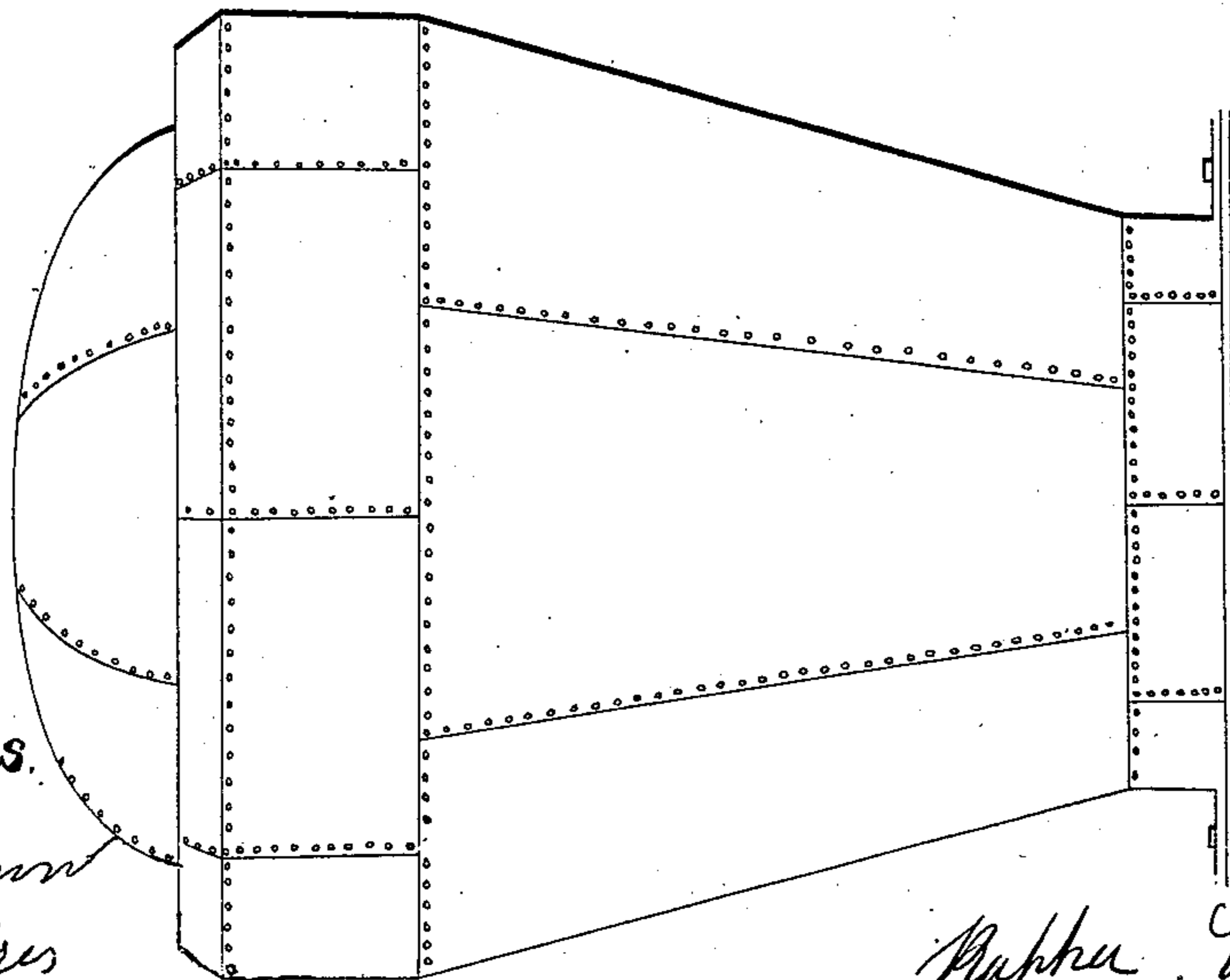
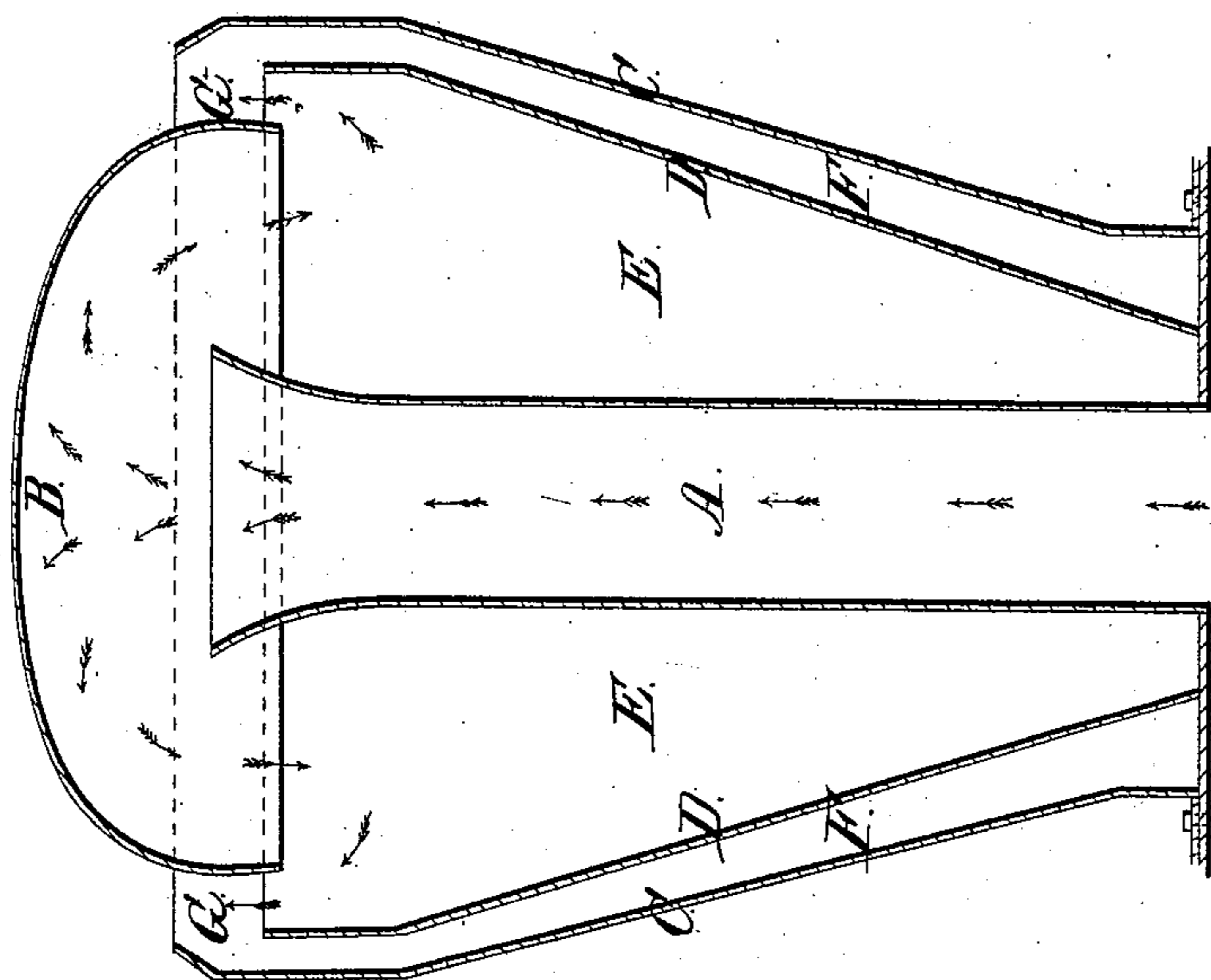


R. Woodworth,
Spark Arrester,
No 43,653, *Patented July 26, 1864.*



Witnesses.

John Brown
Martin Wers

Inventor.

Ralph Woodworth

UNITED STATES PATENT OFFICE.

RAPHA WOODWORTH, OF UNDERHILL, VERMONT.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **43,653**, dated July 26, 1864.

To all whom it may concern:

Be it known that I, RAPHA WOODWORTH, of Underhill, in the county of Chittenden and State of Vermont, have invented a new mode to kill and extinguish the sparks before they escape from a locomotive or stationary steam-engine; 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 of reference marked thereon.

The nature of my invention consists in providing the smoke-stack of a steam-engine with a steam chamber or compartment, from which steam is constantly passing, and a concavo-convex cap, which directs the sparks in such a manner as to bring them in contact with the steam from the steam-chamber, by which they are extinguished while passing from the smoke-stack.

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

I construct my smoke-stack of sheet-iron of the proper thickness, and attach it to the engine in the ordinary manner. The smoke-pipe (marked A on the accompanying drawing) is made of the common size and height, being slightly enlarged at the top to allow the smoke and steam from the engine to spread as it strikes the concave surface of the cap B. The space between the smoke pipe A and the external wall of the smoke-stack C, I divide by the partition D into two chambers or compartments. The inner chamber, E, is a reservoir,

into which the heavier sparks and cinders fall and burn to ashes. The outer chamber, F, is a steam chamber or reservoir, which is supplied with steam, either from the generation of steam from water introduced into it or from the boiler of the engine by means of a steam-pipe for that purpose.

The cap B, as seen in the drawing, is made concavo convex and placed with its concave surface looking downward for the purpose of arresting the course of the smoke and cinders as they pass upward from the smoke-pipe A, and turning them downward and outward across the mouth of the reservoir E, into which the heavier cinders fall, while the lighter ones pass on, meeting the steam issuing from the mouth of the steam-chamber F, being extinguished as they pass out of the smoke-stack at the draft marked G. The cap is held in place by means of bolts, which attach it to the external wall of the smoke-stack, passing through the draft or space marked G.

What I claim as my invention, and desire to secure by Letters Patent, is—

The construction and application to steam-engines of a smoke stack, consisting of a smoke-pipe, reservoir for cinders, steam-chamber, and cap, so arranged, as herein described, that the sparks are brought in contact with steam, by which they are extinguished before passing from the smoke-stack.

RAPHA WOODWORTH.

Witnesses:

MARTIN WIEN,
JOHN BROWN.