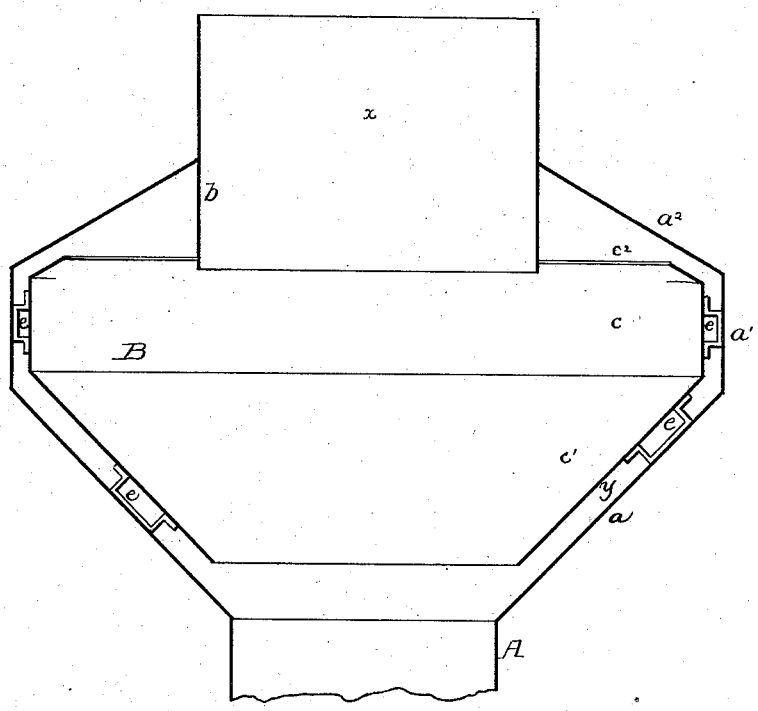
W. RUSHTON.

SPARK-ARRESTER.

No. 192,841 Patented July 10, 1877.



Attest

Fred Benjamin.

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By his attorney

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UNITED STATES PATENT OFFICE.

WILLIAM RUSHTON, OF ATLANTA, GEORGIA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **192,841**, dated July 10, 1877; application filed June 14, 1877.

To all whom it may concern:

Be it known that I, WILLIAM RUSHTON, of Atlanta, Fulton county, Georgia, have invented an Improvement in Spark-Arresters, of which the following is a specification:

My invention relates to that class of locomotive-stacks which are expanded at the upper end, and have inclined tops, with a curtain extending downward around the central opening; and the object of my invention is to protect the pipe from the abrasive action of the sparks at the union of the top and side, and to prevent the escape of the fine dust which in ordinary pipes of this kind escapes to a greater or less extent from the central opening; and these objects I effect by means of a liner, constructed and arranged as shown in the accompanying drawing, which is a sectional elevation of a stack with my improvement.

The uptake is surrounded by the stack-cylinder A, which expands at the upper end, forming the funnel portion *a*, the cylinder a^1, and the inclined bonnet a^2, around the central opening *x* of which is the usual curtain *b*.

Thus constructed, the stack is of the usual character, and is objectionable from the fact that the sparks which are often thrown outward by a suitable deflector strike directly against the lower portion of the bonnet, wearing it rapidly away, while the fine particles, which do not readily settle, are carried to the opening *x* and ejected.

I obviate these difficulties by the use of a liner, B, conforming in shape to the upper expanded portion of the stack, but smaller than the latter, so as to leave an intervening space or chamber, *y*.

This liner is made of cast-steel or other material, in one continuous piece, the central portion *c* being cylindrical, the lower portion c^1 funnel-shaped, and the upper portion c^2 a narrow flange inclined at an angle corresponding to that of the bonnet. Upon the outer faces of the liner are two, three, or more series of lugs, *e*, each series arranged on the same vertical lines and bearing against the inside of the pipe, so that the portions of the liner between the series and the entire flange c^2 shall be free to vibrate, for the purpose described hereinafter.

The liner, thus constructed, may be applied to the pipe without any fastenings, after simply removing the bonnet, and, when in place, forms therewith the intermediate passage *y*, the upper portion of which is parallel with and formed partly by the inclined bonnet a^2.

When the sparks are thrown outward from the uptake, as usual, they strike the liner and are deflected upward between the curtain and the bonnet, where the downward draft produced by the partial vacuum below the liner carries the finer particles into the space *y*, through which they pass downward to the bottom of the stack. Owing to the fact that the flange c^2 is entirely unsupported and will vibrate freely throughout its extent, it will effectually resist the action of the sparks where they are most destructive—that is, at the junction of the bonnet a^2 and cylinder a^1. Thus the sparks thrown upward by the funnel c^1, or directly from the uptake, instead of striking the bonnet a^2, are brought against the flexible flange c^2, from which they rebound or are deflected to the curtain *b*, the larger sparks being thrown downward and the finer particles entering the upper inclined mouth of the passage *y*, as before described.

I claim—

1. The combination, with the stock having the inclined bonnet a^2 and curtain *b*, of a liner, B, having at the upper edge a flange, c^2, free from contact with the outer casing, the whole arranged to form a space, *y*, the mouth of which is presented at an angle to the curtain, as and for the purpose specified.

2. The liner provided at the upper edge with an inclined flange, c^2, supported only at one edge, and having external lugs *e*, arranged on vertical lines, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. RUSHTON.

Witnesses:

W. M. LOWRY,

J. J. MEADOR.