(No Model.)

F. LANSBERG.

AIR BRAKE.

No. 415,514. Patented Nov. 19, 1889.

Fig. I.

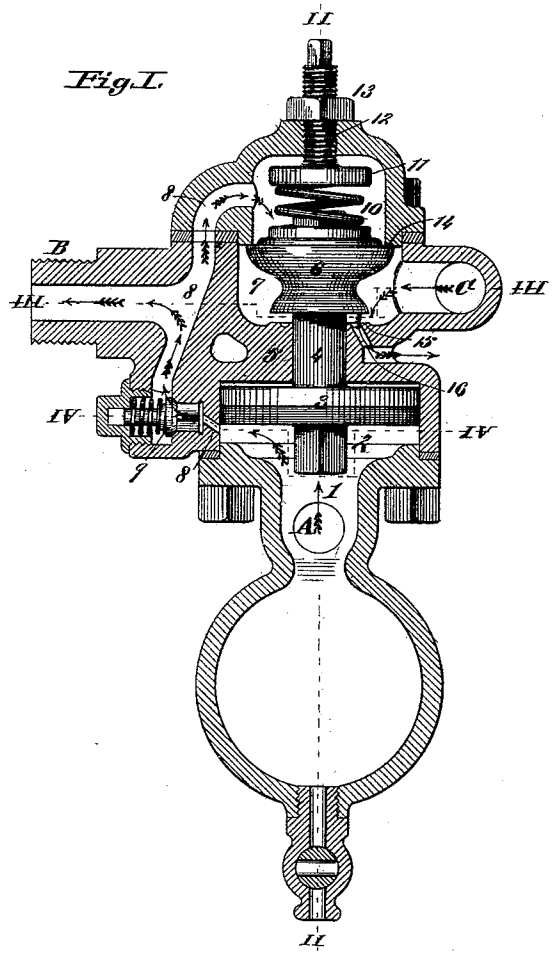


Fig. II.

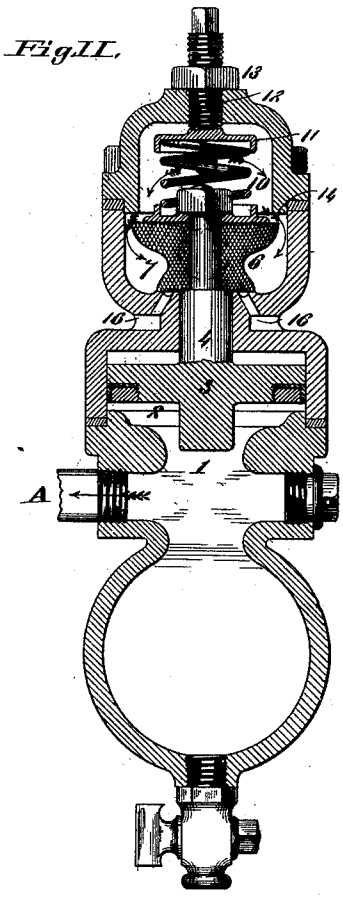


Fig. III.

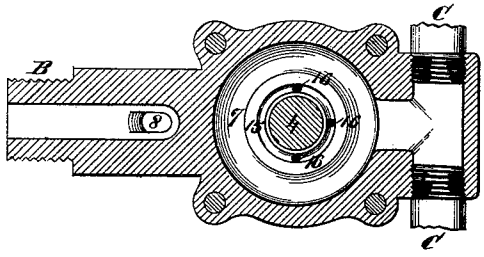
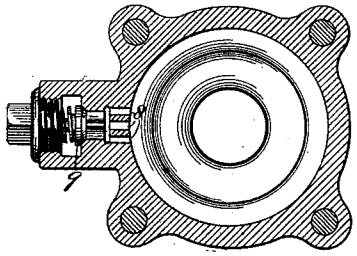


Fig. IV.



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UNITED STATES PATENT OFFICE.

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AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 415,514, dated November 19, 1889.

Application filed March 1, 1889. Serial No. 301,623. (No model.)

To all whom it may concern:

Be it known that I, FRANK LANSBERG, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Air-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is a section illustrative of my improvement. Fig. II is a section taken on line II II, Fig. I. Fig. III is a transverse section taken on line III III, Fig. I; and Fig. IV is a transverse section taken on line IV IV, Fig. I.

My invention relates to an improvement in air-brakes for railway-cars; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, 1 represents a port, with which the train-pipe A communicates. This port leads into a chamber 2, in which is located a piston-valve 3, secured to a vertically-movable stem 4, which passes through the housing 5, and upon which is secured a double-seated valve 6, located in a chamber 7, that communicates with a brake-cylinder pipe C.

8 represents a port forming communication between the chambers 2 and 7, and in which is located a check-valve 9. A pipe B leads from the port 8 to the usual receiver.

The normal position of the valves 3 and 6 is shown in Fig. II, where they are held by means of a spring 10, located between the upper end of the valve 6 and a disk 11 on a threaded stem 12, which passes through the housing, and may be provided with a jam-nut 13. By moving the disk 11 up or down by turning its stem the tension of the spring 10 may be increased or diminished, as desired. The valve 6 has a seat 14 at top and a seat 15 at bottom.

16 represents an exhaust-port in the seat 15.

The operation is as follows: The air passes from the train-pipe through the port 1 into the chamber 2, and, owing to its pressure in excess of that of the spring 10, lifts the valves 3 and 6 and passes out through the port 8 into the pipe leading to the receiver, and filling, of course, at the same time the chamber above the valve 6, with which the port 8 also communicates, as shown in Fig. I. It will be seen that the area of the valve 3 exceeds that of the valve 6, so that the pressure in the chamber of the valve 6, combined with that of the spring 10, is not enough to force the valves downward and close the port 8, leading from the chamber 2, until the pressure in the train-pipe is relieved or exhausted. When this takes place, the check-valve 9 will close, and the combined pressure of the air and spring 10 on the upper face of the valve 6 will force the valves 6 and 3 from the position shown in Fig. I to the position shown in Fig. II, thus closing communication between the chamber 2 and port 8 and forming a communication between the port 8 and the chamber 7, which communicates, as stated, with the brake-cylinder. The moving of the valve 6 downward also closes the exhaust-ports 16. A communication is now formed between the receiver and the brake-cylinder, and this communication is maintained until the pressure in the train-pipe, becoming in excess of that of the receiver when it opens, opens communication between the chamber 2 and the port 8 again by lifting the valve 3, and the operation of the parts described is repeated. In this manner the action of the parts is entirely automatic, and, owing to their construction and the manner of their operation, are not liable to get out of order.

I claim as my invention—

1. The combination, with a train-pipe, a receiver-pipe, and a brake-cylinder pipe, of two chambers in communication with the train-pipe and the brake-cylinder pipe, respectively, a port forming communication between said chambers and the receiver-pipe, an automatic check-valve in said port, a piston and puppet valve connected together, located in the chamber of the train-pipe and brake-cylinder pipe, respectively, a valve-seat above said puppet-valve, and a spring for forcing said puppet-valve from said seat, substantially as set forth.

2. The combination of a train-pipe, a receiver-pipe, and a brake-cylinder pipe, a chamber in communication with the train-pipe, a chamber in communication with the

brake-cylinder pipe, a port forming communication between said chambers and the receiver-pipe, and valves located in said chambers and secured to a stem common to both, the valve of the chamber of the brake-cylinder pipe being a double puppet-valve having a seat above and below, with exhaust-ports leading through the said seat below, substantially as and for the purpose set forth.

3. The combination, with the train, brake-cylinder, and receiver pipes, a duct connecting all of said pipes, and a valve in said duct between the train and receiver pipes, of the valve-stem 4, valves 3 6 on said stem, a spring bearing upon one of said valves, a disk capping said spring and having the screw-threaded stem 12, whereby the inertia of said spring may be increased, and the jam-nut 13 on said stem 12, substantially as set forth.

4. The combination, with the train-pipe, brake-cylinder pipe, and receiver-pipe, of the housing 5, cutting off communication between said train and brake-cylinder pipes, the duct 8, connecting said train, brake-cylinder, and receiver pipes, an automatic check-valve in said duct between the receiver and train pipes, and adapted to be opened by pressure from the train-pipe, a valve-stem passing through housing 5, the valves 3 6 of different areas on said stem, the valve 6 being a double-faced valve, the valve-seat 14, upon which one face of valve 6 seats when moved in one direction, the valve-seat 15 on the housing 5, having exhaust-ports adapted to be closed by the other face of valve 6 when moved in the opposite direction, and the valve 3 being a piston-valve, substantially as set forth.

FRANK LANSBERG.

In presence of—
EDW. S. KNIGHT,
THOMAS KNIGHT.