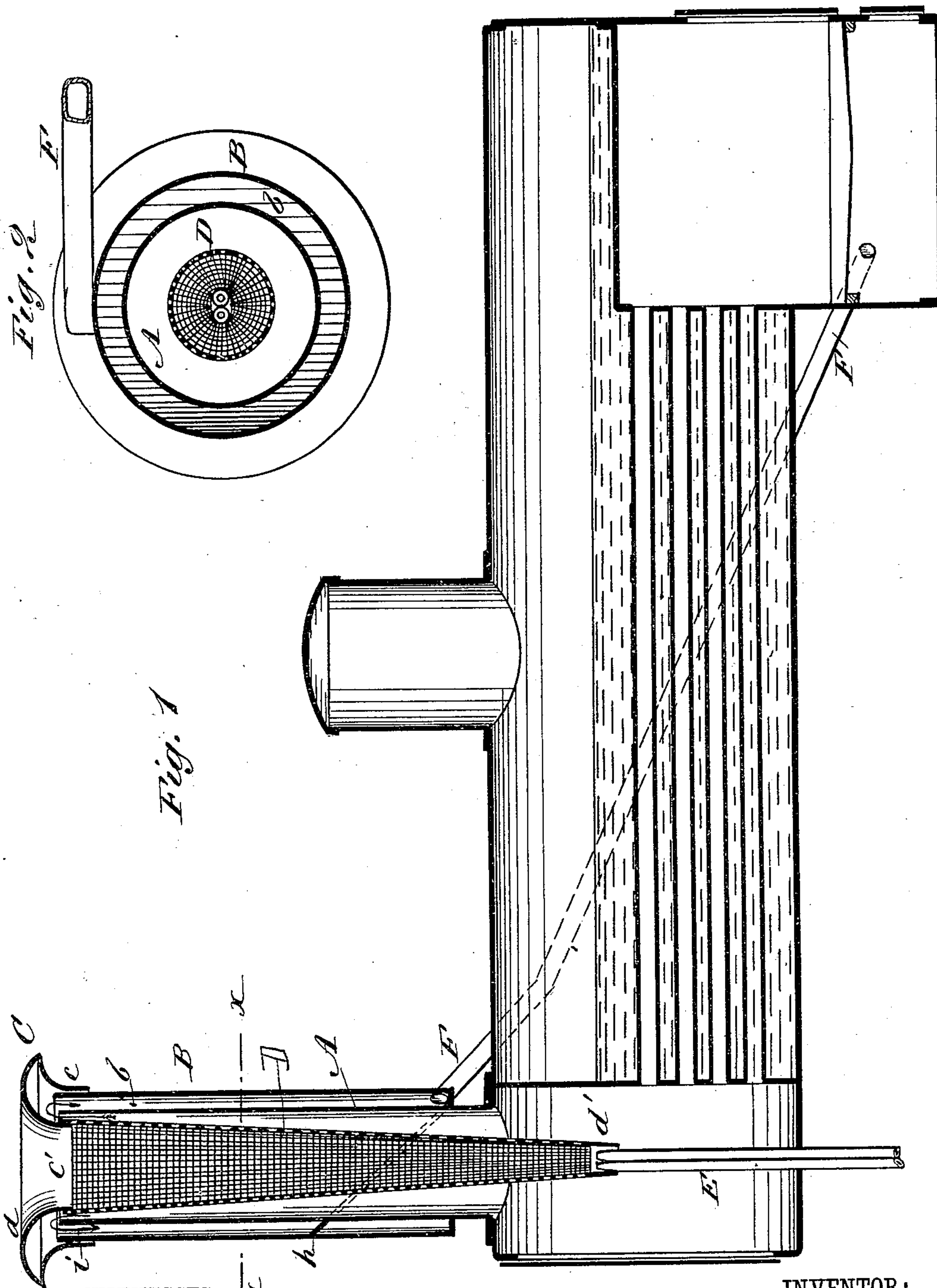


(No Model.)

D. WISER.  
SPARK ARRESTER.

No. 249,717.

Patented Nov. 15, 1881.



WITNESSES:

*C. Newell*  
*C. Sedgwick*

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# UNITED STATES PATENT OFFICE.

DAVID WISER, OF PLYMOUTH, INDIANA.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 249,717, dated November 15, 1881.

Application filed May 3, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID WISER, of Plymouth, in the county of Marshall and State of Indiana, have invented a new and Improved Spark-Arrester, of which the following is a specification.

This invention is an improvement upon the spark-arresters described and claimed in Letters Patent numbered 165,907 and 210,828, which were granted to me July 20, 1875, and December 10, 1878 respectively; and it has for its object modified and simplified construction of the parts, whereby the device is more especially adapted to smoke-stacks which are straight, and the production of a spark-arrester which will return to the fire-box a considerable portion of the smoke and gases, where they will be consumed and utilized as fuel.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of the boiler of an engine, showing my invention attached. Fig. 2 is a horizontal section of the smoke-stack taken at the line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the smoke-stack, which is straight. Surrounding the stack is the jacket B, which is of such size relative to the size of the stack as to form the chamber *b*, which is permanently closed at the bottom, and is closed at the top by the removable annular cover C, the outer rim, *c*, of which fits over and outside the jacket, as shown.

To the inner rim, *c'*, of the cover C is secured the wire or perforated metal cone-shaped spark-arrester or screen D, which is of less diameter than the smoke-stack and goes inside of it, and the rim *c'* is also of less diameter than the stack, so that when the parts are in place, as shown in Fig. 1, the passage *i* is formed between the rim *c* and the stack, through which the sparks, cinders, and products of combustion ascend, and are deflected by the crown *d* of the cover into the chamber *b*. The lower end of the screen D is provided with the collar *d'* or other suitable means of attachment to connect the screen with the exhaust-pipes E of the engine. By this construction the exhaust of steam is directed within the screen, and it has such action therein as to compel the smoke, sparks, cinders, and gases of combus-

tion to ascend to a great extent outside the screen, and much of the same to pass through the passage *i*, from whence the same finds its way back to the fire-box through the pipe F. Besides, the exhaust-steam having a direct central course out of the stack, the steam and gases are to a great extent kept out of contact and from uniting or mingling with each other, and thus the gases returned to the fire-box are free from steam and in a condition to burst into flame and be consumed, furnishing additional heat.

Though I have shown the cover C so constructed as to serve at the same time as the deflector for turning the sparks and gases into the chamber *b*, which is the preferred plan, it is obvious that other means for this purpose might be used, and also that the pipe F, instead of being outside of the boiler, might be placed inside of it and not depart from the spirit of my invention.

The ordinary inclined plate for carrying the sparks and cinders to the entrance of the pipe F is placed in the chamber *b*, as shown at *h*, in Fig. 1.

Instead of inserting the exhaust-pipes in the bottom of the screen, the pipes might be carried higher into the stack and the screen dispensed with, as the counter-currents caused by the exhaust at any point in the stack would cause much of the gases, sparks, &c., to pass into the chamber *b* or other conduits to the fire-box.

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

The combination, with the stack A, the jacket B, the chamber *b*, closed at the bottom and open at the top, and the exhaust-pipes E, of the removable annular cover C, provided with the outer rim, *c*, and the inner rim, *c'*, the passage *i*, formed between the said inner rim and the stack, and the cone-shaped screen D, secured to the inner rim, *c'*, and provided with the collar *d'* at its lower end, substantially as and for the purpose set forth.

DAVID WISER.

Witnesses:

ALBERTUS C. CAPRON,  
CHARLES RICHARDSON.