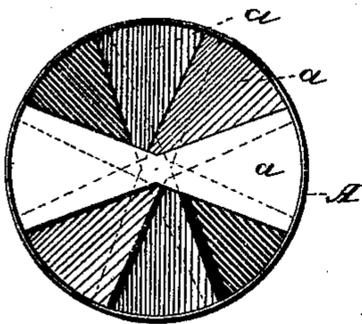


H. COLFORD.  
SPARK-ARRESTERS.

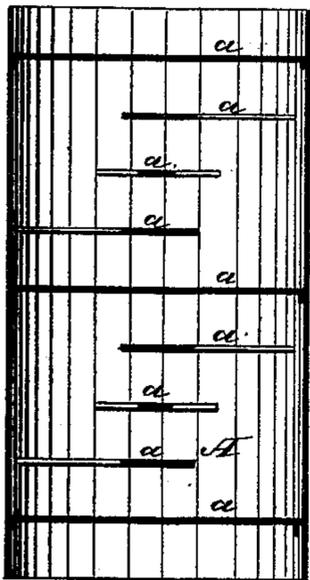
No. 195,346.

Patented Sept. 18, 1877.

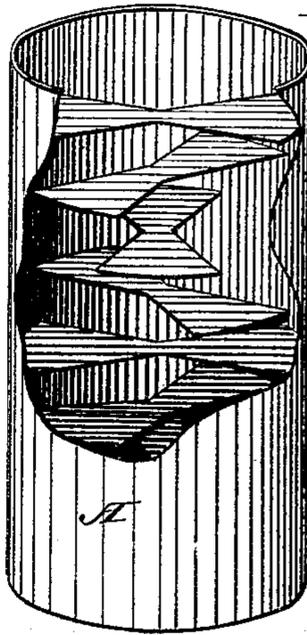
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



*Attest:*

*E. E. Covert.*  
*C. A. Snow.*

*Inventor:*  
*Henry Colford,*  
*by Louis Bagge & Co.*  
*Attys.*

# UNITED STATES PATENT OFFICE.

HENRY COLFORD, OF HALIFAX, NOVA SCOTIA, CANADA.

## IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **195,346**, dated September 18, 1877; application filed February 17, 1877.

*To all whom it may concern :*

Be it known that I, HENRY COLFORD, of Halifax, in the Province of Nova Scotia and Dominion of Canada, have invented certain new and useful Improvements in Spark-Arresters and Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention consists in the combination of a flue, chimney, or drum with a series of interior plates arranged spirally and cross-wise so as to unite opposite sides of the flue or chimney within which they are placed, substantially as hereinafter more fully described.

In the drawing, Figure 1 is a top plan. Fig. 2 is a perspective view, partly in section; and Fig. 3 is a vertical section.

Similar letters of reference indicate corresponding parts in all the figures.

A is the drum or chimney, which may be cylindrical, hexagonal, square, or of any other suitable shape or configuration. Within this stack, projecting at right angles from its walls, is arranged a series of plates, *a*, of the configuration shown in the top plan, Fig. 1—*i. e.*, shaped like a double triangle, united at the top. These plates or double plates are arranged spirally, one above the other, within the case or drum A, so as to overlap each other alongside of their edges, as shown by the dotted lines in Fig. 1, and should, preferably, be so arranged that they can be readily removed when it is desired to clean them. This can readily be done by making the plate with a flange at each end fitting into a socket or equivalent device in the walls of the stack or drum in which they are placed.

I have found that this device will effectually arrest the sparks and prevent the escape of other solid products of combustion when placed in the smoke-stack of locomotives, or in

chimneys subject to a strong draft. The two triangular parts of each plate being in one piece, the sparks cannot possibly escape along the axis or middle line element of the stack or chimney within which they are placed, while the overlapping edges will effectually prevent the escape of sparks in that direction. By this construction and arrangement of plates *a* they are prevented from sagging in the middle, but will remain firmly in their position; nor are they liable to be bent or blown out of place by the steam when my invention is applied to the smoke-stack of a high-pressure engine.

Besides its use as a spark-arrester, this device will answer admirably the purpose of a heater or fuel-economizer, the plates *a* delaying the passage of the heat. When used for this purpose, these plates may be made of corrugated metal, so as to present a larger surface to the passing smoke or hot air.

Having thus described my invention, I do not claim a spark-arrester consisting of a series of spirally-arranged triangular plates projecting from the walls of a smoke-stack or drum, so arranged as to overlap each other at the points, this invention being shown and described in the Letters Patent of the United States No. 166,870, granted to Daniel Hawkesworth on the 17th day of August, 1875; but

What I claim, and desire to secure by Letters Patent of the United States, is—

A spark-arrester or heater consisting, essentially, of a series of double triangular plates, *a*, united in the middle and arranged spirally within or upon a smoke-stack, chimney, or drum, so as to prevent sagging of the plates, substantially as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY COLFORD.

Witnesses:

G. W. ARMS, Jr.,  
E. W. RAEGG.