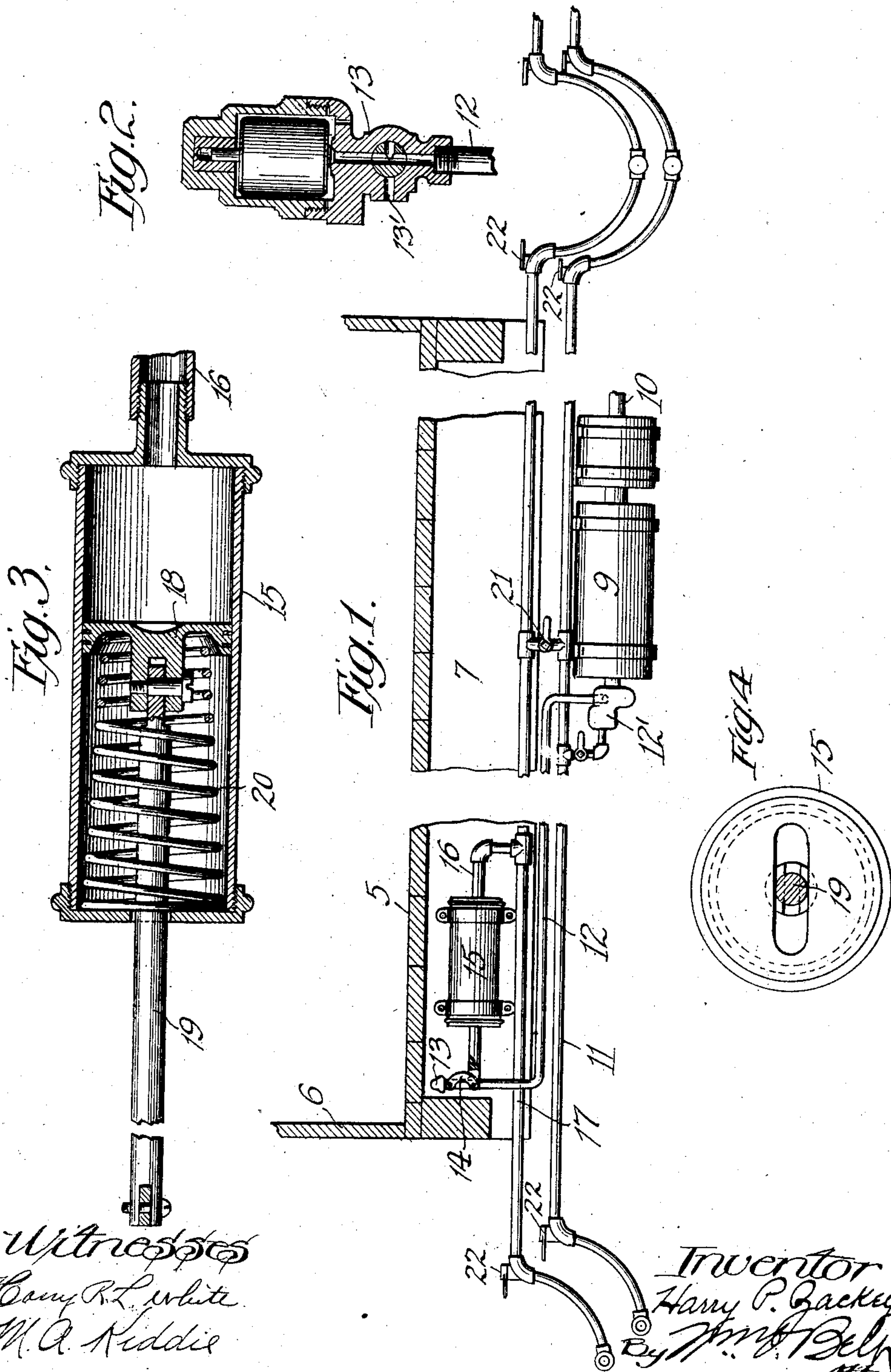


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 MEANS FOR OPERATING THE RETAINING VALVES OF AN AIR BRAKE SYSTEM FROM THE ENGINE.
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Witnesses
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UNITED STATES PATENT OFFICE.

HARRY P. ZACKEY, OF MARTINSVILLE, NEW YORK.

MEANS FOR OPERATING THE RETAINING-VALVES OF AN AIR-BRAKE SYSTEM FROM THE ENGINE.

No. 906,764.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY P. ZACKEY, a citizen of the United States, residing at Martinsville, in the county of Niagara and State of New York, have invented new and useful Improvements in Means for Operating the Retaining-Valves of an Air-Brake System From the Engine, of which the following is a specification.

Retaining valves are used on freight cars generally and on passenger cars, engines and tenders in mountainous districts, to retain a certain pressure, say 15 pounds, in the brake cylinder of an air brake, while the engineer is re-charging the train, in order to maintain sufficient braking power to keep the speed of the train from increasing too rapidly. At the present time these retaining valves are operated manually and the brakeman sets as many valves on the train as may be necessary to accomplish the desired end.

The object of my invention is to enable the engineer to operate the retaining valves from the engine and thereby avoid the necessity of a brakeman going from car to car to set the valves. With this in view I provide a retaining valve pipe line running from the engine throughout the train beneath the cars and suitably coupled between the cars. Under each car this retaining valve pipe line connects with a cylinder in front of a piston which is carried therein by a piston rod connected to a lever which operates the retaining valve. Sufficient pressure is maintained in the retaining valve pipe line to push the piston forward against its spring and hold the retaining valve open to exhaust to the atmosphere. When it is desired to set the retaining valve the engineer reduces the pressure in the retaining valve pipe line sufficiently to permit the spring by acting on the piston to set the retaining valve.

In the accompanying drawings illustrating one embodiment of the invention Figure 1 is a sectional view of a portion of a car showing my invention applied thereto in one position which will be found very convenient, the retaining valve being released. Fig. 2 is a detail sectional view of a retaining valve which may be employed with my invention, showing the same set. Fig. 3 is a longitudinal sectional view through the pressure cylinder, showing the piston as it appears when the retaining valve is released. Fig. 4 is a detail view of one end of the pressure cylinder.

In the drawings, 5 is a floor, 6 the front, 7 one of the longitudinal sills and 8 the front end sill of a car.

The invention is employed in connection with the usual air brake which comprises an auxiliary reservoir 9, a brake piston rod 10 and a train line pipe 11. A pipe 12 is connected to the triple valve 12' on the reservoir and this pipe may be run to any desired location on or under the car and carries a retaining valve 13 of any approved construction. As heretofore stated, this pipe 12 has been run to the top of the car, at one end thereof, so that the retaining valve will be located in convenient position for operation manually by the brakeman. The retaining valve has been variously located on different cars and on different lines but, so far as my invention is concerned, it is not important where this valve is located because it is operated automatically and not manually.

A cylinder 15 is suitably supported on the car and connected at one end by the pipe 16 to a retaining valve pipe line 17. A piston 18 is carried within the cylinder by a piston rod 19 which is connected to the lever 14 of the retaining valve. A spring 20 is confined within the cylinder and operates on the piston to set the retaining valve. I have shown one form of retaining valve in Fig. 2 but as the construction of the valve forms no part of my invention I do not deem it necessary to describe the same in detail. I also provide a valved connection 21 between the train line pipe 11 and the retaining valve pipe line 17, and the latter pipe is provided at each end of the car with angle cocks 22 similar to those on the usual train line pipe.

In practice all of the cars of a train should be equipped with my invention and the retaining valve pipe line is coupled between the cars similar to the main pipe line. A sufficient pressure is maintained in the retaining valve pipe line to push the pistons forward against their springs and thus hold the retaining valves open to exhaust to the atmosphere through the port 13'. It has been customary heretofore, to avoid releasing all the brake pressure when the train is being re-charged, to set as many of the retaining valves by hand as will be necessary to maintain some pressure in the brake cylinders. With my invention this is accomplished by the engineer who simply reduces the pressure in the retaining valve pipe line

sufficiently to permit the springs 20 to act on the pistons and set the retaining valves. Thus the engineer has complete control over the retaining valves and can operate them 5 whenever it becomes necessary or desirable.

In event that only one car of a train is equipped with my invention the angle cocks 22 in the retaining valve pipe line should be closed and the valve 21 opened. The pres- 10 sure in the main pipe line will then pass through the valved connection 21 into the retaining valve pipe line and operate on the piston to hold the retaining valve in released position open to exhaust to the atmosphere. 15 If the pressure in front of the piston 18 is reduced by reason of the train breaking in two or because an unusual quantity of air is drawn from the main line pipe, the spring will act on the piston to set the retaining 20 valve. The retaining valve will also be operated automatically when the engineer has exhausted the air out of the main drum or reservoir. When the retaining valve is set the brakes will be held applied under the 25 pressure maintained by the retaining valve until the latter is released or all the air has leaked out.

My invention is simple in construction, inexpensive to manufacture and it can be 30 easily applied to cars equipped with air brakes. It avoids the necessity for manual operation of the retaining valves by brakemen and places the control of these valves entirely in the hands of the engineer at a 35 single controlling station. The retaining valves can be set to any desired degree by regulating the air pressure accordingly.

Having thus fully described the invention, what I claim is;—

40 1. Means for operating a retaining valve in an air brake system for railway cars, com-

prising a pressure cylinder, a piston within the cylinder and connected to the retaining valve plug, a pipe line connected to the cylinder for supplying pressure thereto to move 45 the piston in one direction and release the retaining valve, and a spring within the cylinder to move the piston in the other direction and set the retaining valve.

2. Means for operating a retaining valve 50 in an air brake system for railway cars, comprising a pressure cylinder, a piston within the cylinder, a piston rod connected at one end to said piston and extending through one end of the cylinder, a lever connected to 55 the retaining valve plug and to the outer end of said piston, a spring within the cylinder operating against one side of the piston, and a pipe line connected to the cylinder in front of the piston for supplying pressure thereto 60 to move the piston in one direction, there being sufficient pressure normally maintained in the cylinder to push the piston back against its spring to hold the retaining valve in released position free to exhaust to the 65 atmosphere.

3. The combination with the main pipe line and the retaining valve of an air brake system for railway cars, of a pressure cylinder, a piston within the cylinder, a piston 70 rod connected to the piston and to the retaining valve plug, a retaining valve pipe line connected to the cylinder for supplying pressure thereto to move the piston in one direction, a spring within the cylinder to 75 move the piston in the other direction, and a valved connection between the main pipe line and the retaining valve pipe line.

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Witnesses:

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