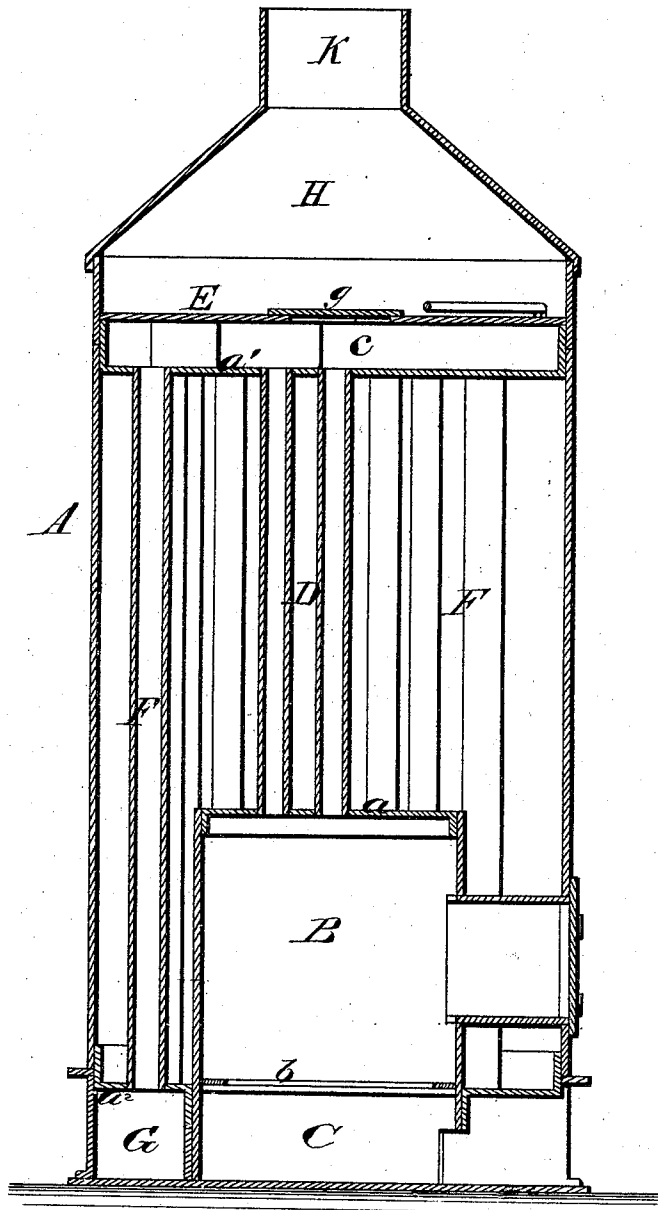


T. W. GODWIN.
STEAM-BOILER.

No. 169,434.

Patented Nov. 2, 1875.

Fig. 1



WITNESSES

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Walter E. Mason

INVENTOR,

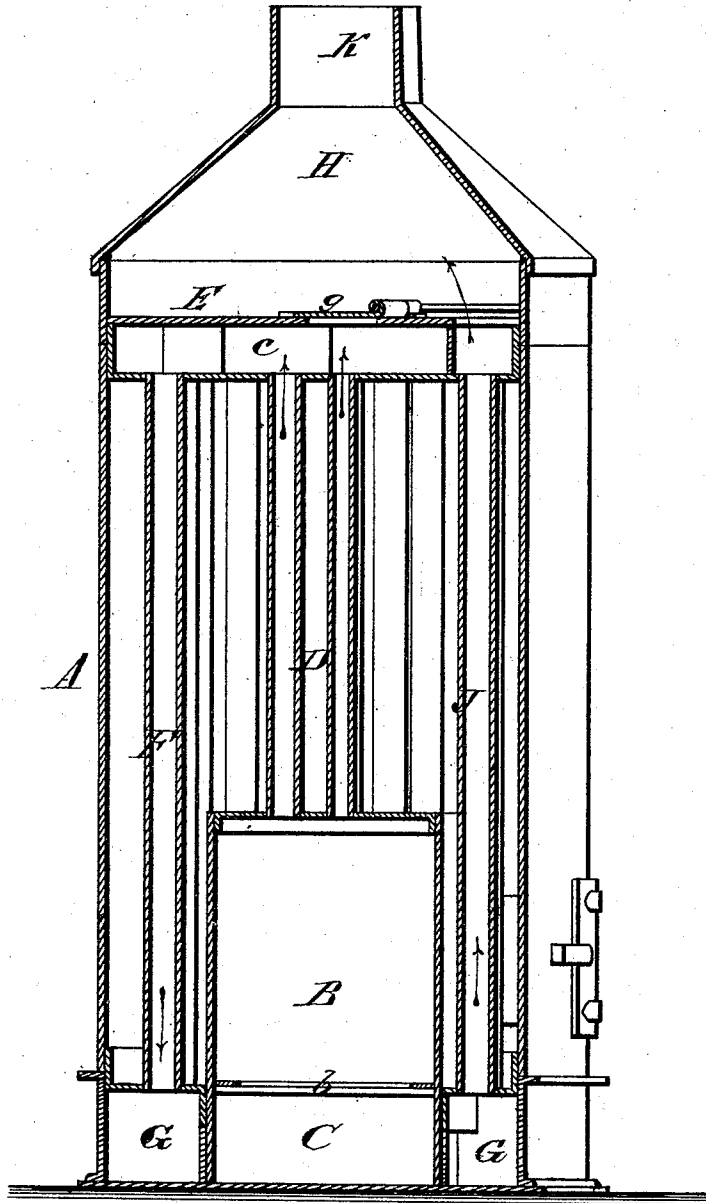
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Fig 2



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Fig. 3

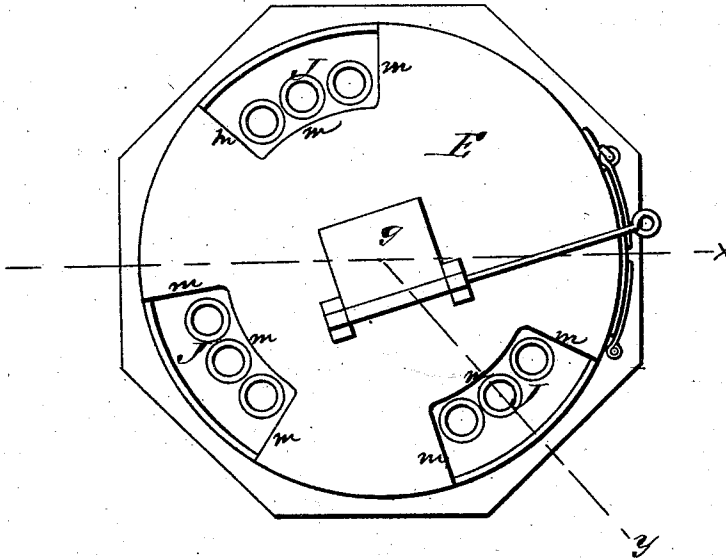
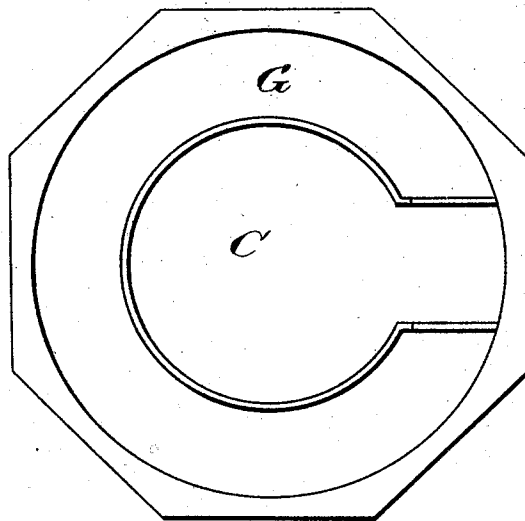


Fig. 4



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UNITED STATES PATENT OFFICE.

THOMAS W. GODWIN, OF NORFOLK, VIRGINIA.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. 169,434, dated November 2, 1875; application filed October 21, 1875.

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 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.

Figures 1 and 2 of the drawings are representations of vertical sections of my steam-boiler improvement, and Fig. 3 is a plan view of the same. Fig. 4 is a plan view of the water-chamber.

This invention has relation to upright steam-boilers, which are especially designed for use in cotton factories and gins, for the purpose of guarding against fire from escaping sparks; and the nature of my invention consists in an upright boiler having a spark-trap at its base, in combination with a recessed cap having projecting flanges, which deflect the products of combustion, causing them to pass in a devious course downwardly through a series of vertical tubes into a spark-trap filled with water, which extinguishes the sparks, the products of combustion passing thence upwardly through a series of vertical tubes into a chamber, and thence through an eduction-pipe into the open air, as hereinafter more fully set forth.

In the annexed drawings, A designates the cylindrical shell or casing of my upright boiler, and $a^1 a^2$ are the three flue-sheets. B designates the furnace-chamber, between which and the ash-pit C are the grate-bars b . From the furnace-chamber B the products of combustion ascend through a cluster of flues, D, into a chamber, e , which is formed by a casting, E, supported upon the flue-sheet a^1 . E (see Fig. 3) is a recessed cap provided with flanges m , the lower edges of which rest on the top of the boiler. The products of combustion

pass upwardly from the furnace through the central tubes, and, when the damper g is closed, pass down through the vertical tubes included between the flanges into the spark-trap, filled with water, which extinguishes the sparks, the products of combustion passing thence upwardly through the tubes J, outside of the flanges of the cap, and thence through the pipe K into the open air. F designate flues, which conduct the products of combustion from the chamber e down into a water receptacle or trap, G, formed in the base of the boiler, outside of the ash-pit C. The tubes or flues F are secured to the flue-sheets $a^1 a^2$, and cause the sparks to dive down into water in the chamber G, where they are extinguished. From the chamber G the products of combustion ascend through tubes or flues J into a chamber, H, from which they are carried off through a pipe, K.

In practice I shall make an opening through the casting E, and provide it with a damper, g , which, when opened, will give a direct draft from the furnace to the stack. This damper will also allow me to regulate the draft of the furnace.

It will be seen from the above description that I not only utilize the heat by conducting the products of combustion three times through the water-space, but I also insure the extinguishment of all the sparks.

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

The recessed cap E, having projecting flanges m and damper g , in combination with the tubes D F J, spark-trap G, and chamber C, substantially as described, and for the purpose set forth.

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

THOS. W. GODWIN.

Witnesses:

WALTER C. MASI,
BRYAN H. MORSE.