A. F. GUE.

EXHAUST VALVES FOR AIR-BRAKES.

No. 190,030. Patented April 24, 1877.

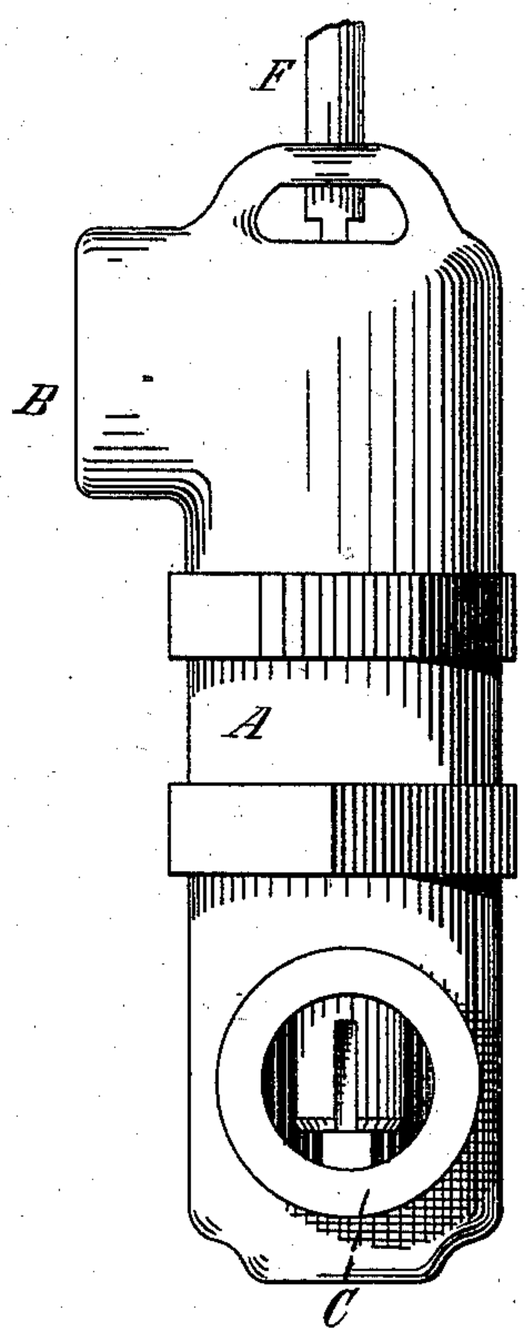

Fig. 1.

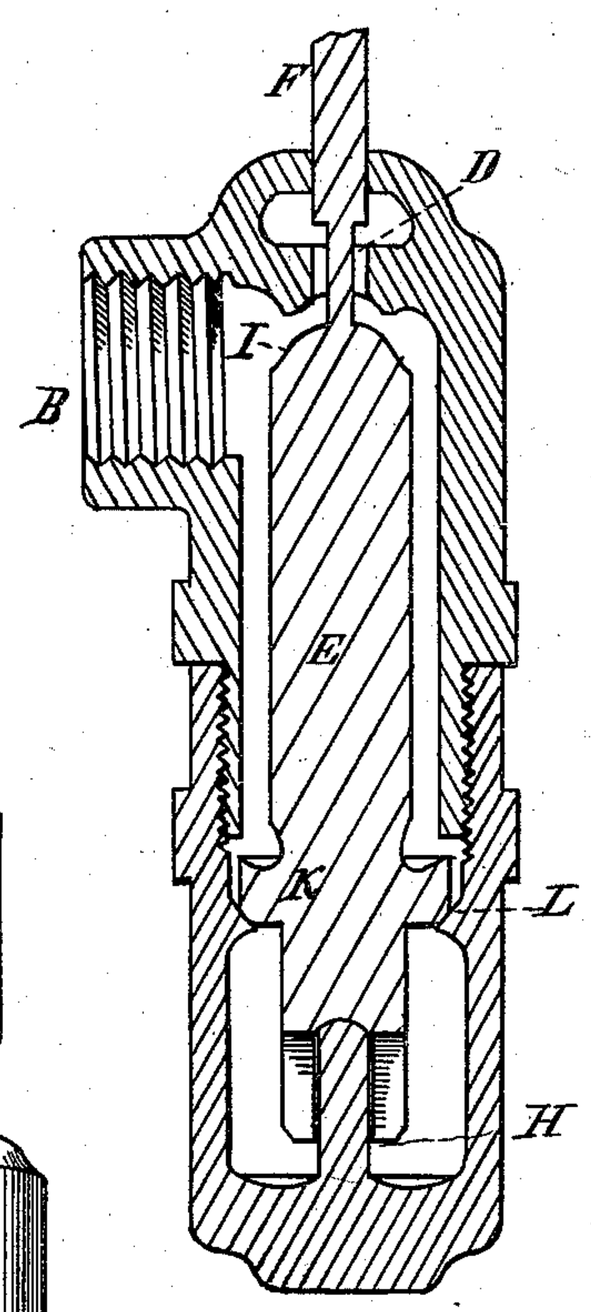

Fig. 2.

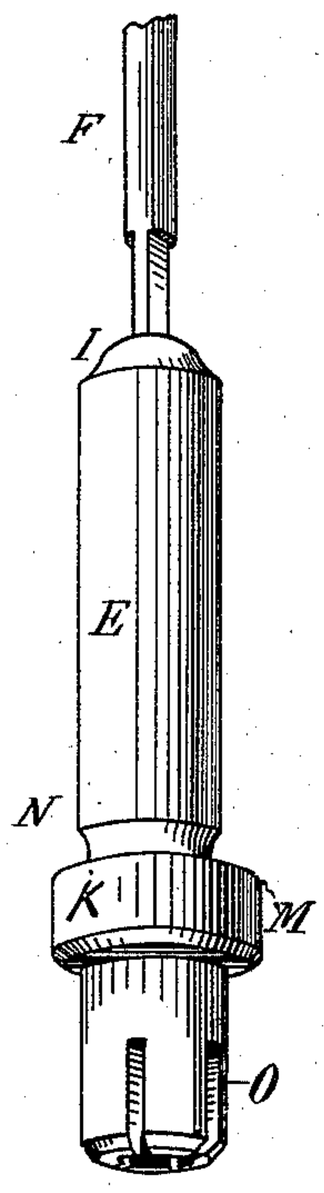

Fig. 3.

Witnesses:
L. E. Romick.
Alley. L. Hayes.

Inventor:
Albert F. Gue.

UNITED STATES PATENT OFFICE.

ALBERT F. GUE, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE F. FIELD, OF SAME PLACE.

IMPROVEMENT IN EXHAUST-VALVES FOR AIR-BRAKES.

Specification forming part of Letters Patent No. **190,030**, dated April 24, 1877; application filed September 19, 1876.

To all whom it may concern:

Be it known that I, ALBERT F. GUE, of the city of Boston, in the State of Massachusetts, have invented a new and useful Improvement in Exhaust-Valves for Steam and Air Brakes, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents the valve-chamber in elevation; Fig. 2, a vertical section of the same; and Fig. 3, a detached view of the exhaust-valve.

The efficiency of the well-known air-brake for stopping a train of cars within the shortest possible space and time is now generally acknowledged as superior to any other device heretofore employed for this purpose. The setting of these brakes is accomplished with all the promptness that could be desired. One objection has, however, heretofore existed—namely, the inability to release with sufficient promptness the brake-shoe from its contact with the car-wheel when, after a momentary stoppage, it is desired to again immediately start the train.

The object of my invention is to overcome this objection or defect and instantly release the brakes by causing the compressed air in the brake-cylinders to be discharged into the natural atmosphere through an exhaust-valve.

It will be seen that my invention is applicable to a brake which is operated through a single line of pipe.

My invention consists in placing within a vertical valve-chamber a weighted exhaust-valve, provided near its lower end with a single flange, and upon its upper end with a smooth-finished convex head, which abuts against a concave seat for closing the exhaust, both the body of the valve and the flange being hollowed out, and the stem cut away, as and for the purposes hereinafter more fully set forth.

It further consists in extending the upper end of the valve to form a stem, which projects through and above the valve-chamber, and in forming the lower end of the valve with a slotted socket, fitting over a spindle, which arises from the base of the valve-chamber, all as hereinafter more fully set forth.

In the drawings, A represents the valve-chamber, preferably arranged at one end of the brake-cylinders; B, its point of union with the brake-cylinder, and C its place of attachment to the supply-pipe. The foot of the weighted valve E sets over the vertical guide H, and is provided with the slots O, to allow particles of caked oil and dirt to be blown away, and thus prevent their accumulation at this bearing. Just above its foot the valve is furnished with the flange K, which rests upon the seat L of the valve-chamber. The stem F is an extension of the valve projecting outside the chamber, so that a workman may move the valve and judge if it operates properly. The upper portion of the valve at I is smooth-finished, so that it will nicely close the exhaust D by mere abutment, without extending upward into said exhaust, and without the use of packing. Immediately above the flange K the valve is considerably cut away, and the upper surface of the flange is concaved, so that an enlarged area is presented to the action of the reflux of compressed air, and friction created by said reflux current to the end of more promptly depressing the valve.

The operation of the valve is as follows: An induction of compressed air will raise the flange K off the seat L, force the head of the valve against, and by abutment close, the exhaust D, and pass into the brake-cylinders, and cause the brakes to be applied; but when the pressure in the train-pipes is relieved by opening the cock at the engine, so that the said pressure falls below a certain degree per square inch, dependent upon the weight of the valve and the areas of the pipe and of the eduction-opening, the valve will drop down by its own weight and open the eduction-port. The engineer is thus enabled to relieve the brakes without discharging the cylinders by not permitting the pressure in the supply to fall to the point at which the valves drop down; but if he desires to open the valves and discharge the cylinders before the pressure is diminished, in order to save time, he can accom-

plish this result by opening the cock at the engine to its full extent, when a reflux current from the cylinders will be created, which, acting upon the concave flange and hollowed-out stem, will cause the valve to open.

Owing to the concave form of the seat of the eduction-opening, and convex form of the stem of the valve, the slightest downward movement of the valve will suffice to open the eduction-port.

Throughout this specification, for convenience, the terms "air-brake" and "compressed air" have been employed; but it is to be understood that my invention is equally applicable where a steam-brake is to be operated.

I am aware of the patents granted to George Westinghouse, Jr., dated January 9, 1872, and to H. L. Perrine, August 3, 1875, and I do not claim the devices, their combination, or arrangement, as exhibited in either of these cases; but

What I claim as my invention is—

1. In exhaust-valves for air or steam brakes, the combination, with a suitable valve-chamber, of a weighted double-ended valve, provided with a convex head and a single concave flange, and so arranged that the action of the air or steam in passing through the valve will cause the induction and eduction ports to be automatically opened and closed for the purpose of supplying air or steam to the cylinders, or of exhausting the same, substantially as set forth.

2. The valve-flange K, constructed with a concave upper surface, substantially as and for the purpose set forth.

3. In combination with the valve-chamber, provided with seat L and eduction-port D, the weighted valve E, constructed with flange K, stem F, and the convex head, as described, for the purpose of closing said port by mere abutment.

4. The combination of spindle H and valve E, provided at its lower end with slots O, as set forth.

In witness whereof I have hereunto set my hand on this 16th of September, 1876.

ALBERT F. GUE.

Witnesses:

GEORGE F. FIELD,

ALEX. L. HAYES.