

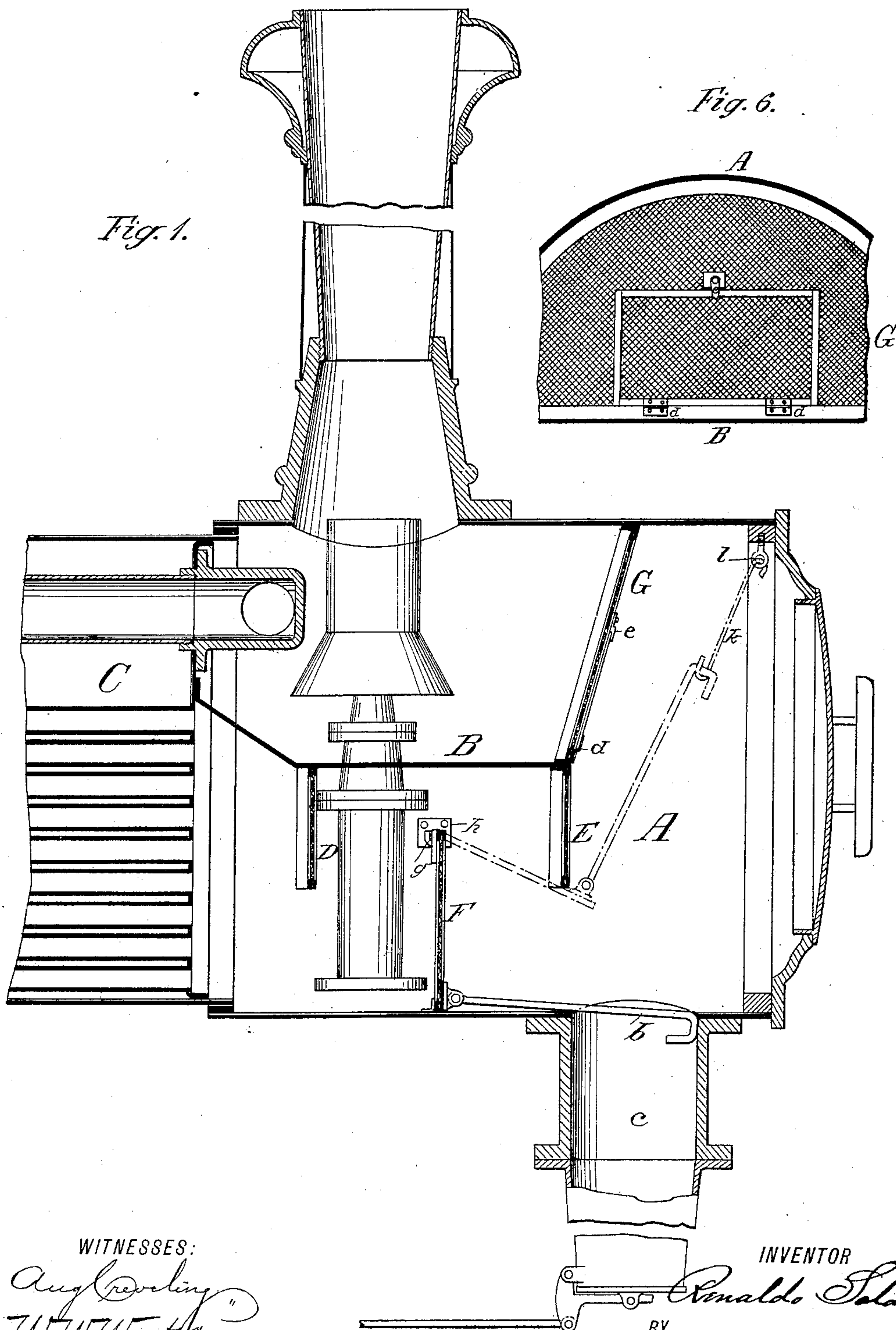
(No Model.)

2 Sheets—Sheet 1.

R. SOLANO.  
SPARK ARRESTER.

No. 353,271.

Patented Nov. 23, 1886.



WITNESSES:  
*Aug. C. C. C.*  
*W. W. W.*

INVENTOR  
*Ronald Solano*  
BY  
*Chas. M. Forbes*  
ATTORNEY

(No Model.)

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Fig. 2.

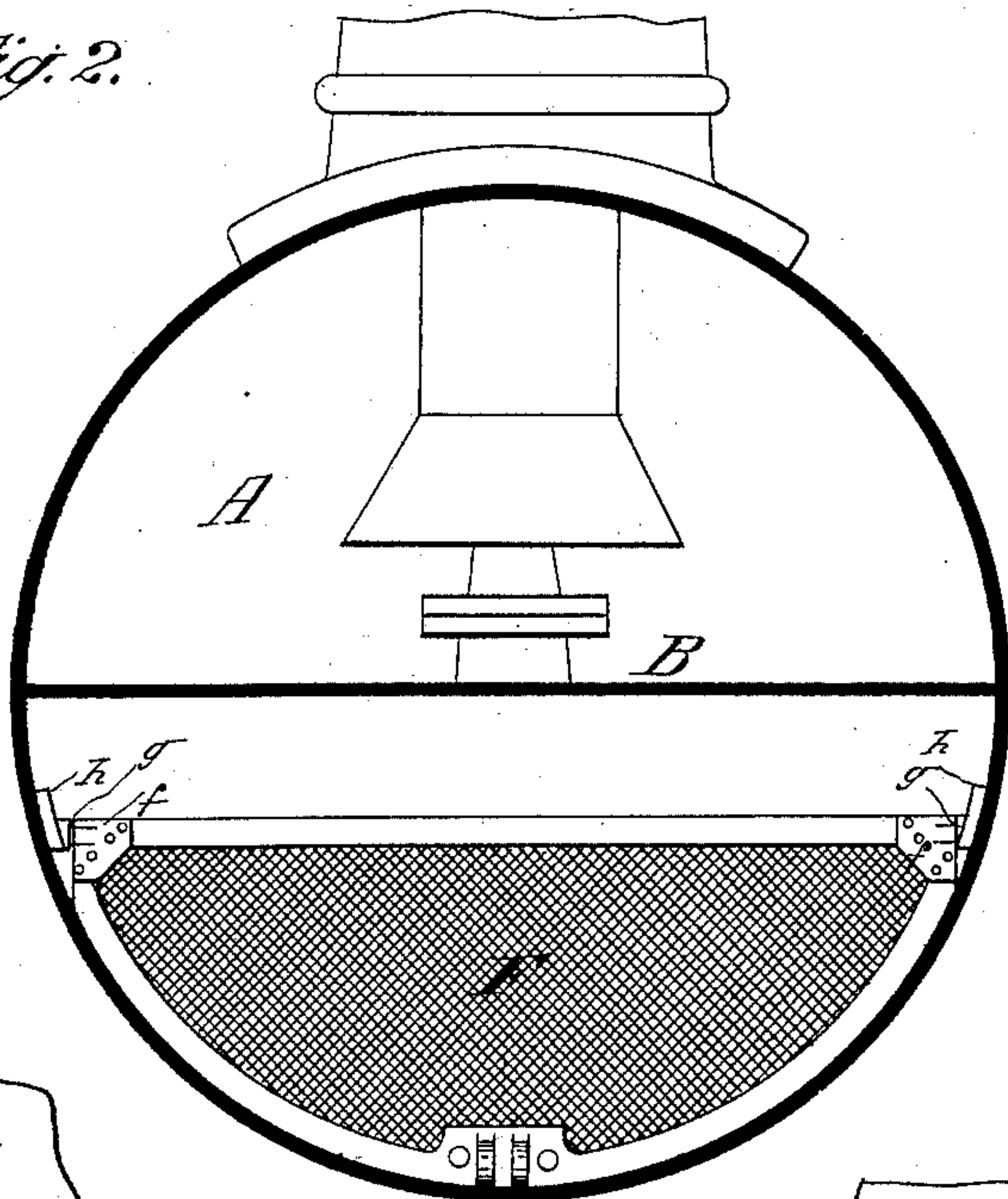


Fig. 4.

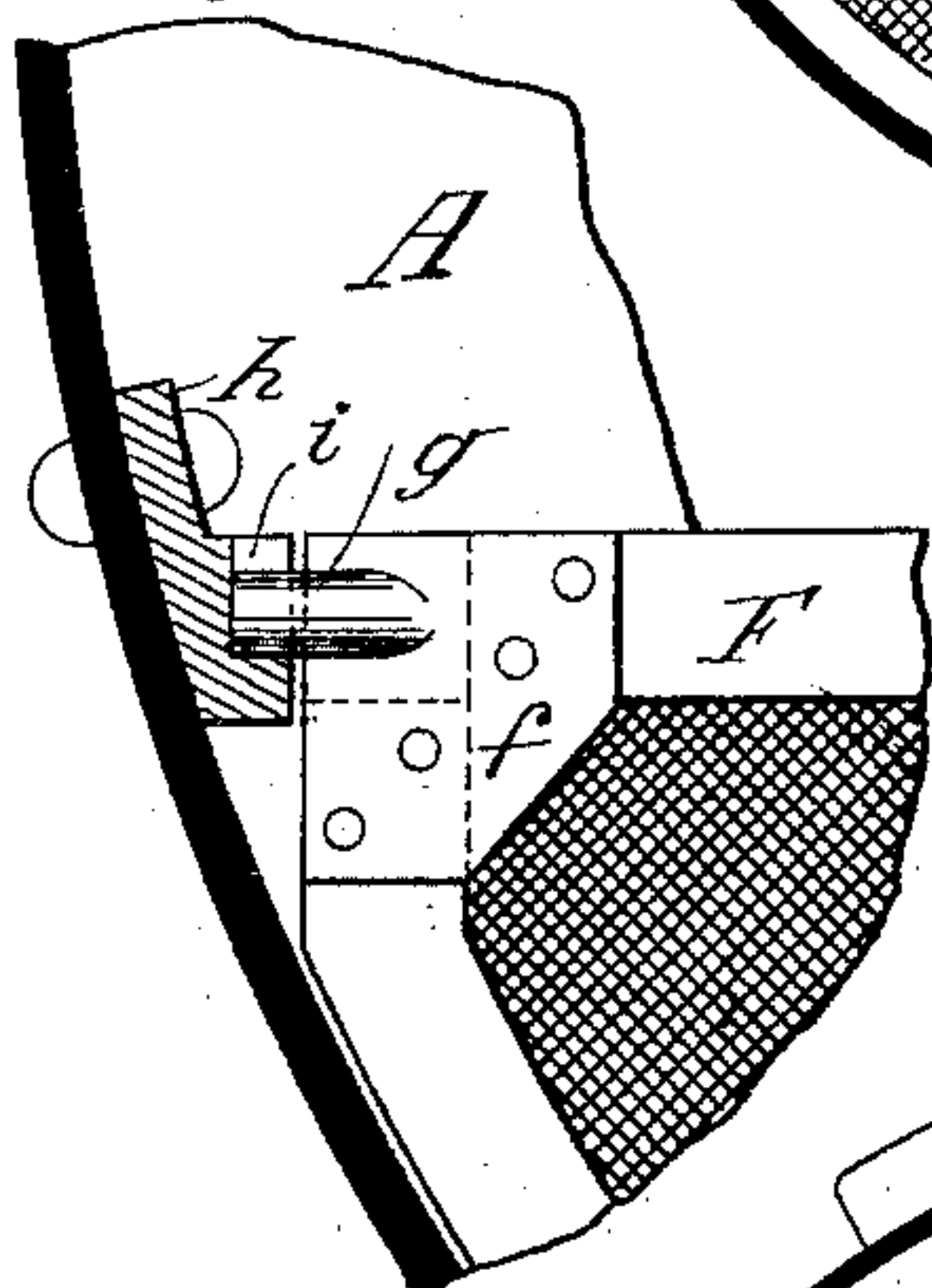


Fig. 5.

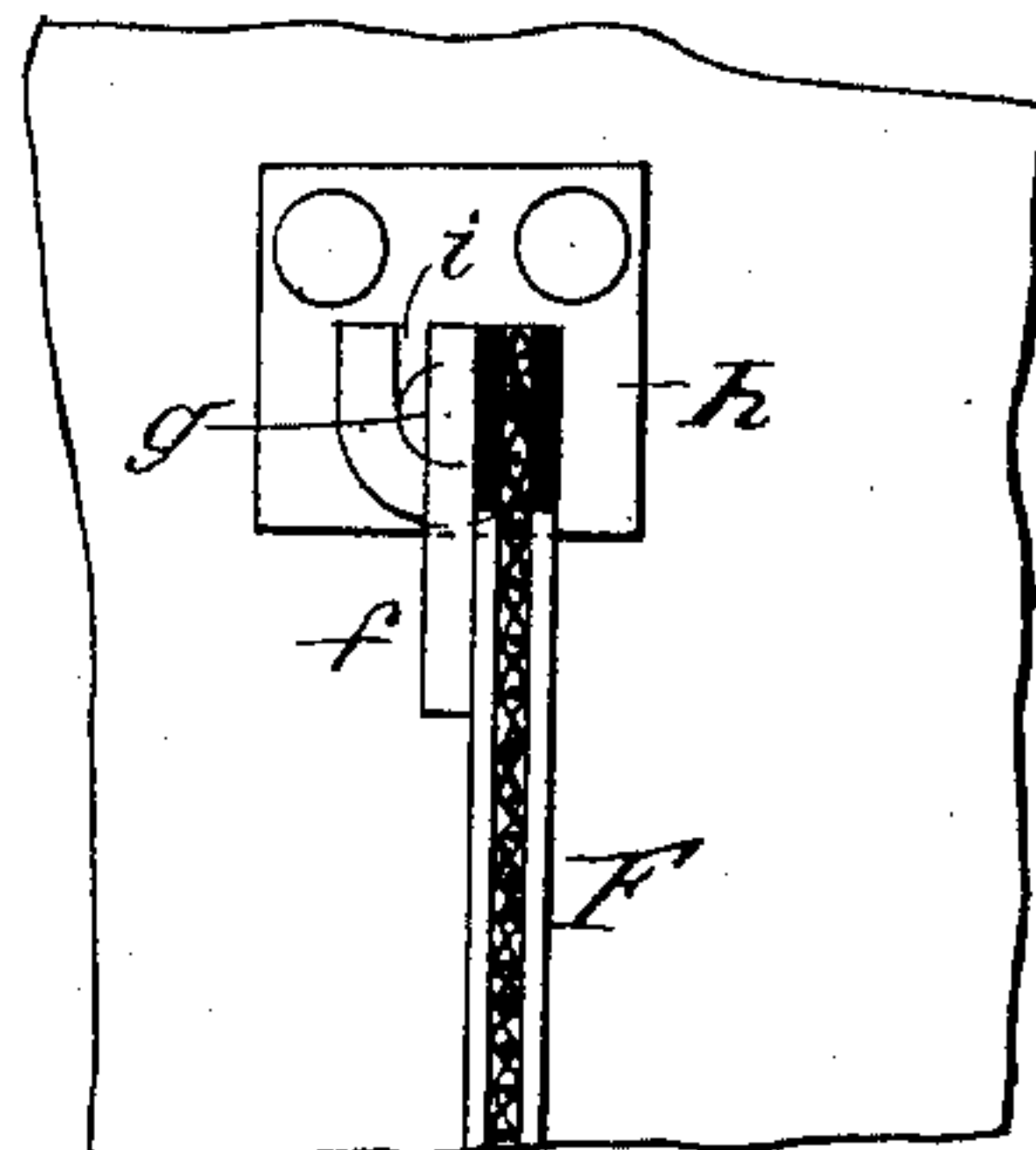
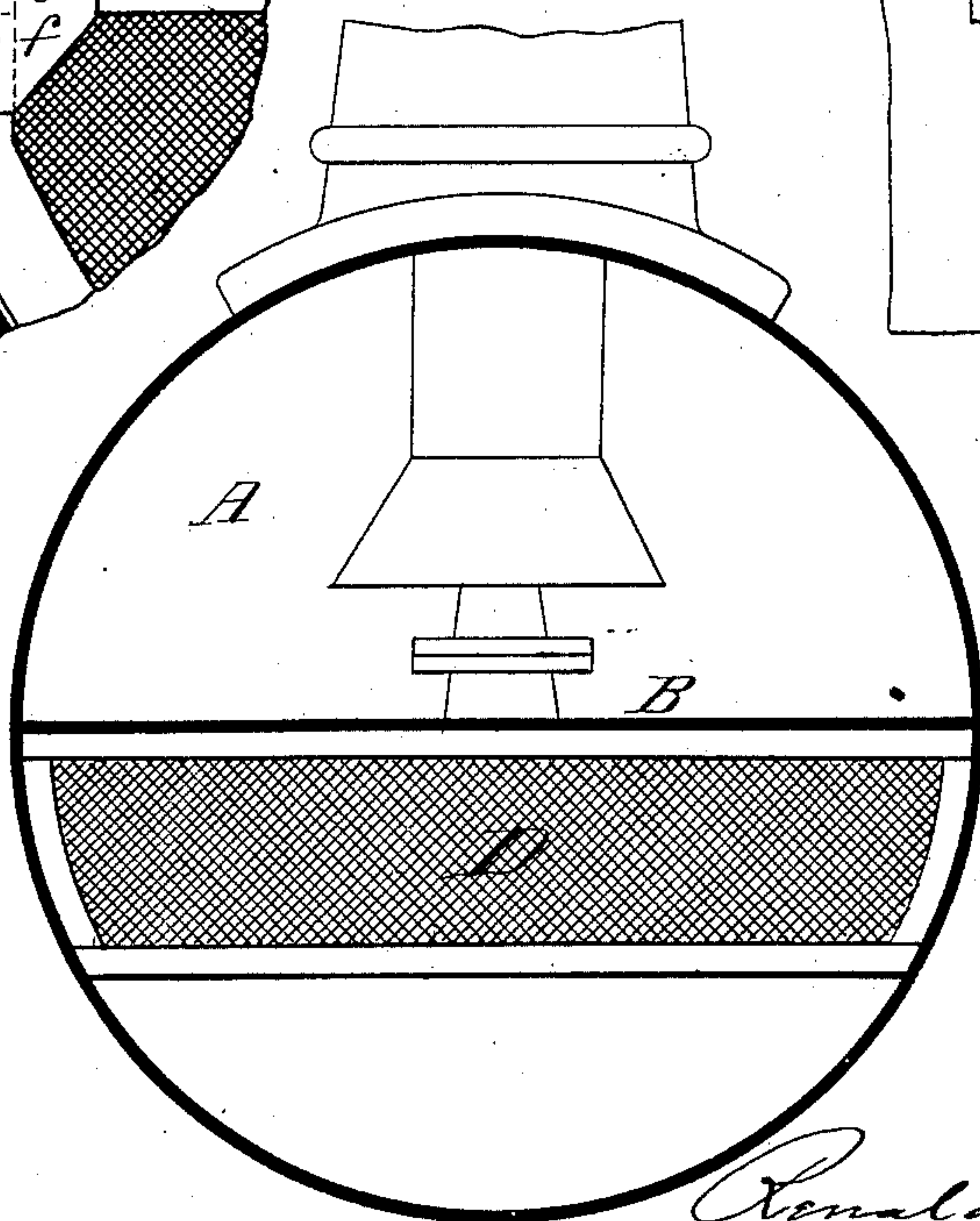


Fig. 3.



WITNESSES:

Angelo  
W. W. Weston

INVENTOR

Ronald Solano

BY

Chas. M. Forbes

ATTORNEY



# UNITED STATES PATENT OFFICE.

RENALDO SOLANO, OF BROOKLYN, NEW YORK.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 353,271, dated November 23, 1886.

Application filed August 28, 1886. Serial No. 212,050. (No model.)

*To all whom it may concern:*

Be it known that I, RENALDO SOLANO, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Spark-Arresters, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 is a longitudinal section of the smoke box and pipe of a locomotive with my improvement; Fig. 2, a cross-sectional view showing the lower swinging wire-cloth frame and its connections to the boiler; Fig. 3, a cross-sectional view of the upper arresters. Figs. 4 and 5 are views in detail of the swinging wire-cloth frame; and Fig. 6, a view in detail, showing the trap in the upper spark-arrester as shown in Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to arrest the spark in a locomotive without diminishing the area of draft in the same; and it consists in such a novel relative arrangement of the arresters that permit a free escape of the products of combustion, as hereinafter more particularly described.

In the drawings, A represents the extension smoke-box of a locomotive, in which a plate, B, is fastened to the end of the boiler C, and to the sides of the smoke-box A. Upon the under side of the plate B wire-cloth frames D and E depend about half-way across the depth of the smoke-box A.

F is a wire-cloth frame projecting upward from the bottom of the smoke-box, about midway of the depending wire-cloth frames D, extending above the bottom of said frames, and hinged or pivoted to the side of the smoke-box, so that it can be elevated to the position shown in dotted lines, for the purpose hereinafter explained. Upon the bottom of the smoke-box an angle-plate is attached, to stop the movement of the swinging frame F, which is fastened in its vertical position by pressing the hook *b* into the discharge-pipe *c*.

G represents the upper spark-arrester, composed of a wire-cloth frame, which occupies

the full upper half of the smoke-box and is fitted with a wire-cloth trap, arranged centrally, swung on hinges *d*, and provided with a suitable catch, *e*, for holding the same in place.

The swinging frame F has an upper cornice or plate, *f*, with pivots *g*, which are journaled in a casting, *h*, the latter being slotted from the bearings, so that the frame F can be removed by simply raising it out of the bearing-socket *i*.

Having now referred to the various parts, I will proceed to describe the operation.

The fire and sparks emitted from the horizontal fire-tubes will impinge against the plate B and the first spark-arrester, D, and the larger sparks will be deflected and fall to the bottom of the smoke-box A; but as the spark-arrester D only occupies one-half of the area of the passage the fire and sparks will consequently escape past it and meet the second arrester, F, which will not allow any to pass unless drawn above the frame, by the draft, which in turn is met by the arrester E, which deflects all the sparks that are too large to pass through to the bottom, and all that remains will meet the finer screen or arrester G, which sustains the draft only through the wire-cloth covering.

In case, in the arrangement shown, the sparks should fill up the space before the screen or arrester F, there will always be more clearance or space than the area of the tubes of the boiler either below the screen or arresters D and E or above the screen or arrester F, and whereby the draft is never impeded.

For cleaning out the sparks, the frame F is elevated and the catch *b* hooked, as at *k*, or to an eyebolt, *l*, as indicated in the drawings, and the dead sparks at the bottom are drawn to the discharge-pipe *c*, while access to the upper exhaust-chamber is had through the trap in the arrester G.

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

1. A chamber into which the products of combustion are discharged, provided with a partition-plate, B, depending foraminous or

wire-cloth frames D and E, and projecting interposed foraminous or wire-cloth frame F, for the purpose specified.

2. In a spark-arrester, substantially as described; the swinging perforated or screen plate F, provided with suitable devices for elevating and securing the same.

3. The combination of the plate B and fo-

raminous plate or partition G, fitted with a central trap of similar material, substantially as and for the purpose specified.

RENALDO SOLANO.

Witnesses:

AUG. CREVELING,  
W. K. WINANT.