

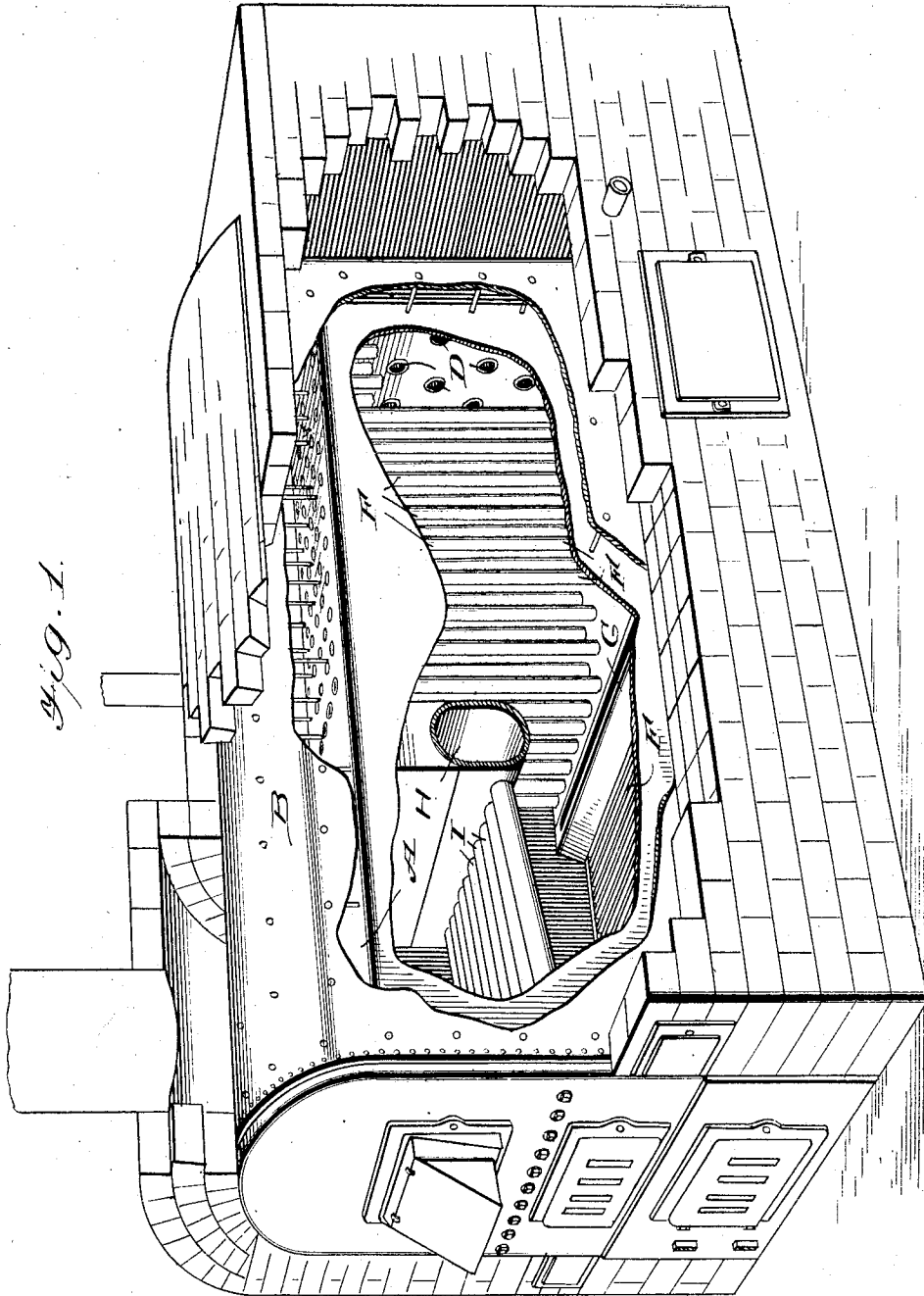
M. E. HERBERT.  
BOILER.

APPLICATION FILED APR. 13, 1914.

1,265,201.

Patented May 7, 1918.

2 SHEETS—SHEET 1.



*Fig. 1.*

WITNESSES  
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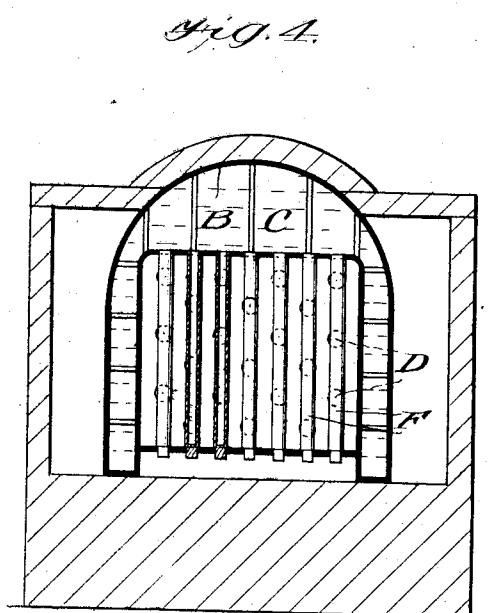
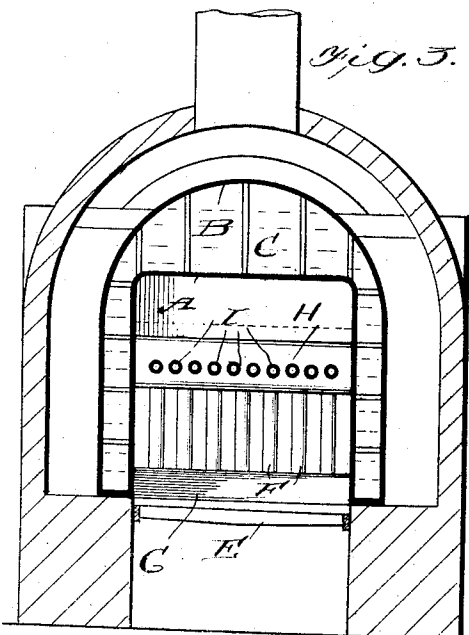
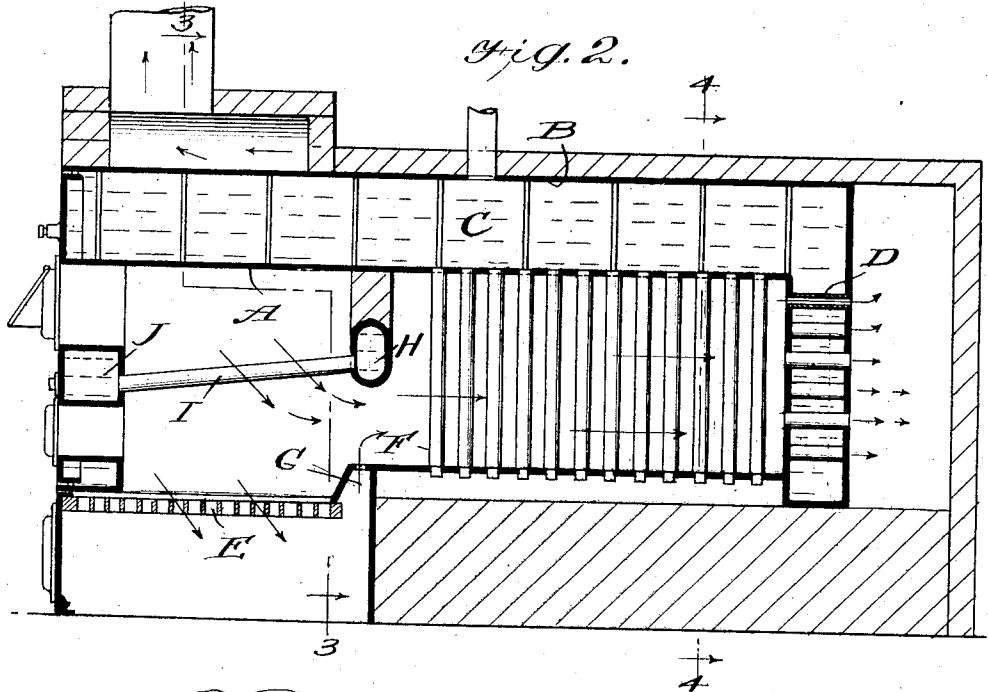
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

MICHAEL E. HERBERT, OF CHICAGO, ILLINOIS.

## BOILER.

1,265,201.

Specification of Letters Patent.

Patented May 7, 1918.

Application filed April 13, 1914. Serial No. 831,495.

*To all whom it may concern:*

Be it known that I, MICHAEL E. HERBERT, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented an Improvement in Boilers, of which the following is a specification.

My present invention relates to boilers of either the down draft or direct draft type, my object being to provide certain improvements in the construction of such boilers, to be hereinafter particularly pointed out, as will enable the presentation of a greater heating surface and the production of a maximum combustion space in order to render the same highly economical in the use of fuel and highly effective in the consumption of smoke.

The means by which I accomplish the above are clearly shown in the accompanying drawings to which reference will be hereinafter made, and in which,

Figure 1 is a perspective view of a boiler constructed in accordance with my invention and set up for use, portions being broken away and in section in order to illustrate the interior thereof.

Fig. 2 is a vertical longitudinal section taken therethrough.

Fig. 3 is a vertical transverse section taken therethrough substantially on line 3—3 of Fig. 2, and

Fig. 4 is a similar view taken there-through on line 4—4 of Fig. 2.

Referring now to these figures it is to be seen that the inner shell A has its sides, top and rear head surrounded by an outer shell B and its rear head, spaced from the inner shell in order to form a surrounding water space C and that the inner shell is without tubular flues except flues D through the rear heads, which hold the hot gases within the inner shell and add to the heating surface and which take the place of stay-bolts to hold the rear heads together and to give the flat surfaces the necessary strength.

In the lower forward portion of the inner shell is the lower grate E and in the down draft type are utilized series of vertical tubes or flues F depending from the top of the inner shell in its rear portion behind the bridge walls and arranged in staggered rows.

The lower bridge wall G is hollow and slotted in order that the hot gases may pass up from under the lower grate and into the

inner shell for the purpose of igniting any smoke or gases passing over the bridge wall.

I provide an upper hollow bridge wall H, the ends of which open through the inner shell and into the water space C and an upper grate I in the fire box consisting of a horizontal row of tubes connecting the hollow bridge wall H with a hollow water wall J extending across the front of the inner shell above its fire box door.

I also propose to weld the inner and outer shells together in order to do away with the use of the usual mud ring and door ring.

Thus by the construction shown and described I convert the entire heating surface of the inside shell, the depending tubes, the water drum, the water tube and upper grate as well as two-thirds at least of the outer shell to the direct action of the products of combustion, which renders the boiler highly economical in its use of fuel.

I also provide by the same construction for a maximum combustion space between the grates and the crown sheet both in the fire box and in the rear of the bridge wall which, together with the slotted lower bridge wall and the hot gases which pass up there-through, permits of a maximum consumption of smoke.

I claim:

1. A boiler of the character described comprising inner and outer shells connected in spaced apart relation and forming a water chamber therebetween, the inner shell of which defines a combustion space and has outlet flues at its rear end extending through the rear end of the outer shell, said inner shell being provided with a plurality of depending water tubes in its rear portion, closed at their lower ends and opening at their upper ends into the said water chamber between the shells, a grate at the lower forward portion of the inner shell, a plate in the lower rear portion of the inner shell receiving and supporting the lower ends of the said water tubes, and a slotted bridge wall between the grate and the said tube supporting plate.

2. A boiler of the character described comprising spaced inner and outer shells forming a water chamber therebetween, extending along the top, rear end, and sides of the inner shell, a plurality of drop flues depending in the inner shell having their upper open ends secured to the top wall of

the said inner shell and opening into the said chamber, a plate in the lower rear portion of the inner shell receiving and supporting the lower closed ends of said drop flues, a grate in the lower forward portion of the inner shell, a slotted bridge wall between the grate and the said flue supporting plate, and a water grate within the inner shell above the first named grate, including a rear manifold extending transversely through the inner shell above the said slotted bridge wall and communicating at its ends with the water chamber, a front manifold extending across the front of the inner shell and also opening into the water chamber, and tubes inclined upwardly from the front and the rear manifolds above the first named grate, all for the purpose described. 15

MICHAEL E. HERBERT.

Witnesses:

WM. H. HERBERT,  
J. E. HANNON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."