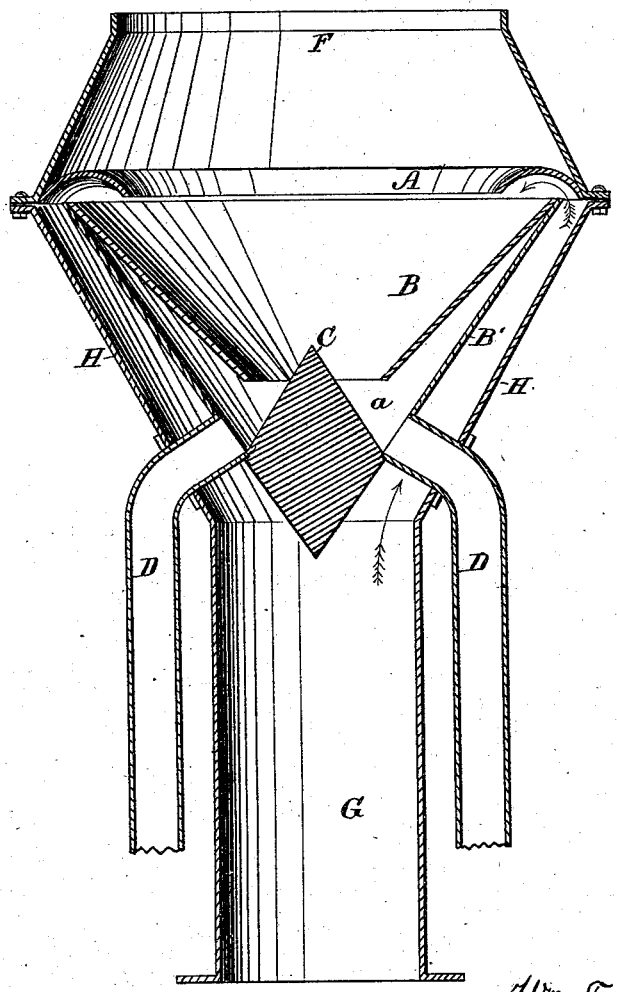
W. T. URIE.

SPARK-ARRESTER.

No. 190,100. Patented April 24, 1877.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM T. URIE, OF WARRENSBURG, MISSOURI, ASSIGNOR TO HIMSELF AND ALEXANDER BETTES, OF SAME PLACE.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **190,100**, dated April 24, 1877; application filed April 13, 1877.

To all whom it may concern:

Be it known that I, WILLIAM T. URIE, of Warrensburg, in the county of Johnson and State of Missouri, have invented a new and Improved Spark-Arrester; and I do hereby declare that the following is a full, clear, and exact description of the same.

In my improved spark-arrester I dispense with a hood or wire-net cover, and provide free escape or exit for the draft. The sparks or cinders are arrested and collected in an annular space or chamber surrounding a cone forming the bottom of the two-part funnel-shaped hopper, and thence conducted away by tubes leading out through the sides of the stack, as hereinafter fully described.

The accompanying drawing shows a vertical central section of "diamond" stack provided with my improvement.

The parts composing my improvement consist of an annular flange or ring, A, for arresting the sparks, a hopper formed of two funnel-shaped parts, B B′, for receiving the sparks thus arrested, and a cone, C, forming the bottom of the hopper, and serving to distribute the sparks and cinders in such manner as to cause their lodgment and accumulation in the hopper, the same being forced into the tubes D D, which lead out through the sides of the stack.

The general operation is as follows: The exhaust forces the sparks or cinders and lighter carbon particles constituting the smoke upward in the space between the hopper and side of the stack, against the ring A, which deflects the same into the hopper B B′. The next escape of steam from the exhaust forces out the smoke through the central opening or outlet F in the top of the stack, and leaves a second deposit of sparks or cinders in the hopper, while at the same time forcing out a portion thereof into tubes D, by which they are conducted away to the fire-box or ash-pit of the locomotive or elsewhere, as preferred.

The sparks and cinders thus arrested by the ring A are first deflected into the upper part B of the hopper, whence they escape downward and strike upon the sides of cone C, by which they are diverted and equally distributed in the space or chamber *a*, surrounding it in the lower part B′ of the hopper. From this space or chamber they will not escape upward, nor is there any tendency of the lighter particles which once enter it to be again drawn into the current of air, steam, and light products of combustion which is constantly maintained through the outlet F while the locomotive is running. The force of the exhaust being directed downward against the cone C at each reciprocation of the pistons, the cone distributes it in such manner as to cause the sparks and cinders to enter the tubes D, so that there is no danger of over-accumulation in the chamber *a*.

Along with the advantages thus attained there is another derived from the general arrangement of parts, whereby the force of the draft is equalized on all sides of the hopper.

The cubical capacity of the barrel or first joint G of the stack is the same as that of the funnel-shaped space or passage between the hopper and sides H of the lower part of the diamond or enlarged portion of the stack, and the diameter of the outlet F to the barrel G is as four to one. Hence free escape is provided for the exhaust, admitting of the strongest draft, and yet the sparks, cinders, and a large share of the ashes and finer particles of carbon usually carried off in the smoke are caught and retained by the hopper.

What I claim is—

1. In a spark-arrester, an annular deflecting ring or flange, a two-part hopper, a cone, and conveying-tubes, combined as shown and described.

2. In a spark-arrester, the combination of the cone with the two-part funnel-shaped hopper B B′ and conducting-tubes, substantially as shown and described.

WM. T. URIE.

Witnesses:

AMOS W. HART,

SOLON C. KEMON.