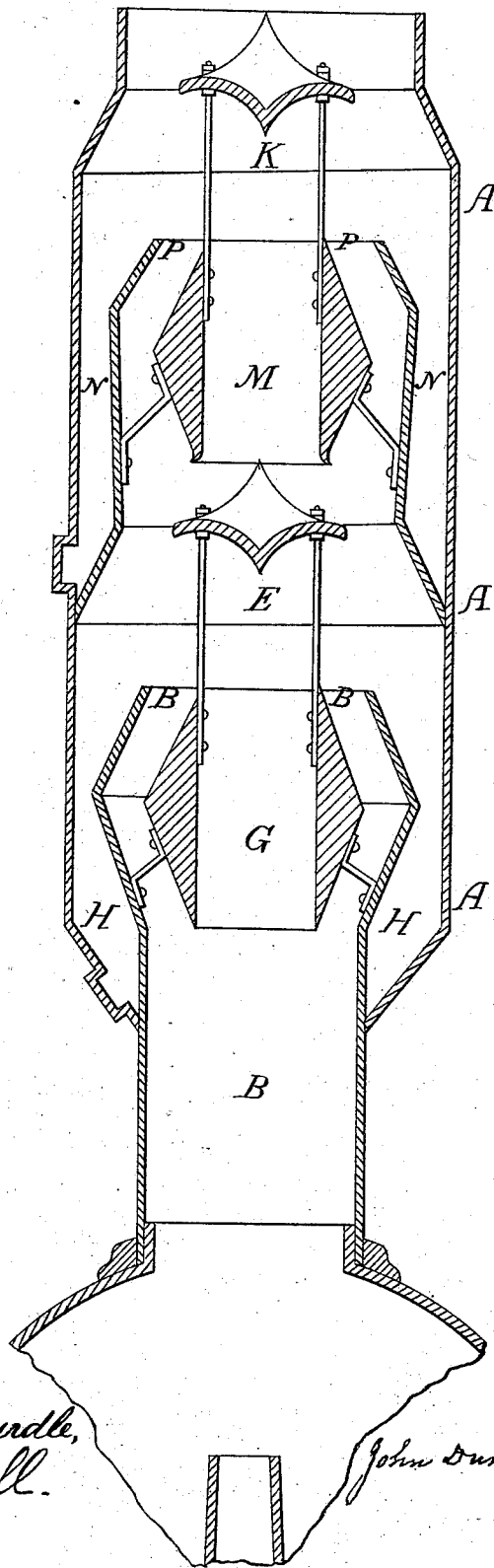


(No Model.)

J. D. BROWN.
Spark Arrester.

No. 238,025.

Patented Feb. 22, 1881.



ATTEST:

Julian A. Hurdle,
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INVENTOR:

John Dunwoode Brown.

UNITED STATES PATENT OFFICE.

JOHN DUNWELL BROWN, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO
MATTHEW L. HARNEY AND PETER J. VANDERBILT, OF SAME PLACE.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 238,025, dated February 22, 1881.

Application filed August 3, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN DUNWELL BROWN, residing in the city, county, and State of New York, have invented a new and useful Improvement in Spark-Arresters for Stacks attached to Locomotive and Stationary Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which forms a part of this specification.

The object of my invention is to prevent dust and cinders from passing through the top of smoke-stacks connected with locomotive and stationary engines, and to do so with as little retardation of the draft as possible. It is well known that an inverted cone placed in the center of the stack, which will deflect the sparks into a pocket formed by the central pipe and the outer shell of the stack, is the best means yet adopted for arresting sparks. The difficulty is, however, great in making steam, as the larger the pipe through which the exhaust-steam passes the larger must be the cone which is placed over it, and consequently the greater retardation to the draft.

The great feature of my invention is to be able to use a small cone over a very large pipe, thus diminishing the obstruction and depositing the sparks in the pocket as well as by a larger cone.

The drawing hereto attached represents a stack of eleven (11) inches diameter at the base, over the inside pipe of which is placed a nine (9) inch cone for deflecting the sparks into the pocket; and the manner of arresting all the sparks, so that none will leave the stack, will now be explained with reference to the drawing.

A A is the shell of the stack; B, the inside pipe passing up into the stack, over which is placed the cone E. The upper portion of this eleven (11) inch inside pipe is flared out to fifteen (15) inches diameter and then brought in again to eleven and a half (11½) inches at the top. Within the space thus formed is placed a ring, G, with double inclines, the ring being six (6) inches in diameter. The exhaust-steam passing upward goes through and around this double cone, the sparks in both currents striking the center of the inverted cone E over the pipe, by reason of the deflection given to the pipe B surrounding the cylindrical cones, and after thus striking are deflected into the pocket

H surrounding the inside pipe, B. The steam, bearing with it the lighter sparks, passes around the inverted cone E into and around another ring, M, having double inclines inclosed within the pipe P, the sparks all striking the center of the cone K, by reason of the deflection of the top of the pipe P surrounding the cylinder-cone M, and are from thence deflected into the pocket N. The steam then passes into the open air entirely divested of dirt or cinder.

To facilitate the entrance of the steam into the upper cylinder, I have placed a cap over the cone E, and to facilitate the exit of the steam from the stack, and to cause the current to stand up in a column above the stack, I have placed another cap on the cone K. Care has been taken in the construction of this stack to see that the area and the sum of the areas all the way up shall be equal to, or a little in excess of, the area at the bottom of the stack, to prevent any choking of the draft.

For the purpose of directing the sparks against the inverted cones, it is necessary that the outer portion of the pipes B and P should be directed inward, as shown in the drawing; but it is not absolutely necessary that a double cylindrical cone be used, but only the lower half. This half would direct the sparks against the side of the outer pipes, from whence they would strike against the cones and be deflected into the pockets. Either form of cylindrical cone would answer the purpose equally well, except that by using only the lower half the uniformity of the area allowed for the passage of the steam would be disturbed to the extent of the area occupied by the upper half of the said cone.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a spark-arrester, the combination of the ring G, having double inclines, with pipe B, cone E, and pocket H, constructed substantially as described.

2. In a spark-arrester, the combination of the ring G, having double inclines, pipe B, cone E, with the ring M, having double inclines, pipe P, cone K, and pocket N, all constructed substantially as described.

JOHN DUNWELL BROWN.

Witnesses:

HENRY C. LOCKWOOD,
JOHN A. KAMPING.