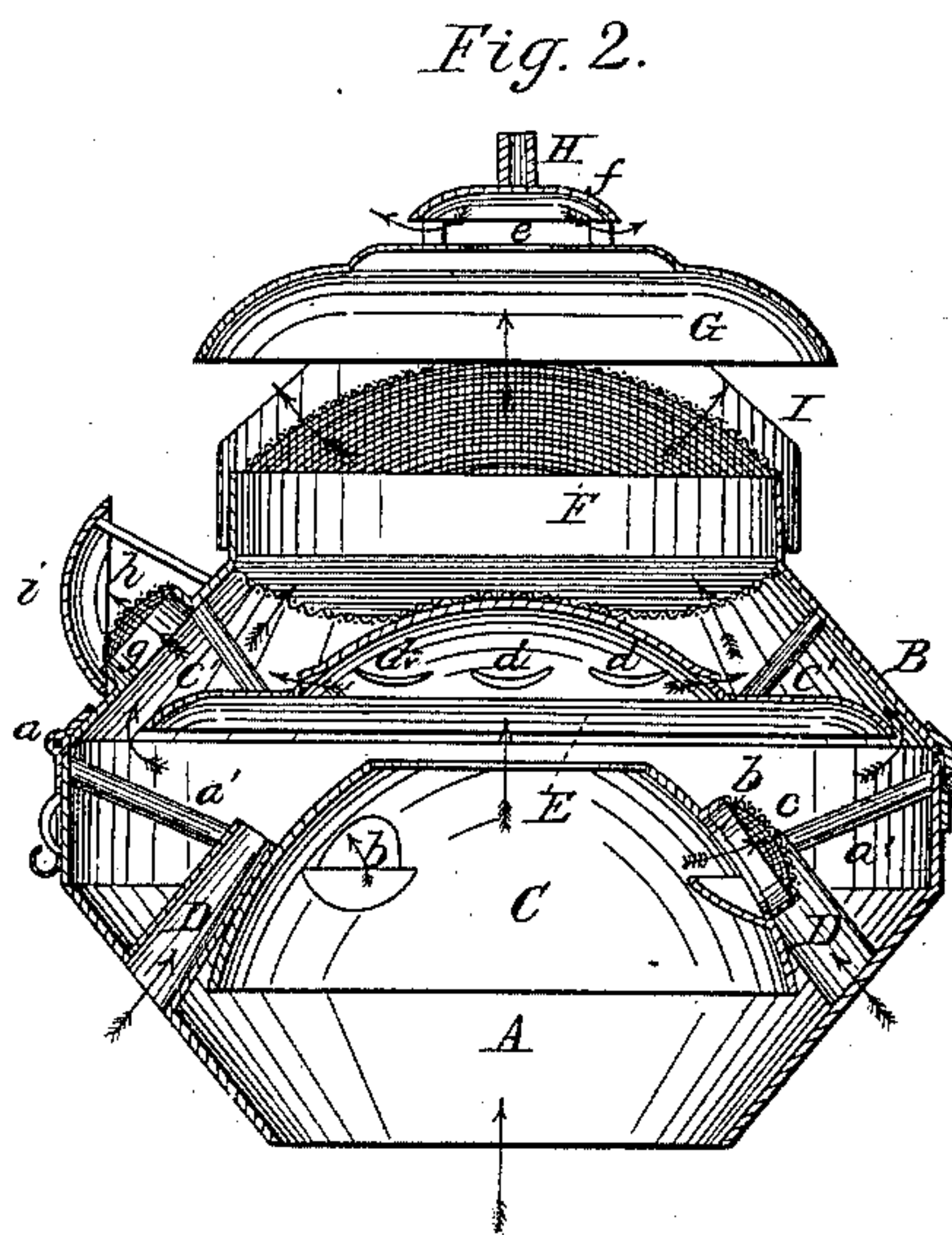
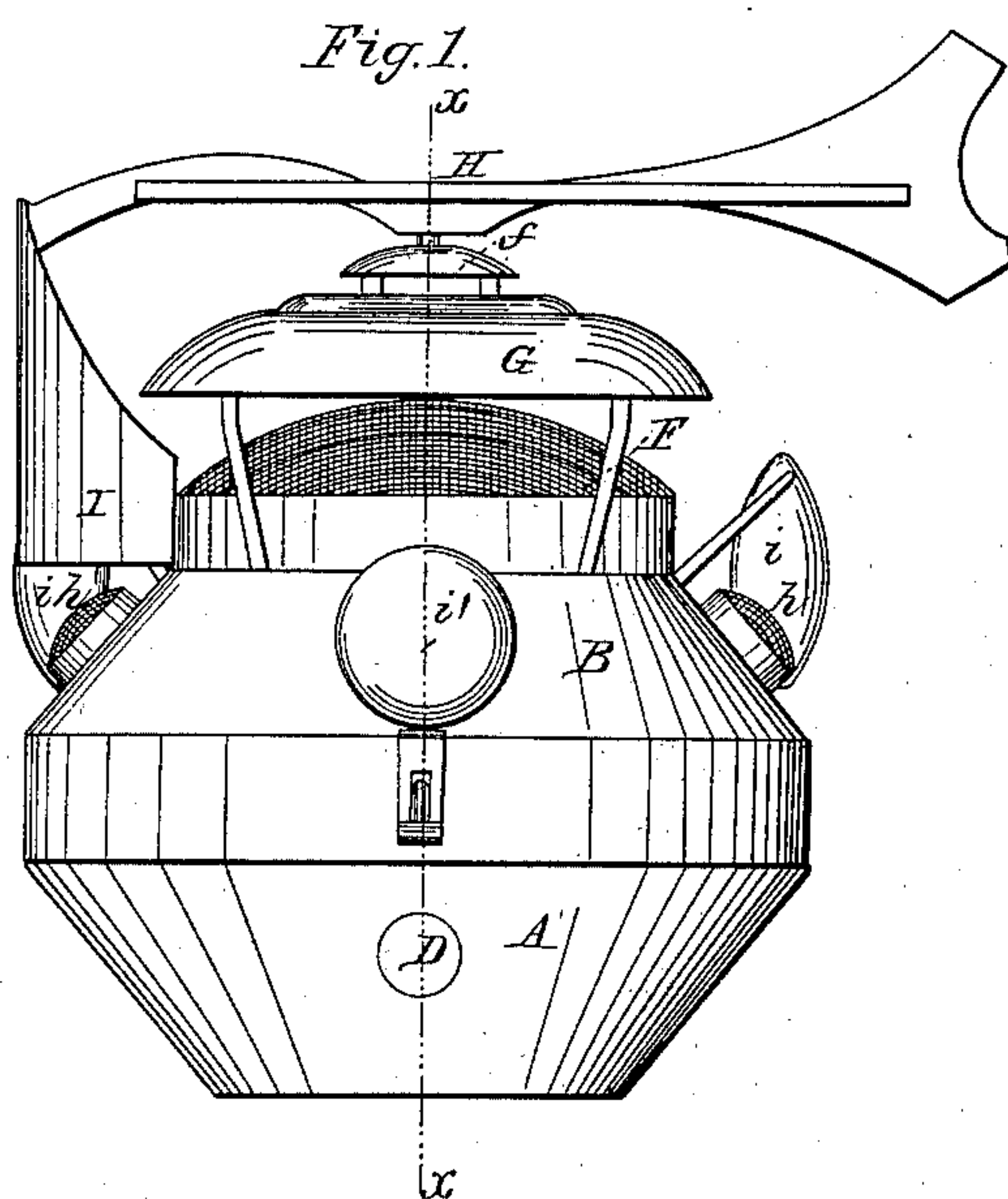


A. F. Smith,
Spark Arrester,

No 80,229

Patented July 21, 1868.



Witnesses.

Wm. A. Morgan
G. L. Cotton

Inventor.

A. F. Smith

per Munnell
Attorney.

United States Patent Office.

A. F. SMITH, OF ELLSWORTH, MAINE, ASSIGNOR TO HIMSELF AND LEWIS FRIEND, OF SAME PLACE.

Letters Patent No. 80,229, dated July 21, 1868.

IMPROVEMENT IN SPARK-ARRESTER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, A. F. SMITH, of Ellsworth, in the county of Hancock, and State of Maine, have invented a new and useful Improvement in Spark-Arresters; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side view of my invention.

Figure 2 is a vertical section of the same, taken in the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved spark-arrester, to be applied to the smoke-stacks of locomotives, chimneys, &c., for the purpose of preventing the escape of sparks therefrom.

The invention consists in the peculiar construction of the device as hereinafter fully shown and described, whereby a good or efficient draught is obtained to insure the escape of smoke, and the cinders at the same time prevented from passing out of the device.

The spark-arrester is composed of two parts, A B, connected by a hinge, *a*. The lower part, A, which is secured to the smoke-stack or chimney, is of inverted conical form, and has within it a shell, C, of inverted-bowl form, and secured in position by arms *a'*, attached to the inner surface of A, as shown clearly in fig. 2. The shell C is open at the top and bottom, and has perforations *b* in its sides, covered with wire cloth *c*.

D represents tubes, which are fitted within the part A, extend up by the side of the perforations *b*, and communicate with the external air.

E represents a cap, which is placed within the part B, and retained in proper position by arms *c'*, as shown in fig. 2. This cap is directly over the top of the shell C, and it is perforated with a series of semicircular slots, *d*, which will admit of smoke passing through, but not the cinders.

Directly over the cap E there is a wire-gauze chamber, F, which is fitted tightly in the top of the part B, and over this wire-gauze chamber F there is a plate, G, having a circular aperture, *e*, at its centre, which is covered by a cap, *f*.

In the side of the upper part of B there are made circular openings, *g*, covered with wire cloth, *h*, and having plates *i* at their outer sides, to shield said openings from the wind.

H is a vane, the pivot of which is at the centre of plate G. This vane has a shield or plate, I, attached to one end of it, said shield or plate extending down below the exposed surface of the wire-gauze chamber F. This shield protects the windward side of the chamber F from the action of the wind.

The smoke and cinders pass up into the lower part of A, through the shell C, around the sides of the same, and through the perforations *b* of the shell, the smoke passing into the wire-gauze chamber F, but not the cinders, the wire gauze excluding them. The greater portion of the cinders pass directly up through the shell C, strike the cap E, and are deflected downward. The tubes D increase the draught in the device, and render it very efficient in its operation. A portion of the smoke escapes through the opening *g* in B. The plate *i* of the opening *g*, and the shield I of the vane, prevent the wind from acting unfavorably upon the draught.

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

1. The two parts A B, the shell C, cap E, and the wire-gauze chamber F, with the openings *b* in shell C, and the openings *g* in the upper part B, covered with wire cloth, all combined and arranged substantially as and for the purpose set forth.

2. The draught-tubes B, placed in the lower part, A, of the device, and the openings *b* in the shell, arranged to operate substantially as and for the purpose specified.

3. The shield I, attached to the vane H, and arranged in relation with the wire-gauze chamber F, substantially as and for the purpose set forth.

A. F. SMITH.

Witnesses:

A. F. DUNKWATER,
J. F. DAVIS.