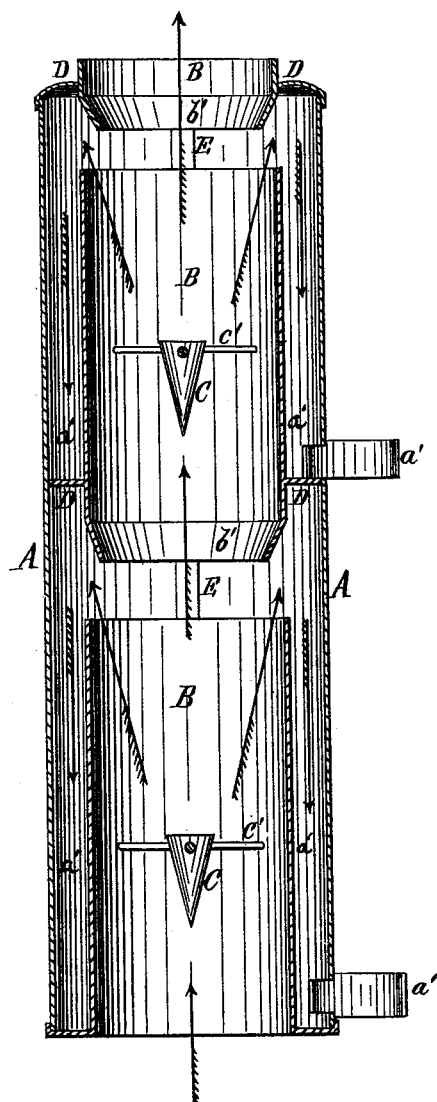


S. BYRAM & W. R. HANSFORD.
Spark-Arrester.

No. 220,801.

Patented Oct. 21, 1879.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SILAS BYRAM, OF MIDDLETOWN, INDIANA, AND WILLIAM R. HANSFORD,
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IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **220,801**, dated October 21, 1879; application filed August 23, 1879.

To all whom it may concern:

Be it known that we, SILAS BYRAM, of Middletown, in the county of Henry and State of Indiana, and WILLIAM R. HANSFORD, of Hicksville, in the county of Defiance and State of Ohio, have invented a new and Improved Spark-Arrester, of which the following is a specification.

The drawing represents a vertical sectional elevation of the device.

The object of this invention is to provide a device for preventing the escape of sparks and cinders from chimneys and smoke-stacks; and it consists of two pipes set one within the other, with an annular space between them, the inner pipe being constructed in vertical sections, with lower edges inclined or drawn inward that are held apart by lugs or straps extending from one to the other, while fixed in the longitudinal axis of each section is a conical deflector, and encircling each section is an annular flange whose diameter is the same as the internal diameter of the outer pipe.

In the drawing, A represents the outside pipe, provided with doors *a'*, through which to remove the accumulations of cinders that may fall in the annular spaces *a'' a''* between the pipes. B B are sections of the inside pipe, having their lower edges contracted or provided with conical rings *b'*, and having centrally secured in their longitudinal axes, by the transverse rods *c'*, the inverted deflecting-cones C C.

D D are the rings or flanges encircling the pipe-sections. E E are the lugs or straps connecting the sections and holding them apart, so that openings F are formed between them.

This device is especially applicable to locomotive and other boilers in which the steam-exhaust is applied to create a draft, and when thus used the exhaust-pipe will deliver the blast directly under the lower conical deflector, so that many of the cinders, being deflected by the cone, will follow the course of the inclined arrows shown in the drawings, and, passing out through the annular space between the

sections, will strike against the rings D and fall to the bottom of the annular chamber, whence they may be removed through the doors. With a powerful blast not all the cinders would fall within the first annular chamber; hence the deflectors, rings, &c., are duplicated, and, if necessary, reduplicated, above, until it is found that their object is fully accomplished.

The application of this device to locomotive and like boilers removes all dangers from sparks and cinders, and will prevent many disastrous conflagrations.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of the pipe A, provided with doors *a'*, with the interior pipe-sections B B, that have their lower edges contracted or provided with conical rings *b'*, and have secured within them transverse rods *c' c'*, that support the deflecting-cones C C, substantially as and for the purpose described.

2. The pipe-sections B B, connected with each other by lugs or straps E E, encircled with rings D D, and having within them deflecting-cones C C, supported by transverse rods, in combination with the outside pipe A, provided with doors *a' a'*, substantially as herein shown and described.

3. The pipe-sections B B, connected to each other and held apart by lugs or straps E E, having their lower edges contracted or provided with conical rings *b'*, and carrying within them the conical deflectors C C, substantially as and for the purpose described.

SILAS BYRAM.

WILLIAM RUDOLPH HANSFORD.

Witnesses to the signature of Silas Byram:

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