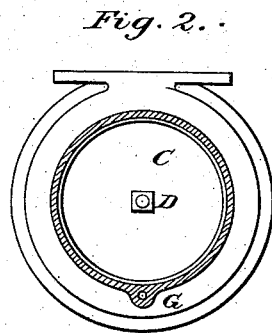
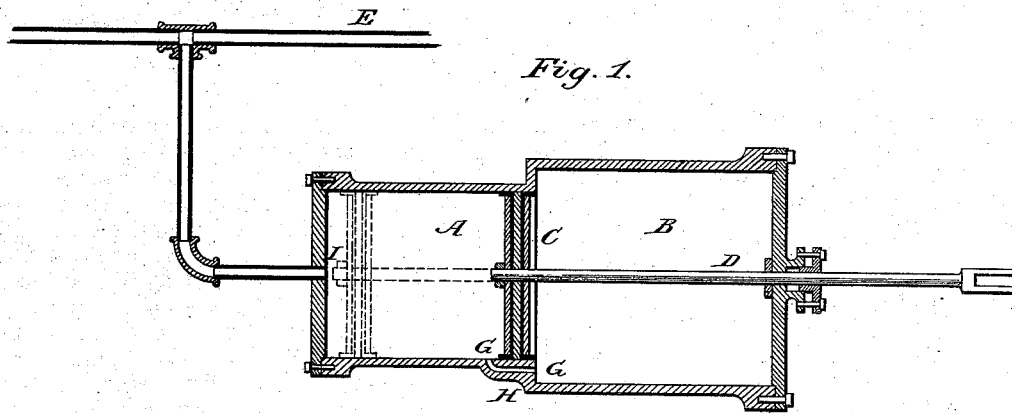


J. R. RENIFF.  
Steam and Air Brake.

No. 160,955.

Patented March 16, 1875.



Witnesses.

Rufus Reniff.  
Edmund P. Cleaveland

Inventor:

James R. Reniff.

# UNITED STATES PATENT OFFICE.

JAMES R. RENIFF, OF BLOOMINGTON, ILLINOIS.

## IMPROVEMENT IN STEAM AND AIR BRAKES.

Specification forming part of Letters Patent No. **160,955**, dated March 16, 1875; application filed November 28, 1874.

*To all whom it may concern:*

Be it known that I, JAMES R. RENIFF, of Bloomington, in the county of McLean and State of Illinois, have invented certain Improvements in Automatic Steam and Air Brakes for Railway-Cars, of which the following is a specification, reference being had to the drawing.

Figure 1 represents a sectional view of cylinder and piston. Fig. 2 shows sectional view of cylinder through H.

My invention relates to the peculiarly-constructed cylinder, at both ends of which are formed, by the position of the piston C, two air-chambers, A and B, one being larger than the other, the pressure coming through pipe E and port I in chamber A, and passing under piston, through port or passage G G, into chamber B, filling both chambers A and B, and keeping a constant pressure on both sides of the piston C, so that when the supply-pipe E is broken, or the cars are uncoupled by accident or otherwise, the pressure confined in the smaller chamber A instantly escapes, and the piston C is forced forward and over the

port or passage G G by the pressure in chamber B, and thus preventing the escape of pressure through port G G from chamber B, and applying the brakes. To release the brakes the pressure is admitted through supply-pipe E, port I, into chamber A, and against piston C, as represented by dotted lines, forcing it back and over the port or passage G G to its original position, and at the same time compressing the air to its original pressure, thus being ready at all times for applying the brakes, the port or passage G G allowing the pressure to become equalized on both sides of piston.

I claim—

The air-chambers A B of unequal diameters, and communicating with each other through a suitable air passage or port, G, in combination with the piston C, acting as a valve in closing and opening said port or passage, substantially as and for the purpose set forth.

JAMES R. RENIFF.

Witnesses:

EDMUND O. CLEVELAND,  
RUFUS RENIFF.