

D. AULD, Jr.
Furnace-Doors.

No. 145,608.

Patented Dec. 16, 1873.

FIG. 1.

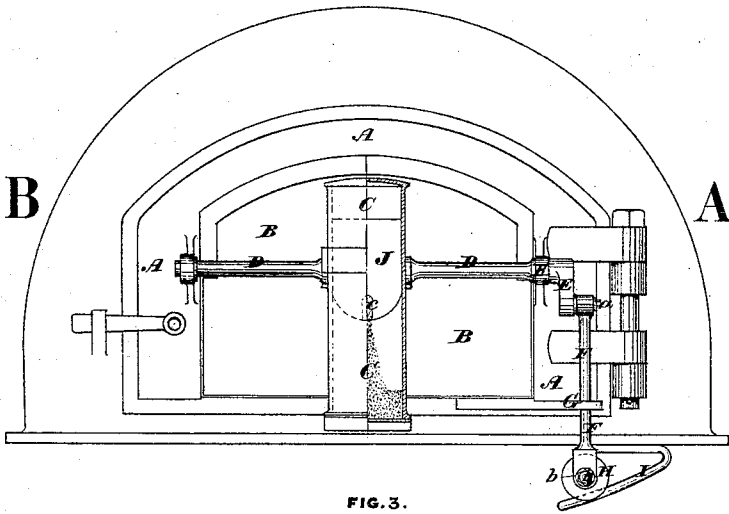


FIG. 2.

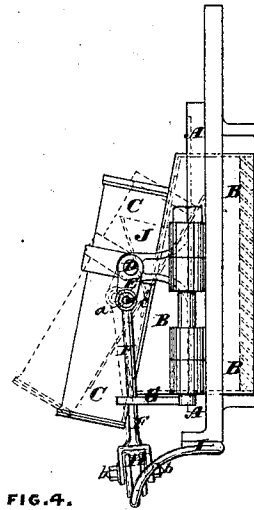


FIG. 3.

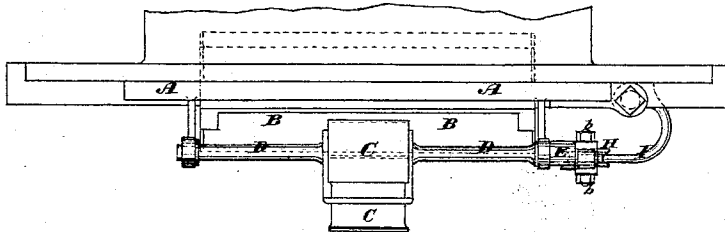


FIG. 4.

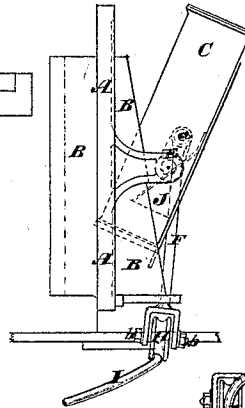


FIG. 5.

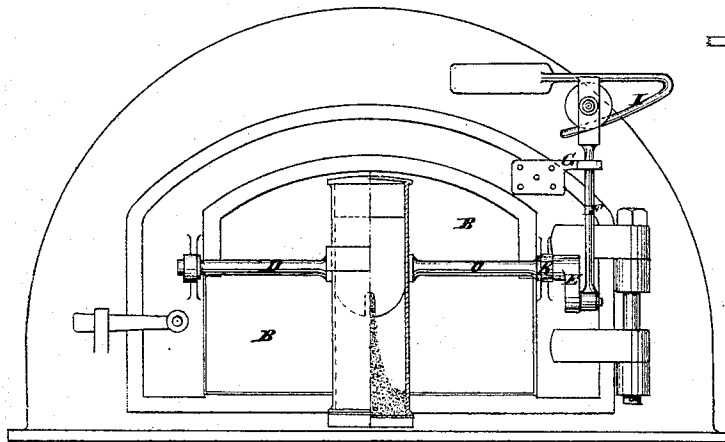
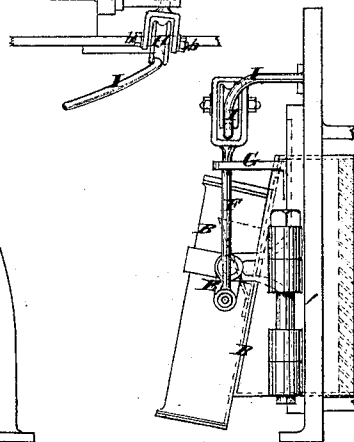


FIG. 6.



Attest.
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UNITED STATES PATENT OFFICE.

DAVID AULD, JR., OF GLASGOW, NORTH BRITAIN.

IMPROVEMENT IN FURNACE-DOORS.

Specification forming part of Letters Patent No. **145,608**, dated December 16, 1873; application filed May 6, 1873.

To all whom it may concern:

Be it known that I, DAVID AULD, Jr., of Glasgow, in the county of Lanark, North Britain, have invented Improvements in Furnace-Doors and in apparatus connected therewith, of which the following is a specification:

This invention consists of a self-acting damper, described hereafter, which may be applied to the door of any furnace in which it is desired to furnish a supply of air to the fire for a limited time after the furnace is replenished with fuel.

On the sheet of drawings hereunto appended, Figure 1 represents a front elevation of a furnace-door, adapted for regulating the supply of air for burning the products of combustion in the furnace, and showing one modification of my said invention, whereby the regulator B is constituted self-acting, applied thereto. Fig. 2 represents an elevation of that end of the door marked A in Fig. 1, while Fig. 3 is a plan of the same. On these figures the apparatus is shown in the position which it occupies when the door A is shut. Fig. 4 is an elevation of that end of the door marked B, Fig. 1, and shows the position of the apparatus when the door A is open.

The air-regulator B is furnished with a sand-box, C; and on one end of the axis D of the air-regulator and sand-box, a crank, E, is fixed, to which the upper end of a rod, F, is coupled. The rod F passes down through a guide, G, fixed to the lower part of the door A, and its lower extremity is formed to carry a roller, H, which revolves on a pin or stud, b. The periphery of the roller H bears upon an inclined plane or edge, formed, in this instance, by securing to the frame of the door or other stationary part of the apparatus, a bent arm or bar, I, and when the door is opened the roller H revolves or rolls up the inclined arm I, thereby pushing the rod F upward and turning the crank E through a sufficient arc to invert the air-regulator B, as shown at Fig. 4. When the air-regulator B has been thus inverted, the sand in the lower part of the box C falls into the hopper J situated at the upper end of the box, as more particularly seen at Fig. 1, so that on again shutting the door

A, there is a sufficient weight of sand in the hopper J to keep the air-regulator B open in the position shown in dotted lines at Fig. 2. The hopper J is provided with an opening, c, at its lower end, through which the sand (on the door being shut) falls slowly back into the lower part of the box C, and thereby gradually closes the air-regulator B.

By this means the regulator B is kept open for a length of time sufficient to admit the quantity of air requisite to burn the smoke and gaseous products evolved from the charging of "green" coal into the furnace.

In lieu of arranging the coupling-rod F, guide G, and inclined arm I, hereinbefore described, at the lower side of the furnace-door, as shown at Figs. 1, 2, 3, and 4 of the drawings, the said rod F, guide G, and inclined arm I may be arranged at the upper side of the furnace-door, as shown in front elevation at Fig. 5, and in end elevation at Fig. 6 of the drawings, or they may be arranged at some other convenient part thereof, and in place of providing the rod F with a roller, H, as shown on the several figures of the appended drawings, the rod F may be formed with a loop, which, as the furnace-door is opened, slides up the inclined arm I, and inverts the air-regulator B through the intervention of the crank E, as hereinbefore described.

In lieu of placing the crank E at the outer side of the bearing K of the axis or spindle D, as shown on the drawings, it may be situated at the inner side of the said bearing, if desired.

I claim—

1. A door for furnaces provided with a damper and with a sand-box connected to the damper, and closing the same as the sand descends in the box, for the purpose specified.

2. The combination of an inclined bar and rod with the door, damper, and sand-box, as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID AULD, JR.

Witnesses:

JOHN BROWN,
JOHN C. MACANDIE.