(No Model.)

J. H. SWARTZBAUGH.

SPARK ARRESTER.

No. 374,562. Patented Dec. 6, 1887.

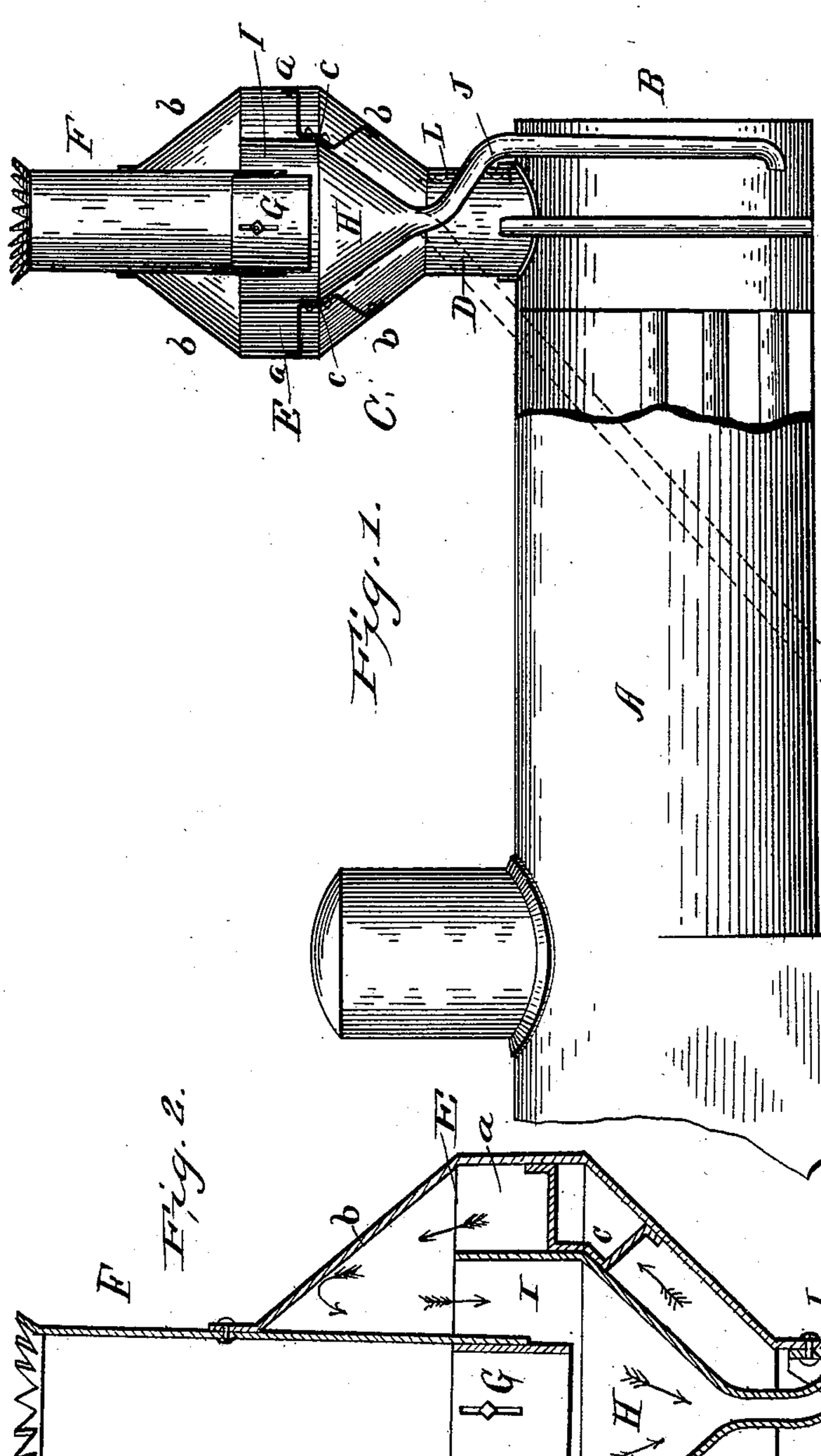

Fig. 1.

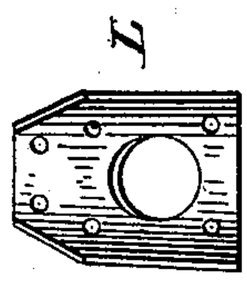

Fig. 3.

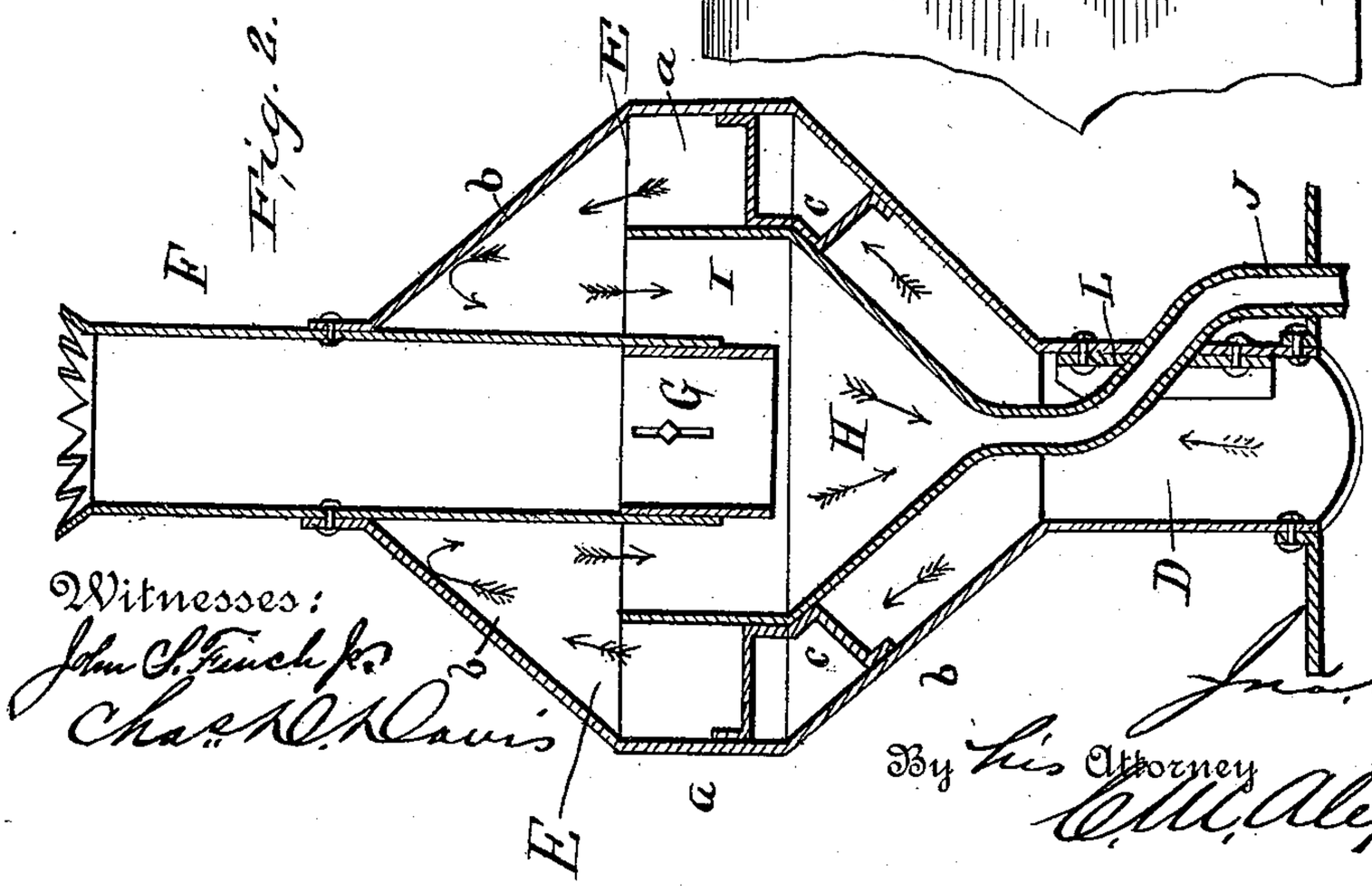

Fig. 2.

Witnesses:
John S. Finch Jr.
Chas. O. Davis

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By his Attorney
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UNITED STATES PATENT OFFICE.

JOHN H. SWARTZBAUGH, OF TIFFIN, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM HYTER, OF SAME PLACE.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 374,562, dated December 6, 1887.

Application filed September 15, 1887. Serial No. 249,758. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SWARTZBAUGH, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to certain new and useful improvements in the construction of that class of spark-arresters which are usually located in the smoke-stack, and are adapted to separate the sparks and cinders from the smoke and gases and convey them to a suitable point of deposit, such as the ash-pan or smoke-box; and it consists in the construction and arrangement of parts hereinafter described, and particularly pointed out in the claims appended.

The invention will be fully understood from the following description when taken in connection with the annexed drawings, in which—

Figure 1 represents a vertical sectional view of my improved spark-arrester attached to a boiler of ordinary construction; Fig. 2, an enlarged sectional view of the smoke-stack detached; and Fig. 3, a detail view of a supporting or re-enforcing plate, which will be fully hereinafter described.

Referring to the drawings by letter, A designates the boiler, B the smoke box or chamber, and C the smoke-stack, which in this instance consists of a short cylinder or tube D, secured to and communicating with the smoke-box in the usual manner, and having attached to its upper end an enlargement, E, which consists of a central band, *a*, considerably larger in diameter than the tube D, having attached to or formed integral with it the two contracted or conical portions *b*, the lower one of which is secured to or formed integral with the short tube D, as shown. Extending into this enlargement of the stack, through the upper end of the upper conical portion *b*, is the outlet-tube F, which is bolted or riveted to an annular flange upon the upper edge of the said upper contracted portion, and depends to a point about on a longitudinal line with the center of the large band *a*. To the lower end of this tube is secured a short tubular extension, G, which is made adjustable to adapt the invention to boilers of different drafts, as will more fully hereinafter appear. Supported in the interior of the enlargement by means of angle-irons *c* is a funnel, H, which has formed upon or secured to its upper edge a band or short cylinder, I, which surrounds and extends up a short distance above the lower edge of the outlet-pipe. To the lower or discharge end of the funnel is secured a spark-conveying pipe, J, which is bent and passed through an aperture in the short tube D, and is then carried down so as to discharge the sparks and cinders into the smoke-box or ash-pan, as shown, respectively, in full and dotted lines in Fig. 1. Bolted to the interior of the tube D, over the aperture through which the spark-conveyer passes, is a re-enforcing or supporting plate, L, perforated for the passage of the conveyer. The object in thus securing this plate is to assist in supporting the conveyer-tube and form a packing to prevent the passage of smoke from the stack, also to strengthen the stack at the point where it is weakened by the aperture.

The object in attaching the adjustable extension G to the lower end of the outlet-pipe is to provide means for adapting the invention for boilers or locomotives of different drafts, the extension being lowered for a boiler of a strong draft, and vice versa.

In operation the sparks and cinders are carried up around the funnel in the stack by the draft, and impinge against the interior of the upper contracted portion of the enlargement, and are thereby deflected inwardly toward the outlet-pipe, whence they drop down into the mouth of the funnel and are conveyed away by the pipe attached thereto, as shown by the arrows in Fig. 2, the smoke and gases passing down a short distance into the funnel, and from thence out through the outlet or discharge pipe.

It will be observed that by means of the contracted upper portion of the enlarged stack, and the regulating device attached to the lower end of the discharge-pipe and projecting into the collecting-funnel, I obtain a thoroughly-effective spark and cinder arrester, which may be readily adjusted to suit boilers

of different drafts, and one which will not retard the draft sufficiently to impair the efficiency of the boiler.

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

1. The combination of the boiler, the stack provided with an enlargement consisting of the central large band, *a*, and the two oppositely-contracted portions *b*, the funnel supported with mouth upward in the said enlargement and provided with a conveyer-pipe at its lower end, and an extension, I, at its upper edge, the outlet-pipe suspended concentrically within the said enlargement and extending into the extension on the funnel a short distance, and the adjustable extension G, attached to the lower end of the outlet-pipe, all arranged substantially as and for the purpose described.

2. In a spark-arrester and conveyer, the combination of the boiler, the stack connected thereto and provided with an enlargement, C, consisting of the two oppositely-contracted portions *b*, connected by a short central band, *a*, the funnel H, supported with its mouth upward within the enlargement, and provided with a short tubular extension, I, on its upper edge, the bent conveyer-tube connected to the lower discharge end of the funnel and passing out through the side of the stack, the plate L, bolted to the stack, where it is perforated and provided with an aperture for the passage of the conveyer-tube, the outlet-pipe suspended within the enlargement, as described, and the extension G, adjustably attached to the lower end of the outlet-pipe, all arranged substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. SWARTZBAUGH.

Witnesses:
GEO. S. YINGLING,
GEO. R. HUSS.