No. 660,037. Patented Oct. 16, 1900.

E. VORBACH.

HOT BLAST STOVE.

(Application filed May 1, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

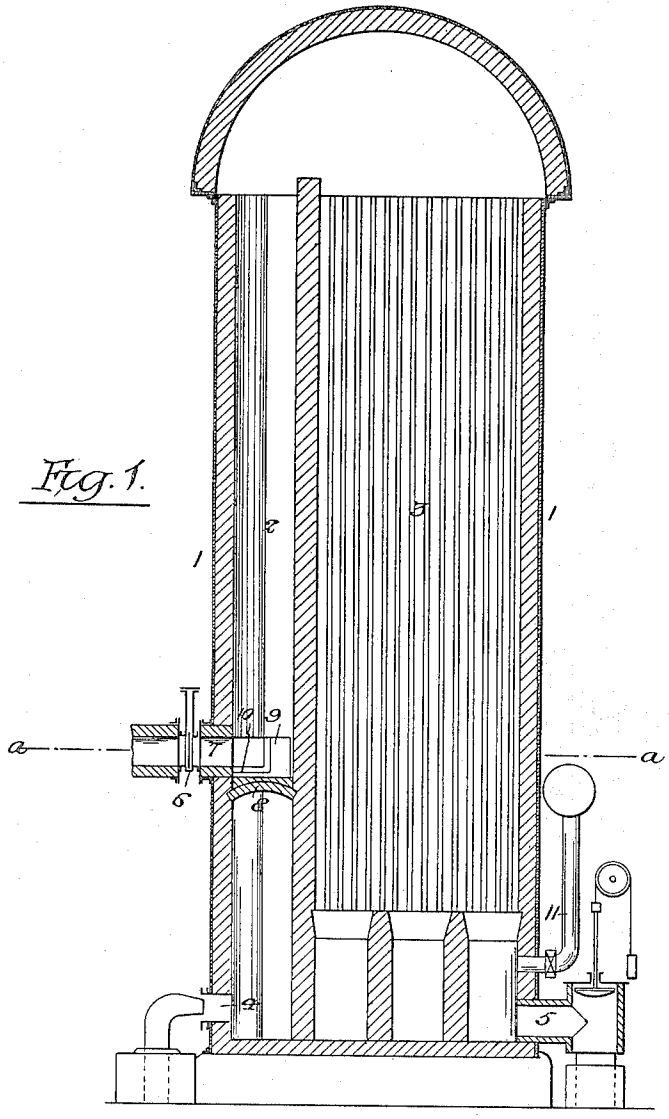
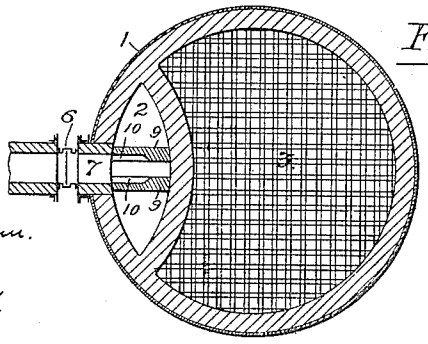


Fig. 2.



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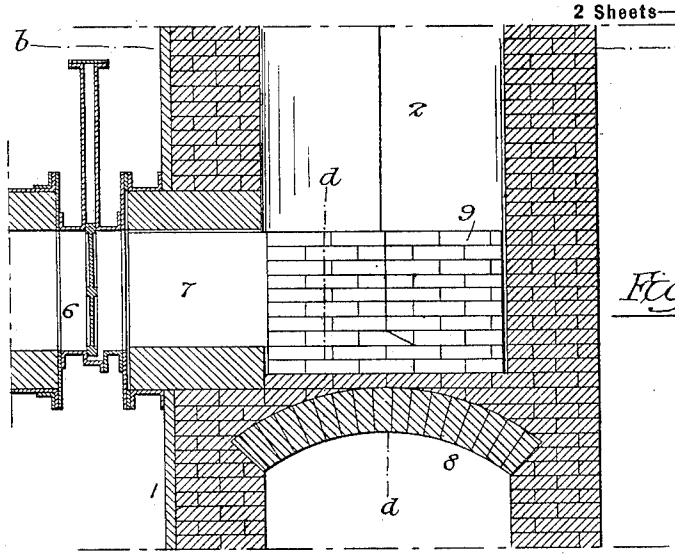


Fig. 3.

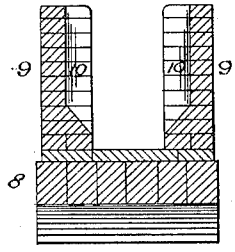
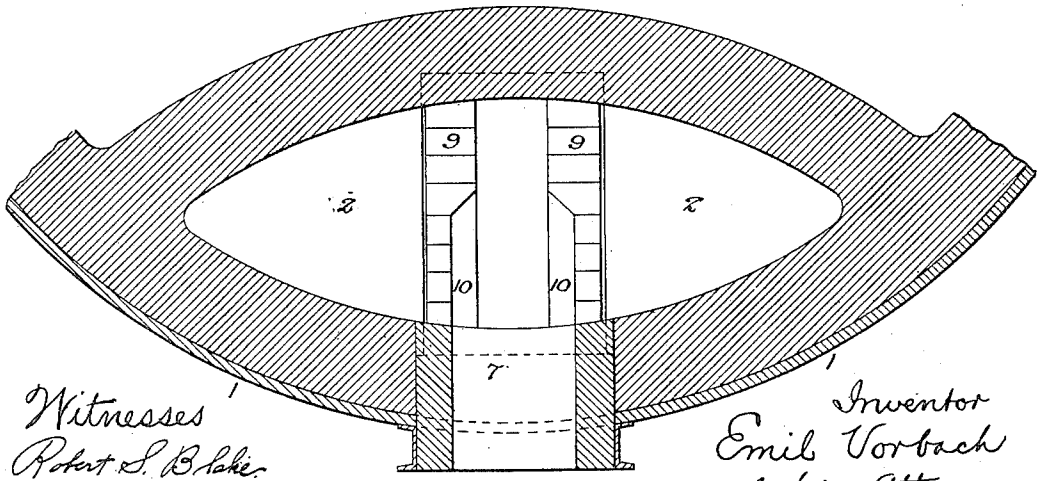


Fig. 5.

Fig. 4.



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UNITED STATES PATENT OFFICE.

EMIL VORBACH, OF KLADNO, AUSTRIA-HUNGARY, ASSIGNOR TO THE WELLMAN-SEAVER ENGINEERING COMPANY, OF CLEVELAND, OHIO.

HOT-BLAST STOVE.

SPECIFICATION forming part of Letters Patent No. 660,037, dated October 16, 1900.

Application filed May 1, 1899. Serial No. 715,214. (No model.)

To all whom it may concern:

Be it known that I, EMIL VORBACH, a subject of the Emperor of Austria-Hungary, and a resident of Kladno, Bohemia, Austria-Hungary, have invented certain Improvements in Hot-Blast Stoves, of which the following is a specification.

The object of my invention is to so construct a hot-blast stove as to prevent the excessive heating of the valve which governs the flow of hot air from the stove, whereby the use of a water-cooled valve for the purpose is rendered unnecessary and a plain valve can be used, if desired. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a hot-blast stove to which my invention has been applied. Fig. 2 is a sectional plan view of the same on the line *a a*, Fig. 1. Fig. 3 is an enlarged vertical section of part of the stove. Fig. 4 is a sectional plan view on the line *b b*, Fig. 3; and Fig. 5 is a transverse sectional view on the line *d d*, Fig. 3.

In Fig. 1 of the drawings, 1 represents the outer casing of a hot-blast stove; 2, the flue at one side of the same through which the hot gases rise; 3, the brick checker-work through which the gases descend; 4, the gas-inlet; 5, the gas-outlet; 11, the valved cold-air inlet, and 6 the valve through which the hot air is withdrawn.

In the use of the stove the valve 6 is closed during the heating of the checker-work 3, the gases entering the lower end of the flue 2 and after rising through the same and descending through the checker-work escaping through the outlet 5. When the stove has been sufficiently heated, the flow of gas is cut off, air is permitted to enter the chamber at the bottom of the checker-work structure, the valve 6 is opened, and the air is drawn upward through the checker-work, down through the flue 2, and out through the pipe containing the valve 6.

In hot-blast stoves as now constructed the valve 6 is subjected to a high degree of heat, which arises not so much from the hot air passing through the valve-casing as from the hot gases and the heat radiated from the casing of the stove during the heating up of the same. It is therefore customary to use water-cooled valves, which are complicated, expensive, and liable to get out of order, such valves necessitating the maintenance of an elevated reservoir of water or some other supply of water under pressure, and also requiring close attention and necessitating frequent shut-downs for repairs. It is the object of my invention, therefore, to protect the valve 6 from the excessive heat to which it is ordinarily subjected, for when this result is successfully accomplished the period of usefulness of the valve is much prolonged, and, if desired, the use of water-cooled valves, with their attendant trouble and expense, is rendered unnecessary, an ordinary sliding gate-valve being available for this purpose.

In carrying out my invention I introduce into the flue 2 a screen, whereby the hot gases will be directed away from the inner end or mouth of the hot-air pipe 7, thus not only preventing the access of the hot gases to the valve structure 6, but also preventing the excessive heating of that portion of the stove-casing with which the pipe 7 communicates. This screen consists in the present instance of an arch 8, crossing the flue 2 from side to side and disposed centrally in said flue just beneath the point at which the pipe 7 communicates therewith, and on this arch are built two vertical screen-walls 9 9, extending up on each side of the opening of the pipe 7, as shown in Figs. 3, 4, and 5. The portions of the screen-walls 9 nearest the mouth of the pipe 7 are recessed, as shown at 10, so that they will not obstruct the entrance to the pipe, while at the same time the screen-walls may possess the desired bulk and stability without being separated laterally from each other to the extent of the full diameter of the pipe 7, as they might in that case unduly obstruct the flue 2 and interfere with the free flow of the gases upwardly through the same.

Although, as before set forth, the protection afforded by the screen enables me to use an ordinary sliding gate-valve in place of the water-cooled valves ordinarily required, and although I prefer in all cases to use such sim-

ple form of valve a water-cooled valve might be employed if desired, as the protection of the same from the high degree of heat to which it is usually subjected will materially increase its term of usefulness and render it less liable to get out of order.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a hot-blast stove having a checker-work chamber and a combined ascending gas-flue and descending air-flue at one side of the same, a valved hot-air-discharge pipe communicating with said flue, and a screen located in said flue below the mouth of the pipe so as to protect said pipe and its valve from the action of the ascending hot gases, said screen being less in width than the flue so as to provide passages for the upward flow of the gases on each side of the same.

2. The combination of a hot-blast stove having a combined ascending gas-flue and descending air-flue, a valved hot-air-discharge pipe communicating with said flue, and a screen located in the flue adjacent to the mouth of said hot-air-discharge pipe, said screen consisting of an arch crossing the flue, and vertical screen-walls rising from said arch, one on each side of the mouth of the pipe.

3. The combination of a hot-blast stove having a combined ascending gas-flue and descending air-flue, a valved hot-air-discharge pipe communicating with said flue, and a screen located in the flue adjacent to the mouth of said pipe, said screen having vertical walls disposed one on each side of the mouth of the pipe and having internal recesses in those portions adjacent to said mouth.

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

EMIL VORBACH.

Witnesses:

ADOLPH FISCHER,

RUDOLF LANG.