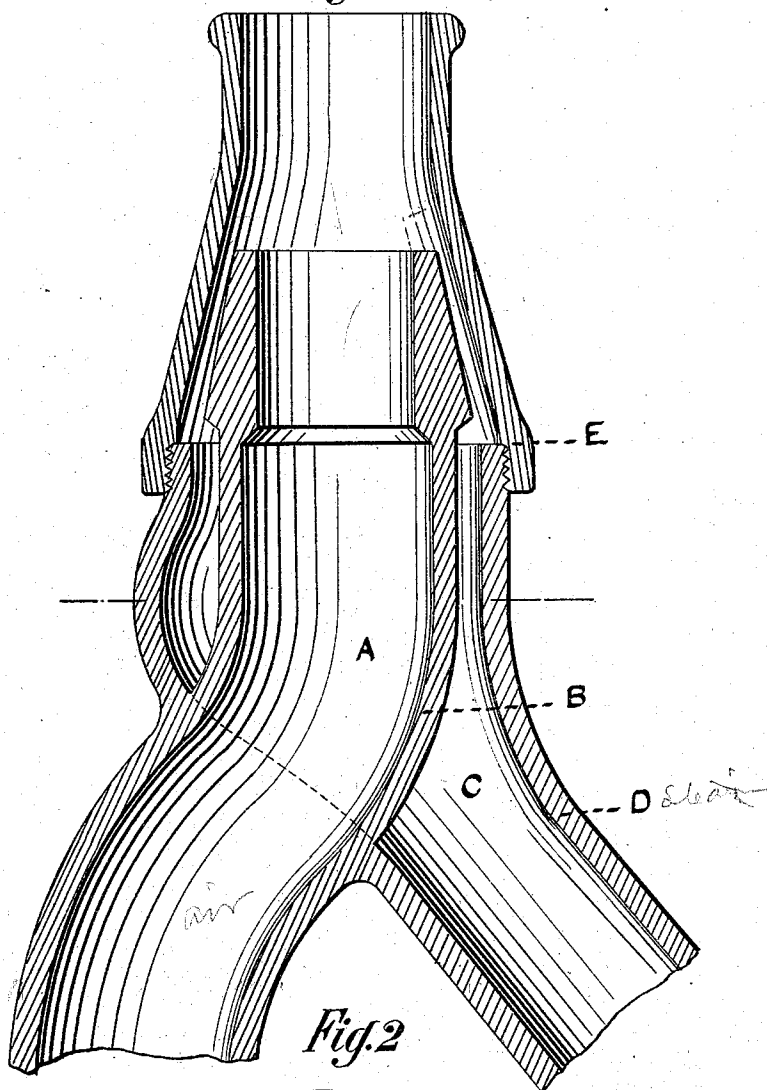


W. EBBITT.  
STEAM EJECTOR.

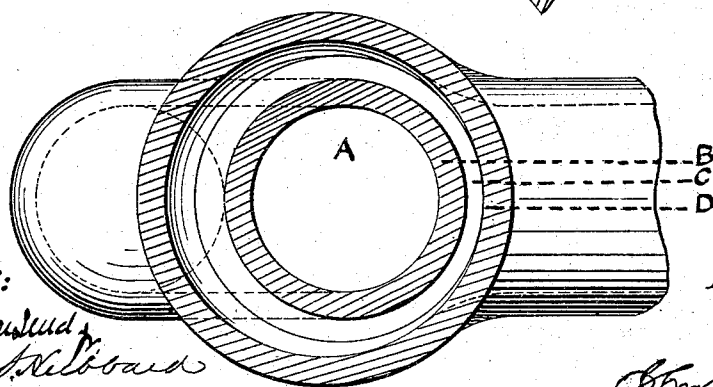
No. 177,927.

Patented May 30, 1876.

*Fig. 1*



*Fig. 2*



*Witnesses:*

*James M. Townsend  
Gustav H. Kilbuck*

*Inventor:*

*Wm. E. Ebbitt*

# UNITED STATES PATENT OFFICE.

WILLIAM EBBITT, OF NEW YORK, N. Y., ASSIGNOR TO EMPIRE VACUUM  
BRAKE COMPANY, OF SAME PLACE.

## IMPROVEMENT IN STEAM-EJECTORS.

Specification forming part of Letters Patent No. **177,927**, dated May 30, 1876; application filed  
March 21, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM EBBITT, of the city, county, and State of New York, have invented a new and useful Improvement in Steam-Ejectors, of which the following is a specification, reference being had to the accompanying drawing.

The ordinary method of producing a partial vacuum by the force of steam is by injecting a column or current of steam into and in the direction of the outlet of an air-pipe connected with the cylinder or other chamber in which the vacuum is to be produced.

In the patent granted to me dated July 15, 1873, the steam, instead of being injected into the air-pipe, is made to surround the outlet thereof in a thin sheet or ring; but in that device the current of steam is made to turn nearly a right angle after it is brought near to or in contact with the air-pipe.

My present invention relates to an improved arrangement and construction of the steam-pipe and the air-pipe, so as to produce a more direct and powerful action of the steam at the outlet of the air-pipe than has heretofore been produced.

In the drawing, Figure 1 represents a vertical section of both the steam-pipe and the air-pipe. Fig. 2 represents a horizontal section of the steam-pipe and the air-pipe above their junction.

In both figures, A represents the interior of the air-pipe, and B the air-pipe itself. C represents the interior of the steam-pipe, and D the steam-pipe itself, enveloping the air-pipe above their junction.

By reference to the drawing it will be seen that the air-pipe at its outlet is completely surrounded by the steam-pipe, which projects beyond the mouth of the air-pipe. When the steam is introduced the column of air at the outlet of the air-pipe will be completely surrounded by a sheet of steam.

As shown in Fig. 1, the air-pipe leads, by a

gentle curve, from its union with the steam-pipe to the vacuum-chamber in the cylinder or other container, and the steam-pipe, by a like curve, leads to the boiler. My improvement thus avoids an angle both in the steam-pipe and in the air-pipe, and the loss of power consequent thereon.

Steam-ejectors in which a vacuum is produced by the application of a current of steam, either into an air-pipe or surrounding such pipe at its outlet in the direction of the air-outflow, have long been used, and I limit my claim to an improvement in such ejectors, as follows:

It is obvious that the force of the current of steam in such a case is modified or affected by the friction of the steam-current at the point where it operates upon the column of air, and the force of steam required to produce the vacuum is also affected by the form and direction of the air-pipe leading to the chamber in which the vacuum is to be produced.

In ejectors heretofore constructed the steam-current has been brought into contact with the air-column either at a right or an acute angle. By my improvement both the steam-pipe and the air-pipe approach the point where the steam-pipe operates to produce the vacuum by a gentle curve, instead of by an angle, whereby the friction in ejectors as hitherto constructed, and consequent loss of power, is materially lessened. Therefore,

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

The combination, in a steam-ejector, of an air-exhaust pipe and a steam-pipe, diverging by a gentle curve from their point of junction to their respective connections, substantially as and for the purpose hereinbefore described.

WM. EBBITT.

Witnesses:

JAMES M. TOWNSEND, Jr.,  
GROSVENOR S. HUBBARD.