W. G. VAN BUSKIRK.

Spark-Arrester for Locomotives.

No. 168,299. Patented Sept. 28, 1875.

Fig. 1

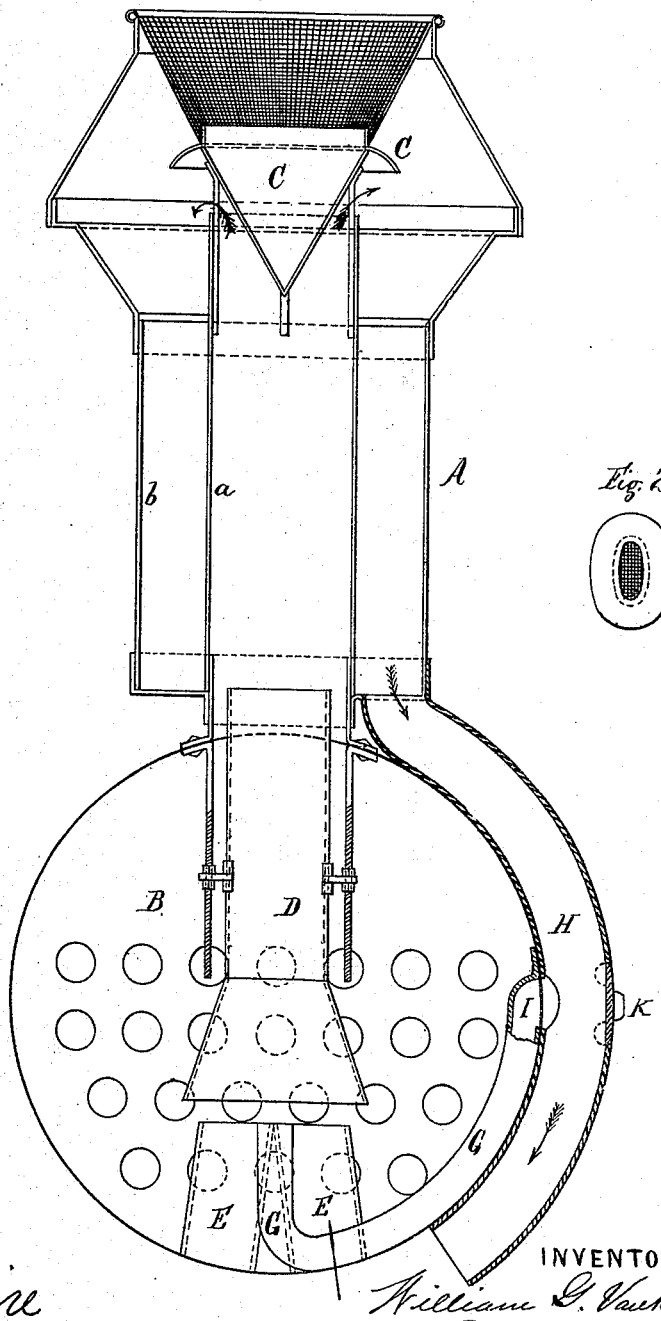

Fig. 2

WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM G. VAN BUSKIRK, OF FISHKILL LANDING, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES L. KIMBALL, OF SAME PLACE.

IMPROVEMENT IN SPARK-ARRESTERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **168,299**, dated September 28, 1875; application filed April 30, 1875.

To all whom it may concern:

Be it known that I, WILLIAM G. VAN BUSKIRK, of Fishkill Landing, Dutchess county, in the State of New York, have made certain new and useful improvements for the purpose of preventing the escape of cinders and sparks from locomotive smoke-stacks; and I do hereby declare the following to be a full and clear description of said improvements, reference being had to the accompanying drawing, making part of this specification, and the letters and figures marked thereon.

This invention relates to a class of devices designed to prevent the escape of sparks from the smoke-stack of a locomotive, and is of such a shape and construction that it may be easily attached to the smoke-stack and fire-box of almost any style of locomotive.

Various devices known as spark-arresters have been constructed for the purpose of breaking up the cinders before they leave the smoke-stack, and reducing them to such small pieces that there would be little danger of fire from such as escape. In other cases the sparks and cinders have been conducted from the top of the smoke-stack, and in some cases they have been collected in the stack and removed at intervals when the locomotive is at rest; but in the latter case the accumulation of cinders in the smoke-stack materially interferes with the proper working of the locomotive.

The object of my invention is both to more effectually prevent the escape of the sparks and cinders, and at the same time prevent their accumulation in the stack, which object I accomplish by creating a counter-current or downward draft in the smoke-stack between the outer and inner pipes, so that when the sparks and cinders strike a deflecting-cone or usual wire screen, placed at or near the top of the smoke-stack, they will come under the influence of this current, and be drawn downward and out of the stack.

In the drawing, Figure 1 is a representation of a smoke-stack and smoke-box of a locomotive with my invention attached, and Fig. 2 is a detached view of a screen used to prevent the sparks from again entering the smoke-stack.

A is a smoke-stack, having the usual inner and outer pipes *a* and *b* and deflecting-cone C, placed over the top of the inner pipe. In the smoke-box B I use the ordinary construction of "petticoat-pipe" D and exhaust-tubes E E. G is a pipe, one end of which terminates under the petticoat-pipe, alongside of the exhaust-tubes, and the other end communicates with a pipe, H, about half-way up the side of the smoke-box. At or near the bottom of the smoke-stack I make an opening through the outer casing *b*, and attach the pipe H, which passes down around the outside of the smoke-box, and may terminate in any convenient receptacle for the sparks and cinders, placed beneath the smoke-box or elsewhere. Where the pipe G opens into the pipe H I place a guard or screen, I, to prevent the passage of any sparks or cinders into the pipe G, and on the opposite side of the pipe H I place a slide, K, so that this screen may be easily inspected and cleaned, if necessary.

In the general construction of smoke-stacks I have found from careful observation and experiment that the upward draft out of the top extends about half-way down the stack in the space between the pipes *a* and *b*, so that all cinders which come below that point will generally fall and remain at the bottom until removed through an opening usually made in the stack for that purpose; but in my improved construction the pipe G, having the air drawn from it by the draft up the petticoat-pipe, will cause a strong current down the pipe H, thus drawing the air from the lower part of the annular space between the two pipes *a* and *b* of the smoke-stack, and create a counter-current or downward draft, which will draw the cinders and sparks almost from the top of the smoke-stack down into the pipe H, from which they may be discharged into any convenient receptacle, as their own weight and momentum will carry them past the screen I.

I have shown the pipe H as leading from the bottom of the smoke-stack; but it may be placed at the side, near the bottom, if found more desirable; and, if required, an additional set of the pipes H and G may be used on the other side of the smoke-box. The pipe G may also be extended a little higher than the ex-

haust-pipes E E, if sufficient current is not obtained by having it flush with them, and, vice versa, the current may be diminished by shortening this end of the pipe G.

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

1. A locomotive smoke-stack in which the sparks and cinders are arrested and removed through the influence of a counter-current or downward draft created therein by means of a pipe terminating at or near the mouth of the exhaust-pipe, and connected with a discharge-pipe leading from the bottom of the smoke-stack, substantially as shown and described.

2. The construction and arrangement of the pipe G with the exhaust-tubes E E and pipe H, in combination with the smoke-stack A and smoke-box B of a locomotive, substantially as and for the purpose shown and described.

W. G. VAN BUSKIRK.

Witnesses:

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