T. W. GODWIN.

Spark-Arrester for Steam-Boilers.

No. 198,602. Patented Dec. 25, 1877.

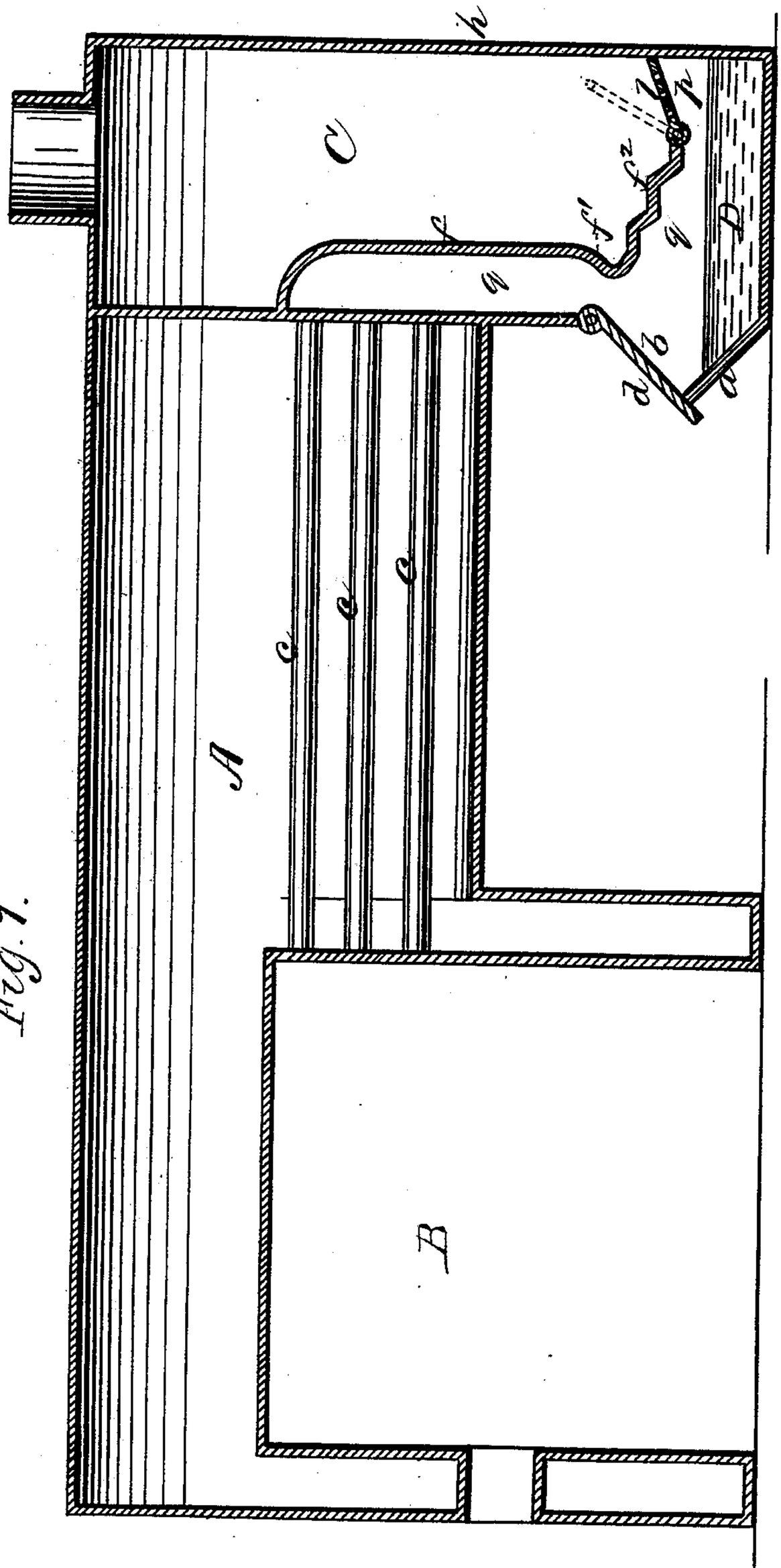

Fig. 1.

WITNESSES

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THOMAS W. GODWIN, OF NORFOLK, VIRGINIA.

IMPROVEMENT IN SPARK-ARRESTERS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **198,602,** dated December 25, 1877; application filed November 3, 1877.

To all whom it may concern:

Be it known that I, THOMAS W. GODWIN, of Norfolk, in the county of Norfolk and State of Virginia, have invented a new and valuable Improvement in Spark-Arresters for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal central section of my spark-arrester applied to a horizontal boiler.

This invention has relation to improvements in spark-arresters for steam-boilers; and it consists in a descending flue arranged in the smoke-box, and opening at its lower end into a water-box, through which the products of combustion are carried from the furnace to the stack, the said flue being carried partly across the said smoke-box, and being transversely corrugated, whereby the sparks are carried by the downward draft into the water and extinguished, while the smoke escapes into the stack, as will be hereinafter more fully described.

In the annexed drawing, the letter A indicates an ordinary horizontal boiler; B, the furnace, and *c* the flues leading from the said furnace into the smoke-box C. At the lower end of the latter a reservoir, D, is formed below the level of the flues *c*, which holds a supply of water for extinguishing sparks. This reservoir has an inclined end wall, *a*, between which and the inner wall of the smoke-box is an opening, *b*, closed by a suitable door, *d*, up which accumulations of cinders will be drawn in clearing out the smoke-box. This door will be closed by a suitable catch or latch.

The products of combustion, on entering the smoke-box from flues *c*, are received into a downward flue, formed by a metallic plate, *f*, extending completely across the smoke-box aforesaid, and downward somewhat below the inner wall of box C. The lower portion of the plate *f* is turned inward, as shown at f^1, and then carried horizontally nearly across the length of the said box, this portion being transversely corrugated, as shown at f^2. Between the corrugated portion f^2 of plate *f* and the outer wall *h* of the fire-box a passage, *p*, is formed, for the purpose of allowing smoke to pass into the body of the smoke-box on its way to the stack. This passage may be closed by a reticulated hinged door, *l*, operated from the outside by a crank or other equivalent device.

The plate *f* and its corrugated horizontal extension f^2 form, with the end wall of the boiler and the bottom of the smoke-box reservoir, an annular flue or passage, *q*, opening by means of the passage *p* into the smoke-box, which extends entirely across the said box.

As the products of combustion pass out of the flues *c* they are directed downward by the upper branch of plate *f*, and backward away from passage *p* by the incline f^1. They then enter the reservoir D, the sparks and cinders falling directly into the water therein, or being directed by the inclined corrugated branch f^2 of the plate *f* into the water after they have entered the lower branch of the flue *q*, by which means they are extinguished and prevented from getting into the stack. Under ordinary circumstances sparks and cinders will be thoroughly captured before reaching the passage *p*, and deposited in the water-box; but sometimes the reticulated door closing the said passage may be advantageously used. In practice the upper branch of the deflecting-plate *f* may be corrugated, as is the lower branch, in order that it may the better resist the heat thrown upon it from the flues *c;* and it may be made separate therefrom and removably bolted thereto, so that when burned out it may be readily replaced. I also propose to make it either of cast or wrought iron, as may prove most eligible.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a boiler, its smoke-box, and the boiler-flues, of the water-reservoir at the bottom of the smoke-box and an

angular plate, forming a vertical and horizontal flue in said smoke-box, substantially as specified.

2. In combination with the flues *c* and the water-receptacle D, the plate *f* and its corrugations f^1 f^2, whereby the sparks escaping from the furnace are deflected into the water and arrested, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

THOS. W. GODWIN.

Witnesses:
J. W. HAMILTON JOHNSON,
F. J. MASI.