D. WISER.
Spark-Arrester.

No. 210,828. Patented Dec. 10, 1878.

Fig. 1.

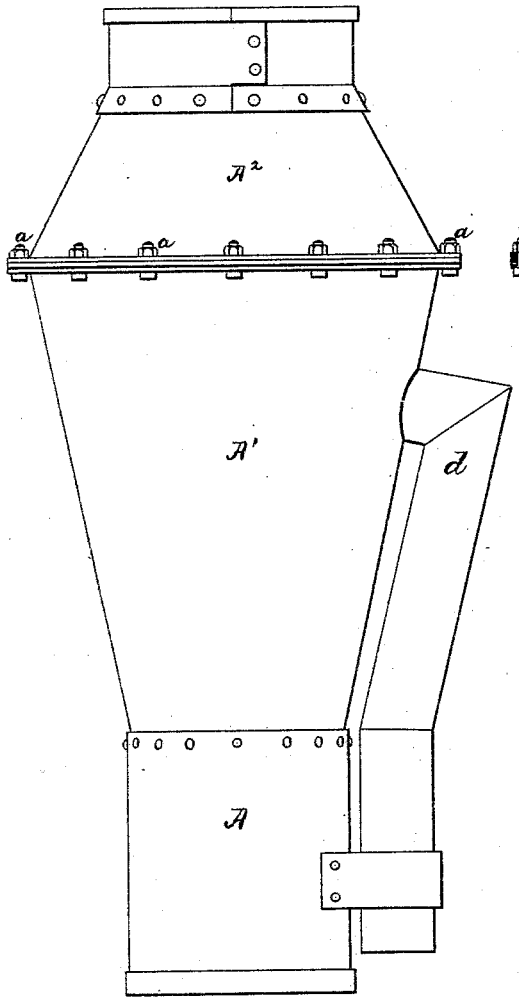
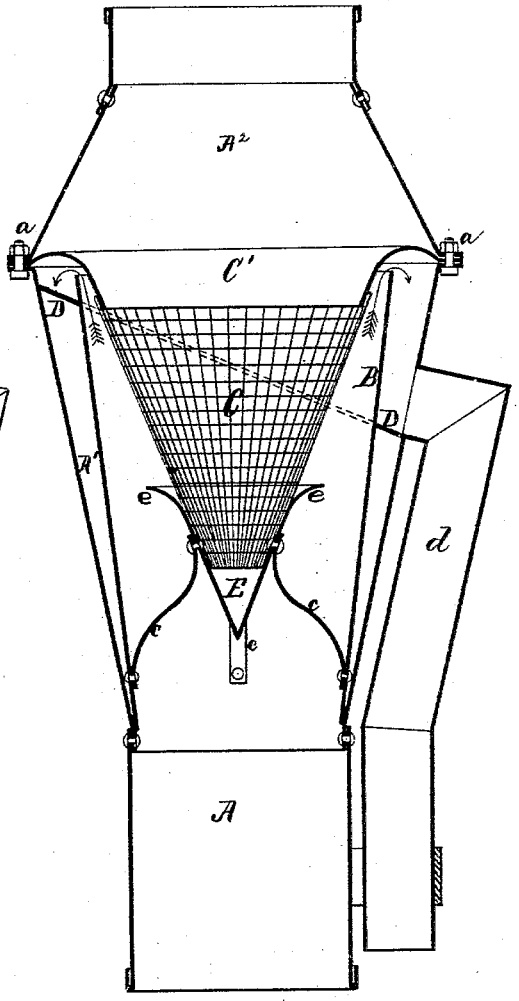


Fig. 2.



Witnesses:
Theodore G. Hoster.
B. S. Clark.

Inventor:
David Wiser
By Fitch & Fitch
attys.

UNITED STATES PATENT OFFICE.

DAVID WISER, OF PLYMOUTH, INDIANA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **210,828**, dated December 10, 1878; application filed May 25, 1878.

To all whom it may concern:

Be it known that I, DAVID WISER, of Plymouth, Marshall county, State of Indiana, am the inventor of Improvements in Spark-Arresters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an elevation of a locomotive smoke-stack containing my improvements, and Fig. 2 is a vertical central sectional view of the same.

My invention relates to a combination of devices for preventing the escape of sparks or cinders from the stack of a locomotive, and to accomplish their discharge through a pipe to the ground or into the furnace, ash-pan, or fire-box of the locomotive; and my invention consists of certain improvements upon the devices shown and described in Letters Patent of the United States issued to me jointly with Henry Schmieders, July 20, 1875, No. 165,907, for spark-arresters.

In order that my present improvements may be thoroughly understood, it will be necessary for me to describe in detail herein some of the parts which are shown and described in the said before-named Letters Patent; but I do not intend to claim herein as new any of the devices shown in said patent, combined and arranged as therein specified.

A is the body of the stack, made with a flaring top, A^1, surmounted with a bonnet of a truncated-cone shape, A^2, the bonnet being joined to the top A^1 by bolts *a*, as shown. Within the top A^1, and extending upward from the joint of the body A and top A^1 to about the line of the base of the bonnet A^2, is the deflector B, inside of which is supported the screen C of gauze or wire-cloth, made in the form of an inverted cone.

Heretofore the upper edge of the wire-cloth screen has been curved over and around the upper edge of the deflector B, and carried out into the joint between the top A and bonnet A^2, and held by the bolts *a*; but I have found that the force of the impact of the sparks and cinders upon that portion of the gauze screen which is curved over and around the deflector—that is to say, that part which forms the outwardly-turned base of the inverted cone C—is liable to wear and fracture the gauze or wire-cloth.

My improvement consists in the continuous metal rim or ring C′, to which the upper edge of the wire-cloth cone or screen C is secured, below the line of the top of the deflector B, the said ring being then curved over and around the top of the deflector, and secured at its outer edge in the joint between the top A^1 and the bonnet A^2 by the bolts *a*.

I thus provide a solid surface for the sparks and cinders to strike against at the top of the deflector, and the liability of the screen to be fractured at this point by the impact of the cinders is avoided.

The cinders are guided over the top of the deflector by the solid ring C′, and fall upon the inclined annulus D in the space between the deflector and the top A^1, from whence they descend into the pipe *d*, through which they may be conducted to the ground, the ash-pan, or the fire-box. If to the latter, a considerable saving of fuel is thus effected.

The lower end or apex of the cone-shaped screen C is supported by a cone of solid or continuous metal, E, as shown, which cone E is properly supported by braces *c*, as shown. This cone E is intended to prevent the abrasion or fracture of the screen C at this point by the impact of the cinders, which are thrown forcibly upward; but I have found that while this cone will protect the apex of the screen C, the said screen is more or less liable to be injured by the force of the sparks along its sides above the inverted apex.

My second improvement consists in the flaring or outwardly-curved rim or base *e* of the supporting-cone E. By means of this rim the sparks are prevented from striking the screen along its sides at the time they are rising through the stack with the most velocity, but are deflected outwardly, and cast somewhat against the wall of the deflector B, and thence upward.

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

1. In a locomotive-stack, A, having the top A^1 and bonnet A^2, together with the deflector B, annulus D, and pipe *d*, the combination,

with the screen C, of the solid rim or ring C′, all constructed and arranged to operate substantially as and for the purpose specified.

2. In combination, the stack A, deflector B, top A^1, bonnet A^2, annulus D, and pipe *d*, together with the screen C, extending over and around the top of the deflector, and with its upper edge secured in the joint of the said top and bonnet, and supported at its lower end by the cone E, having the outwardly-flared rim or base *e*, as and for the purpose specified.

DAVID WISER.

Witnesses:
J. D. McCLAREN,
GEO. H. SHOEMAKER.