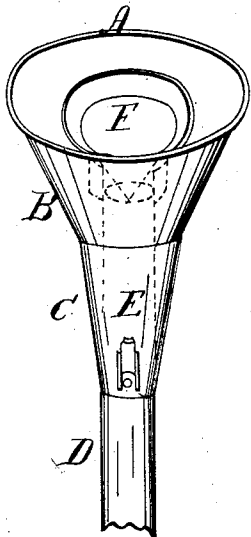
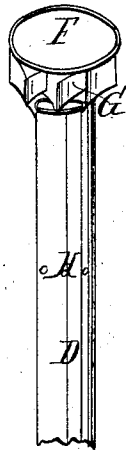


*W. T. James,*  
*Spark Arrester,*  
*No 688, Patented Apr. 13, 1838.*

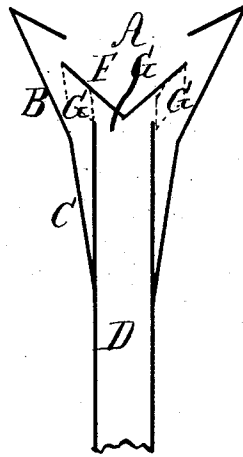
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses;*  
*Sam. Fairbank*  
*Samuel Fry.*

*Inventor;*  
*Wm. T. James*

# UNITED STATES PATENT OFFICE.

WILLIAM T. JAMES, OF NEW YORK, N. Y.

## APPARATUS FOR EXTINGUISHING SPARKS.

Specification of Letters Patent No. 688, dated April 13, 1838.

*To all whom it may concern:*

Be it known that I, WILLIAM T. JAMES, of the city, county, and State of New York, and a citizen of the State of New York and of the United States, have invented and brought into use a new and useful improvement in the method of preventing the sparks or ignited particles of fuel issuing from the tops of chimnies or smoke-pipes from escaping into the atmosphere with the smoke and gases which proceed from furnaces or fires.

This improvement is applicable to chimnies and to smoke-pipes of furnaces or fires used to generate steam to work steam-engines and other purposes; but is of the most value when applied to the smoke-pipes used on steam-boats and low-motive engines on rail roads; where the sparks of ignited fuel which escape from the smoke-pipes, are always inconvenient and often dangerous.

The description of my improvement is as follows:—The chimney or smoke-pipe is surrounded by another pipe or funnel, three and a half times its diameter at the top, and made smaller at the bottom, just so as to fit the smoke-pipe; and in length about five times the diameter of the smoke-pipe, its shape somewhat resembling that of a speaking-trumpet—only the mouth or upper end has a concave flanch on it as wide as the diameter of the smoke-pipe projecting inward and downward on an angle, so as to leave the mouth only twice as large as the diameter of the smoke-pipe, the top of which is in the center below the mouth or opening left by the flanch, and is covered by a circular piece of sheet-iron rendered concave or conical, the convex or conical side down—the apex of the cone or the center of the convexity being placed in the center of the smoke-pipe; and the diameter of this piece or covering being double that of the top of the smoke-pipe and just the size of the opening left by the flanch above; and at the distance below the flanch or mouth, of about one half of the diameter of the smoke-pipe. Around this inverted conical piece and on the under side are placed or fastened six spiral flues or issues which enter the smoke-pipe at equal distances on its circumference and exactly at the top the six combined being at least equal in magnitude to the smoke-pipe so as not to obstruct or check the draft:—the

form of these openings may be that of an oblong square and on the under side they may be left open their entire length.

The drawings which accompany this specification and make part of it will show the parts more distinctly.

The smoke, gases and sparks when they ascend the chimney or smoke-pipe escape through these spiral openings or flues and take a circular direction under the flanch; and the sparks being of greater specific gravity than the smoke, their centrifugal force impels them through the smoke against the inner side of the outer tube which surrounds the smoke-pipe, where they circulate until they drop to the bottom of the tube, and thus their escape from the top of the smoke-pipe into the open air is prevented. There is a hole at the bottom of the tube which surrounds the smoke-pipe covered by a slide for the purpose of removing the extinguished cinders, if necessary, and opposite to this there are holes in the smoke-pipe into which the cinders may pass when accumulated in quantity; and it has been contemplated to place tubes to these holes through which the cinders might descend to a part of the fire place out of the strength of the draft; or by placing a descending tube at the first mentioned hole they may be conveyed to any other convenient place. The outer tube or pipe may be of the same shape as the smoke-pipe; but the above is the most convenient form though not essential. The openings or flues above described should be so large and numerous as not in any measure to obstruct or check the draft of the smoke-pipe. This improvement is applicable to all chimnies and smoke-pipes from which ignited particles of fuel or sparks may issue; and consists in the application of the above outer tube—the flanch—the conical cover and the spiral flues in combination and in their application to the aforesaid object. I do not claim said outer tube—or the flanch—or the flues or any other part of said machine or machinery separately nor any of the combination separately and independently of the object aforesaid; but

I claim as my invention and improvement—

The combination of the outer tube—the flanch—the conical cover—the openings and

spiral flues in their combination with a smoke-pipe or chimney for the purposes aforesaid in manner aforesaid or any other manner substantially the same.

5 In testimony whereof, I the said WILLIAM T. JAMES hereunto subscribe my name in the presence of the witnesses whose names are

hereto subscribed, on the sixth day of December, A. D. 1837.

WM. T. JAMES.

Witnesses:

SAML. FAIRLAMB,  
SAMUEL FRY.