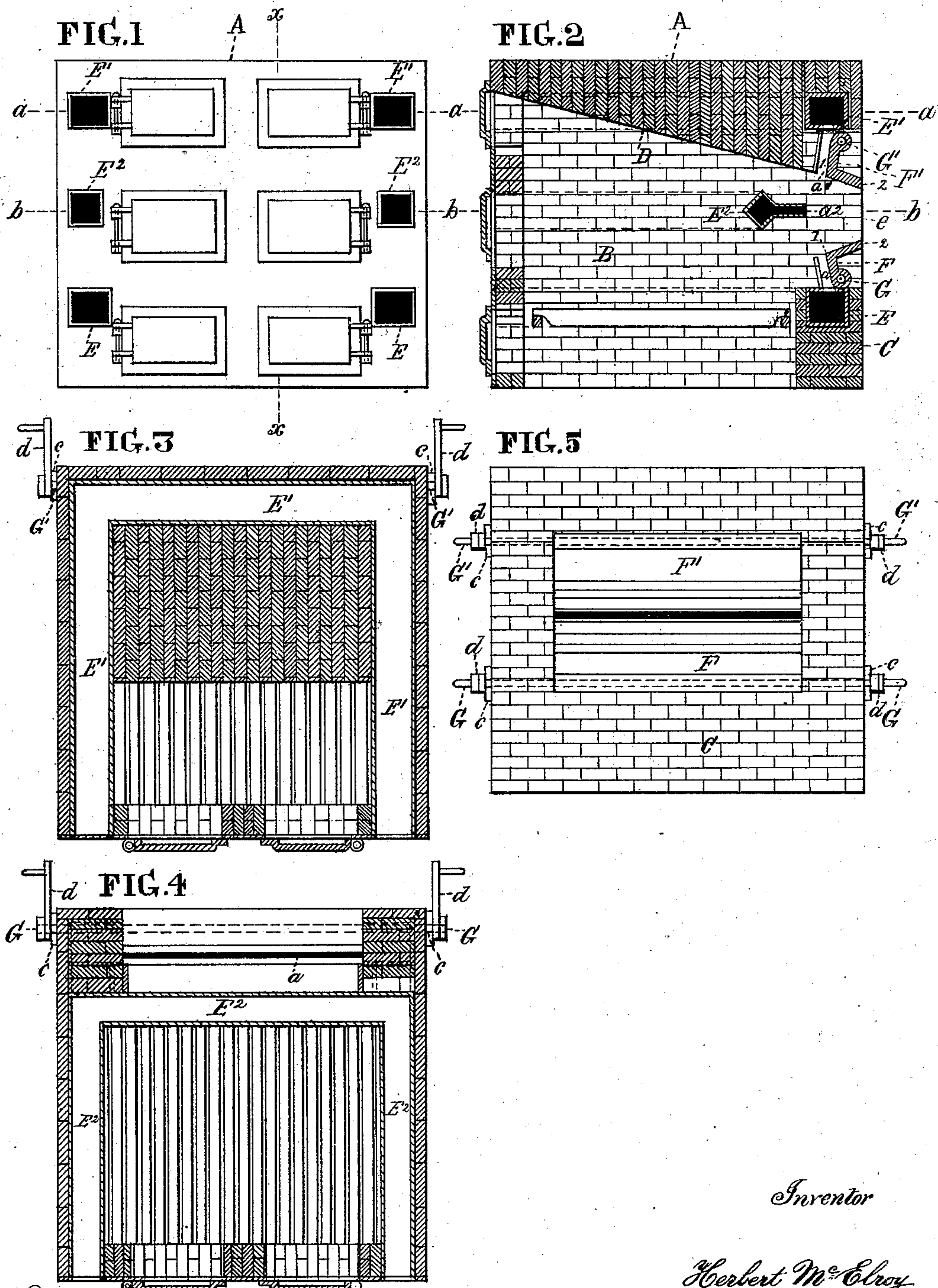


(No Model.)

H. McELROY.
Furnace for Steam Boilers

No. 232,534.

Patented Sept. 21, 1880.



Witnesses

Thomas J. Bewley.
Isaac Rinago.

Inventor

Herbert McElroy

per Stephen Ustick attorney

UNITED STATES PATENT OFFICE.

HERBERT McELROY, OF PHILADELPHIA, PA., ASSIGNOR OF ONE-HALF OF
HIS RIGHT TO FRANKLIN LAWRENCE, OF SAME PLACE.

FURNACE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 232,534, dated September 21, 1880.

Application filed June 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, HERBERT McELROY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Furnaces for Steam-Boilers and other purposes, of which the following is a specification.

My invention will be understood by the following statement: There is an air-flue at the rear side of the fire-place and in the bridge-wall, which extends through the side walls to the front of the furnace, or, if desired, to rear, where it receives the air. Over the bridge-wall the flue has a narrow opening, one side of which is formed by one side of an L-shaped valve hinged at one edge. Near the top of the furnace there is a similar air-flue and valve, the narrow opening extending to the line of the arch of the fire-chamber, so that currents of air are caused to approach each other from above and below the passage of the products of combustion, and thereby intermingle with said products and facilitate the combustion. The draft is regulated by turning the valves so that their hinged wings will enlarge or diminish the narrow openings, and at the same time their other wings increase or diminish the depth of the passage for the products of combustion.

In the accompanying drawings, which make a part of this specification, Figure 1 is a front elevation of my improved furnace. Fig. 2 is a vertical section at the broken line *xx* of Fig. 1. Fig. 3 is a horizontal section at the line *a* of Figs. 1 and 2. Fig. 4 is a like section at the line *b b* of Figs. 1 and 2. Fig. 5 is a rear view of the furnace.

Like letters of reference in all the figures indicate the same parts.

A represents my improved furnace. B is the fire-chamber, C the bridge-wall, and D the arch.

In the bridge-wall there is an air-flue, E, which has a turn at each side of the furnace, the parallel parts extending through the side walls to the front of the furnace for the reception of air. The rear part of this flue has a narrow opening or slot, *a*, extending to the top of the bridge-wall C, which preferably has an upward inclination, as shown in Fig. 2. The rear side of the narrow opening is formed by the hinged wing 1 of the L-shaped valve F, which turns on the rod G.

Near the top of the arch D there is a similar air-flue, E', with its narrow opening or slot *a'* at its rear part extending to the bottom line of the arch, the said flue being provided with the winged valve F' on the rod G'.

The valve-rods have their bearings in the plates *c*, and have a crank, *d*, for operating them, so that the hinged wings 1 may open or close the narrow openings or slots, and the wings 2 may increase or diminish the depth of the passage *e* of products of combustion.

There is an air-flue, E², of similar construction to the flues E and E', arranged with an opening, *a*², in a horizontal plane about midway between the valves F and F'; or, instead, there may be openings or slots at the upper and lower sides. If desired, two or more of such flues may be used, having exit-openings, as represented.

The openings or slots *a* and *a'* of the flues E and E', it will be observed, have an inclination frontwise. The object of this is to direct the currents of air through them in such a manner as to partially meet the products of combustion, and thus cause a more rapid intermingling of the air therewith than would otherwise occur, and thus to facilitate the combustion.

In the drawings the parallel parts of the air-flues E, E', and E² are represented as extending to the front of the furnace; but, if desired, they may extend the other way and open through its rear wall, or they may open through the side walls.

I claim as my invention—

1. In combination with the air-flues E and E', having slots *a* and *a'*, respectively, the valves F and F', having wings 1 1 for opening and closing said slots, substantially as described.

2. In combination with the air-flues E and E', having slots *a* and *a'*, and the passage *e*, the valves F and F', each having wings 1 and 2, arranged as described, whereby the said passage *e*, for products of combustion, is enlarged or diminished by the action of the wings 2 2 of the valves simultaneously with the opening and closing of the flues E and E' by the wings 1 1.

HERBERT McELROY.

Witnesses:

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STEPHEN USTICK.