G. WESTINGHOUSE, Jr.

Ejector-Attachment for Vacuum-Brakes.

No. 168,119. Patented Sept. 28, 1875.

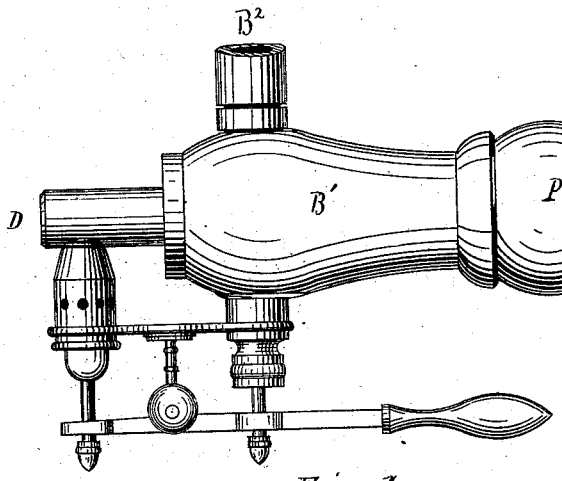

Fig. 1

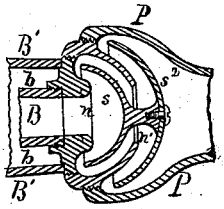

Fig. 3

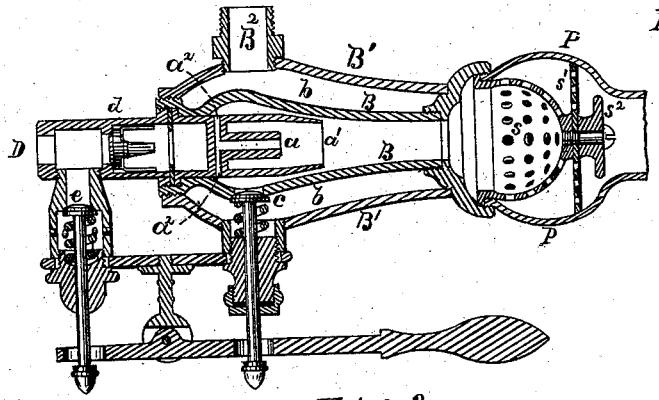

Fig. 2

Witnesses { Chas. G. Cage. / C. L. Parker.

Inventor: George Westinghouse Jr by George H. Christy, his Atty.

UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, JR., OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN EJECTOR ATTACHMENTS FOR VACUUM-BRAKES.

Specification forming part of Letters Patent No. **168,119**, dated September 28, 1875; application filed December 24, 1874.

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, Jr., of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Ejector Attachment in Vacuum-Brake Apparatus; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a plan elevation of an ejector, illustrating my present improvement; Fig. 2 is a longitudinal sectional view thereof; and Fig. 3 is a detached sectional view of the devices for preventing noise in a somewhat modified form.

My present invention relates to certain improvements in that class of railway-brake mechanism in which an ejector is employed for exhausting the air from the brake-cylinders, and thus apply the brakes, as referred to in reissued Letters Patent granted to me July 29, 1873, No. 5,506, and consists in combining with an ejector, suitable for the purpose of exhausting the air, certain mechanical means, substantially as hereinafter described, for preventing wholly or in part the noise which is caused by the escaping steam when escaping directly from the ejector into the atmosphere.

As an element in this combination any suitable form of ejector may be employed. The one herein shown I consider especially adapted to the purpose; but in so far as it differs from those previously in use it forms the subject-matter of a separate application. It has a steam-supply pipe, B^2, and outer casing B^1, a steam-jacket chamber, *b*, the ordinary ejector-head B, and two jet-nozzles, *a* a^1, one central and the other annular, and exterior to the outgoing column of air, which enters by the pipe D from the brake-pipes and cylinders. The port a^2 is in a cross-bar, so inserted as not materially to obstruct the outflow of air. The check-valve *d* is of any desired construction, suitable for permitting the outflow of air, but preventing the inflow of air or steam. Steam is admitted to the ejectors by raising the valve *c*, and, in order to release the brakes, air is admitted back of the check-valve *d* by opening a valve, *e*, for that purpose. To prevent or deaden wholly, or in part, the noise commonly made by the steam when escaping from the ejector directly into the atmosphere, I arrange on the end of the head B a box or chamber, P, with one or more diaphragms, *s* s^1, extending across the same transverse, or nearly so, to the direction of the motion of the escaping steam. These diaphragms may be made of any desirable shape, as flat, dome-shaped, or otherwise. In Fig. 2 I have shown two of these diaphragms, *s* *s'*, as perforated. The size of the perforations will vary somewhat with their numbers, and also with the size of the steam and air escape openings or passages in the ejector; but the aggregate area of such perforations should be such that a ready outflow and escape of the steam will not be prevented by such diaphragm or diaphragms, while at the same time the force with which it will flow on or escape will be so lessened as to destroy wholly, or in part, the unmusical vibrations commonly resulting from such use of steam. Outside the perforated diaphragms I have shown an imperforate diaphragm, s^2, around the outer edge of which the steam passes out. This diaphragm also tends to lessen or destroy the vibrations referred to, and impede the inflow or escape of steam, and it may be arranged across the steam-escape passage, either before or behind or between the perforated diaphragms, or may be used without them, as illustrated in Fig. 3, presently to be described.

These devices may be secured in the box P in any convenient way, that shown in the drawing being now considered quite as good as any, and probably the best.

Suitable escape-ports are to be employed to draw off the water of condensation, or the devices referred to may be arranged on the cab, with their discharging ends downward, in which case they will drain themselves.

The inner or first diaphragm *s*, if arranged in near proximity to the discharge-openings of the ejector-head, I prefer to make concave or dome shaped, as shown, whereby, with a moderate size of box or case, I secure a maximum of space and area of port-openings for the expansion and escape of steam.

A lattice-work or series of transverse bars may be employed in a like arrangement, if so preferred, as a mechanical equivalent.

The imperforate diaphragm, with annular steam-escape passages around its outer edge, is more fully illustrated in Fig. 3, and in the construction there shown substantially the same diaphragms are represented as in Fig. 2, the annular ports around the edge being simply a continuous or unbroken perforation. In such construction, however, I prefer to interrupt the direct flow of steam from one annular port to another by carrying up annular flanges *n n*, from the box or case P between the diaphragms, but with a central opening or perforation.

I am aware of, and hereby disclaim, the arrangement shown in patent to William Sellers, of August 15, 1865, No. 49,445.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A box or case, arranged on the discharge end of an ejector, and containing one or more diaphragms, with perforated or annular escape-ports, or both, the same being arranged across the direction of the escape of steam from the ejector, substantially as set forth.

2. In combination with an air-ejector, otherwise arranged to discharge freely into the open air, one or more perforated diaphragms, arranged in or across the discharge, substantially as and for the purposes set forth.

3. A dome-shaped diaphragm, *s*, arranged with reference to the discharge-opening of the ejector-head, and in combination therewith, substantially as set forth.

In testimony whereof I have hereunto set my hand.

GEORGE WESTINGHOUSE, JR.

Witnesses:

JAMES M. CHRISTY,

GEORGE H. CHRISTY.