(No Model.)

M. MAHONY.

STEAM BOILER.

No. 365,141. Patented June 21, 1887.

Fig. 1.

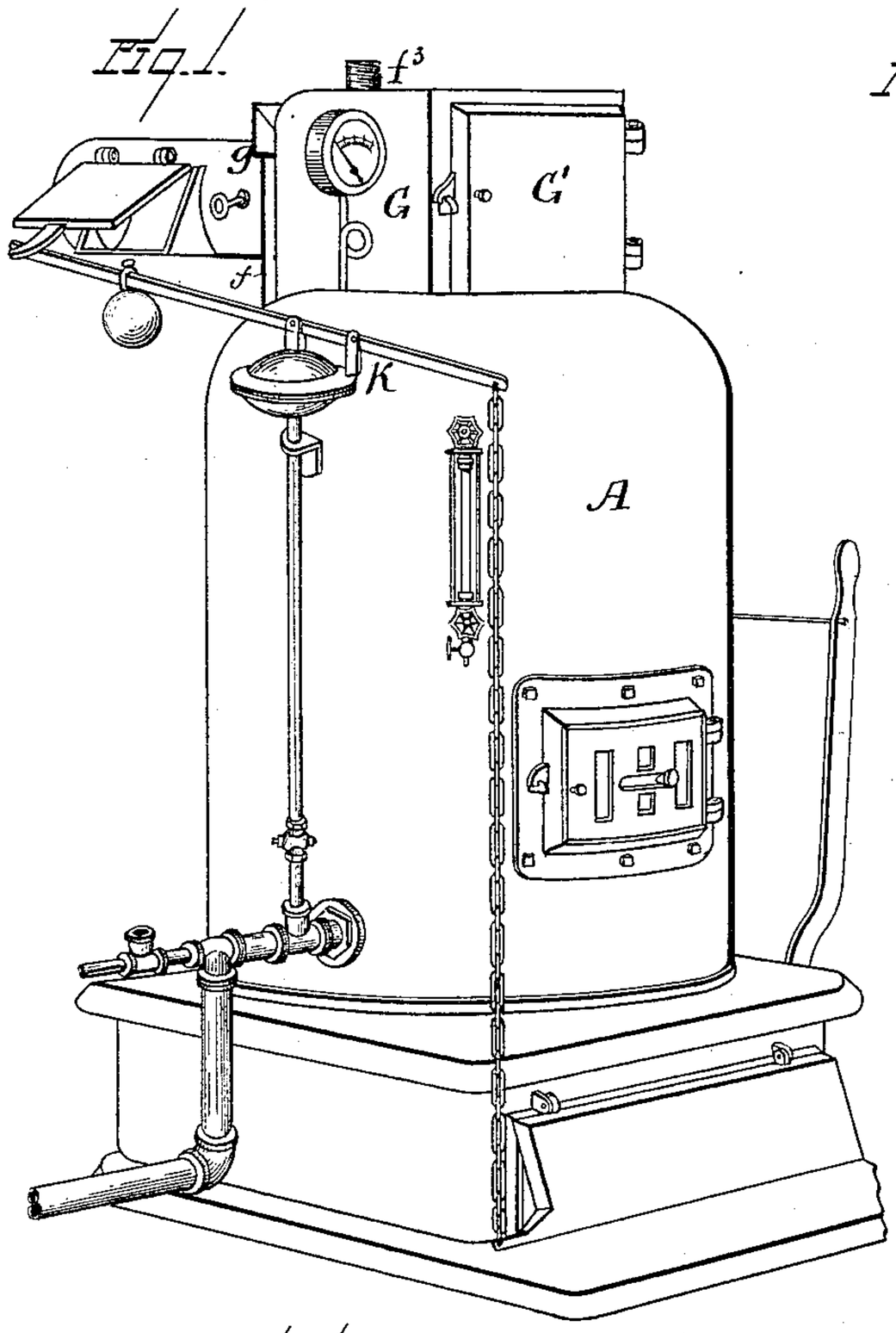


Fig. 2.

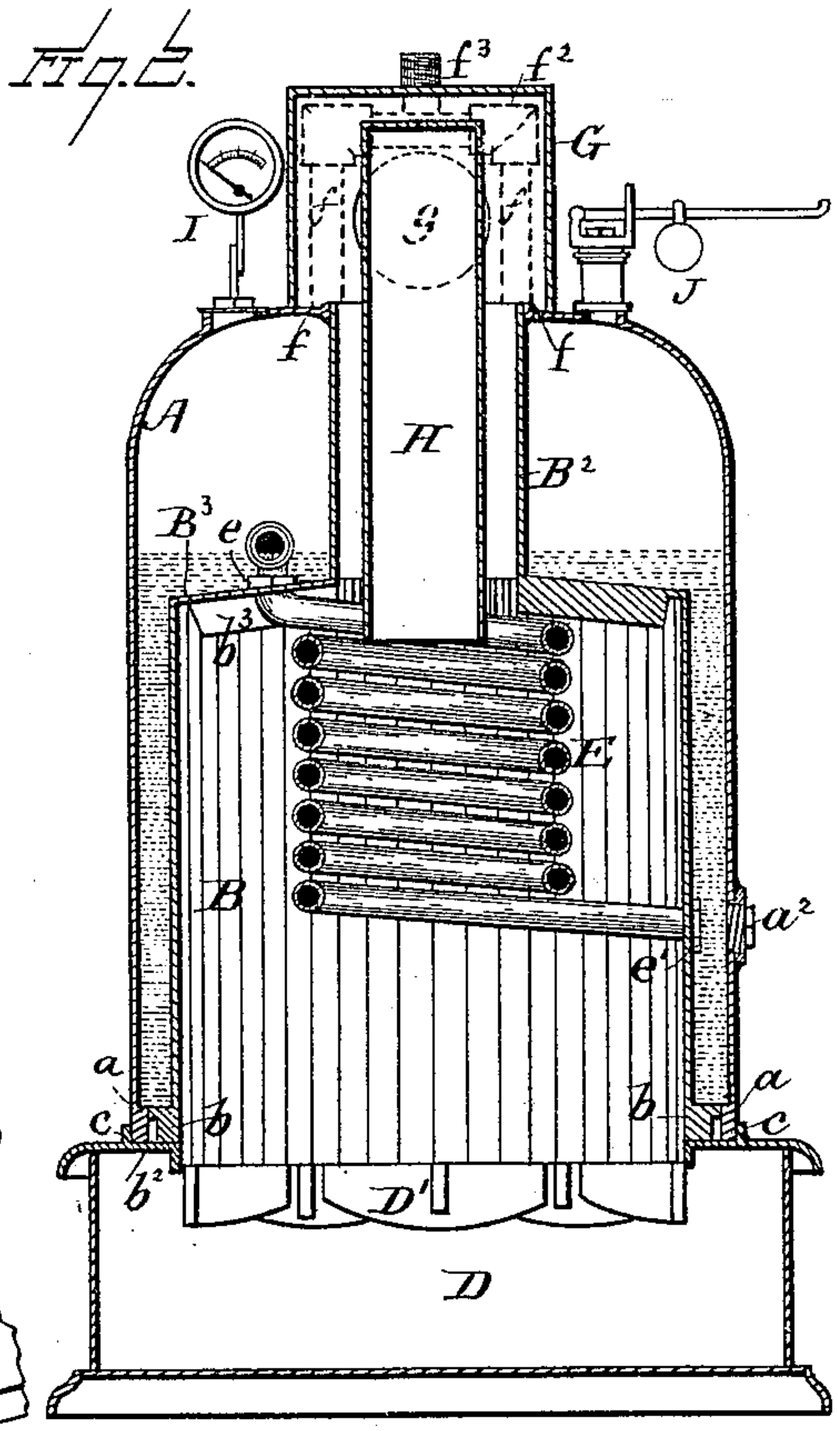


Fig. 3.

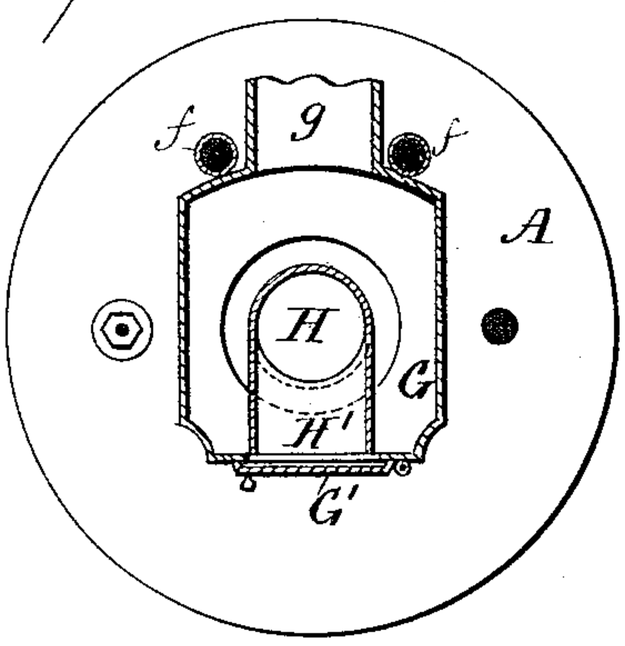
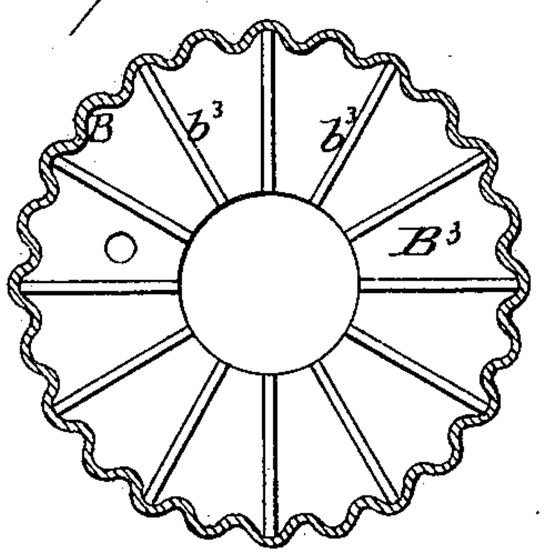


Fig. 4.



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UNITED STATES PATENT OFFICE.

MICHAEL MAHONY, OF TROY, NEW YORK.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 365,141, dated June 21, 1887.

Application filed May 13, 1887. Serial No. 238,108. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL MAHONY, a citizen of the United States, residing at Troy, in the county of Rensselaer, State of New York, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to steam-generators, more particularly of that class of water-circulators that are made of cast metal for heating dwellings and other buildings; and the object of my invention is to provide a water-heater for such purposes as will be automatic in operation, and thus dispense with the attendance of an engineer, and in which the water will circulate rapidly and the steam will be superheated by the escaping products of combustion; and to that end the invention consists in the construction of the same, as will be hereinafter more fully described, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a boiler constructed in accordance with my invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a horizontal section through the upper end of the magazine, the superheating-pipes, and the hood against them. Fig. 4 is a horizontal section showing a bottom view of the crown-sheet of the boiler.

In said drawings, A is the outer shell, and B the inner shell, of the boiler. These parts are supported by the base-plate C, forming the top of the ash-pit D, the walls of which support the grate D′. Projecting from the surface of the base-plate there is a vertical flange, *c*, that surrounds the lower end of the shell of the boiler and maintains it in proper position. The two shells of the boiler are retained a few inches apart, to form a water leg or chamber surrounding the inner shell. The latter has cast therewith a central vertical flue, B^2, that extends substantially up to the top of the outer shell of the boiler, and is fitted and cemented thereto at that point, substantially as hereinafter described, in relation to the joint formed at the lower end of the shells. This is accomplished at said lower end by forming an annular rib, *a*, on the inside of the outer shell and an annular rib, *b*, on the outside of the inner shell. The latter rib is turned so as to substantially fit within the rib *a*, and has a circular groove, b^2, cut in it to receive a suitable cement well packed therein to form a water-tight joint at that point. The side walls of the inner shell are corrugated to increase its heating-surface and elasticity. Its crown-sheet B^3 is provided with radial ribs b^3, that are pendent therefrom, to evenly distribute the heated products of combustion against said crown-sheet and all around the interior of the flue B^2.

To increase the water-heating capacity of the boiler and form a coal-retaining magazine therein, a coil, E, is suspended in the fire-chamber at some distance above the burning coal, and with its periphery at some distance also from the inner shell to maintain a broad annular passage between it and said shell. The upper portion of this coil passes through the crown-sheet, and is secured by a nut, *e*, placed upon said portion, and the upper end of the pipe is bent nearly horizontally to deflect the water rushing from said end when in operation. The lower end of the pipe E passes through the side of the inner shell, B, and is retained by a nut, *c*′. Access to this fastening can be obtained through an opening made in the outer shell opposite said lower end of the pipe; but otherwise said opening is closed by a screw-tap, a^2. The steam produced in the coil and boiler, is superheated and carried off by means of two pipes, *f*, issuing vertically from the top of the boiler. They are united at their upper end by means of a horizontal pipe, f^2, carrying in the middle of its length a vertical pipe, f^3. The combined area of the two pipes *f* being more than the area of the pipe f^3, priming of the boiler is thereby greatly prevented.

The pipes *f* and f^2 may be covered by a hood, G, through which the products of combustion escape to the flue *g*, and thus their temperature be maintained at a high degree; but they are shown against it to facilitate the removal of the magazine. This hood also incloses the upper end of the tubular magazine H, that extends down to the first or upper coil of the pipe E. The upper end of the magazine H has a lateral extension, H′, through which coal can be poured into the magazine, and the front end of said extension, together

with the front of the hood, is closed by a door, G′, hinged to the side of said hood.

The boiler is provided with a steam-gage, I, a safety-valve, J, and a draft-regulating diaphragm and lever, K, of suitable construction.

Having now fully described my invention, I claim—

1. The combination of the outer shell of a boiler, steam-pipes issuing from the top thereof, and a hood against said pipes, and having a door upon one of its sides, with an inner shell having a central smoke-flue, and within said flue a coal-magazine having its upper end closed by the door of the hood, substantially as and for the purpose described.

2. The combination of the outer shell of a boiler, steam-pipes issuing from the top thereof, and a hood adjacent to said pipes, with the inner shell having a central smoke-flue, and within said flue a coal-magazine having its upper end under said hood, and a water-holding coil having its upper end passing through the crown-sheet and its lower end passing through the side of the inner shell and forming a coal-receiver, and having smoke-passages between it and the inner shell, substantially as described.

3. The combination of the outer shell of a boiler, steam-pipes issuing from the top thereof, and a hood adjacent to said pipes, with the inner shell having its crown-sheet provided with pendent radial ribs, a central smoke-flue, a magazine therein, arranged as shown, and a water-holding coil under said magazine, and forming the lower end thereof, substantially as described.

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

MICHAEL MAHONY.

Witnesses:

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