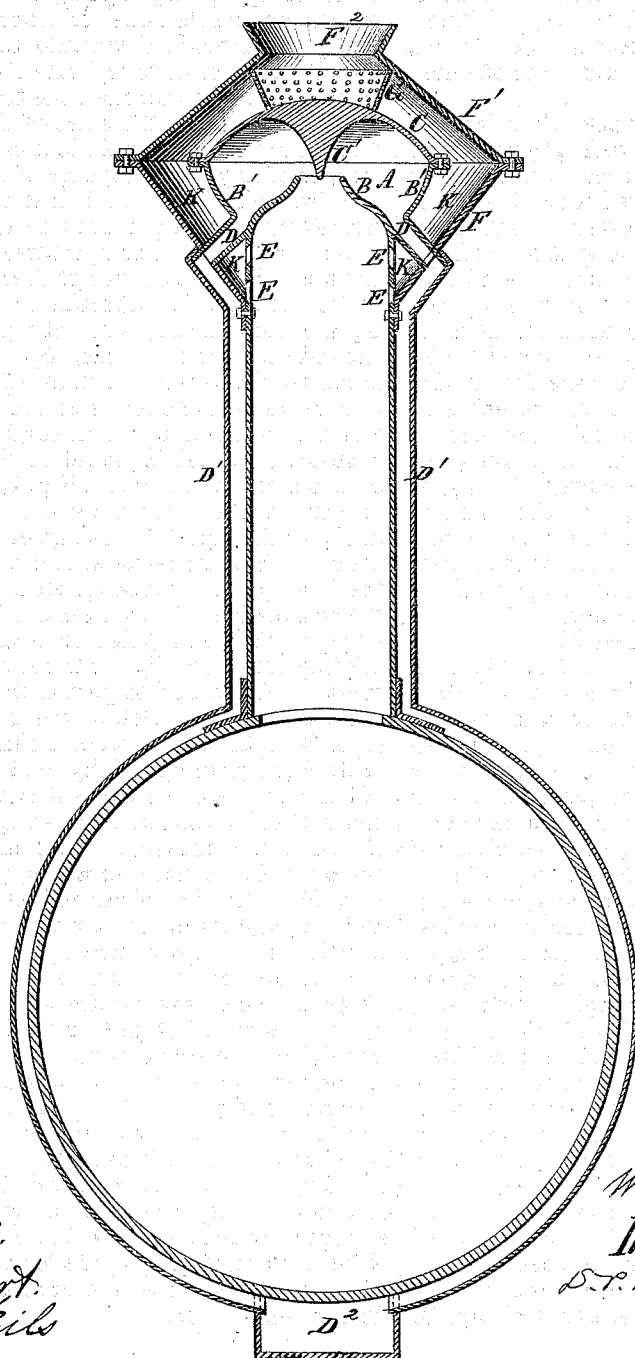


WILLIAM F. GRASSLER.

Improvement in Spark Arresters.

No. 125,287.

Patented April 2, 1872.



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UNITED STATES PATENT OFFICE.

WILLIAM F. GRASSLER, OF MUNCY, PENNSYLVANIA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. 125,287, dated April 2, 1872.

Specification describing certain Improvements in Smoke-Stacks, Chimneys, and Flues, invented by WILLIAM F. GRASSLER, of Muncy, in the county of Lycoming and State of Pennsylvania.

This invention more particularly relates to that class of smoke-stacks which are used upon steam-generators and furnaces, and may also be used upon chimneys and flues of fire-places and fire-hearths, where it is desirable to arrest the sparks, cinders, and dust or solid products of the fuel, which may be carried upward into said smoke-stack, chimney, or flue by the draught of air, or by any artificial blast or means whatever which may be applied to the steam generator or furnaces thereof, or to any fire-place or fire-hearth, so as to prevent said sparks, cinders, and dust or solid products of the fuel, from escaping from or passing out from the top of said smoke-stack, chimney, or flue without arresting the draught thereof; and its novel features consist in the construction, combination, and arrangement of the several parts of which it is composed, as will be more fully described hereinafter.

Figure 1 is a sectional elevation.

In constructing spark-arresters of this character I form the inside, or spark and dust chamber, of either wrought or cast iron, or of any suitable metal. I form on the outside of the spark and dust chamber an air or draught chamber, constructed of either wrought or cast iron, or of any suitable metal, boiler and sheet iron being very suitable for this chamber. These chambers may be constructed and placed on the top of any smoke-stack, chimney, or flue by means of bolts or rivets, or by any fastening suitable for that purpose. The smoke-stack, chimney, or flue to which the chambers are applied may be of any height or diameter preferred or desired.

At the upper end of the smoke-stack, chimney, or flue there is placed a spark and dust chamber, A, formed by fastening with bolts or rivets, or by any suitable means, to the top of a smoke-stack, chimney, or flue, a truncated cone, B, and placing around its base, on the outside, a bowl or basin, B', extending slightly above said truncated cone B. On the top of said bowl or basin B' there is closely fitted, and securely clamped, bolted, riveted, or fastened, by any suitable means, a conical cap, C,

or covering, having a peak, C', in the center of said cap, on its under or concave side, and said peak extends down into the spark and dust chamber so as to separate the cinders and sparks coming up through the truncated cone and direct them to the sides of the spark and dust chamber, all to be made of cast or wrought iron, or of any metal capable of resisting heat and fire. The spark and dust chamber thus formed must have two or more square rectangular or round holes or apertures, D, cast, cut, or punched in the bottom of the bowl or basin, at its intersection with the truncated cone. Square, rectangular, or round pipes D¹, of any desired size, are to be cast, bolted, or riveted around said holes or apertures. The pipes may pass down on the outside of the smoke-stack, and around the boiler of an engine into the receptacle D², which is placed on the under side of a boiler, as shown in Fig. 1, or into any proper receptacle for the sparks, cinders, and dust; or the pipes may be passed down on the inside of the smoke-stack and boiler. Below the base of the truncated cone, in the top of the smoke-stack, I form a series of square, rectangular, or round holes or apertures, E, or both, combined, to allow of the escape of smoke, steam, and gas, and to permit the air to enter the smoke-stack. Below the holes or apertures E in the smoke-stack I construct an air or draught chamber, K, by joining, by means of bolts or rivets, the bases of two frustums of cones, F and F¹, one of them being inverted, as shown in the drawing. Said air or draught chamber K terminates in a straight or flaring flue, F². At the lower end of the flue F², and slightly within the air or draught chamber K, I place a wire-screen, G, made in the form of an inverted truncated cone, having its base placed against the under side of the upper frustum F¹ of the air or draught chamber K, and the smaller end rests on the upper or convex side of the cap C, which forms the top or covering of the spark and dust chamber. The air or draught chamber K, communicating with the smoke-stack, and also with the spark and dust chamber A, is intended not merely to allow of the escape of the steam, smoke, and gas, by means of the holes or apertures E, but is intended to provide for a free passage of air into the smoke-stack, so as to aid in producing combustion.

The operation of these chambers is as follows: The parts having been constructed and arranged substantially as described, and a fire having been kindled in the furnace fireplace or fire-hearth, the draught or blast will cause the smoke, sparks, and gas to pass upward into the smoke-stack, chimney, or flue, and in the case of a locomotive-engine more or less of the solid portions of the fuel, such as small portions of coal or wood, and dust, with the sparks, pass through the flues or tubes of the boiler or steam-generator, and up through the smoke-stack into the spark and dust chamber A, where the separation takes place. The solid portions or particles, together with the sparks and dust, are thrown into the spark and dust chamber A, and are carried down by the pipes D¹, while the smoke, steam, and gases that do not pass down through the pipes D¹ pass through the holes E into the air or draught chamber K, and thence out of it, through the flue F² on the top of said chamber.

The advantages arising from this form of construction are, that it is cheap, durable, and easily attached to any form of smoke-stack, chimney, or flue, effectually arresting the sparks, cinders, and dust, and preventing their escape

from the top of a smoke-stack, chimney, or flue, thus obviating a great source of annoyance to passengers in railway cars, and protecting not only the property along the route of a railroad from destruction by sparks and hot cinders, but aids in protecting and preserving the paint, varnish, and furniture of railway cars.

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

1. In combination with a smoke-stack, a spark and dust chamber, A, consisting of a truncated cone, B, a bowl or basin, B', a cap, C, a peak, C', holes E, and pipes D¹, for passing off the sparks, cinders, and dust, constructed and arranged substantially as and for the purposes set forth.

2. The combination of the smoke-stack and air or draught chamber K with the apertures E, wire-screen G, and flue F², constructed and arranged substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. F. GRASSLER.

Witnesses:

WM. BRINDLE,
ROBERT H. WEEKS.