

W. F. GRASSLER.

SPARK ARRESTER.

No. 180,577.

Patented Aug. 1, 1876.

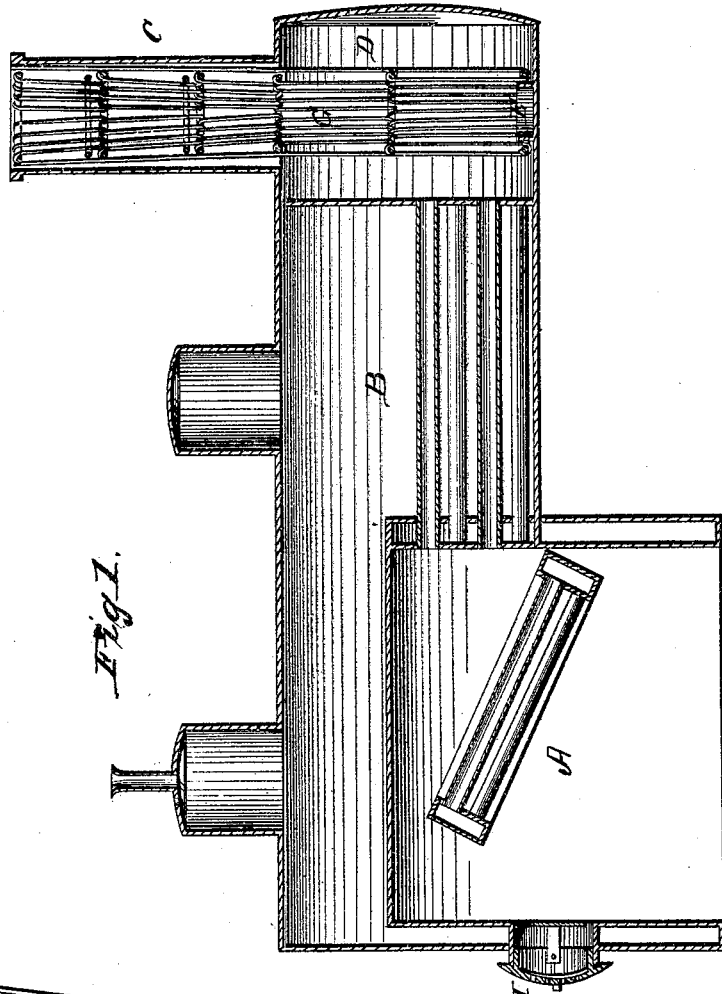


Fig. 1.

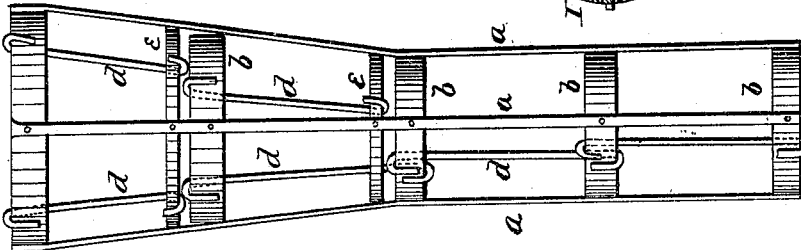


Fig. 2.

WITNESSES

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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. 180,577, dated August 1, 1876; application filed July 12, 1876.

To all whom it may concern:

Be it known that I, WILLIAM F. GRASSLER, of Muncy, in the county of Lycoming, and in the State of Pennsylvania, have invented certain new and useful Improvements in a Smoke and Spark Consumer; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention has for its object to consume the smoke and sparks from a locomotive-furnace; and it consists in the construction of an open tube, extending from the top of the smoke-stack down and to the exhaust-nozzle, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a longitudinal vertical section of a locomotive furnace and boiler embodying my invention. Fig. 2 is an enlarged side view of the skeleton tube.

A represents the furnace of a locomotive. B is the boiler, C the smoke-stack, and D the chamber at the front end of the boiler under the stack. In the bottom of the chamber D is the exhaust-nozzle E. G represents the open-work tube, having its lower or nozzle end open and of sufficient diameter to receive the nozzle E of the exhaust, retaining this diameter to about the middle of its entire length, when it gradually enlarges from this middle point to the upper or top end. This end is of the same diameter as the inside top diameter of the stack, to which it is closely fitted, giving the tube a much greater diameter at the upper end than at the lower, or somewhat in the form of a funnel.

The tube G is constructed in the following manner: *a a* represent four iron bars or rods, extending the entire length of the tube to support and stiffen it, and to the inner sides of these bars or rods are riveted rings *b b*, at such distances apart as to suit the desired length of the slots or open spaces, which are formed by

wires or rods *d d*, hooked or looped around the rings in broken joints. At the upper portion of the tube, where the diameter of each succeeding ring is enlarged, additional rings *e e* are used, as the smaller ring will not receive a sufficient number of wires or rods to fill the following one of greater diameter. The ring *e* is riveted to the bars or rods *a* at a distance from the ring *b* sufficient to admit of the wires or rods *d* being hooked between them. A sufficient number of such wires or rods are then hooked on the ring *e* to fill the next ring *b* of greater diameter; otherwise the open spaces between the wires or rods *d* would be too large. By this construction of the tube G a clear and unobstructed passage of the exhaust steam is obtained from the nozzle through the tube.

The uniform size or diameter of the tube, from the lower end upward to near the middle, admits of the use of a much smaller lifting-pipe, by the use of which a much greater vacuum is obtained. This, together with the action of the air admitted through the perforated fire-door I in the front of the furnace A, affords a good combustion, and also prevents the smoke from rising or leaving the furnace, where it is consumed.

The long open spaces or slots formed by the wires or rods *d* extend between the rings *b* where the joints are broken.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The open tube G, constructed, as described, of the rods *a*, rings *b e*, and rods or wires *d*, and of the same diameter from the lower end upward to about the middle, and then gradually increasing in diameter to the upper end, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of June, 1876.

WM. F. GRASSLER.

Witnesses:

JNO. J. CROUSE,
C. L. EVERT.