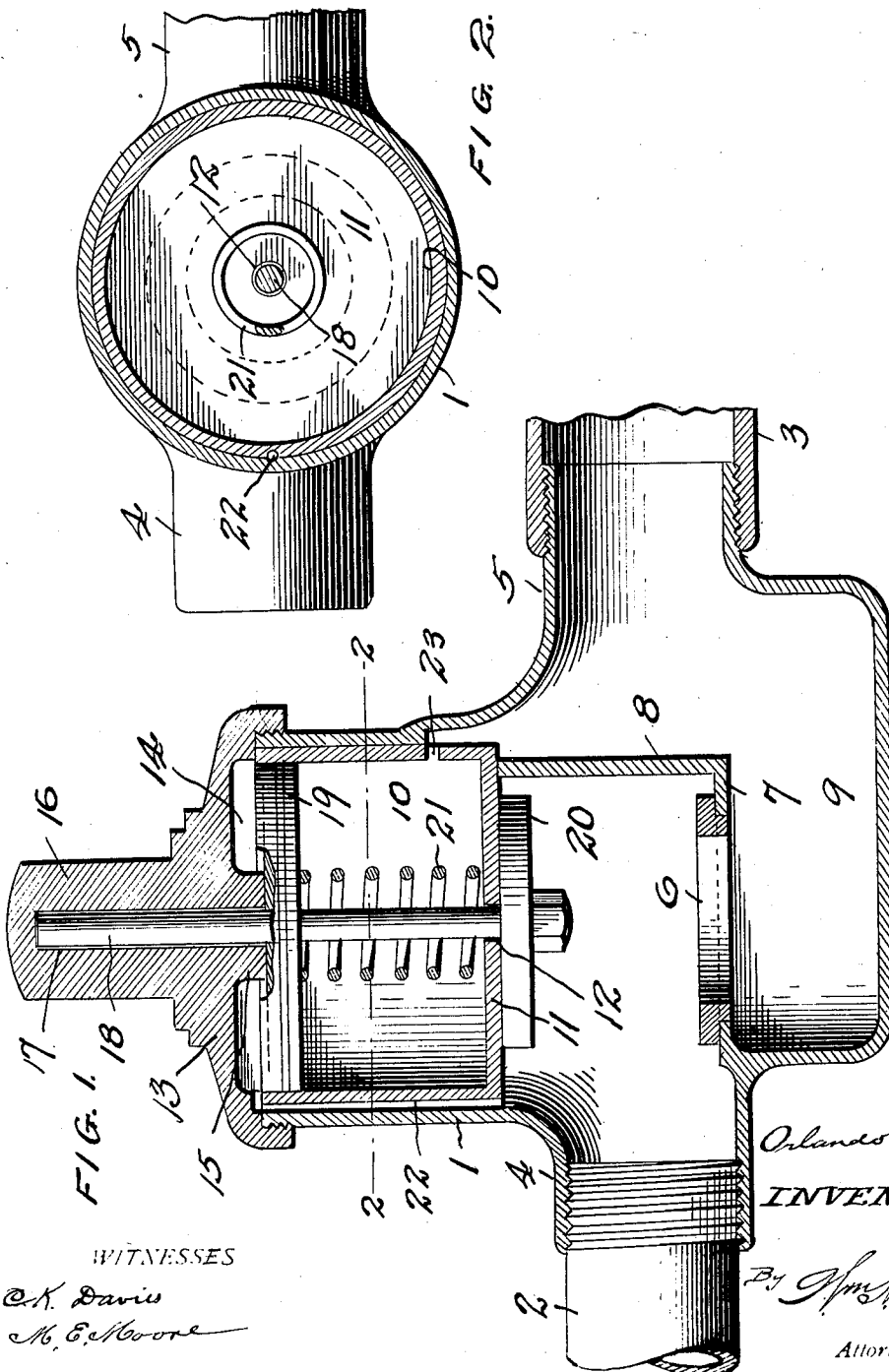


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AIR BRAKE SAFETY VALVE.
APPLICATION FILED APR. 5, 1909.

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937,991.



WITNESSES
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AIR-BRAKE SAFETY-VALVE.

937,991.

Specification of Letters Patent.

Patented Oct. 26, 1909.

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To all whom it may concern:

Be it known that I, ORLANDO GIBSON, a citizen of the United States, residing at Hollidaysburg, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Air-Brake Safety-Valves, of which the following is a specification.

The present invention relates to improvements in safety devices for use in connection with fluid pressure brake systems.

As is well known in this art, when the pressure in an air brake system is relieved sufficiently, the brakes are applied. If the pressure is suddenly reduced by the breaking of a train pipe, bursting of hose couplings, or the parting of the cars in a train equipped with air brakes, the brakes are too suddenly applied and set. This emergency application of the brakes causes the movement of the train to be checked to such a degree as to endanger the lives of the passengers. If some of the cars on a train thus checked are not equipped with air brakes, the unchecked momentum of such cars permits them to continue their movement and they frequently collide with the forward cars of the train, doing great and avoidable damage. When equipped with my improved valve, such a sudden reduction of pressure in the air system is prevented; the forward section of a train having air brakes is still under control of the engineer if the train parts, and the brakes of the system are applied gradually as the pressure is reduced throughout the train pipe.

In carrying out my invention I interpose or insert in the train pipe of the air brake system, one or may be two valves to each car, the valve or valves being located preferably in proximity to the angle cocks of the hose coupling at the end of the car.

In the accompanying drawings I have illustrated one example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles.

Figure 1 is a vertical longitudinal section of the valve, fragments of the train pipe and angle cock being connected to the valve casing. Fig. 2 is a transverse section on line 2—2 of Fig. 1.

As above stated, the safety device, which consists essentially of casing 1 and the inclosed parts, is interposed in the train pipe, a portion of which is shown at 2, and near the angle cock 3 of the hose coupling at the end of the car. The casing 1 is formed with short length tubes 4 and 5, which are conveniently threaded for connection with the train pipe and with the angle cock.

The casing 1 is normally open to the passage of air under pressure through a valve seat or ring 6 which is located in the perforated horizontal partition 7 of the casing. This partition is integral with the vertical dividing wall 8, and an enlargement 9 is present in the casing for the passage of compressed air around the wall 7.

Within the casing 1 and resting upon the top of the wall 8 thereof is an inner casing or cylinder 10, having a bottom 11 with a central perforation 12. The upper open end of the cylinder 10 is closed by the cap 13 which is secured to the casing 1 by threads, as usual. The under face of the cap piece 13 is bored out or recessed forming a chamber 14 of approximately the diameter of the cylinder 10, and a central lug 15 projects through the chamber 14. This lug 15 and the boss 16 of the cap are bored out to form a socket 17, and in this socket 17 the stem 18, upon which the piston and valve heads 19 and 20 are secured, is adapted to rest when the air pressure is normal, and is guided when the piston head is moved under pressure. The piston 19, when the pressure is normal bears against the lug 15 of the screw cap, as clearly shown in Fig. 1, and a spring 21 is interposed between the underside of the piston and the upper side of the bottom 11 of the cylinder 10, to aid in keeping the passage open for air under pressure, by holding the valve 20 against the underside of the cylinder 10. Air under pressure is admitted to the chamber 14 through the duct or passage 22, and air may also be admitted to the interior of cylinder 10 through the perforation 23, the pressure thus being equal throughout the device when the conditions are normal, that is, when the brakes are held off.

Now, assuming the brakes to be off and pressure present in the train pipe, with the parts as shown in Fig. 1, if the train parts,

or for some other reason, the pressure is suddenly reduced, say at the right side of Fig. 1, the air rushes through valve seat 6 to the right, and is withdrawn from cylinder 10 through port 23. The pressure under piston 19 is thus relieved and the pressure above piston 19 in chamber 14, which has not been appreciably reduced as yet, forces the piston 19 and valve 20 downward until valve 20 closes the opening in the valve seat or gasket 6. With the valve closed down upon the seat 6, and held there by pressure from the pipe 2 the escape of air in volume is cut off. As the piston and valve descend, the piston 19 passes port 23, and gradual escape of air is permitted around the closed valve by means of the duct 22, chamber 14 to the cylinder 10 and from thence through port 23 to the atmosphere. With this gradual reduction of pressure the brakes are applied gradually and the momentum of the train is thus gradually checked, and the forward part of the train may still be controlled by the engineer from his cab.

From the above description taken in connection with the drawings it is obvious that I have produced a device which fulfills the conditions set forth as the purpose of my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination in an air brake system of a valve casing having a cylinder therein, a piston movable in the cylinder, a spring on the shaft interposed between the piston and the bottom of the cylinder, a stem and a valve on said stem, a valve seat adapted to be closed by said valve, and means for closing said valve when pressure in the system is sufficiently reduced.

2. The combination in an air brake system of a casing having a cylinder therein, a piston and stem in the cylinder, a spring surrounding the stem and serving to normally force the piston away from the bottom of the cylinder, a valve on the stem outside the cylinder and a valve seat adapted to be closed by said valve, and a chamber

formed above the piston containing air under pressure for closing said valve when pressure in the system is sufficiently reduced under the valve.

3. The combination with an air train pipe of a casing having a valve seat; a cylinder, a piston and stem within the cylinder, a valve outside the cylinder on the stem adapted to close the seat, means for normally holding the valve above and out of engagement with the seat, a chamber above the piston containing air under pressure and a duct to connect said chamber with the train pipe, and a port from the cylinder to the train pipe whereby a gradual discharge of air is permitted when said valve is closed.

4. The combination with an air train pipe of a casing having a valve seat; a cylinder, a piston and stem within the cylinder and a spring bearing against said piston, a valve on the stem outside the cylinder adapted to close said valve seat, and a chamber above the piston communicating with the train pipe, and a port from the cylinder to the air pipe whereby a gradual discharge of air is permitted when said valve is closed.

5. In combination with the train pipe, a casing secured therein, a valve seat in the casing, a cylinder secured in the casing thereabove, a rod passing through the cylinder and having sliding movement in a socket in the casing, a piston in the cylinder mounted on the rod, a valve on the lower end of the rod outside the cylinder, means for normally holding the valve in contact with the cylinder and a pressure chamber above the piston adapted to contain air under pressure for forcing the piston downward when the pressure in a portion of the train pipe is suddenly reduced, said movement of the piston causing the valve to engage and close the opening in the valve seat.

In testimony whereof I affix my signature, in presence of two witnesses.

ORLANDO GIBSON.

Witnesses:

ORLANDO BRENNEN,
HOWARD PAPE.