

(No Model.)

W. H. HODGSON.
FURNACE.

No. 476,270.

Patented June 7, 1892.

Fig. 1.

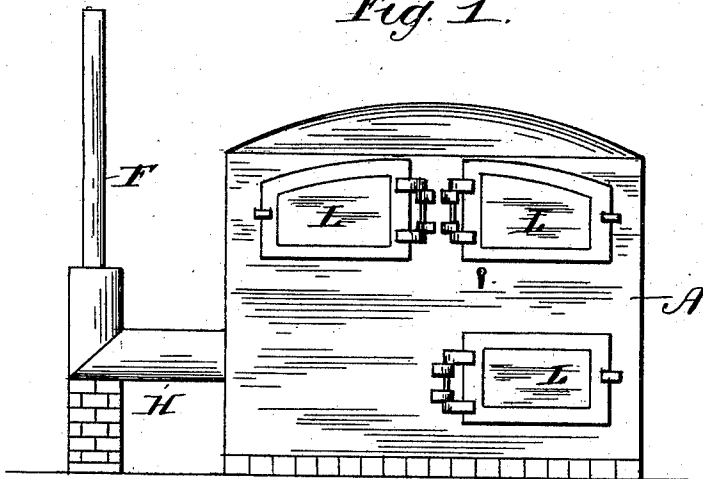


Fig. 3.

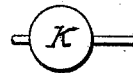
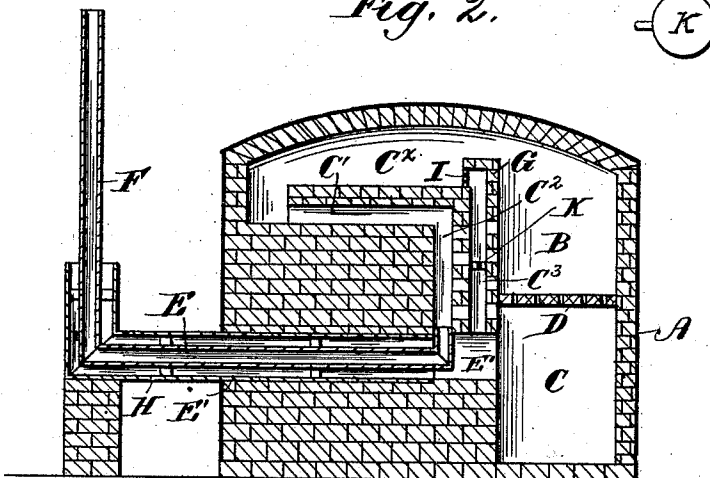


Fig. 2.



Witnesses:
O. Northrup
H. B. Kingsbery

Inventor:
Wm H. Hodgson,
by William C. Doulter,
attorney

UNITED STATES PATENT OFFICE.

WILLIAM HERBERT HODGSON, OF WINONA, MINNESOTA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 476,270, dated June 7, 1892.

Application filed June 11, 1891. Serial No. 395,928. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HERBERT HODGSON, a citizen of the United States, residing at Winona, in the county of Winona and State of Minnesota, have invented certain new and useful Improvements in Furnaces for Heating Plow and Cultivator Shapes; 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 has relation to furnaces, and though the improvements hereinafter described are applicable to almost any kind of furnace, yet they are particularly applicable to furnaces designed to heat the blanks of mold-boards, cultivator and seeder shovels, &c., before shaping them.

Among the objects designed to be accomplished by my improved furnace are to supply to the combustion-chamber and oven of the furnace a supplementary body of air heated by the escaping products of combustion, and thus by supplying additional heat and oxygen to the flame in the combustion-chamber effect complete combustion of the fuel and avoid the production of smoke and waste of fuel; also, to provide a furnace which will be of simple construction and capable of utilizing the greatest possible amount of heat derived from a given amount of fuel; and with these objects in view the invention consists in the construction and novel arrangement and combination of parts constituting my improved furnace, substantially as hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claim.

In the drawings, Figure 1 is a side view of a furnace embodying my improvements, and Fig. 2 a vertical section thereof. Fig. 3 is a detail elevation of the damper K.

In said drawings, A indicates the furnace-casing, constructed of heavy sheet-iron and having its interior built in with masonry, so as to form at one end thereof the fire or combustion chamber B and the ash-pit C beneath the same and the oven or heating-chamber C^x near the upper end of the furnace. A grate D is secured intermediate the combustion-chamber and the ash-pit.

Below the oven the brick-work is con-

structed to form a horizontal flue or passage C' and the vertical flue or passage C², which latter at its lower end communicates with the inner end of a pipe E, arranged horizontally in an opening E' of the masonry, said pipe E communicating at its outer end with the stack F. The fire-bridge G serves to shield the blanks that may be placed in the oven from the direct heat of the flame in the combustion-chamber. It will thus be seen that the products of combustion pass from the combustion-chamber into the oven C^x, thence through the flues C' C², and pass out through the pipe E and into the stack. It will also be seen that considerable heat is lost with the escaping products of combustion which might be utilized for heating a supplementary body of air and admitting the latter to the combustion-chamber and oven, and in order to effect this important purpose I form the vertical flue or passage C³ between the chamber B and ash-pit C and the flue C², the lower end of said flue C³ communicating with the horizontal flue or opening E' and its upper end communicating with the oven. I also locate within the passage E' a pipe H, surrounding the pipe E and its outer end being open to receive a current of cold air. By this means the cold air entering the pipe H will be highly heated by the heat of the escaping products of combustion and will upon reaching the rear end of said pipe E be divided, a portion passing upwardly through the flue C³ and into the oven to assist the heating of the articles therein and another portion passing upwardly through the grate D and into the fire-chamber, thereby materially assisting the combustion therein.

A perforated plate I may be located near the upper end of the flue C³, through which the supplementary body of air may pass. If preferred, the flues C' C² C³ may be provided with sheet-iron pipes.

A damper K is located in the flue C³, which may be operated from the outside of the casing to open and close the said flue when desired. A like damper may be arranged in the rear end of opening E' to regulate the quantity of supplementary air admitted to the ash-pit and fire-chamber. This damper may also be operated from the exterior of the furnace.

Admission to the oven and combustion-

chamber and ash-pit may be had through the doors L L L.

Various modifications may be resorted to in carrying out my invention and yet be within the scope of the same. Instead of causing the supplementary body of air to take the course and be admitted to the oven in the precise manner indicated it may be caused to take a different course and be admitted to the oven in a different manner and at another point thereof.

The advantages attained by my furnace will be readily apparent from the foregoing description, taken in connection with the accompanying drawings.

What I claim is—

The combination of the ash-pit, the combustion-chamber above the same, the horizontal passage E', communicating at its inner end with the ash-pit, the vertical flue C², communicating at its upper end with the horizontal

passage C', the heating-oven located above the said passage C' and communicating at one end with the same and at its other end with the combustion-chamber, the vertical flue C³, located intermediate the flue C² and the combustion-chamber and communicating at its upper end with the oven and at its lower end with the passage E', a pipe E, arranged within the latter passage and communicating at its outer end with a suitable chimney and at its inner end with the flue C², and a cold-air pipe surrounding the pipe E and communicating at one end with the exterior air and at its other end with the passage E', as described, for the purpose specified.

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

WILLIAM HERBERT HODGSON.

Witnesses:

ALEX. SIMPLOT,

P. S. WEBSTER.