

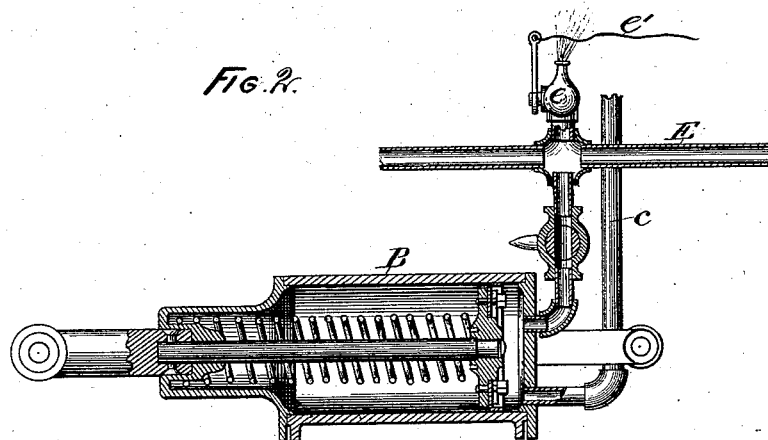
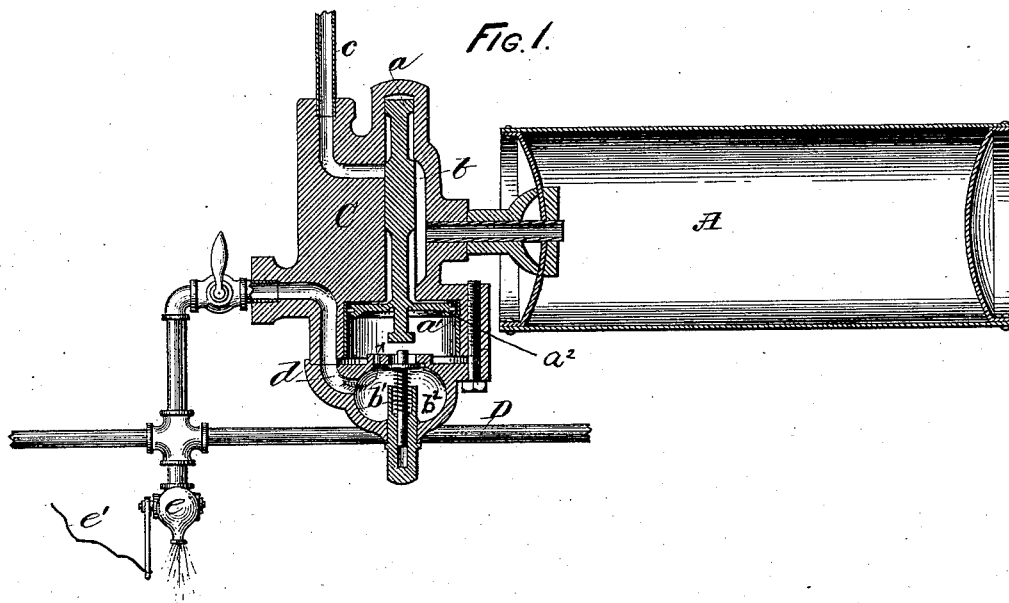
(No Model.)

3 Sheets—Sheet 1.

L. E. SLOAN.  
RAILWAY AIR BRAKE.

No. 307,344.

Patented Oct. 28, 1884.



*Witnesses.*  
*E. G. Johnson*  
*J. Bennett*

*Inventor:*  
*Leander E. Sloan*  
*By*  
*Mont. & Underwood*  
*Attorneys.*

(No Model.)

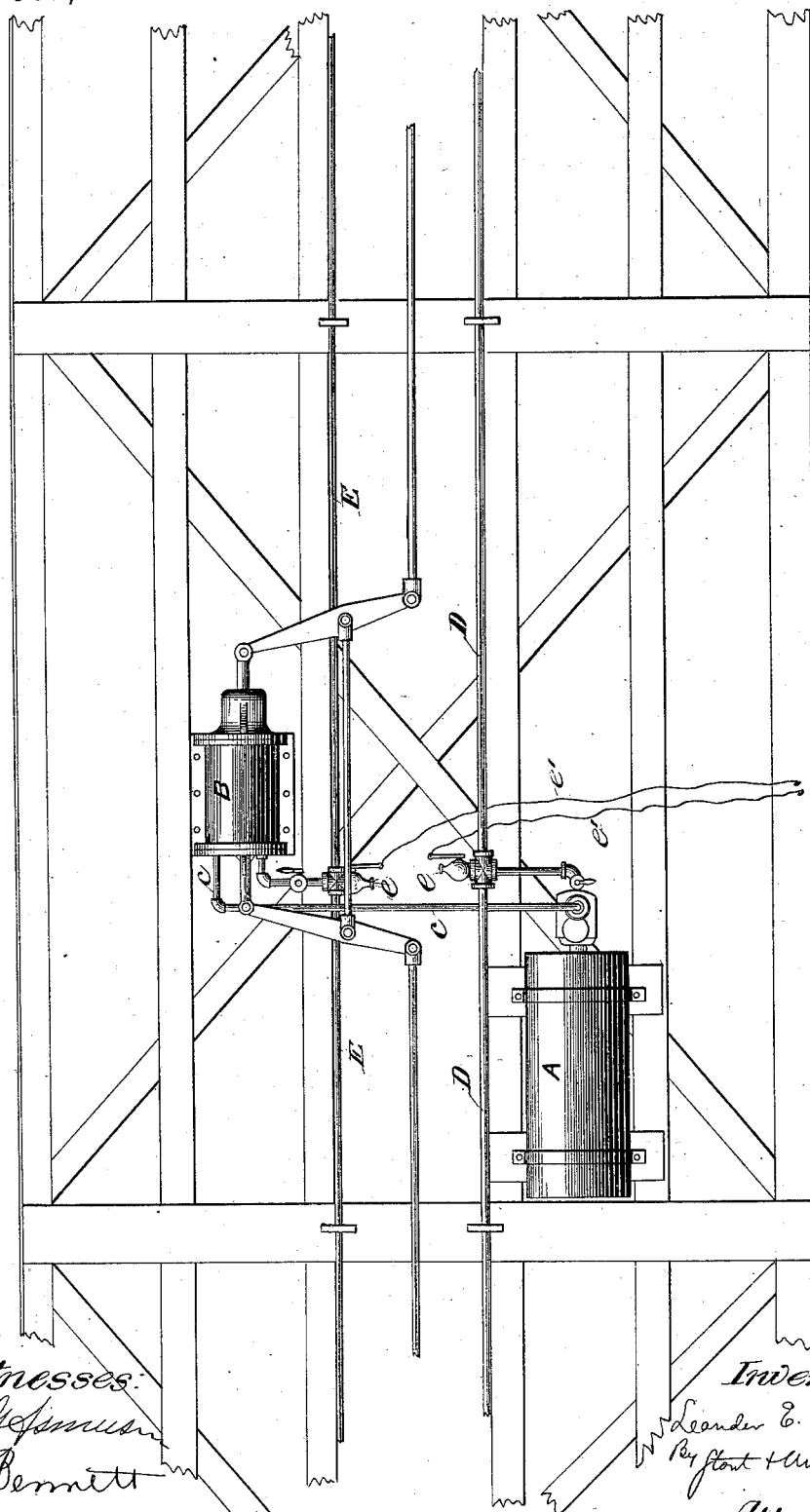
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FIG. 3.



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(No Model.)

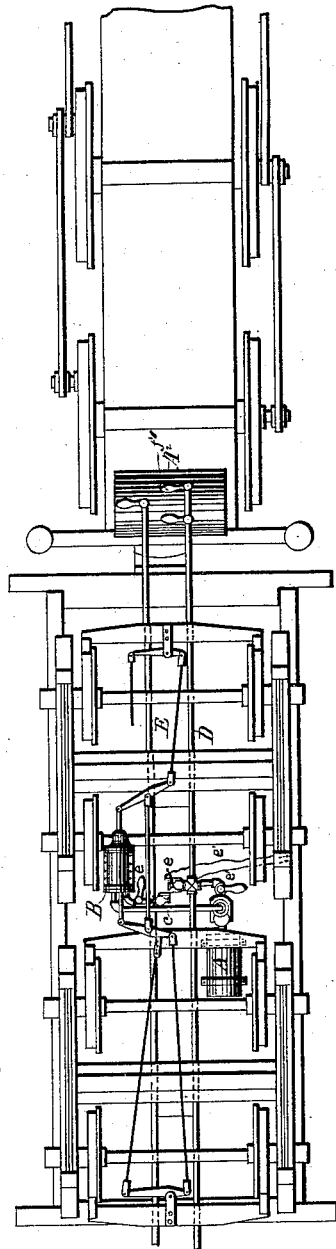
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Fig. 4.



Witnesses:

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*M. D. Dammheimer*

Inventor:

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# UNITED STATES PATENT OFFICE.

LEANDER E. SLOAN, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-THIRD TO JAMES A. SLOAN, OF SAME PLACE.

## RAILWAY AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 307,344, dated October 28, 1884.

Application filed December 12, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, LEANDER E. SLOAN, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Automatic Brakes and Sanding Devices for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in railway air-brakes, and has for its object to construct the operating-valve thereof so that the same will be simple, less liable to get out of order, and consequently a more reliable and safe device of this character than those in ordinary use, the latter being objectionable on account of their complicated construction.

A further object of my invention is to directly connect the brake-cylinder with the main reservoir on the locomotive, as by such connection I secure the application of the brakes whenever, on account of sticking of the piston in the chamber of the operating-valve, the air in the auxiliary cylinder is shut off from the brake-cylinders, such a complication being of frequent occurrence. Also, by the general construction of my improved air-brake, the brakeman is enabled to release or engage the brakes from a single point on the train, thereby avoiding the usual delay incident to the starting of a train caused by the necessity of having to successively release the brakes on all the cars.

The invention therefore consists in the general construction and arrangement of the several operating parts, as will be hereinafter more fully described with reference to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section through the center of the auxiliary air-reservoir and operating-valve; Fig. 2, a horizontal section through center of brake-cylinder; Fig. 3, a plan view showing the double-acting brake system; Fig. 4, a diagram showing the connection with the main air-reservoir of the locomotive.

The letter A represents the auxiliary air-reservoir, arranged in close relation to my improved operating-valve C, the latter being provided with a passage, *b*, to connect said res-

ervoir, through the medium of a pipe, *c*, with the brake-cylinder B. This operating-valve C has also a port, *d*, communicating, through chamber *b*<sup>2</sup> below chamber *a*<sup>1</sup>, with a pipe, D, leading to the main reservoir A<sup>2</sup> on the locomotive.

The letter *a* designates the guide of the piston *a*<sup>2</sup> of the main valve C, said piston working in a chamber, *a*<sup>1</sup>, to close or open the passage *b*, and is kept in the position shown in Fig. 1 by the tension of the air in the pipe D, and when this tension is decreased the piston is forced down upon the spring-valve *b*<sup>1</sup> by the pressure of the air from the auxiliary reservoir A, thus opening communication between said reservoir and the brake-cylinder through the medium of the passage *b* and pipe *c*, and setting the brakes. By this construction of the operating-valve the same is rendered extremely simple, less liable to get out of order, or become inoperative by sticking, and is consequently a more reliable device than those of a more complicated arrangement.

The letter E represents a main pipe, by means of which I establish direct connection between the brake-cylinders and the main air-reservoir A<sup>2</sup> on the locomotive to admit the application of the brakes, whenever, on account of the sticking of the piston *a*<sup>2</sup> in the chamber of the operating-valve C, the air of the auxiliary reservoir is shut off from the brake-cylinder, such sticking of said piston being a frequent occurrence and detrimental to the proper working of air-brakes in general use.

The main pipe E and pipe D are provided with branches and relief-valves *e*, and whenever the brakes may have been applied through the medium of said main pipe, or the one D, the brakeman may be enabled to release said brakes from a single point on the train, as the relief-valves of each may, by means of cords *e*<sup>1</sup>, connected thereto, be actuated from a single car, thereby admitting of the application or releasing of the brakes throughout the entire train with a saving in time usually consumed in such operations. Especially is this of importance in starting a train, as in devices of this character now in ordinary use it is necessary to release successively the brakes on all the cars.

In the pipe D, I place a cock,  $f'$ , close to the main air-reservoir  $A^2$  of the locomotive, (see Fig. 4,) so that after the auxiliary reservoirs A on the trucks are filled, the connection between these and the main reservoir may be cut off and a high pressure raised in the last to be ready for use through the direct pipe E. This cock  $f'$ , which is necessary for the working of the brakes through the direct pipe E, will prove of great value at times when the automatic system is applied singly to the cars.

In automatic braking, as usually applied, when the brakes are set from the cars by means of the relief-valves  $e$ , the communication between the main reservoir  $A^2$  and the auxiliary ones A being open, the air from the main reservoir will rush out through the valves faster than from said auxiliary reservoirs, and if the main valve-pistons have the least tendency to stick the action of the brakes will be retarded so as to endanger the safety of the train, while with cock  $f'$  on the pipe D this difficulty is entirely avoided.

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

1. In an automatic air-brake, the combination, with the auxiliary reservoir A and pipe D, of the operating-valve C, having passage

$b$ , piston  $a'$ , chamber  $a'$ , port  $d$ , chamber  $b^2$  below chamber  $a'$ , and spring-valve  $b'$ , substantially as shown and described.

2. The combination, with an automatic air-brake, of the direct main pipe E, having branches and relief-valve  $e$ , connecting with the brake-cylinders, substantially as shown, and for the purpose set forth.

3. In an automatic air-brake, the combination of the operating-valve C, having ports  $b$  and  $d$ , piston  $a$ , and spring-valve  $b'$ , with the direct pipe E, having branches and relief-valves  $e$ , communicating with the brake-cylinders, substantially as shown, and for the purpose specified.

4. In an automatic air-brake, the combination of the pipe D, auxiliary reservoir A, main reservoir  $A^2$ , and relief-valves  $e$ , connected to said pipe, with the cock  $f'$  arranged in close relation to the main reservoir, substantially as shown, and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand, on this 23d day of July, 1883, in the presence of two witnesses.

LEANDER E. SLOAN.

Witnesses:

STANLEY S. STOUT,  
H. G. UNDERWOOD.