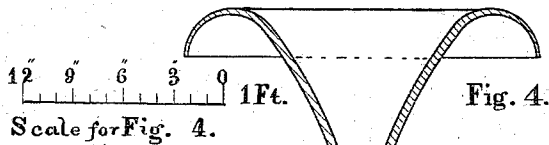
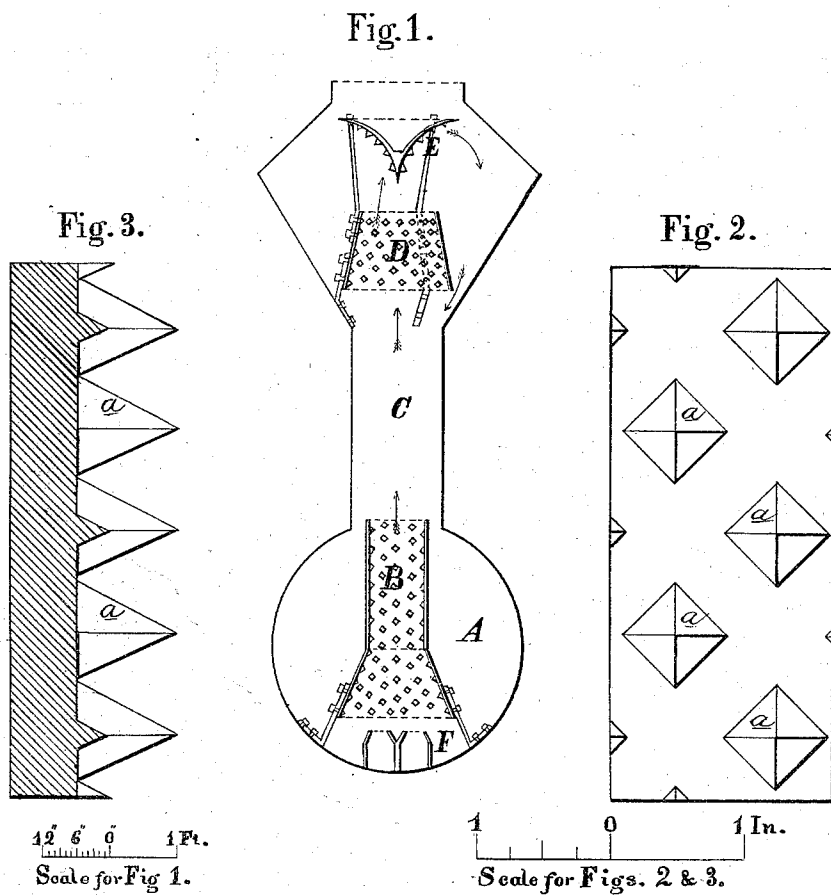


J. BARDSLEY.
Spark-Arresters.

No. 144,049.

Patented Oct. 28, 1873.



Geo. L. Dow

*James Bardsley
 per Humphrey & Stuart
 Attorneys.*

UNITED STATES PATENT OFFICE.

JAMES BARDSLEY, OF AKRON, OHIO.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. 144,049, dated October 23, 1873; application filed September 30, 1873.

To all whom it may concern:

Be it known that I, JAMES BARDSLEY, of Akron, Summit county, State of Ohio, have invented an Improvement in Spark-Arresters, of which the following is a specification:

The object of my invention is to arrest and extinguish the cinders and sparks thrown from the smoke-stack of locomotive and other high-pressure engines; to increase the draft of such stacks by dispensing with the wire screen usually employed to arrest such sparks; and to diminish the wear incident to such stacks by constant attrition of the cinders.

The improvements are fully hereinafter described and claimed.

The following is a full description of my invention, reference being had to the accompanying drawings, in which—

Figure 1 represents the vertical central section of a smoke chamber and stack of a locomotive-engine, and Figs. 2 and 3 a front and side view, respectively, of a section of any plain surface provided with projections, hereinafter mentioned, to show the size and arrangement of said projections; and Fig. 4, an enlarged view of the cone E to show its peculiar shape.

A, Fig. 1, is the smoke-chamber, whence rises the stack C. Within this stack is the lifting-pipe B directly above the exhaust-pipes F. Near the top of the stack is situated a conducting-pipe, D, tapering toward its top, and having its outside lower rim held about two and a half inches from the inside of the smoke-stack opposite, as shown. Centrally above the conducting-pipe is the inverted cone E, having its outside edge curved downward. (See Fig. 4.) The inside surface of the lifting-pipe B, conducting-pipe D, and lower surface of the cone E are studded with rectangular pyramidal projections *a*, having one corner toward the bottom of the stack and arranged in rows, so that the projections in each alternate row

shall stand opposite the spaces in the row immediately preceding.

I have employed and recommend projections of the size and arranged as shown in Figs. 2 and 3.

The sparks coming from the smoke-chamber are broken up by being violently driven against the projections in the lifting and conducting pipes B and D by the exhaust. By the conducting-pipe D they are caused to converge against the cone E, where they are still further broken, and by the outside edges whereof they are deflected downward into the large part of the pipe, whence the smaller particles escape into the air, but the larger and heavier ones fall between the lower rim of the conducting-pipe D and the stack, into the stack, to be again driven upward. By causing the cinders to thus converge upon the cone E they are prevented from violently striking the inside of the stack, thus avoiding the wear of the stack hereinbefore mentioned.

I do not claim as new the use of projections on the interior of the parts of the smoke-stack for breaking up cinders, as I am aware that the same is not new. I am aware that it is not new to arrange an inverted cone having studs or projections within a hollow cylinder located in a smoke-stack for breaking up the cinders or sparks; but such of itself is not my invention; but

I claim—

The combination of the inverted cone E supported above the tapering pipe D, and the lifting-pipe B located at the base of the smoke-stack C, when the surfaces of all are provided with alternately-arranged studs *a*, in the manner and for the purpose specified.

JAMES BARDSLEY.

Witnesses:

JOHN W. BAKER,
E. W. SHOOK.