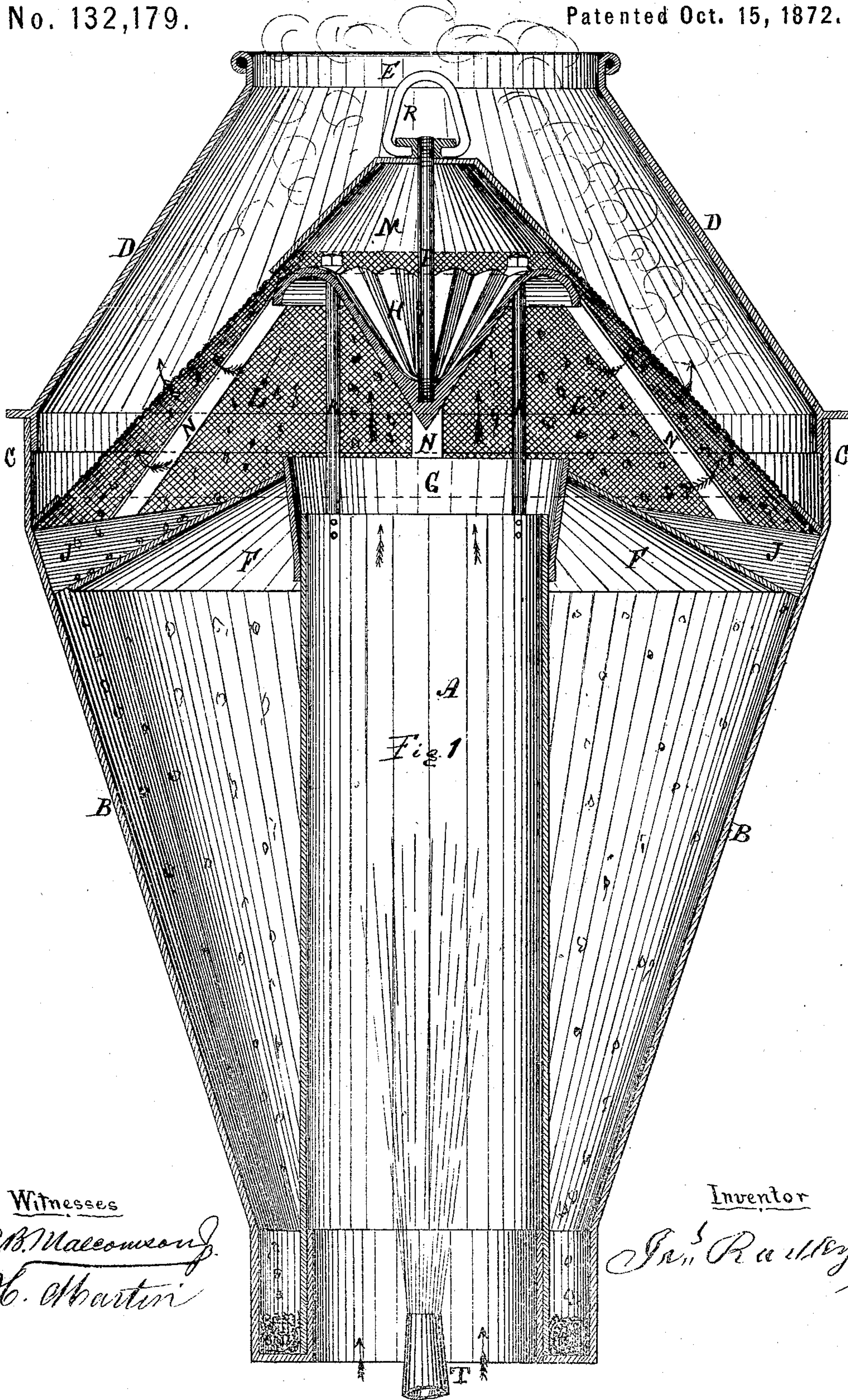


J. RADLEY.

Improvement in Spark-Arresters for Locomotives.
No. 132,179.

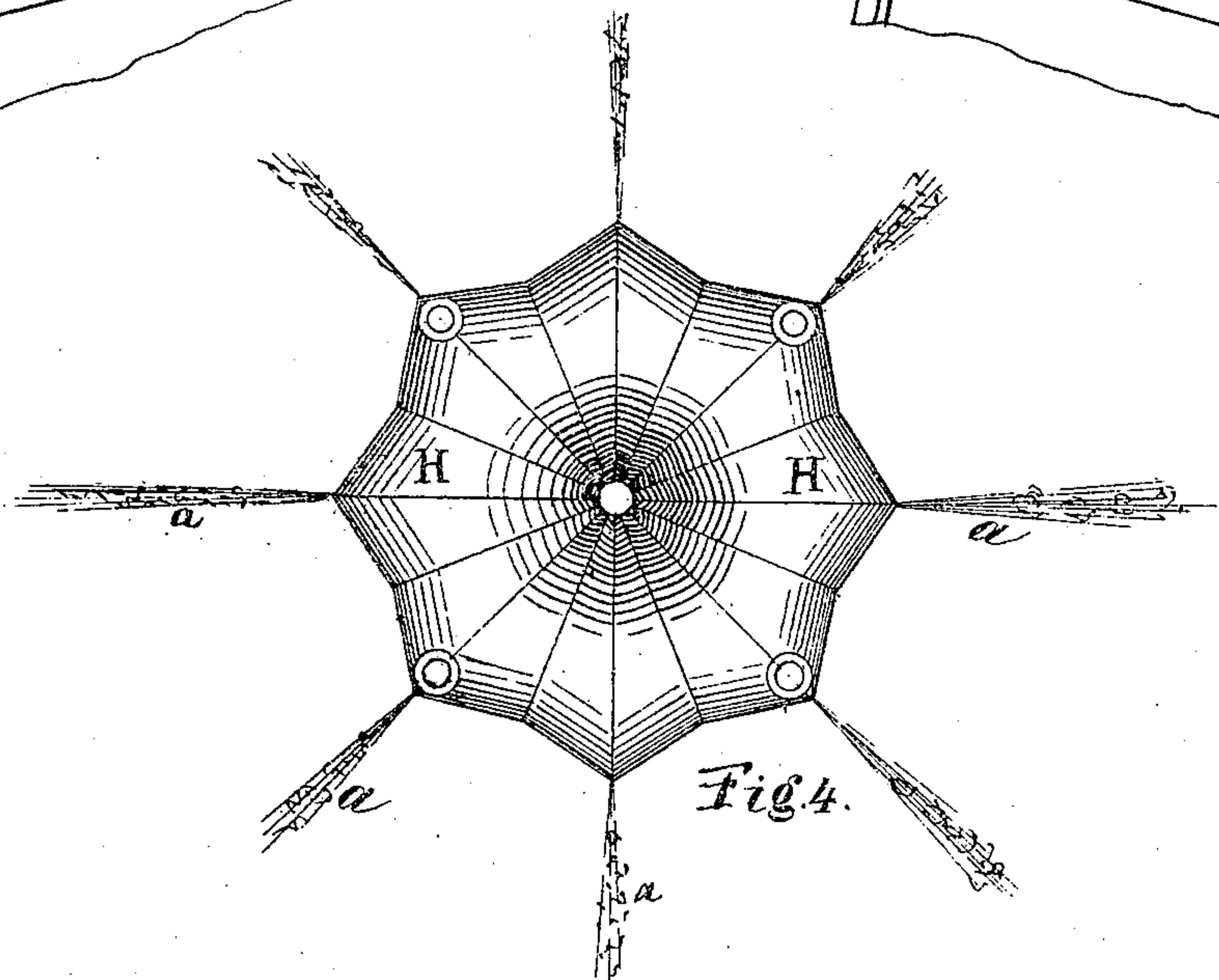
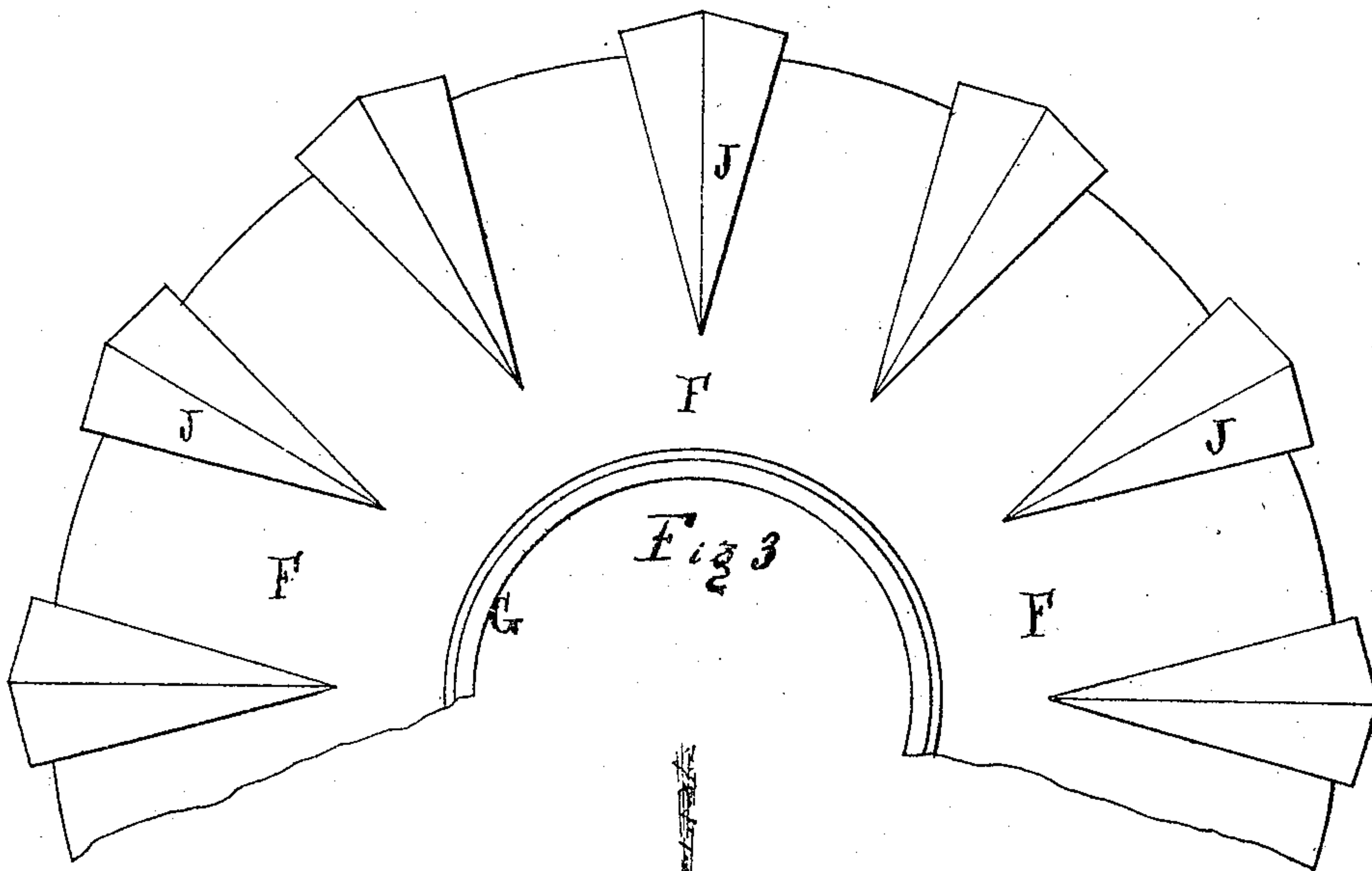
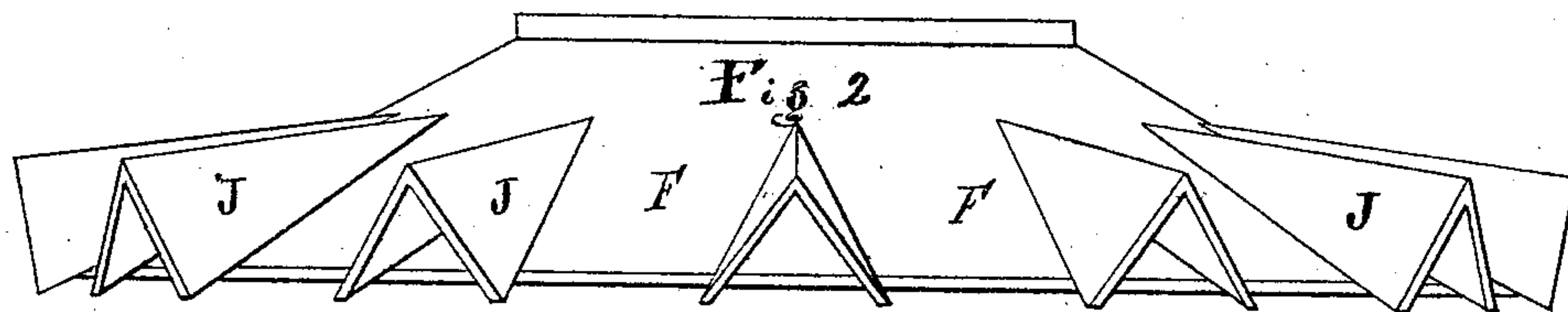
Patented Oct. 15, 1872.



Witnesses
A. B. Maccombs
H. Hartin

Inventor
J. Radley

J. RADLEY.
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Witnesses

A. B. Maccombs
H. Martin

Inventor.

J. S. Radley

UNITED STATES PATENT OFFICE.

JAMES RADLEY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SPARK-ARRESTERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. 132,179, dated October 15, 1872.

To all whom it may concern:

Be it known that I, JAMES RADLEY, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Locomotive Spark-Arresters; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters and figures marked thereon, in which—

Figure 1, Sheet 1, is a vertical section of the apparatus; and Figs. 2, 3, and 4, Sheet 2, are details thereof.

The same parts are designated by the same letters in all the figures in which they occur.

The object of my invention is, first, to separate the sparks and cinders from the effluent steam and gases; secondly, to expel the smoke from the chimney with such force as to make it mount upward and pass off clear of the tops of the cars; and, thirdly, to collect the sparks and cinders in a chamber from which they may be removed from time to time, or at convenient opportunities.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

I surround the smoke-pipe or chimney A with the conical sheet-iron casing B, the upper part, C C, of which casing I make cylindrical. On top of this cylindrical portion I place the short conical sheet-iron casing D D, having an open top or vent, E, about twice the area of the chimney A. Around the top of the chimney A, and within the casing B B, I place the conical cover or floor F F, which has a central piece, G, fitting snugly around the top of the chimney A. The cover or floor piece F F is shown in side elevation in Fig. 2, Sheet 2, and in top view or plan in Fig. 3, Sheet 2. Around the skirt or periphery of this floor, and upon its upper surface, are a number of angular projections or ribs, J J J, formed of sheet-iron, the outer portion of which angular ribs extend beyond the edge or margin of the floor F F, and are made to bear or rest against the outer casing B B, as shown in Fig. 1, Sheet 1, thus forming a space or opening between the edge or margin of the floor F F and the inside of the casing B B, through which spaces or openings the sparks and cinders pass or fall down into the chamber B B. The deflecting-cone

H is made of cast-iron, and so curved toward the margin as to throw the sparks and cinders downward upon the floor F F; it is also deeply corrugated from the apex to the margin or base, so as to cause the sparks and cinders, by passing along the bottom of these corrugations, to descend down upon the floor F F in the form of little streams, as shown at *a a a*, Fig. 4, Sheet 2, between which streams the steam and gases from the chimney may pass outward without carrying such sparks or cinders along with them. The cone H is supported by three rods, K K, the tops of which pass through holes formed in the casting for the purpose, and the rods are furnished with shoulders or collars, upon which the casting may rest, and are secured by nuts bearing upon the casting; or the rods may have screws cut sufficiently down to have nuts both above and below the casting. The space between the margin of the deflecting-cone H and the bottom edge of the cylindrical part C C of the casing is covered with a netting, L L, of wire-gauze, as shown in Fig. 1, Sheet 1, and is in the form of a conical frustum. The lower margin of this wire-gauze is secured to a ring of flat bar-iron, which rests on the upper part of the casing B B; and the upper edge of the wire-gauze is secured to the conical piece M, which covers the deflecting-cone H; and the flat ring at the base of the wire-gauze is secured to the conical piece M by flat bars of iron, N N. The conical piece M may be of sheet or cast iron, and it, together with the wire-gauze netting, is secured to the deflecting-cone H by the bolt P, which is screwed into the lower part of the deflecting-cone, and has a nut upon its top end bearing upon the conical piece M, to which nut is attached a small bail, R, by which the whole stack, if necessary, can be quickly removed or replaced.

The passage of the steam and gases after passing through the wire-gauze netting L L is gradually contracted by the conical casing D D till it reaches the vent E, thereby giving the smoke and gases a sufficient force to carry them clear above the train or cars.

The apparatus being thus constructed, the exhaust steam from the steam-cylinders, issuing from the blast-pipe T, drives the gas, sparks, and cinders up the chimney A directly against the deflecting-cone H, and into and

along the grooves of its corrugations, and then, by means of the downward curve at the skirt of the deflecting-cone, the sparks and cinders are thrown down in small streams upon the floor F F, and then down into the chamber B B by passing through the spaces between the angular ribs J J J at the outer edge of said floor, while the steam and smoke pass off between the streams of sparks and through the wire-gauze into the space between the wire-gauze and the outer conical case D D, and outward by the vent E at the top of the stack.

Having thus described the construction and operation of my improved locomotive spark-arrester, what I claim therein as my invention, and desire to secure by Letters Patent of the United States, is—

1. The conical floor F F at the top of the

spark-chamber B B, having narrow spaces around its periphery, in the manner and for the purpose substantially as described.

2. The conical floor F F, in combination with the angular ribs J J J, in the manner and for the purpose substantially as described.

3. The conical casing D D and its vent E, in combination with the conical wire-gauze netting L L, in the manner and for the purpose substantially as described.

4. The corrugated deflecting-cone H, in combination with the conical floor F F, in the manner and for the purpose substantially as described.

JAS. RADLEY.

Witnesses:

A. B. MALCOMSON, Jr.,

H. MARTIN.