T. Reaney,

Spark Arrester.

No. 1,447. Patented Dec. 28, 1839.

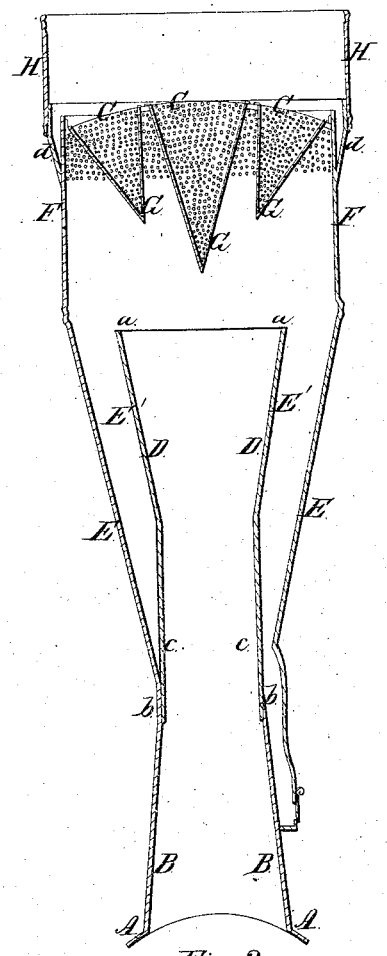
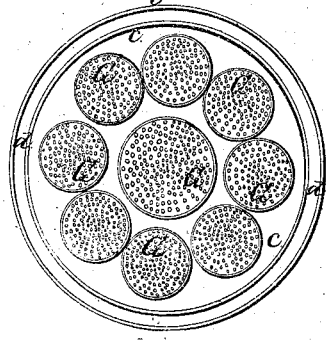


Fig. 1.

Fig. 2.



UNITED STATES PATENT OFFICE.

THOMAS REANEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOHN NAGLEE, OF SAME PLACE.

SPARK-ARRESTER.

Specification of Letters Patent No. 1,447, dated December 28, 1839.

To all whom it may concern:

Be it known that I, THOMAS REANEY, of the Northern Liberties, in the county of Philadelphia and State of Pennsylvania, have invented an Improved Apparatus for Arresting the Sparks which Ordinarily Escape from the Flues of Locomotives and Other Steam Engines; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings, Figure 1 is a vertical section through axis of the smoke pipe or flue, of a locomotive steam engine, drawn on a scale of an inch to the foot; and Fig. 2 is a top view of the same.

A, is a flanch for attaching the pipe to the smoke box, the first section, B, of which pipe is in the form of the frustum of a cone, and from the upper end of this section the part C, rises cylindrically, and this is surmounted by the section, D, which diverges or flares out, from its lower to its upper end, terminating at, *a a*, and constituting what I denominate the inner pipe. The upper section of this pipe by its flaring out, diffuses the draft consisting of the air and escape steam around and over the whole area of the interior of the hood or cap F F. From the point, *b b* the inner pipe is incased or surrounded by an exterior pipe, E, E, which unites with it at its lower part, at or near the junction of the sections B and C, of said interior pipe. The exterior pipe, E, E, is in the form of the frustum of a cone, which supports a cylindrical hood or cap, F, F. The top of this hood or cap is covered by a plate of metal C C C, Fig. 2, and this is perforated with seven, eight or more holes which are the basis of as many cones of metal, G, G, G, G. The cones may be formed of woven wire but I prefer to make them of thin plates of metal, perforated throughout with holes in the manner of a grater, or colander; such perforated plates having been found to answer the purpose intended in a very perfect manner, not being liable to derangement like the meshes of wire gauze, and being also much more durable.

In an apparatus of the kind and size described I have used eight such perforated cones, the center cone at its upper, or open end is eleven inches in diameter and twenty one inches deep to its angular point or apex. The seven surrounding cones are eight inches in diameter at their open ends, and thirteen at their angular point. I do not intend to confine myself to this number of cones, or to the dimensions stated, but it is necessary in all cases not to fall far short thereof, the great object of their large number and dimensions being to obtain a perforated surface much larger than could possibly be obtained by three or four cones without making the cap inconveniently large and sacrificing much of the utility of the instrument.

In addition to the perforations through the cones, I in general also make similar perforations around the upper edge of the hood or cap; and I surround this perforated part of the cap, with a rim which rises above the edge of said cap. This rim is shown at *d d* Fig. 1. The perforations covered by this rim afford a considerable increase of the surface for the escape of the draft and waste steam. The rim, *d*, *d*, may rise to the height of three or four inches above the top plate of the cap—and this height I have found it advantageous to increase by means of an additional open cylinder, say of eighteen inches or two feet more or less in height, which cylinder may be lowered when necessary in passing under bridges by attaching it to a rock shaft or by making use of any of the other known devices used in sliding chimneys. H, H is a representation of such a cylinder which is sufficiently large to slide down over the rim *d d* of the cap F, F.

The ashes from the detained sparks will fall down into the space E′ E′ between the inner and exterior pipes and may at any time be removed therefrom through a suitable door slide or shutter for that purpose. Such receptacles for ashes and openings have been used in other spark-arresters and are well known.

I am aware that the top or covering of a cap or hood has been made of wire gauze in the form of a single inverted cone or curved segment of a hollow sphere; but it is not possible with a single cone to obtain sufficient escape surface for the draft. I do not therefore claim the merely giving to the covering of such a cap the form of an inverted cone; but

What I do claim is—

1. The inserting of a number of such cones of perforated metal or wire gauze into suitable openings in the plate of metal, which forms the covering or top of such hood or

cap, for the purpose of giving sufficient surface for the passage of the draft through the perforations, or meshes of such cones.

2. I also claim in combination with a number of cones arranged and perforated as described the perforating of the upper portion of the sides of the hood or cap, said perforations being surrounded by a rim retiring from said hood or cap, and rising up above the upper surface of the top plate thereof, as herein fully set forth.

3. I also claim as my right, the privilege of the many forms which approximate to that of a cone, such as the pyramid, frustums with small superior bases, &c., which are a modification of the frame without affecting the principle.

THOMAS REANEY.

Witnesses:
JAMES REANEY,
WM. A. MORRELL.