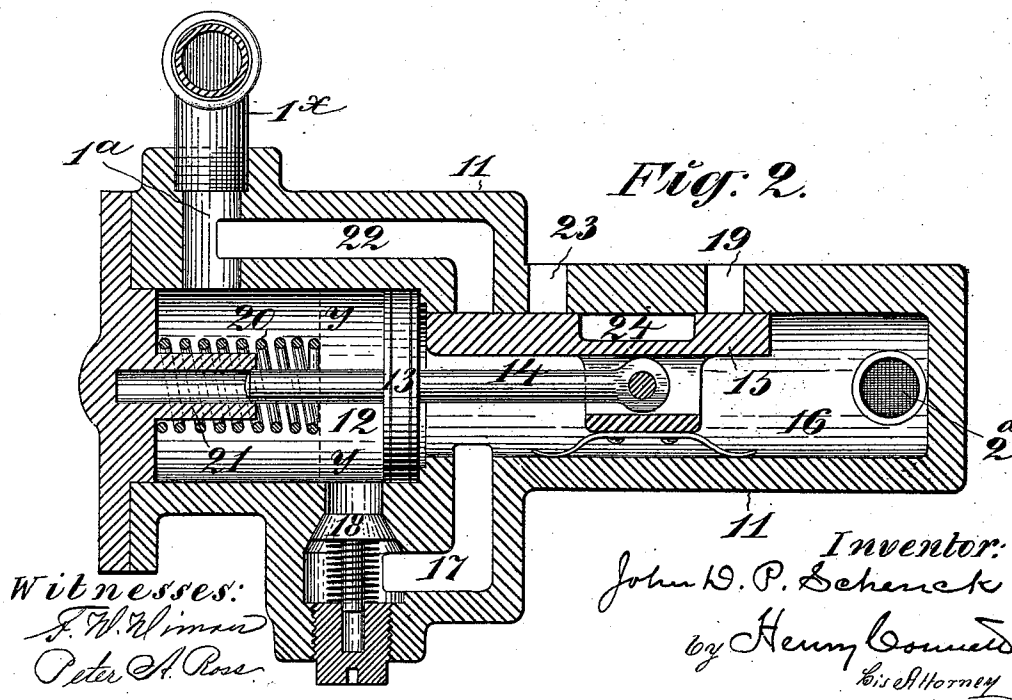
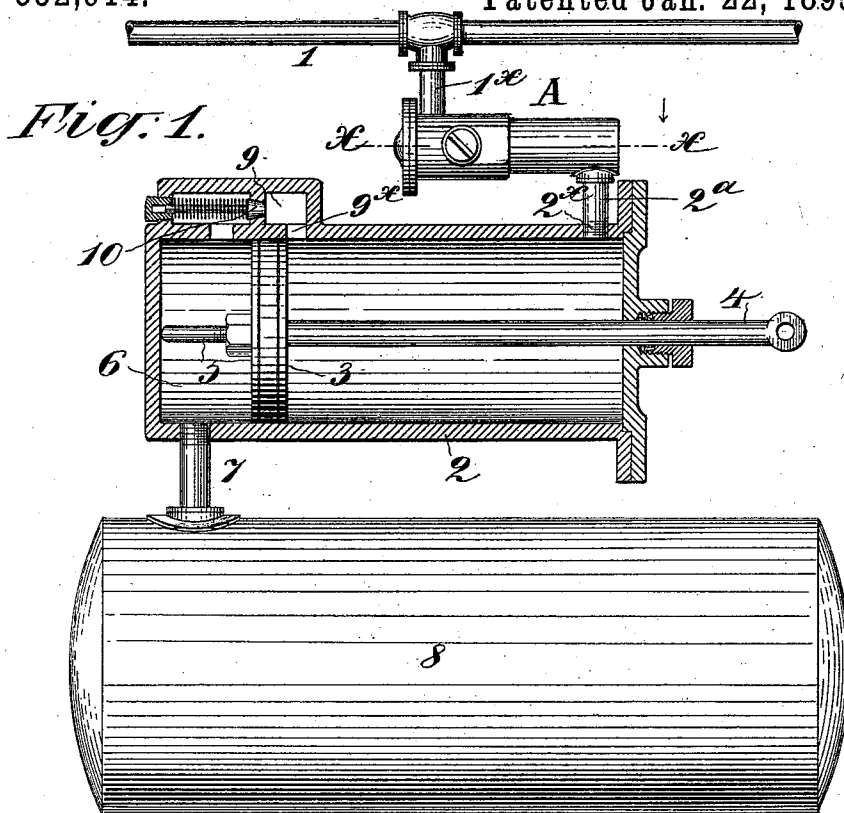


(No Model.)

J. D. P. SCHENCK.
AIR BRAKE FOR CARS.

No. 532,914.

Patented Jan. 22, 1895.



UNITED STATES PATENT OFFICE.

JOHN D. P. SCHENCK, OF NEWARK, NEW JERSEY.

AIR-BRAKE FOR CARS.

SPECIFICATION forming part of Letters Patent No. 532,914, dated January 22, 1895.

Application filed March 9, 1894, Serial No. 502,970. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. P. SCHENCK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Air-Brakes for Cars, of which the following is a specification.

My present invention relates to air-brakes for railway trains, and has reference particularly to that part of the brake-mechanism which is usually placed under the car-body.

The object of the invention is to improve the construction of the mechanism generally but in particular to provide for the quick evacuation of the air at the brake-cylinder when the brakes are being set, all as will be hereinafter fully explained with reference to the accompanying drawings, and the novel features of the invention will be carefully defined in the claims.

In the said accompanying drawings—Figure 1 is a general view of the braking-mechanism under a car and embodying my invention, the brake-cylinder being represented in axial section. Fig. 2 is an enlarged axial section of the relief device for effecting quick evacuation of the air. The plane of the section is indicated by line *z, z*, in Fig. 1.

1 represents the train-pipe through which air under tension is supplied to the brake-cylinders under the respective cars of the train.

2 is the brake-cylinder, 3 the brake-piston therein, and 4 the piston-rod, which will be coupled to the brake-levers of the car in the usual way. These levers are not shown as they are well known.

When the brakes are off, the piston 3, will be in the position seen in Fig. 1; that is, stopped by a prolongation, 5, of the piston-rod which forms a distancing piece and which bears against the head of the brake-cylinder. This stopping of the piston leaves a chamber, 6, behind the piston 3, and this chamber is connected by a pipe, 7, with an auxiliary air-reservoir, 8. The chamber 6, is also connected with the front end of the brake-cylinder through a by-passage, 9, which opens into the cylinder at 9^x, just in front of the piston when the latter is in its extreme position seen in Fig. 1. The flow of air through the by-passage 9, is limited to one direction by a check-valve 10, backed by a light spring of sufficient tension to keep the valve up to its seat.

When the engineer admits compressed air 55 to the train-pipe 1, in order to relieve the brakes, the air flows to the brake-cylinder 2, through a relief-device designated as a whole by A, in Fig. 1, and enters the front end of the cylinder 2, at 2^x. It presses back to the 60 piston 3, to the position seen in Fig. 1, and then flows through the by-passage 9, to the chamber 6, displacing the valve, 10. From the chamber 6, it flows by way of pipe 7, to the reservoir 8, thus equalizing the tension in 65 the said reservoir, the brake-cylinder, and the train-pipe. It will be obvious, however, that before the air can flow through the by-passage 9, the piston 3, must be pressed or forced back to the stop so as to uncover the entrance to 70 said passage.

When the engineer opens the train-pipe to the atmosphere to set the brakes, the tension in the brake-cylinder in front of the piston is at once reduced and as the check-valve 10, 75 prevents the reflux of air through the by-passage 9, the tension behind the piston will force the piston forward thus setting the brakes.

Where a train is long, as in the case of 80 freight trains especially, it is found impossible to get that quick relief or evacuation of the air in setting the brakes which will enable the engineer to set the brakes on all of the cars at substantially the same instant, 85 without employing relieving devices at or near the point where the braking mechanism is situated on each car. If the engineer's valve alone be relied on for relief, the air will not flow from the train-pipe quickly enough 90 and the brakes on the forward cars will be set an appreciable time before those on the rear cars.

The device A before referred to, has for its object to provide an automatic means for 95 evacuating the brake-cylinder directly by opening it to the atmosphere the instant the tension in the train-pipe is reduced, and also, should the engineer so desire, he may so manipulate the engineer's valve as to cause the 100 evacuation of the train-pipe also at this point. The construction of this device will be described with reference to Fig. 2.

11 is a casing having in it a cylindrical chamber, 12, which extends part way the 105 length of the casing. In this chamber 12, plays a piston 13, provided with a rod, 14, coupled to a slide-valve, 15, in a chamber, 16.

The train-pipe 1, connects with the chamber 12, through a branch pipe 1^x, and passage 1^a, and the brake-cylinder 2, connects with the valve-chamber 16, through a pipe 2^a. When the air under tension flows from the train-pipe to the brake-cylinder, it enters the chamber 12 at 1^a, flows into the chamber 16, through a by-passage, 17, around the piston 13, and thence to the brake-cylinder by the pipe 2^a. The by-passage 17, is controlled by a check-valve, 18, which prevents reflux of air from the valve-chamber 16.

The slide-valve 15, follows the movements of the piston 13, to and fro, and the operation is as follows: When the brakes are off and the maximum air tension prevails in the brake-cylinder and train-pipe, there will be, of course, an equal tension on both sides of the piston 13. If now, in setting the brakes, the engineer opens the engineer's valve gradually, the tension will be relieved in chamber 12, and the piston 13, will be moved as far as the dotted line *y* in chamber 12, thus shifting the valve 15, far enough to uncover a port, 19, in the casing 11, and opening the valve-chamber 16, to the atmosphere. This will evacuate the brake-cylinder 2, instantly and set the brakes on this car.

The dotted line *y* corresponds to the end of a coil spring, 20, coiled about a tubular socket, 21, in the chamber 12, and this spring will arrest the piston in its movement under the conditions named; but if the engineer opens his valve fully and suddenly, the tension in the valve-chamber 16, will act so forcibly on the piston 13, as to cause it to move on until it is stopped by the end of the guide 21, the spring 20 yielding to permit of this further movement of the piston. Under these conditions the valve 15, will be carried on until a passage, 22, from the train-pipe inlet, 1^a, will be opened to a port, 23, leading to the atmosphere, through the medium of a recess, 24, in the valve 15, and the train-pipe will be evacuated simultaneously with the brake-cylinder, thus relieving the train-pipe at each car simultaneously no matter how many cars may be in the train. This opening of the train-pipe will, however, only be momentary as the recoil of the spring 20, will drive back the piston to the line *y* and cause the valve to close the ports 23, as soon as the tension behind the piston 13, is relieved. If the piston remains at the point indicated by the line *y* and air under tension be admitted by the train-pipe to release the brakes, it cannot flow through the by-passage 17, about the piston until the latter is moved far enough to uncover the port from the chamber 12, to the said by-passage, and when the piston is so moved, it will shift the valve far enough to close the port 19, which opens the valve-chamber to the atmosphere. Thus the engineer may, if he so desires, simply evacuate the air from the brake-cylinders or, at will, evacuate also the train-pipe at each car.

Having thus described my invention, I claim—

1. In an air-brake for cars, the combination with the train-pipe and brake-cylinder, of a device for directly evacuating the train-pipe at each car of the train, when the brakes are set, by opening said pipe automatically to the atmosphere, said device comprising as its essentials a casing having in it a cylindrical piston-chamber open to the train-pipe, a valve-chamber open to the cylinder, a port leading to the atmosphere from the valve-chamber, and a passage connecting the valve-chamber with the train-pipe, a piston in the piston-chamber, a piston-rod extending from the piston into the valve-chamber, and a valve in said chamber coupled to the piston-rod and controlling the port leading to the atmosphere and the passage leading to the train-pipe, substantially as and for the purposes set forth.

2. In an air-brake for cars, the combination with the train-pipe and brake-cylinder, of a device for effecting the evacuation of the brake-cylinder to the atmosphere at each car, said device comprising a casing having a piston-chamber 12, at one end, in communication with the train-pipe, a valve-chamber 16, at the other end in communication with the brake-cylinder, and a port leading from the valve-chamber to the atmosphere, a piston in the piston-chamber between the inlets from the train-pipe and brake-cylinder, the rod of said piston, extending into the valve-chamber, a valve in said chamber controlling the port to the atmosphere, a by-passage 17, connecting the piston-chamber and valve-chamber and opening into the latter behind the piston when the brakes are off, and a valve 18, controlling said by-passage and preventing the flow of air therethrough from the valve-chamber to the piston-chamber, substantially as set forth.

3. In an air-brake for cars, the combination with the train-pipe and the brake-cylinder, of a device arranged between the said pipe and cylinder for the direct evacuation of the air in setting the brakes, said device comprising a casing 11, connected with the train-pipe at one end and with the brake-cylinder at the other end, a piston 13 in said casing between the said connecting points, a valve 15, in the casing adjacent to the inlet from the brake-cylinder, said valve controlling a port 19, to the atmosphere, and having a recess 24, adapted to connect a port 23, to the atmosphere with a port-passage 22, open to the train-pipe, a cushion spring 20, in the end of the casing adjacent to the train-pipe inlet, a by-passage 17, about the piston, and a check-valve in said by-passage to prevent the reflux of air, said ports being arranged to operate substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN D. P. SCHENCK.

Witnesses:

PETER A. ROSS,
JAS. KING DUFFY.