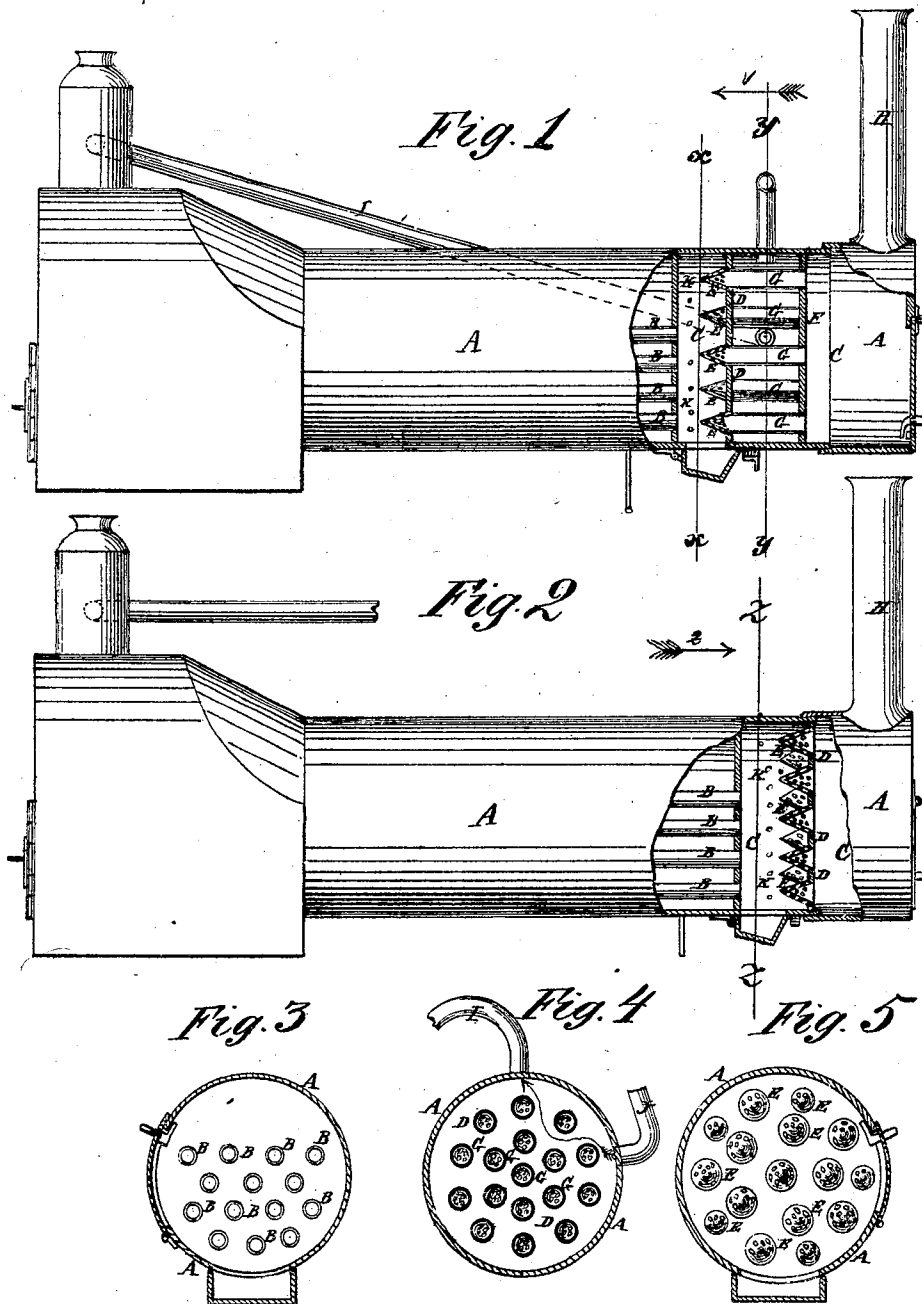


J. L. FERRIS.
Improvement in Spark-Arresters.
No. 129,274. Patented July 16, 1872.



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UNITED STATES PATENT OFFICE.

JAMES L. FERRIS, OF SOUTH BRUNSWICK, NEW JERSEY.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. 129,274, dated July 16, 1872.

Specification describing a new and useful Improvement in Spark-Arrester and Superheater for Locomotives, invented by JAMES L. FERRIS, of South Brunswick, (Jamesburg Post-Office,) in the county of Middlesex and State of New Jersey.

In the accompanying drawing, Figure 1 is a side view of a locomotive-boiler to which my improvements have been attached, part being broken away to show the construction. Fig. 2 is the same view as Fig. 1, but showing a modification of the improvement. Fig. 3 is a detail cross-section taken through the line *x x*, Fig. 1, looking in the direction of arrow 1. Fig. 4 is a detail cross-section taken through the line *y y*, Fig. 1, looking in the direction of arrow 1. Fig. 5 is a detail cross-section taken through the line *z z*, Fig. 2, looking in the direction of arrow 2.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved spark-arrester for attachment to locomotive-boilers, which shall be so constructed as to prevent the sparks from passing out through the smoke-stack and setting fire to combustible substances at the sides of the road, and which shall also be so constructed as to enable the waste heat passing off with the products of combustion to be utilized for superheating the steam; and it consists in the construction of the various parts of the device, as hereinafter more fully described.

A represents the shell, and B the tubes of the boiler, about the construction of which there is nothing new. C represents the smoke-box, in which is secured a plate, D, perforated with numerous holes, in which are secured the bases of a number of cones, E, the apexes of which point toward the flue-plate of the boiler A B, and the sides of which have numerous holes formed in them. By this construction, as the sparks pass out of the flues B with the smoke and other products of combustion they strike against the inclined sides of the cones

E and fall into the lower part of the smoke-box D, whence they may be removed through an opening in the shell A at the bottom of said smoke-box D. At a little distance from the plate D is placed a second plate, F, the perforations of which are directly opposite the perforations of the said plate D, with which they are connected by short flues or tubes G, through which the gaseous products of combustion pass to the smoke-stack H from the cones E. The space between the plates D F is connected with the dome of the boiler A B by a pipe, I, which may pass along the side of the boiler, as shown in the drawing, but which I prefer to lead through the steam-space of the boiler A B so that the pipe may be wholly out of the way, and so that the steam in said pipe may not be cooled by the exposure of the pipe to the air. The steam is superheated in the chamber between the plates D F, and is taken thence to the steam-chest of the cylinders through a pipe, J. In the shell A of the boiler are formed a number of small holes, K, to admit fine streams of air, to burn the gaseous products of combustion as they pass to the cones E, thus making the superheater more effective.

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

1. The series of perforated cones E and their supporting-plates D, constructed substantially as herein shown and described, and arranged in the smoke-box of the boiler between the flue-plate and smoke-stack, as and for the purpose set forth.

2. The pipes G and plate F, in combination with the plate D and perforated cones E, and interposed between the flue-plate and smoke-stack of the boiler, substantially as herein shown and described, and for the purpose set forth.

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