E. M. JOHNSON.

SPARK-ARRESTER.

No. 189,228. Patented April 3, 1877.

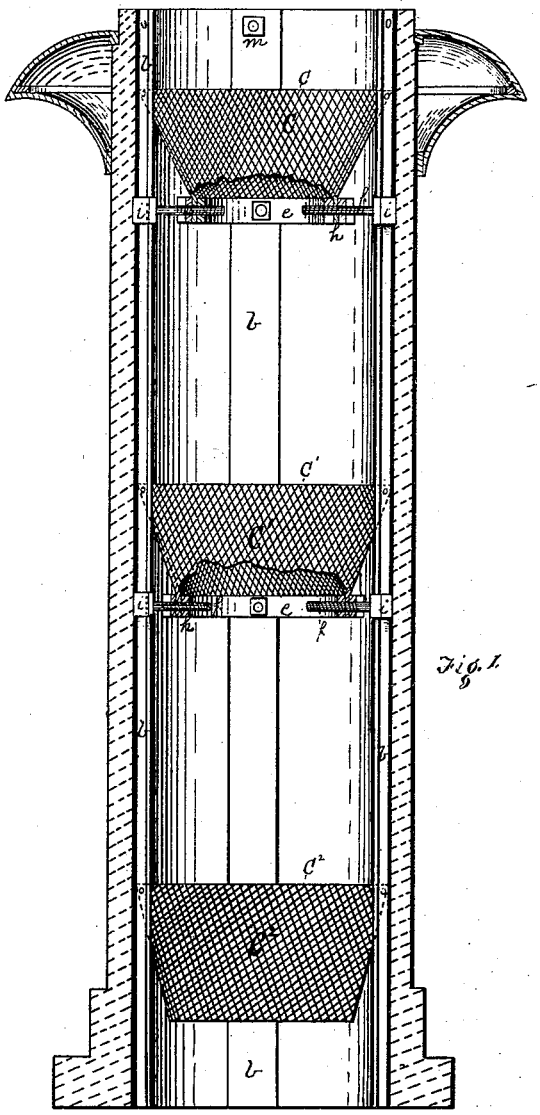

Fig. 1.

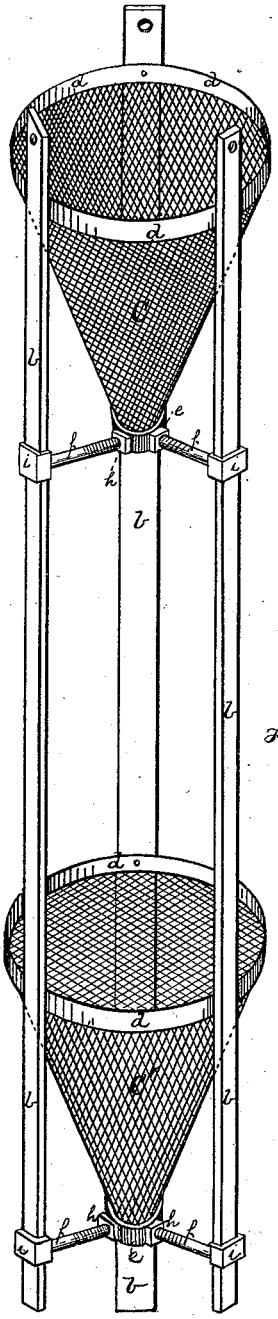

Fig. 2.

Witnesses.

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ENOCH M. JOHNSON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND JOHN E. SAMPSEL, OF SAME PLACE.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **189,228**, dated April 3, 1877; application filed January 17, 1877.

To all whom it may concern:

Be it known that I, ENOCH M. JOHNSON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Spark-Arresters; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a vertical section of a locomotive smoke-stack with my improved spark-arrester in connection therewith. Fig. 2 is a perspective view of the brackets, showing my invention in another form.

Like letters refer to like parts in each.

My invention relates to that class of devices termed "spark-arresters," used in connection with locomotive and other stacks; and it consists in combining with the stack a series of inverted hollow perforated conical frusta, arranged one above the other, so as to obtain deflecting surfaces, against which the sparks are thrown by the draft without obstructing the draft.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

In the drawing referred to, A represents a locomotive-stack, the inner surface of which should be straight and of equal diameter throughout. Upon the rods or bars *b b* I secure a series of perforated conical frusta, C C^1 C^2, in any suitable manner, with the base up. These perforated conical frusta or baskets may be made of steel plate, wire, or other suitable substance, and when made of wire the bases of the cones are riveted or welded to rings *d* attached to the rods *b*, (as shown in Fig. 2.)

In order to prevent the baskets from bending I find it necessary in some cases to secure the apex of the cone or basket in a ring, *e*, which is held in position by the bolts *f*, provided at the end with slots *i*, which slide upon the rods *b*. In order to adjust the apex of the cone in the center of the stack the bolts *f* are provided with the jam-nuts *h*. When steel-plate baskets are used, however, it is not always necessary to use the ring *e*. At the apex of the baskets C C^1 C^2 are central openings, through which the induced draft, caused by the exhaust from the engine, passes. These openings should not be smaller than the exhaust-pipe, so that the draft shall not be obstructed by the brackets, and when certain kinds of fuel are used the openings of the lower basket or baskets are larger than the upper one, as shown in Fig. 1.

The baskets suspended on the rods *b* are passed down the top of the stack, and secured therein by the bolts *m* passing through the rod and stack. The baskets fit close against the stack, and so prevent any sparks from passing between.

I do not limit myself to the number of baskets used, as in some cases two are sufficient.

The operation of my improved spark-arrester is as follows: The sparks carried up by the jet-exhaust will be deflected against the lower basket, and, falling back, will be again caught by the draft, and thrown against the basket or carried through the lower one to the next basket, being retained in the stack long enough to die out and be broken into cinder fine enough to pass through the meshes of the baskets, and will then be carried out of the stack in the form of dead cinder.

The central openings in the basket are material, and the baskets should be adjusted and arranged so as to bring the open apices in line, so as to prevent the baskets from materially affecting either the natural or induced draft of the stack.

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

In combination with a stack, a series of inverted hollow perforated conical frusta or baskets, having central openings arranged within the stack, one above another, substantially as and for the purposes specified.

In testimony whereof I, the said ENOCH M. JOHNSON, have hereunto set my hand.

ENOCH M. JOHNSON.

Witnesses:

JAMES I. KAY,

F. W. RITTER, Jr.