(No Model.)

M. MAHONY.

BOILER.

No. 480,331. Patented Aug. 9, 1892.

Fig. 1.

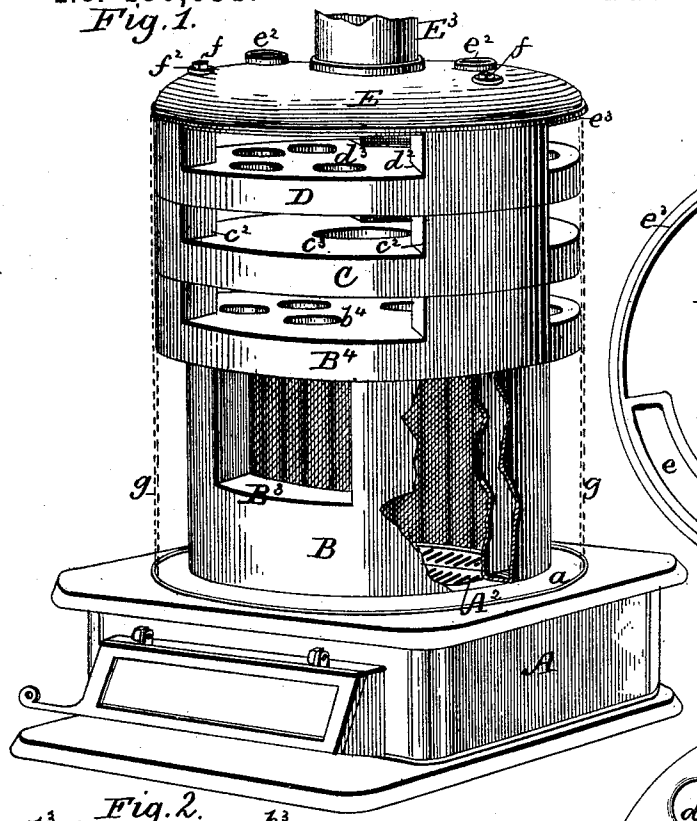


Fig. 2.

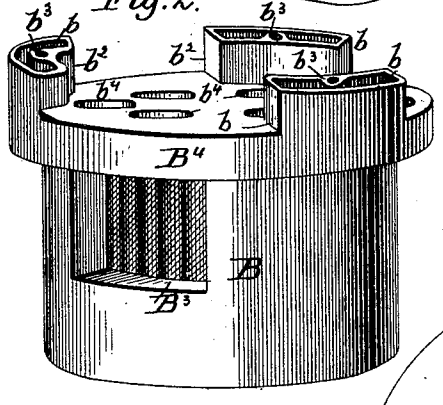


Fig. 5.

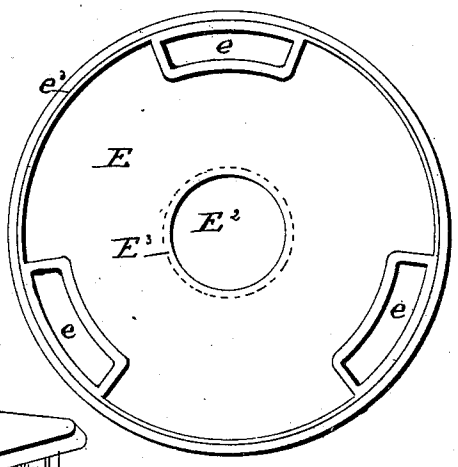


Fig. 4.

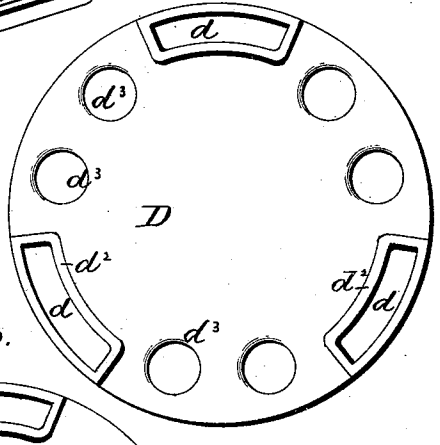
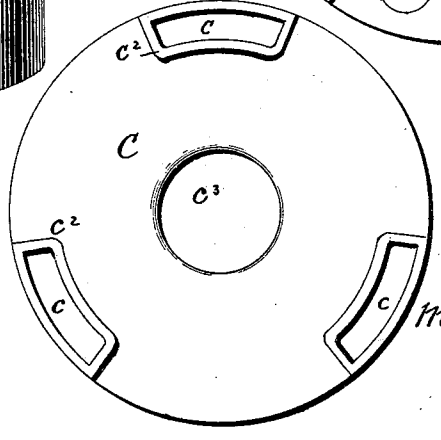


Fig. 3.



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UNITED STATES PATENT OFFICE.

MICHAEL MAHONY, OF TROY, NEW YORK.

BOILER.

SPECIFICATION forming part of Letters Patent No. 480,331, dated August 9, 1892.

Application filed March 24, 1892. Serial No. 426,300. (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 Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to sectional steam-boilers; and the objects of my improvement are to provide a boiler of this class for hot water or for steam of simple construction and possessing a large surface for radiation and an efficient circulation of the water therein. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a boiler constructed in accordance with my invention, the outer shell of said boiler being removed and the side of the fire-pot broken away to clearly illustrate the construction. Fig. 2 is a perspective view of the fire-pot and of the lower heat-radiating section of the boiler. Fig. 3 is a top view of the section used above the latter. Fig. 4 is a top view of the section of the boiler used above that shown in Fig. 3. Fig. 5 is a view of the under side of the top section or steam-dome of the boiler.

In said drawings, A represents the base containing the ash-pit and carrying the grate A^2. Upon said base is placed the cylindrical fire-pot B, close to the central opening, over which the grate A^2 is placed. Said fire-pot has inner and outer walls united together by a horizontal extension at the bottom, and in said pot there is left a side opening B^3, through which the fuel is introduced therein. Over the fire-pot, but formed integral therewith, there is a horizontal double-wall cylindrical section B^4, that overhangs the outer wall of the fire-pot to present on its top an extensive area for the absorption of the caloric contained in the flame and heated gases produced by burning fuel and permit the use of broad passages *b* for the circulation of the water from section to section without rendering said area smaller than that of the fire-pot. The passages *b* are formed by hollow extensions b^2 or tubes of segmental form (three in number in this case) projecting from the top of the sections B^4 a distance about equal to the height of said section. The outer face of the tubes b^2 is made to coincide with the periphery of the section. Within the body of the section B^4 is also a series of vertical flues b^4, formed integral therewith for the passage of the products of combustion from the fire-pot to the chamber above said section. On top of the tubes b^2 a section C is placed. Said section has a periphery of the same size as that of the section B^4 and has tubes c^2 of segmental form, also projecting above the top thereof. In the bottom of the section C there are openings *c* of substantially the same size as the passages *b* in the section under it to permit the passage of water from the interior of the section B^4 to that of the section C. In the center of the latter section there is a large vertical flue c^3 formed integral therewith for the passage of the products of combustion to the chamber above the section C.

On top of the tubes c^2 a section D is placed. Said section has a periphery of the same size as that of the section C, and has tubes d^2 of segmental form, also projecting above thereof. Said tubes have openings *d* through them for the upward passage of water or steam opposite the openings in the bottom thereof. Said section D has also a series of vertical flues d^3 formed integral therewith for the upward passage of the products of combustion. The flues d^3 in the section D are as far from the center of said section as possible to cause the products of combustion to take a horizontal course underneath the section D after leaving the central vertical flue c^3 of the section C.

On top of the tube d^2 the top section or steam-dome E of the boiler is placed. Said dome has in its bottom thereof three openings *e*, corresponding in form and arrangement to the passages *d* in the section under it. It has also a central pipe E^3 passing therethrough and made integral therewith to form a flue E^2 for the passage of the smoke or the products of combustion from the boiler. In the top of the dome there are openings e^2, in which pipes can be secured to conduct the steam or hot water from the boiler in any direction.

To secure the dome E and the sections D and C to the fire-pot or its section B^4 bolts *f* are used. One end of each bolt is made to engage with a screw-tapped perforated lug b^3, projecting in the interior of each tube b^2. The

bolts f are made to pass through the openings cd in the sections C D and through the steam-dome, and the upper ends of said bolts have polygonal heads f^2 thereon that bear upon slightly-yielding washers on top of the dome. To complete the boiler, a jacket, preferably of cast-iron, made in sections, with doors thereon to facilitate the cleaning of the boiler-flues, and which is shown by the vertical dotted lines g on the sides of Fig. 1, is placed around and in contact with the sections B^4 C D. The upper edge of said jacket bears against a circular flange e^3, pendent from the under side of the dome adjacent to its periphery, and the lower edge of the jacket bears against a circular flange a, projecting from the top of the base A. By this construction a dead-air chamber is obtained between the fire-pot B and the jacket g, that prevents any great radiation of heat from the fire-pot to the surrounding air, and also from the sections above the fire-pot.

Having now fully described my invention, I claim—

1. In a sectional boiler, the combination of a double-wall cylindrical fire-pot having integral therewith an overhanging section provided with a series of vertical flues therethrough and segmental tubes projecting above it, with a series of sections having vertical flues therethrough and segmental tubes projecting above them, and a steam-dome having segmental openings in the bottom thereof, substantially as described.

2. A sectional boiler consisting of a double-wall cylindrical fire-pot having an overhanging section provided with vertical flues therethrough and segmental tubes projecting above it, with a series of substantially similarly-constructed sections resting upon the fire-pot section, and a steam-dome having segmental openings in the bottom thereof, bolts passing through said openings, and a jacket bearing against the overhanging sections, substantially as described.

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

MICHAEL MAHONY.

Witnesses:
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