

(No Model.)

F. W. EAMES.
Air Ejector.

No. 241,334.

Patented May 10, 1881.

Fig. 1.

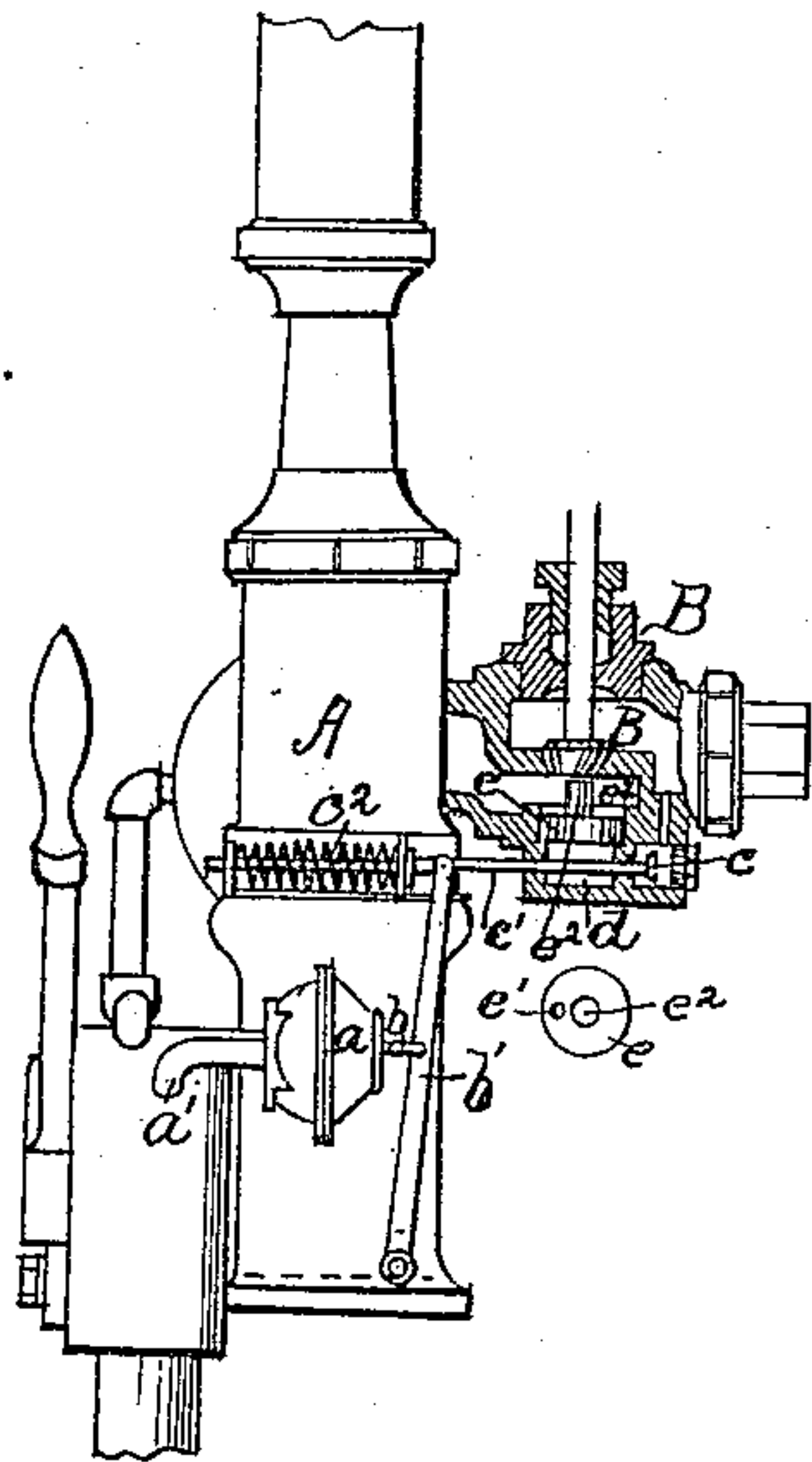
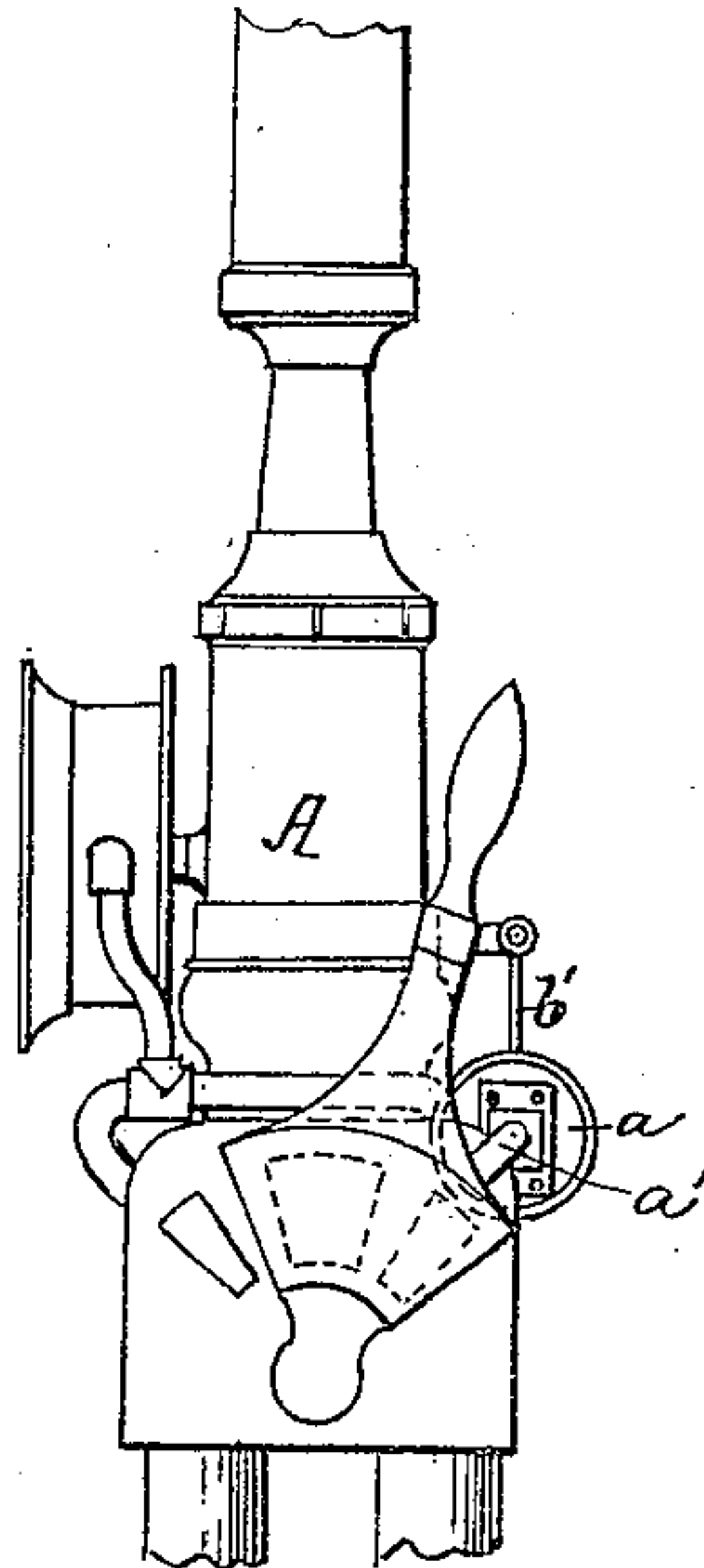


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

FREDERICK W. EAMES, OF WATERTOWN, NEW YORK.

AIR-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 241,334, dated May 10, 1881.

Application filed October 29, 1880. (No model.) Patented in England February 15, 1879.

To all whom it may concern:

Be it known that I, FREDERICK W. EAMES, a citizen of the United States, residing at Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Air-Ejectors, (Case L;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, the same having been patented to me by the government of Great Britain by Letters Patent No. 616, dated February 15, 1879.

My invention relates to ejectors for vacuum-brakes; and it consists in providing the ejector with a diaphragm acted upon by a vacuum on one side and a spring or weight on the other, and connected by a lever to a secondary valve, which, when opened, allows the steam to lift the main valve of the ejector, and thus open a passage for the steam from the boiler through the ejector, and thereby create a vacuum in the brake-pipe.

Figure 1 represents a rear elevation of an air-ejector showing my improvements applied, the steam-valve being shown in vertical section. Fig. 2 represents a side elevation of the same.

In the drawings, A represents the ejector, and B the steam-valve for controlling its action, the valve-box of which is modified somewhat in its construction in order to serve the purposes of my invention.

a represents a diaphragm-chamber, connected to the ejector below or beyond its air-nozzle by a pipe, *a'*. To the diaphragm of this chamber is attached a rod, *b'*, connecting the rocking lever *b*, pivoted to the lower end of the ejector A. To this lever is attached a valve, *c*, having an elongated stem, *c'*, which closes a steam-passage leading to the chamber *d*, arranged beneath the controlling-valve B of the ejector A.

Surrounding the elongated valve-stem *c'* is a spring, *c²*, the tendency of which is to thrust open the valve *c* against the counteracting force of the back-pressure of the air on the diaphragm *a*.

In the chamber *d* is a piston, *e*, provided

with a short stud, *e²*, projecting upward. This piston *e* is situated immediately below the valve B of the air-ejector, and is provided with a small opening, *e'*, Fig. 1.

So long as a vacuum is maintained at the inner face of the diaphragm *a*, (and which is the case when a vacuum is maintained in the brake-pipe attached to the ejector,) the steam-valve will retain its seat, for the reason that the force exerted by the diaphragm is greater than that of the spring *c²*. When, however, the vacuum falls below the required degree the spring *c²* will come into action and unseat the valve, when the steam will rush into the lateral passage in the valve-box into the chamber *d* below the piston *e*, which piston, rising, will lift the valve B from its seat, thereby admitting steam to the ejector A when the full vacuum-power is again re-established. This vacuum again causes the diaphragm *a* to move, giving motion to lever *b* and causing valve *c* to seat itself. The valve B thereupon at the same time closes, and piston *e* falls, the opening *e'* therethrough allowing a sufficient amount of fluid or steam to escape for that purpose.

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

1. The arrangement of a diaphragm, spring, and secondary valve and piston, in such a manner that the steam-valve of the ejector will be automatically unseated by the contact of the piston therewith when the vacuum in the brake-pipe falls below the desired limit, and operating in the manner set forth.

2. An automatic device for turning on the steam-valve of an air-ejector whenever the vacuum falls below the desired minimum of pressure, consisting of diaphragm *a*, spring *c²*, valve *c*, and piston *e*, and their necessary pipe and lever connections, all operating in the manner set forth.

3. The combination of valve B, piston *e*, having opening *e'*, valve *c*, spring *c²*, and diaphragm *a*, and its necessary pipe and lever connections, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRED. W. EAMES.

Witnesses:

CHAS. D. BINGHAM,
E. D. EAMES.