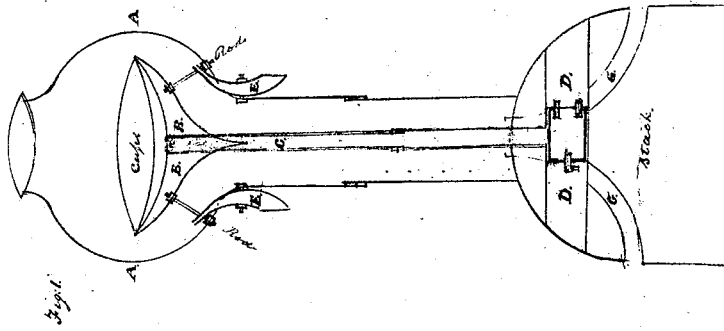


JONAS P. FAIRLAMB, SR.

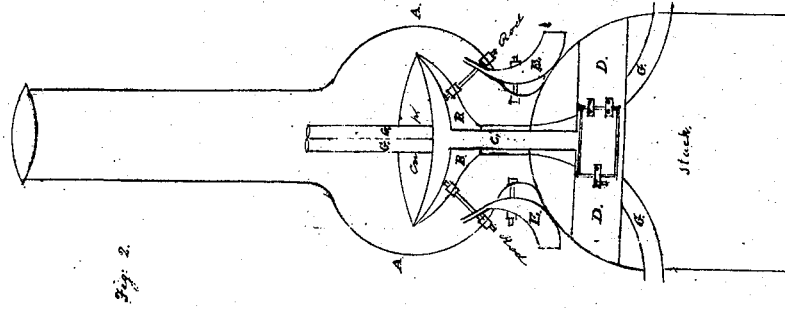
APPARATUS FOR EXTINGUISHING SPARKS.

Patent No. 624.



Witnesses  
J. J. L. L. L.  
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Patented March 3, 1838.



Jonas P. Fairlamb, Sr.

# UNITED STATES PATENT OFFICE.

JOSEPH P. FAIRLAMB, SR., OF PHILADELPHIA, PENNSYLVANIA.

## APPARATUS FOR EXTINGUISHING SPARKS.

Specification of Letters Patent No. 624, dated March 3, 1838.

*To all whom it may concern:*

Be it known that I, JONAS P. FAIRLAMB, Sr., of the city of Philadelphia and Commonwealth of Pennsylvania, civil engineer, have invented a new and improved mode of consuming and extinguishing sparks of fire and of preventing their escape and the escape of cinders, scales, dust, and ashes from the chimneys or main flues of locomotive and all steam-engines and all other kinds of chimneys and of increasing the draft so as to burn anthracite or other coal.

The nature of my invention consists in providing a hollow enlarged fixture as represented in the annexed drawing marked A, A, which I place at or near the top of the flue. This may be varied in shape and size to suit the place for which it is designed. The globular form I think the best, as represented by Figure 1, A, A. In this globular enlarged fixture, with its center common to the center of the hollow space in the globe, and in a perpendicular line with the center of the flue, I provide an inverted cone B, with concave surface at its base, of less diameter than that of the space in the globular enlargement, and greater than the diameter of the flue of the chimney. The diameter of this inverted cone I vary to suit the fuel used, making it larger for wood than for coal. I support this cone or cup in its place by rods or other sufficient fastenings, extending from the periphery of the hollow enlargement to the bottom of the cup or basin. From the bottom of this basin I construct one or more tubes C, extending down to a box D, placed at the bottom or at any convenient place about the chimney or stack, for the reception of all the materials that are precipitated in the basin B. The door of this box should be so tight as not to admit atmosphere sufficient to interfere with the lightest particles that may fall in the basin.

I also construct hollow tubes or spouts E, extending upward through and into the hollow enlargement with stops, to admit, when necessary, the atmospheric air, thereby furnishing the requisite oxygen to produce combustion, increase the draft of the chimney, and prevent the return of steam from the exhaust pipes G, in locomotives and other engines propelled by steam. I make the number to correspond with the size of the chimney.

To burn anthracite or other coal in loco-

motive or other steam engines I construct the above described apparatus at or near the bottom of the chimney as represented by Fig. 2, extending the exhaust pipes up through the basin with the aperture closely fitted to the pipes, which pass through the center of the inverted core. By opening the air spouts the draft will be increased without the aid of exhaust steam and may be regulated at pleasure. Placed at or near the bottom of the chimney this apparatus may not prevent the escape of dust as effectually as when placed at the top, but it will be found even than, a much better safeguard against sparks, when burning wood, than any contrivance heretofore used within my knowledge. It may be rendered more complete by placing the enlarged apparatus at bottom and top, two instead of one. The draft will be found to exceed that produced by any mode heretofore known or used, by closing the air spouts when the exhaust steam is introduced. When common chimneys are being constructed for buildings, this enlargement may be made at the top, of the same materials as those used for the rest, inserting the basin and air spouts as in other cases, or it may be made separately and closely fitted to the top of the chimney, as upon chimneys already made. To lower chimneys of locomotives to enable them to pass under bridges and low objects, instead of the usual mode the chimney may be made in parts sliding into each other similar to the tubes of a telescope the base of each piece being made larger than the top to facilitate the fall. The chimney may be raised and lowered by common machinery at pleasure.

The operation of my improvement is as follows: viz: So soon as any heat is communicated from the fire to the enlarged cavity A, A, the atmospheric air being the heaviest rushes through the air spouts E, into the enlarged hollow space increasing the draft and supplying the necessary oxygen to effect the combustion of the sparks, and giving a second and effectual impetus to the exhaust steam of engines, when carried out through the chimney, passing out freely with the smoke. The moment there is sufficient heat communicated to the enlarged hollow space A, A, to produce rarefied air, a vacuum and eddy current are formed, which arrest the further ascent of sparks, scales, cinders, dust, and ashes, which, by the laws

of gravity, are precipitated into the basin B and pass down through tube C, to box D, and are effectually prevented from passing out at the top.

- 5 I construct this apparatus of sheet iron, copper, tin, or of any other substance suited to the place for which it is designed. In burning anthracite or other coal, I prefer cast iron for the basin, which will be greatly exposed to the heat in steam engines.

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

The construction of the above described

apparatus for preventing sparks, scales, dust, cinders, or ashes, from going out of 15 chimneys, and of increasing the draft of the same so as to facilitate the burning of anthracite and other coal in locomotive and other steam engines, as well as in common chimneys attached to buildings. 20

Witness my hand at the city of Philadelphia this 19th day of December, 1837.

JONAS P. FAIRLAMB, SENR.

Witnesses:

S. C. LUDFOUL,

VIRGIE GIENELL.