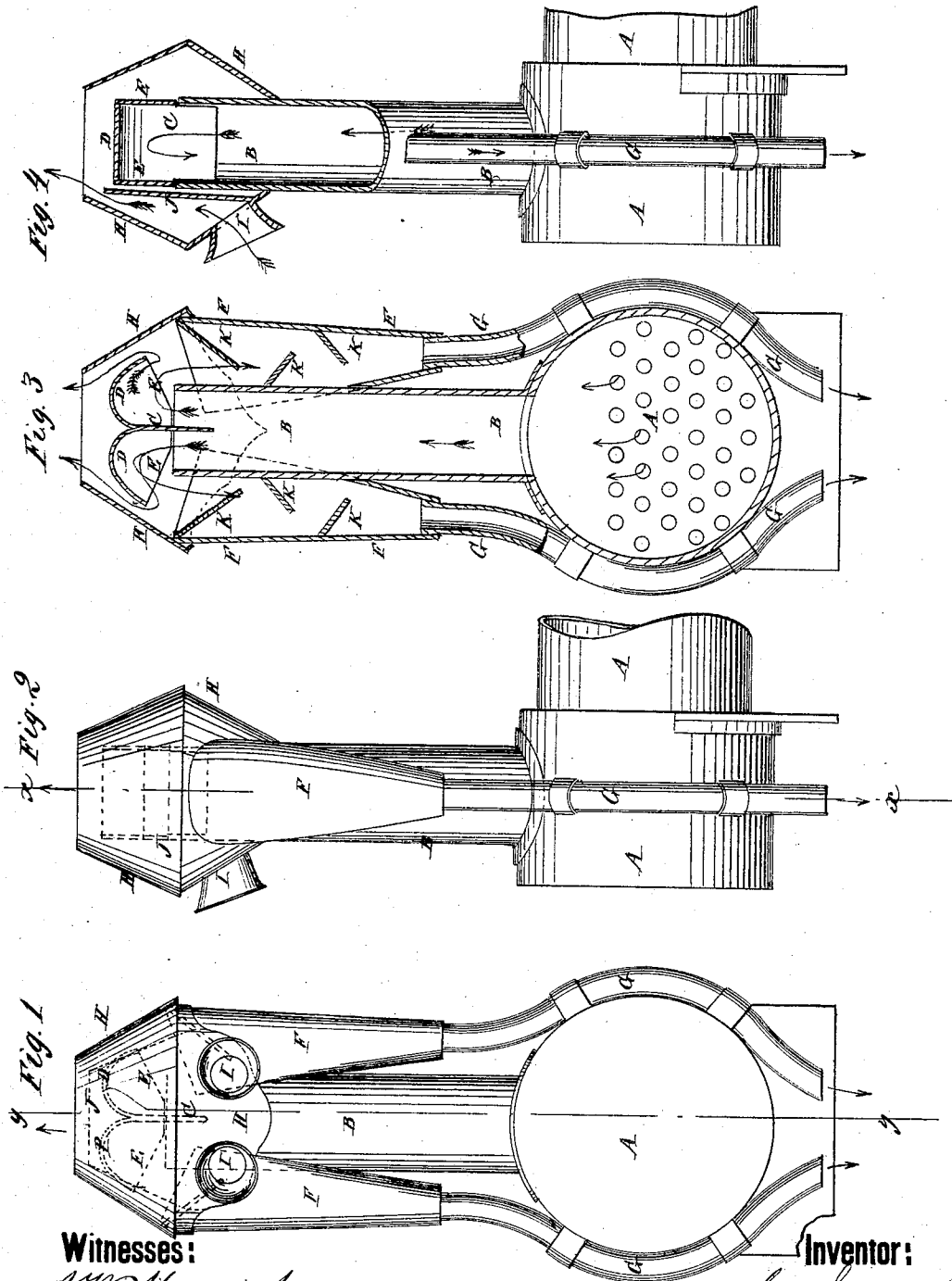


G. SWENSON.
Spark-Arresters.

No. 144,932.

Patented Nov. 25, 1873.



Witnesses:

A. W. Almqvist
Perquies

Inventor:

G. Swenson
Per *Wm. L. G.*
Attorneys.

UNITED STATES PATENT OFFICE.

GUSTAF SWENSON, OF HACKENSACK, NEW JERSEY, ASSIGNOR TO HIMSELF
AND PETER BOGART, JR., OF SAME PLACE.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **144,932**, dated November 25, 1873; application filed
September 27, 1873.

To all whom it may concern:

Be it known that I, GUSTAF SWENSON, of Hackensack, in the county of Bergen and State of New Jersey, have invented a new and useful Improvement in Spark-Arrester, of which the following is a specification:

Figure 1 is a front view of a boiler and smoke-stack to which my improvement has been applied. Fig. 2 is a side view of the same. Fig. 3 is a detail section taken through the line *x x*, Fig. 2. Fig. 4 is a detail section taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to the arrangement of devices within the hood of the smoke-stack, for directing the course of the air and products of combustion entering and passing through the same, as hereinafter described.

A represents a locomotive, and B its smoke-stack. In the upper end of the smoke-stack B is inserted a vertical plate, C, in the direction of the length of the boiler A. The upper end of this plate C has the edges of two plates, D, attached to it, which curve downward in opposite directions nearly to the top of the stack B. To the side edges of the plates C D are attached the plates E, the lower middle parts of which are secured to the front and rear sides of the top of the stack B. The plates C D E thus form guide-spouts by which the direction of the sparks and cinders is changed, and they are guided downward, at the opposite sides of the stack B, into the tapering pipes F, which are attached, larger ends upward, to the opposite sides of the upper part of the stack. The inner side of the upper part of the pipes F is cut away, so that they may partially overlap the said stack, as shown in Figs. 2 and 3. G are pipes extend-

ing from the lower ends of the pipes F, down around the sides of the forward end of the boiler A, and terminate beneath said boiler, so as to discharge the sparks and cinders upon the roadway. The pipes G may be an extension of the pipes F, and their lower ends may be extended downward as close to the roadway as possible. The upper ends of the pipes F and stack B are covered with a hood, H, which is made in the form of a double cone, as shown in the drawings. In the forward side of the lower part of the hood H are formed two holes, in which are inserted two flaring tubes, I. Within the hood H, and in front of the upper end of the stack B and guide-spout C D E, is placed a plate, J, to form a passage leading to the upper part of the hood H. By this arrangement, the tubes I and plate J, as the locomotive moves forward, gather the air and discharge it through the upper end of the hood, so as to increase the draft through the smoke-stack, and thus counteract any tendency of the guide-spout C D E to check the draft. In each of the pipes F are placed one or more inclined plates, K, as shown in Fig. 3, down which the sparks and cinders slide, and which prevent the return of the said sparks or cinders should there be any upward draft through the said pipes.

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

The vertical plate J, arranged in the conical hood with relation to the tubes I, guides D E, and top of the stack B, as shown and described, for the purpose specified.

GUSTAF SWENSON.

Witnesses:

JAMES T. GRAHAM,
TOMPSON B. MOSHER.