No. 680,107. Patented Aug. 6, 1901.

G. ALLEN.

FURNACE.

(Application filed June 1, 1900.)

(No Model.)

Fig. 1.

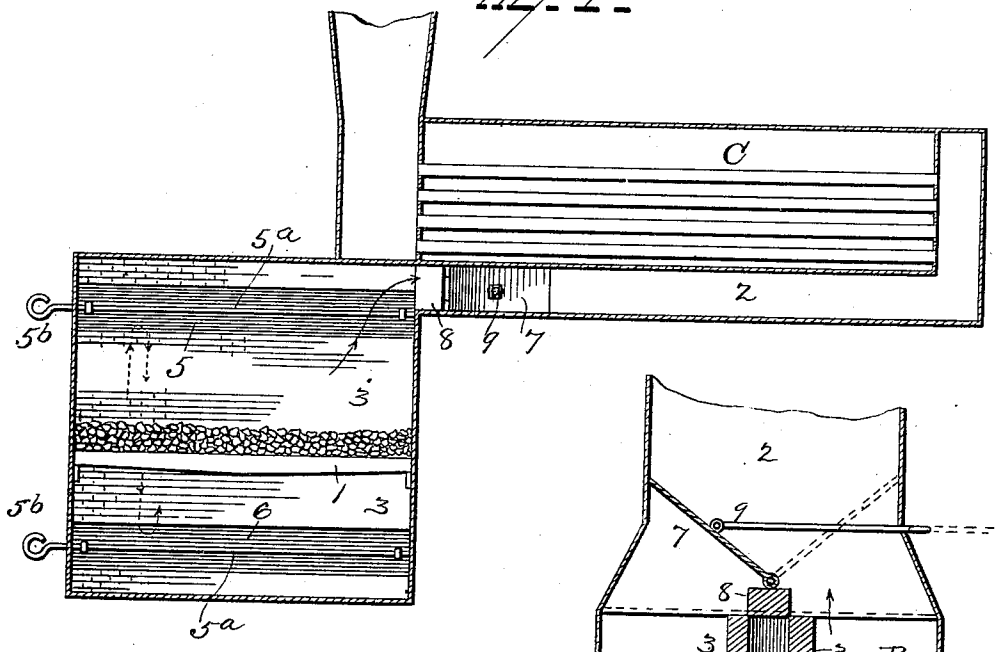
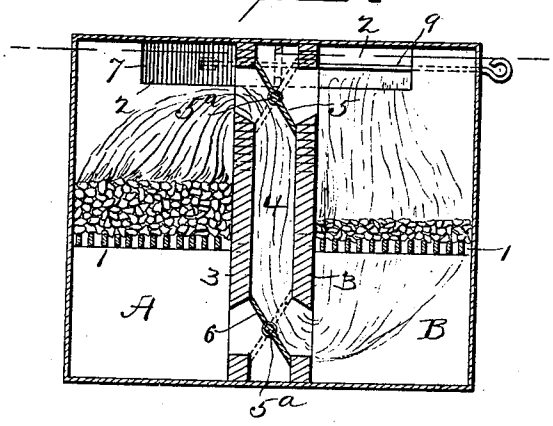


Fig. 3.

Fig. 2.



WITNESSES

E. D. Nottingham

G. F. Downing.

INVENTOR

G. Allen

By A. A. Seymour

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE ALLEN, OF FRANKLIN, PENNSYLVANIA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 680,107, dated August 6, 1901.

Application filed June 1, 1900. Serial No. 18,775. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ALLEN, a resident of Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in furnaces, and more particularly to steam-boiler furnaces, the object of the invention being to provide an improved furnace in which all smoke and gases will be consumed and which will be extremely simple in construction and most effectual when in use.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 are views in section, taken at right angles to each other, illustrating my improvements; and Fig. 3 is a view in horizontal section.

A and B represent two independent divisions or fire-chambers of the fire-pot, each provided with an independent grate 1 and both communicating with the flue 2, extending beneath the boiler C. The sections of the fire-pot are divided by parallel walls 3, spaced a suitable distance apart to form a flue or chamber 4, the walls 3 being provided near their upper and lower ends above and below the grates 1 with alined openings, and dampers 5 and 6, respectively, are pivoted between their ends between said walls 3 in proximity to the openings therein and are secured on rods 5^a, projecting through the wall of the furnace and provided with handholds 5^b at their outer ends for turning them to guide the smoke and gas from one grate down below the other, as will more fully hereinafter appear.

A damper 7 is provided in the flue 2 and is pivoted at one end to an enlargement 8 at the upper closed end of the walls 3 and is provided with a rod 9, projecting through the side of the furnace to operate said damper and swing it to shut off communication between either chamber A or B and the flue 2 for a purpose which will now be explained.

When the parts are in the position shown in Fig. 1, fresh coal or other fuel has been placed on grate 1 in chamber A and the damper 7 is turned to close direct communication between chamber A and flue 2 and the dampers 5 and 6 are turned to direct the smoke and gas from the burning fuel on grate 1 in chamber A down between the walls 3 and up under and through the red-hot coals or embers on the grate in chamber B, so that the smoke and gas will be entirely consumed by the hot coals or embers in chamber B before the heat passes into flue 2. After the fuel in chamber A has burned off practically all smoke and gas fresh fuel can be placed in chamber B and the dampers 5, 6, and 7 operated to direct the smoke and gas from chamber B down between the walls 3 and up through the red-hot coals or embers in chamber A.

Various slight changes might be resorted to in the general form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not wish to limit myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a furnace, the combination with two fire-chambers, of a vertical flue disposed between said fire-chambers and extending from the bottom to the top thereof, said flue adapted to communicate near its respective ends with both of said fire-chambers, two independent valves or gates in said flue and pivotally supported in line with the vertical axis and in line with the points of communication of said flue with the fire-chambers, means for operating said gates independently to open communication between the respective ends of the flue and the respective ends of the respective fire-chambers, another flue common to both fire-chambers and a single valve independent of the first-mentioned valves for closing communication between one fire-

chamber and said last-mentioned flue and opening communication between the latter and the other fire-chamber.

2. In a boiler-furnace, the combination with a boiler, two fire-chambers and a flue under the boiler and common to both fire-chambers, of a valve in said flue for opening communication between said flue and one of the fire-chambers and closing communication between said flue and the other fire-chamber, a vertical flue disposed between said fire-chambers and extending from bottom to top of the fire-box, said flue adapted to communicate at one end with both fire-chambers under the grates and adapted to communicate at the upper end with the fire-chambers above the grate, two independent valves in said vertical flue arranged to direct products of combustion therethrough, from the top of one fire-chamber to the bottom of the other fire-chamber, and means for independently adjusting said valves.

3. In a furnace, the combination of two fire-chambers each having a grate, a vertical flue disposed between said fire-chambers and closed at its respective ends, said flue having lateral openings near its upper end to communicate with the respective fire-chambers, a valve in the flue between said lateral openings, said flue also having lateral openings at or near its lower end to communicate with the respective fire-chambers some distance below the grates therein, a valve in the flue between said last-mentioned lateral openings, a flue common to both fire-chambers, and an independent valve in the last-mentioned flue to close the outlet of one fire-chamber and open the outlet of the other.

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

GEORGE ALLEN.

Witnesses:
C. H. HARRIS,
J. WALTER FENNER.