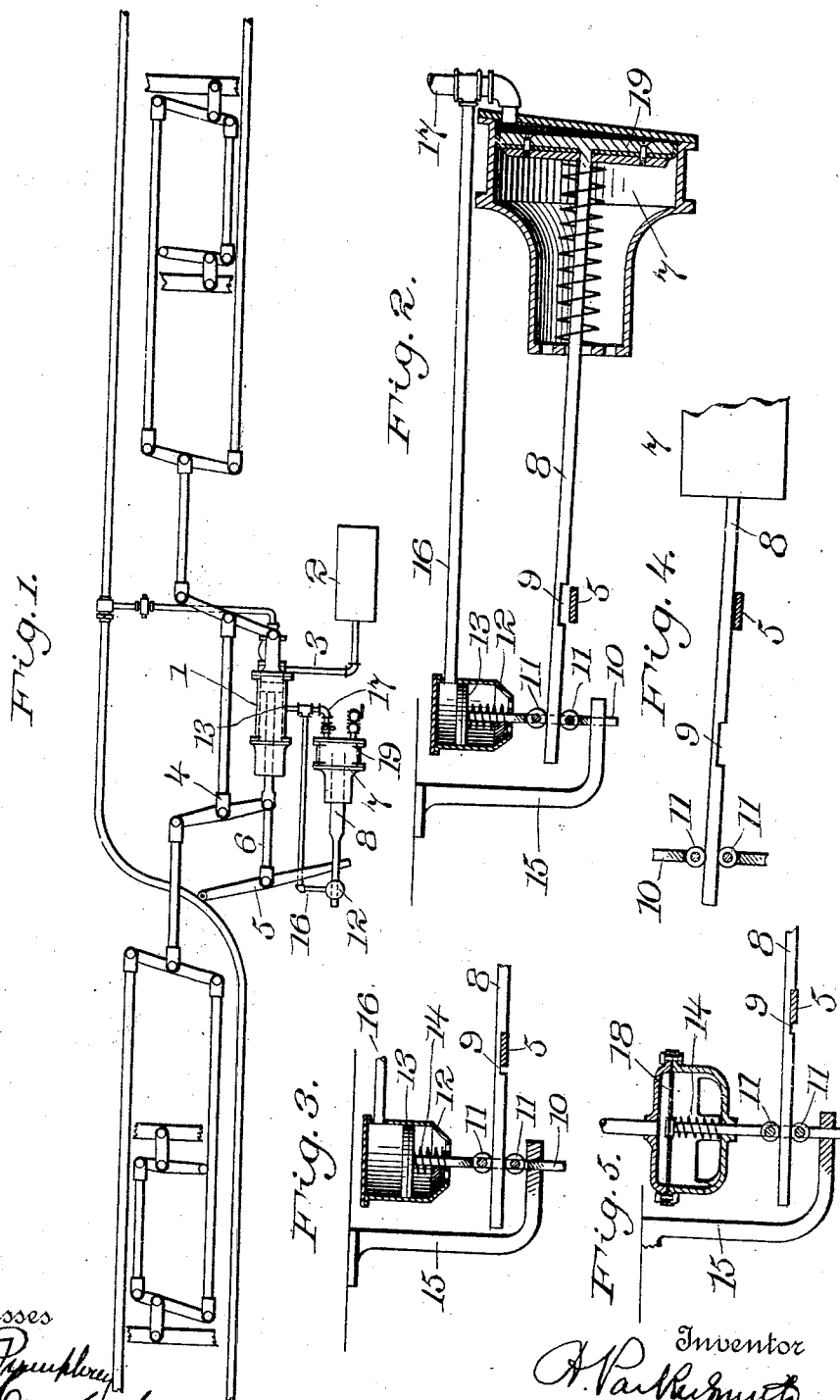


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PATENTED JAN. 1, 1907.

A. PARKER-SMITH.
FLUID PRESSURE BRAKE.
APPLICATION FILED JULY 16, 1906.



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FLUID-PRESSURE BRAKE.

No. 839,883.

Specification of Letters Patent.

Patented Jan. 1, 1907.

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To all whom it may concern:

Be it known that I, AUGUSTUS PARKER-SMITH, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Fluid-Pressure Brakes, of which the following is a specification.

My invention relates to fluid-pressure brakes in general, and more specifically is designed to produce an improvement upon the type of air-brake apparatus illustrated in re-issued patent to W. H. Sauvage, No. 12,229, dated June 7, 1904.

The best form of apparatus embodying my invention at present known to me is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a plan view of the apparatus. Fig. 2 is an enlarged vertical detail section of the second cylinder and automatic mechanism for throwing its piston-rod into engagement with the brake-rigging, the parts being shown just before engagement. Fig. 3 is a similar detail of a portion of the apparatus shown in Fig. 2 after the parts are in engagement. Fig. 4 is a detail showing the position of these parts when the brakes are released. Fig. 5 is a modification showing a diaphragm in place of the piston in the pneumatic engaging device.

Throughout the drawings like reference-figures indicate like parts.

1 is the main cylinder; 2, the usual auxiliary reservoir connected to the cylinder by pipe 3, controlled by a triple valve. (Not shown.) The piston of this cylinder is connected to the usual foundation brake-rigging 4 in the ordinary manner.

5 is an auxiliary lever pivoted to the car body and connected to the main piston or the foundation brake-rigging in any convenient manner, as by the link 6.

7 is the second cylinder having the piston 19 and piston-rod 8 provided with one or more notches 9 or equivalent means for engaging the auxiliary lever 5. This piston-rod 8 has its outer end guided by any convenient device, such as the guide-wheels 11 11, mounted on the guide-plunger 10, which is connected to the piston 13 of the small cylinder 12 or to the diaphragm 18. (Shown in Fig. 5.) The spring 14 normally tends to

hold the piston or diaphragm up and so bend or swing the piston-rod 8 that the notch 9 cannot engage the auxiliary lever 5, as shown in Fig. 2. This movement of the piston-rod 8 may be facilitated by making the head of the second cylinder 7 slightly inclined, as shown in Fig. 2.

15 is a bracket or other convenient device for steadying and guiding the outer end of the guide-plunger 10.

16 is a pipe connecting the pneumatic cylinder 12 with the crossover connection 17, extending from the main cylinder 1 to the second cylinder 7 or otherwise connecting with the second cylinder 7. The crossover-pipe 17 enters through the side of the cylinder 1 at a point 13, so as to be uncovered by the piston in the first cylinder when the same has completed a predetermined extent of outward travel in the manner usual in the Sauvage system.

The operation of my invention is as follows: The parts are normally in the position shown in Fig. 1. Air being admitted to the main cylinder 1 in the usual way, the piston will move out, carrying with it the brake-levers and the auxiliary lever 5 until the piston passes the point 13, opening up communication through the crossover-pipe 17 with the second cylinder. When this is done, the auxiliary lever 5 has moved out to a position opposite the notch 9 of the piston-rod 8, as indicated in Fig. 2. Part of the air admitted to the second cylinder passes through the pipe 16 at this moment, forces down the piston 13 in the small cylinder 12, bringing the notch in the piston-rod 8 in engagement with the auxiliary lever 5, as shown in Fig. 3. Further outward movement of the second piston is then transmitted to the auxiliary lever 5 and through it with multiplied force to the foundation brake-rigging 4. When the air is released, the piston 13 or diaphragm 18 will gradually rise as the spring 14 overpowers the decreasing air-pressure, and when the second piston 19 has reached home the piston in the main cylinder 1 will pass by the point 13, opening communication between the pneumatic cylinder 12 and the open air. This will completely release the spring 14, which will expand, swinging the piston-rod 13 up into the position shown in Fig. 2 and permitting the auxiliary lever 5 to swing

back into the position shown in Fig. 4 as the piston in the main cylinder goes home. This places the parts of the apparatus in their normal position ready for another application of the brakes.

The main advantage of my invention is in the instantaneous nature of the engagement between the piston-rod of the second cylinder and the auxiliary lever, which eliminates all lost motion usually required for throwing ordinary clutches and latches into action. This reduces the travel of the second piston and compels it to do useful work from the beginning of its motion, thereby effecting an economy in the use of air.

It is evident, of course, that various changes could be made in the details of construction illustrated and described without departing from the spirit and scope of my invention. Other means for effecting the engagement between the piston-rod of the second cylinder and the foundation brake-rigging might be substituted for that shown, and various kinds of pneumatic apparatus operated by the same pressure of air transmitted to the second cylinder might be employed to make and break this connection; but these modifications would be mere changes of form and still operate upon the principle of my invention, as herein described and claimed.

Having, therefore, described my invention, I claim—

1. In a fluid-pressure brake system employing two cylinders, the second piston of which is brought into action after the movement of the first piston has begun, the combination of a member moving with the first piston adapted to engage with or be disengaged from the second piston, fluid-pressure apparatus for effecting such engagement and disengagement, and means for introducing fluid under pressure into said apparatus si-

multaneously with its introduction into the second cylinder.

2. In a fluid-pressure brake system employing two cylinders, the second piston of which is brought into action after the movement of the first piston has begun, the combination of a lever having a fixed pivot, connected to the first piston-rod and extending across the path of the second piston-rod, means whereby the second piston-rod may engage the lever, a fluid-pressure device for effecting said engagement, and a pipe extending from the same to the source of supply of fluid to the second cylinder.

3. In a fluid-pressure brake system employing two cylinders, the second piston of which is brought into action after the movement of the first piston has begun, the combination of a lever having a fixed pivot, connected to the first piston-rod and extending across the path of the second piston-rod, a projection on said second piston-rod adapted to engage the lever when it is bent down upon it, a small cylinder and piston arranged to bend the second piston-rod, and a pipe leading from said small cylinder to the supply-pipe for the second cylinder.

4. In a fluid-pressure brake system employing two cylinders, the second piston of which is brought into action after the movement of the first piston has begun, the combination of means for connecting and disconnecting the second piston with the brake-rigging, a pneumatic cylinder and piston for actuating said means, and connections from said pneumatic cylinder to the second brake-cylinder.

Signed at New York, N. Y., this 13th day of July, 1906.

AUGUSTUS PARKER-SMITH.

Witnesses:

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