J. A. BLAIR & W. C. BUSH.

SPARK-ARRESTERS.

No. 195,745. Patented Oct. 2, 1877.

Fig: 1.

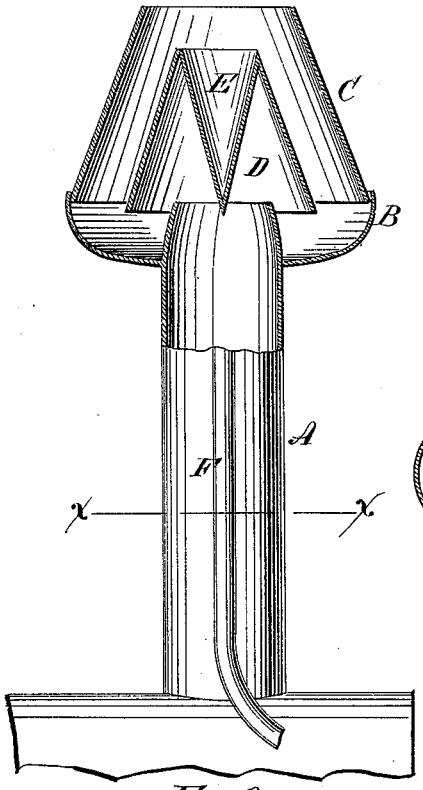


Fig: 3.

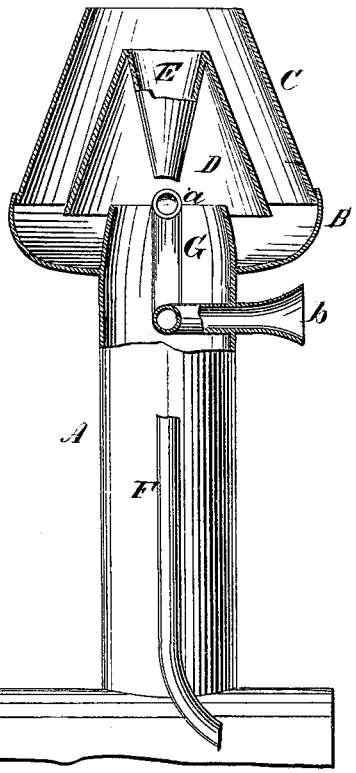


Fig: 5

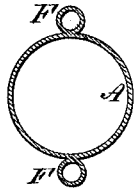


Fig: 2

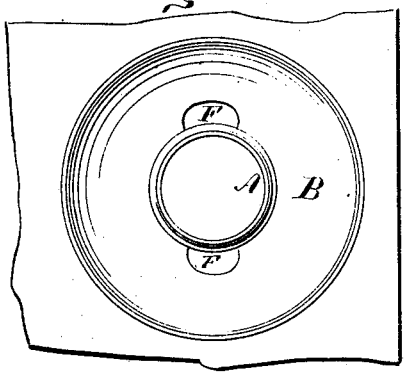
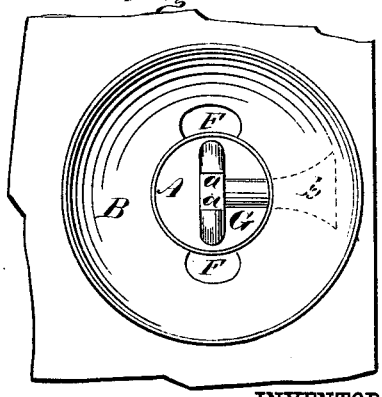


Fig: 4



WITNESSES:

Chas. Nida

J. H. Scarborough.

INVENTORS

J. A. Blair.

W. C. Bush.

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN A. BLAIR AND WILLIAM C. BUSH, OF FAIR HILL, MARYLAND.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **195,745**, dated October 2, 1877; application filed July 23, 1877.

To all whom it may concern:

Be it known that we, JOHN A. BLAIR and WILLIAM C. BUSH, of Fair Hill, county of Cecil, and State of Maryland, have invented a new and Improved Spark and Cinder Catcher, of which the following is a specification:

Figure 1 is a side elevation, in part section, of our improved spark and cinder catcher. Fig. 2 is a plan view with the double cone removed. Fig. 3 is a side elevation, in part section, of a modified form of the device. Fig. 4 is a plan view of the same with the double cone removed. Fig. 5 is a transverse section on line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of our invention is to provide an improved spark and cinder catcher for locomotives and other engines which will catch the cinders and conduct them to the ground.

In the drawing, A is a smoke-stack, which is slightly contracted at its upper end, and B is an annular concave receiver, which surrounds the smoke-stack a short distance from its upper end. To the receiver B a truncated sheet-metal cone, C, is fitted. Within this cone a similar but smaller cone, D, is suspended by rods or straps over the upper end of the smoke-stack, with its lower edge projecting downward a short distance below and outside of the upper end of the smoke-stack.

An inverted cone, E, of small diameter, is joined to the upper edges of the cone D, and projects downward into the center of the smoke-stack a short distance. At the sides of the smoke-stack there are pipes F, which are enlarged at their upper ends, and are connected with the receiver B. The lower ends of these pipes extend downward nearly to the ground.

The device shown in Fig. 3 consists in the addition to the stack of a double blast-nozzle, G, the branches *a a* of which are located on opposite sides of the lower portion of the cone D.

The blast-nozzle G is turned in a right angle, and extends through the front of the smoke-stack, where it is provided with a bell-shaped mouth, *b*.

The sparks and cinders that are projected upward by the exhaust of the engine are directed by the converging top of the smoke-stack against the cone D, by which they are deflected so that they strike the inner surface of the cone C, from which they drop into the receiver B, and are delivered to the pipes F, by which they are carried downward below the boiler and permitted to escape to the ground.

Where the cones C D do not materially impede the draft the blast-nozzle G is not used; but when the draft is insufficient the said nozzle is employed to increase it by gathering air from the front of the engine as it moves forward.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. The hollow truncated cones C D, the inverted cone E, and receiver B, in combination with the smoke-stack A, substantially as shown and described.

2. The receiver B, attached to and inclosing the upper end of the smoke-stack A, in combination with said stack and pipes F, which extend downwardly on the outside of the stack from openings in the bottom of the receiver, as and for the purpose specified.

3. The combination of the cones D E, smoke-stack A, and blast-nozzle G *a b*, the latter being arranged below the cones, as and for the purpose specified.

JOHN A. BLAIR.
WILLIAM C. BUSH.

Witnesses:
C. SEDGWICK,
ALEX. F. ROBERTS.