

municating passage from the train-pipe to the auxiliary reservoir, a valve in said chamber controlling communication between the train-pipe and brake-cylinder openings, also between the brake-cylinder and exhaust openings and normally holding said openings in communication and also between the valve-chamber and train-pipe opening, substantially as described. 14th. A triple valve having a valve-chamber with brake-cylinder, exhaust, auxiliary reservoir and train-pipe openings each communicating with said chamber, and said valve-chamber forming a communicating passage from the train-pipe to the auxiliary reservoir, a valve in said chamber controlling communication between the valve-chamber, and brake-cylinder opening, also between brake-cylinder and exhaust openings and normally holding the said openings in communication and also between the train-pipe and brake-cylinder openings, substantially as described. 15th. A triple valve having a valve-chamber with brake-cylinder, exhaust, auxiliary reservoir and train-pipe openings, each communicating with said chamber, and said valve-chamber forming a communicating passage from the train-pipe to the auxiliary reservoir, a valve in said chamber controlling communication between the valve-chamber and brake-cylinder opening, between the brake-cylinder and exhaust openings, and normally holding said openings in communication between the train-pipe and brake-cylinder openings, and between the valve-chamber and train-pipe opening, substantially as described. 16th. A triple valve for fluid pressure brakes, having a brake-cylinder and train-pipe openings, a valve controlling said openings and placing them in communication, a check-valve in the train-pipe opening leading to said first named valve, and positive means for preventing the seating of the check-valve during such communication, substantially as described. 17th. In a triple valve for fluid pressure brakes, a single valve-chamber, the herein described two valves in said chamber, one normally stationary and adapted to move to open communication between the train-pipe and brake-cylinder openings, and the other valve movable independent of the first-named valve to close communication between the brake-cylinder and exhaust port and to open communication between the auxiliary reservoir and the brake-cylinder and hold the same open during the opening movement of the first-named valve. 18th. In a triple valve for fluid pressure brakes, the combination of a single valve-chamber, the herein described two valves in said chamber, one normally stationary and adapted to move open communication between the train-pipe and brake-cylinder openings, and the other valve movable independent of the first-named valve to close communication between the brake-cylinder and exhaust port and to open communication between the auxiliary reservoir and the brake-cylinder, a single piston positively connected to and moving one valve and connections with the other valve for moving it. 19th. In a triple valve for fluid pressure brakes, the combination with a valve-chamber, a valve in said chamber controlling communication between the train-pipe and brake-cylinder openings, and the auxiliary reservoir and brake-cylinder openings, and another valve in said chamber movable independent of the first-named valve to open and close communication between the auxiliary reservoir and brake-cylinder openings, and hold said communication open during the opening movement of the first-named valve. 20th. A triple valve having train-pipe, auxiliary reservoir, brake-cylinder and exhaust openings, a valve controlling communication between the train-pipe, the auxiliary reservoir and the brake-cylinder, between the brake-cylinder and the exhaust, and normally holding said openings in communication, and between the train-pipe and auxiliary reservoir, and a piston connected with said valve and interposed between said train-pipe opening and a passage from the train-pipe leading only to one side of said piston, substantially as described. 21st. A triple valve having train-pipe, auxiliary reservoir, brake-cylinder and exhaust openings, a valve controlling communication between the auxiliary reservoir and brake-cylinder, between the train-pipe and brake-cylinder, between the exhaust and brake-cylinder, and normally holding the said cylinder in communication with the exhaust, and between the train-pipe and auxiliary reservoir, and a piston connected with said valve and interposed between said train-pipe opening and a passage from the train-pipe leading only to one side of said piston, and a double-seated check-valve in the train-pipe, substantially as described.

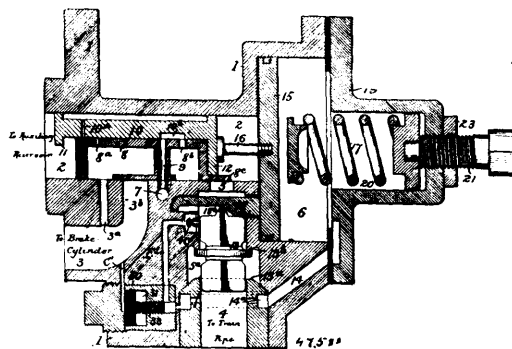
No. 47,588. Triple Valve for Air-Brakes.

(Triple soupape pour freins à air.)

Henry Lawrence Howe, Canadaigque, New York, U.S.A., 4th December, 1894; 6 years.

Claim.—1st. In a fluid pressure brake, the combination of a valve controlling the exhaust from the brake-cylinder, a fluid pressure supply passage communicating with a reservoir, and a second valve controlling said passage the movement of which is effected by the variations of pressure in the brake-cylinder, substantially as described. 2nd. In an air-brake apparatus, the combination with the triple valve, of another valve exposed to the brake-cylinder pressure and closing communication between the train-pipe and auxiliary reservoir while the brakes are on, substantially as described. 3rd. The combination with the triple valve of an air-brake apparatus controlling the passage of pressure to the brake-cylinder of another valve controlling communication between the train-pipe and auxiliary reservoir and exposed to the brake-cylinder

pressure, and a check valve in the train-pipe to hold the pressure in auxiliary reservoir, substantially as described. 4th. The combination with a brake-cylinder, reservoir, triple valve and train-pipe, of a passage connected with the train-pipe and leading to a reservoir forming a portion of the air-brake apparatus, and a differential piston or valve controlling said passage exposed to the change in



pressures in the train-pipe and brake-cylinder to open or close said passage after the movement of the triple valve, substantially as described. 5th. The combination with a brake-cylinder, reservoir, triple valve and train pipe, of a passage leading from the train-pipe and communicating with the auxiliary reservoir, and a differential piston or valve controlling said passage, the differential areas of which are exposed both to the brake-cylinder and to the train-pipe pressures to open and close said passage after the triple valve has moved, substantially as described. 6th. The combination with a brake-cylinder, reservoir, valve, train-pipe and a check-valve in said train-pipe, of a by-passage extending from the train-pipe to the upper side of said check-valve, and a piston or valve automatically controlling said by-passage, substantially as described. 7th. The combination with a brake-cylinder, reservoir, triple valve, train-pipe and a double seated check-valve in said train-pipe, of a by-passage opening into the train-pipe upon opposite sides of said double check-valve and a piston or valve controlling said by-passage exposed to the train-pipe and to the brake-cylinder pressures, substantially as described. 8th. The combination, with a brake-cylinder, reservoir, triple valve and train-pipe, of a by-passage leading from the train-pipe and communicating with the reservoir, a check-valve closing one end of said by-passage and a piston or valve controlling the other end and exposed to the brake-cylinder and train-pipe pressures, substantially as described. 9th. The combination, with a brake-cylinder, reservoir, and valve for controlling the admission and exhaust of fluid to and from the brake-cylinder, of a supply passage communicating with the auxiliary reservoir and a piston or valve controlling said passage and an air passage connection between the said piston or valve and the brake-cylinder whereby the piston or valve is operated by an increase and decrease in pressure in the brake-cylinder, substantially as described. 10th. The combination, in an air-brake apparatus, of a train-pipe passage to the auxiliary reservoir, a by-pass from the train-pipe passage communicating with the auxiliary reservoir having a valve exposed to and moved to open said by-pass by the train-pipe pressure when the brake is released, substantially as described. 11th. The combination, in an air-brake apparatus, of a check valve in the train-pipe passage adapted to close the same on an increase of pressure in the train-pipe, and a by-pass around or past said check-valve having a valve moved to open said pass by the train-pipe pressure when the brake is released, substantially as described. 12th. The combination, in an air-brake apparatus, of a check-valve in the train-pipe passage, a connection with the triple valve adapted in one position to hold the check-valve from its seat, a by-pass around or past said check-valve, and a piston or valve controlling said by-pass moved to open the by-pass after the triple valve is in release position, substantially as described.

No. 47,589. Triple Valve for Air-Brakes.

(Triple soupape pour freins à air.)

Henry Lawrence Howe, Canadaigque, New York, U.S.A., 4th December, 1894; 6 years.

Claim.—1st. In a triple valve for fluid pressure brakes, the combination with the valve-chamber having connections with the auxiliary reservoir, brake-cylinder and train-pipe, of a two-part valve 10, 10^c, one part capable of movement independent of the other, and one part having ports controlling the admission of pressure to the brake-cylinder and the other part controlling the exhaust from the brake-cylinder, and an underlying valve holding the brake-cylinder constantly open, substantially as described. 2nd. In a triple valve for fluid pressure brakes, the combination with the valve-chamber having connections with the auxiliary reservoir, brake-cylinder and train-pipe, of a two-part slide valve 10, 10^c, adapted to control the admission of pressure to and the exhaust from the brake-cylinder, and a single piston with connections for moving one part of the slide-valve in advance of the other part, and an underlying valve