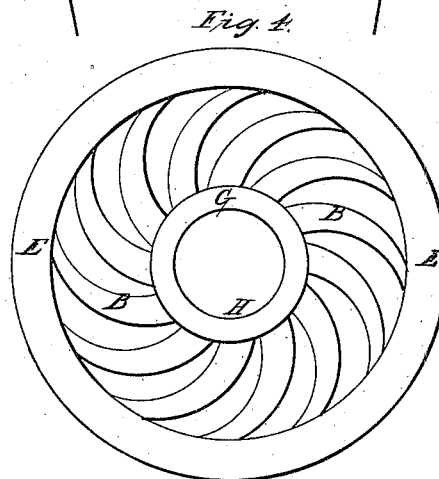
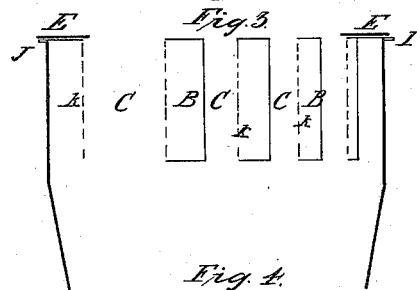
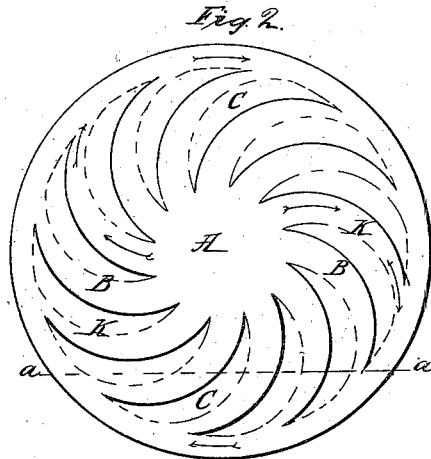
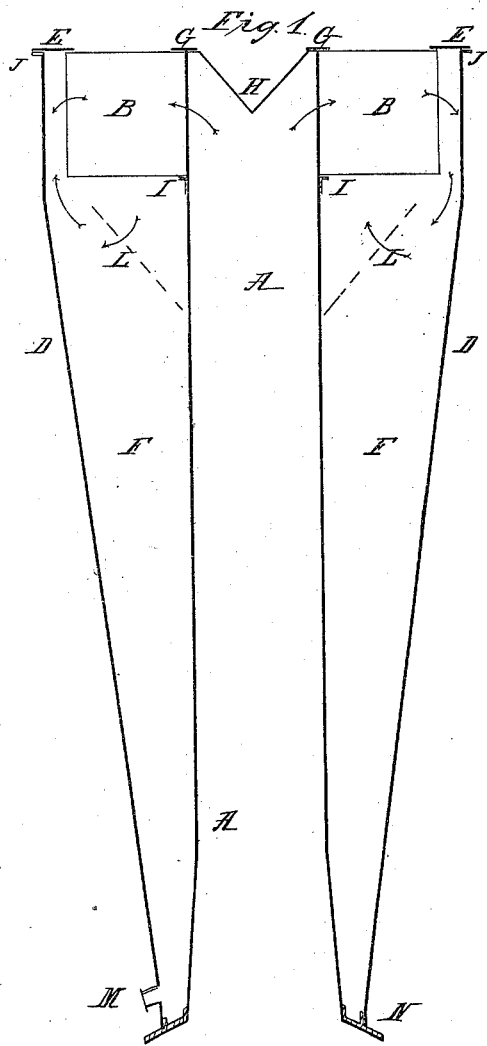


W. C. Grimes,
Spark Arrester,

No. 2,05,

Patented Sep. 23, 1845.



UNITED STATES PATENT OFFICE.

WILLIAM C. GRIMES, OF PHILADELPHIA, PENNSYLVANIA.

SPARK-ARRESTER.

Specification of Letters Patent No. 4,205, dated September 23, 1845.

To all whom it may concern:

Be it known that I, WM. C. GRIMES, of the city of Philadelphia and State of Pennsylvania, have invented a new and Improved Mode of Preventing the Escape of Sparks and Cinders from the Chimneys of Locomotive or other Steam Engines; and I do hereby declare that the following is a full and correct description thereof.

The nature and principle of my invention consists in giving to the upper part of the chimney of a locomotive or other steam engine, such form as to cause the gaseous current as it passes through the same, to circulate, or revolve around a horizontal, cylindrical, screen; tending by this circular or rotary motion to throw all the sparks or other solid particles from the central screen outward, to the walls of the cylinder, or scroll formed chamber, from whence through proper openings, they escape into an exterior receptacle prepared for the purpose; while the gases readily pass into the central screen, and thence escape out the open ends of it into the atmosphere direct, or through short vertical side flues constructed for the purpose.

In the accompanying drawing Figure 1 is a vertical section of the stack cut through its center, A, A, the vertical part of the chimney, which in its transverse section gradually changes from a circular form below, to a rectangular form above. B, B, the curved or circular part (of the chimney) wherein a cylindrical screen C, C, formed of perforated sheet iron, constitutes the interior wall, while the exterior wall I, I, is unperforate, and of a scroll like form. The sides of this part of the flue are flat and are riveted to flanges turned upon the edges of the sheet forming the outer walls of the circular flue. The inner edges of these sides are riveted to flanges turned upon the ends of the perforated cylinder or screen which is left quite open at the ends. E, E, is a rectangular box or receptacle for the sparks and cinders, which are thrown into it through the openings F, F, in the outer wall I, I, the sparks are removed from this receptacle through the spout G, which is closed by a cap or hinged door adapted to the purpose.

Fig. 2 is a vertical section of the curved or circular part of the chimney, cut through the axis of the cylindrical screen C, C, at e, e. B, B, are sections of the curved flue,

above and below the cylindrical screen. D, D, are vertical flues formed at the ends of the screen, by plates of sheet iron K, K, bent horizontally into cylindrical segments, the edges of which are riveted to the sides of the flue around the ends of the perforated cylinder or screen; except at the upper side where it is left open, as indicated in this figure; the arrows showing the direction of the current.

Fig. 3 is a horizontal section of the same, cut through the axis of the cylindrical screen at d, d. B, B, the curved flue. C, C, the cylindrical screen; D, D, the side flues formed by the cylindrical segments of sheet iron K, K.

Fig. 4 is a transverse section of the chimney and spark receptacle at a a of Fig. 1.

Fig. 5 is a horizontal section of the curved or circular part of the chimney, being the same as Fig. 3, except in the formation of the screen, which is not a plain cylinder as in the former, but consists of a series of convex or conical rings, formed of perforated sheet iron. The better to understand the form of these rings, let it be supposed that a disk of sheet iron is made slightly conical, and then all the central part removed, thus leaving a ring of its circumference of but a few inches in width. In the formation of this screen a series of such rings—all of the same size and form—are used, their position being alternately reversed, whereby they are connected, or attached by riveting, alternately at their inner and outer edges, as shown in the figure. This form is sometimes given to the screen, to increase the extent of the perforated surface, whereby the impediment that a screen opposes to the escape of the gases may be lessened.

Mode of operation: The gaseous current on reaching the upper part of the chimney takes the direction indicated by the arrows, (in Fig. 1) revolving around the central screen, into which it freely passes, and escapes from thence through the side flues D, D, as indicated by the arrows in Fig. 2. While the sparks and cinders accompanying the gaseous current are kept off the central screen by centrifugal force, and being impelled thereby against the outer walls of the flue, they pass through the openings F, F, into the spark chamber E, E, from whence they are removed as occasion may require.

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

5 The giving to the gaseous current a rotary motion around a cylindrical or other formed screen; by giving to the upper part of the chimney, a curved, coiled, or convoluted

form around the screen, substantially in the manner as herein before shown, and set forth.

WM. C. GRIMES.

Witnesses:

ARMON DAVIS,
WM. GARRIGUES.