J. Dykeman,

Exhaust for Locomotive Engines,

No. 28,976, Patented July 3, 1860.

Fig. 1.

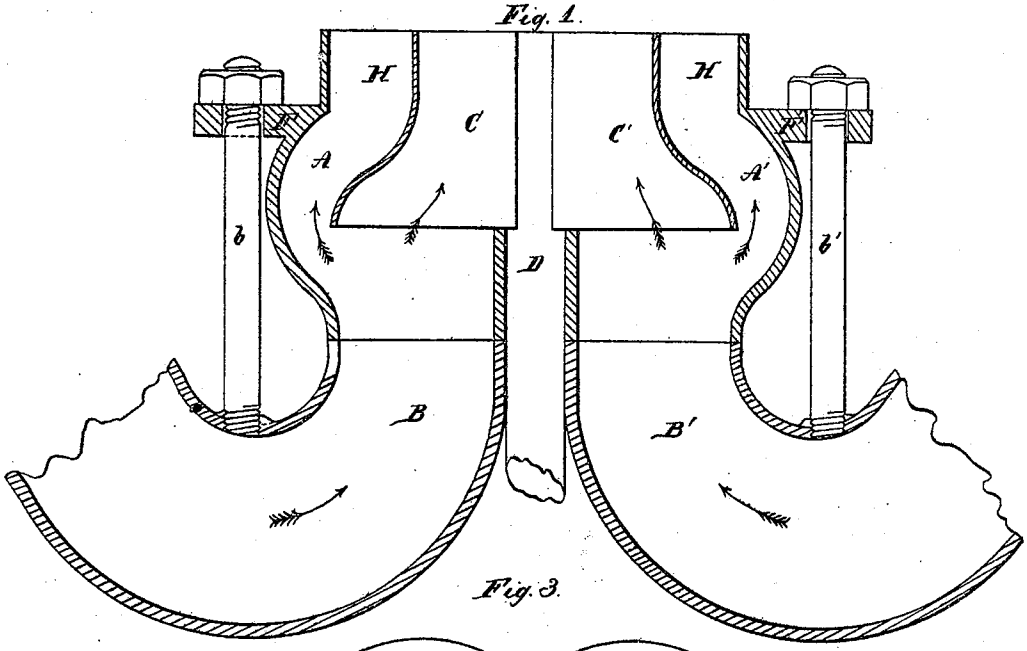


Fig. 3.

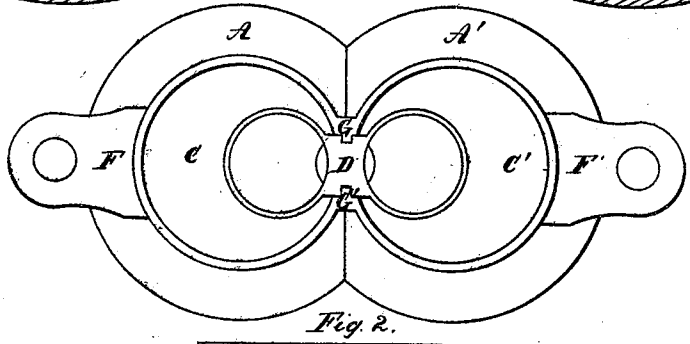
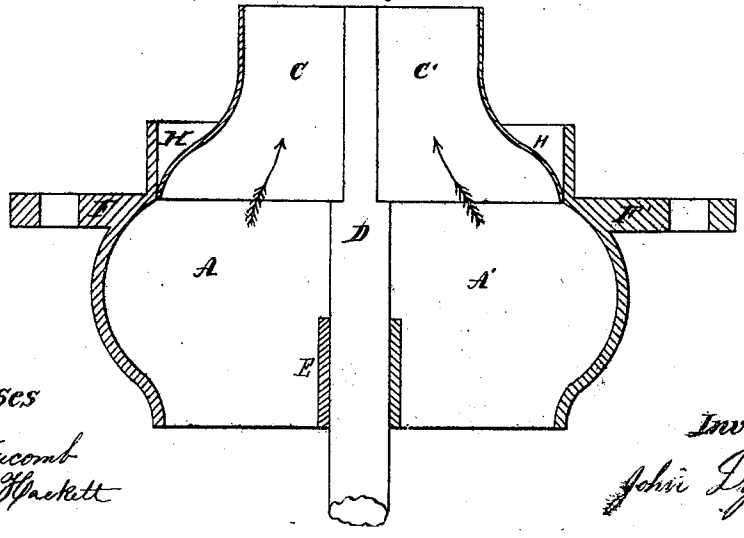


Fig. 2.



Witnesses

Wm. D. Staucomb

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UNITED STATES PATENT OFFICE.

JOHN DYKEMAN, OF GREENBUSH, NEW YORK.

VARIABLE EXHAUST FOR LOCOMOTIVE-ENGINES.

Specification of Letters Patent No. 28,976, dated July 3, 1860.

To all whom it may concern:

Be it known that I, JOHN DYKEMAN, of Greenbush, in the county of Rensselaer and State of New York, have invented, made, and applied to use an Improved Variable Exhaust for Locomotive and other Double-Acting Engines.

My invention is simple in construction and can be varied from two to six inches of opening, thereby concentrating the exhaust jet and increasing or diminishing the draft at the will of the engineer. It effects a great saving in fuel and has advantages over all other apparatus for a similar purpose, which will be clearly shown in the following specification.

The nature of my invention is as follows. A chest or box is formed of two globular or spherical shells cast together and having a partition between, and is provided with two openings on its bottom side which fit on the upper end of the exhaust pipes of a locomotive or other double-acting engine and are firmly secured by means of bolts, and has also two openings in the top of said chest for the escape of the exhaust steam. Two conical cups or nozzles are cast to a spindle which slides freely through the lower end of the partition which divides the chest or box, which has two ribs on its upper end fitting into channels or grooves cut in the said spindle the lever for operating the same can be attached either above or below the smoke arch. The conical cups or nozzles are inclosed in the spherical or globular shells and are situated one on each side of the center partition which divides the chest into two separate compartments, the openings in the top of said cups are small and placed close together with a slight thickness of metal between which extends down to the bottom of said cups the openings in which are large and of the same area as the mouth of each exhaust pipe. When the full opening is required for the exhaust steam, the bottom of each conical cup or nozzle is situated about the center of the globular casings which are much larger at that point than any other, thereby providing sufficient space for the escape of exhaust steam which can pass freely through and on the outside of each conical cup or nozzle without resistance. But when an increase of draft is required the engineer raises the spindle and the conical cups or nozzles attached to the same until the lower openings fill and close the openings in the top of the chest the exhaust steam is concentrated in passing through the small openings in the top of said conical cups or nozzles, thereby producing strong and separate blasts which do not unite until they escape, and effectually preventing the exhaust steam from one pipe being forced into the other by the alternate stroke of the pistons, which is a great objection found in the use of single exhaust regulators.

I have fully tested my improvement by actual experiment on locomotive engines using wood or coal separately and find it effects a saving in fuel is simple in construction and not liable to get out of repair while the expense of construction does not exceed ten dollars on each.

Having thus set forth the novelty of my improved variable exhaust, and to enable others skilled in the art to make and use the same I will now proceed to describe it and certify that the accompanying drawings and specification are a full and correct representation of the same, like letters corresponding with like parts.

Figure 1 represents a longitudinal section of a variable exhaust with the conical cups or nozzles in the position to give the greatest opening. Fig. 2 represents a longitudinal section of the same with the conical cups or nozzles raised. Fig. 3 is a plan of the same.

A A′ Figs. 1, 2, 3, represents the globular shells cast together and forming the chest or box.

B B′, Fig. 1, are parts of the exhaust pipes to which it is secured by the bolts (*b b′*).

C C′ are the conical cups or nozzles cast to the spindle D, which slides in a hub cast on the chamber E to receive it.

F F′ are flanges or lugs cast on the outside of the chest through which the bolts (*b b′*) pass which secures it to the exhaust pipes B B′.

G G′, Fig. 3, are the guides which fit in grooves cut in spindle D and on which it slides freely up and down.

H H′ are two cylindrical rings which extend a short distance above and protect the openings in the upper part of the chest and

into which the lower part of the conical cups or nozzles fit when raised up to the fullest extent.

The red arrows indicate the course of the exhaust steam, Fig. 1 showing the conical cups or nozzles lowered, with the exhaust steam passing freely through them and also through the openings H H′ in the top of the chest, while Fig. 2 represents the conical cups or nozzles raised up closing the openings H H′ and thereby concentrating the exhaust steam passing through the small opening in the upper part of said cups or nozzles and forming separate jets or blasts into the smoke arch.

I do not claim the use of a conical plug inserted in a steam pipe as that has been known and used before, but

What I do claim is—

The arrangement of the conical nozzles, C, C′, with the exhaust pipes B, B, as constructed, in such a manner that four steam passages may be employed when necessary or only two may be used, and the steam concentrated in said nozzles, thereby diminishing or increasing the draft of the fire, as is herein fully set forth.

JOHN DYKEMAN.

Witnesses:

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BARTH. J. HACKETT.