

M. WEISS.
 REGENERATIVE FURNACE.
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1,045,650.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 1.

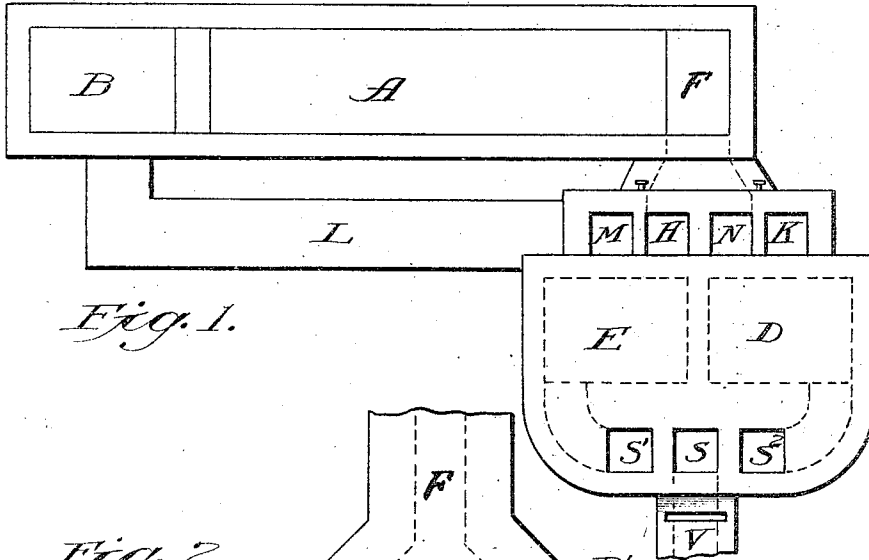


Fig. 1.

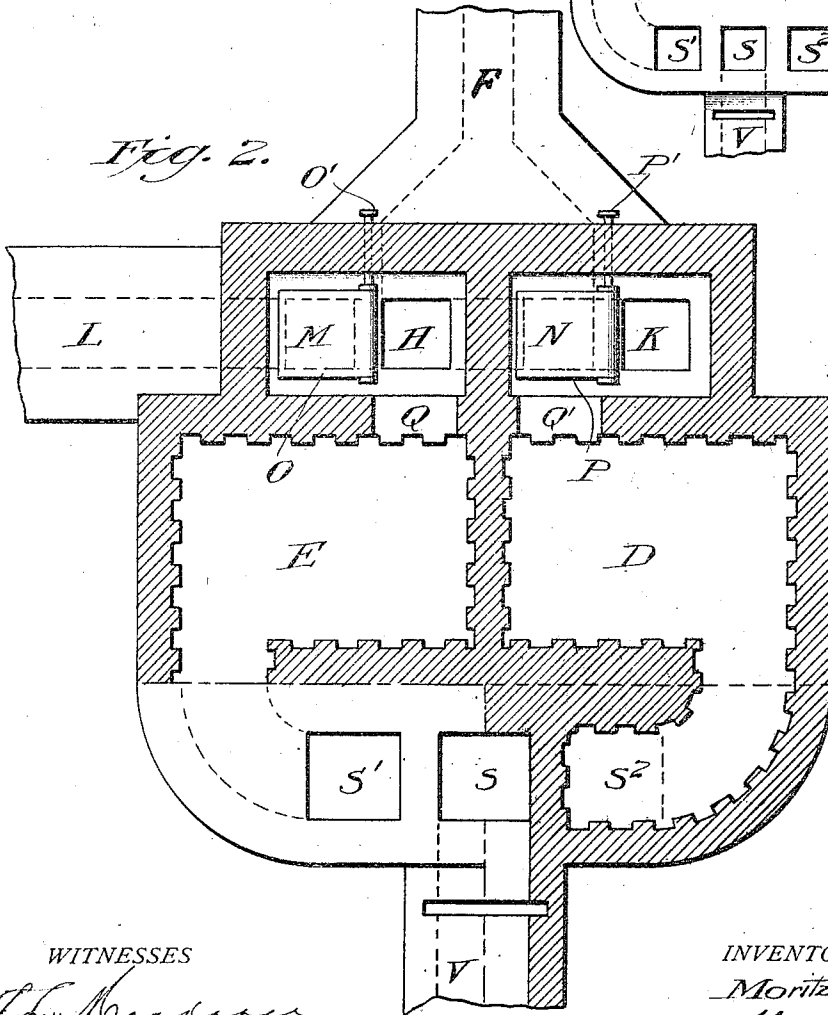


Fig. 2.

WITNESSES

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2 SHEETS-SHEET 2.

Fig. 3.

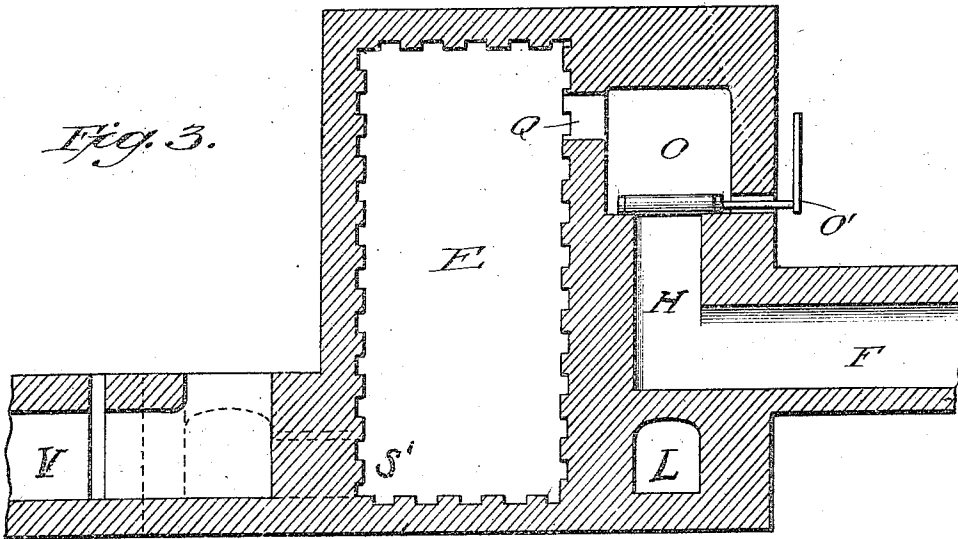


Fig. 4.

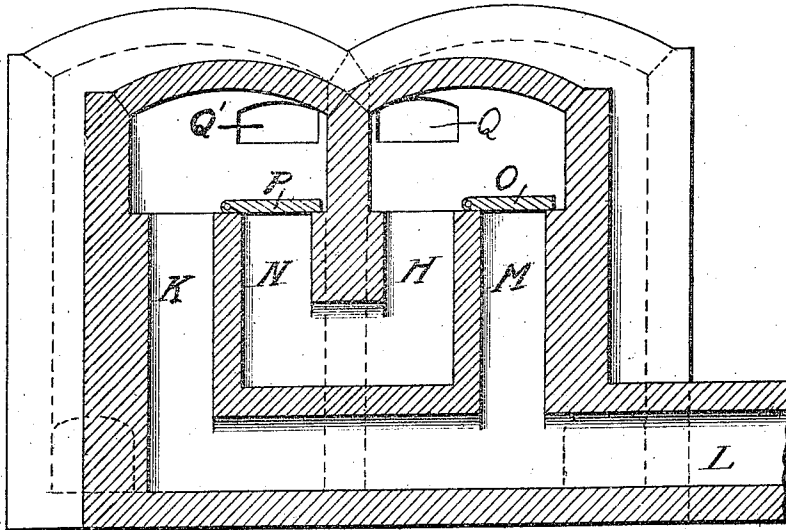
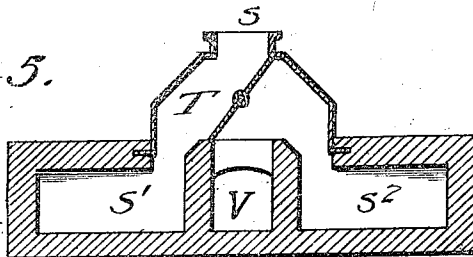


Fig. 5.



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MORITZ WEISS, OF RESICA, AUSTRIA-HUNGARY.

REGENERATIVE FURNACE.

1,045,650.

Specification of Letters Patent.

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Application filed April 13, 1911. Serial No. 620,929.

To all whom it may concern:

Be it known that I, MORITZ WEISS, a subject of the Emperor of Austria-Hungary, whose residence is Resica, Austria-Hungary, have invented certain new and useful Improvements in Regenerative Furnaces, of which the following is a specification.

This invention relates to a device constructed independently and separate from the furnace, which is provided with a pair of regenerative chambers, one of which is adapted to receive the products of combustion from the furnace while the opposite chamber simultaneously receives a charge of fresh air which becomes thoroughly heated by passing through and absorbing the heat from the checker work of said chamber, each of these regenerative chambers being controlled by suitable valves to reverse the passage of the air and products of combustion and each of said chambers also communicating with a single channel way which leads to the combustion chamber of the furnace so that the pre-heated air will at all times enter the said combustion chamber and flow in a given direction and thus cause the flame to act in a constant direction.

In the accompanying drawings illustrating my invention, Figure 1 is a diagrammatic view of my invention showing the general arrangement in connection with a furnace or oven, Fig. 2 is a horizontal section of my device, Fig. 3 is a vertical section through the cold reversing chamber and valves, Fig. 4 is a vertical section through the hot reversing valves, and Fig. 5 is a vertical section through the cold reversing valves.

In my improved apparatus, the waste heat employing device is in controlled communication with the outlet of a furnace for the products of combustion and is interposed in the course of these products to the stack. It is in communication with the supply of air to the device through the furnace. The apparatus for using the waste comprises a series of communicating chambers containing checker-work of fire brick and separately controlled. This checker-work is intensely heated by the waste products of combustion admitted to the several chambers alternately and the temperature of said products is considerably reduced on reaching the stack, by which means undue heat-

ing of the stack is prevented. When one chamber has become unduly heated communication between the furnace and stack is opened through another similar chamber of checker-work and the first process is repeated. The chamber already heated is opened to the air which circulates from the coldest part of the regenerator to its hottest part and is heated on its way to the combustion chamber by the employment of counter currents.

The following is a description of my improved device.

A is a furnace hearth, B is the combustion chamber, D and E are the chambers of checker-work, F is the flue leading from the furnace to the chambers.

M and K are ports leading from the chambers to the hot air chamber L. H and N are similar ports adapted to direct the flow of the waste heat from the flue F through the cold chamber.

O and P are double acting valves adapted to open and close the first and second sets of ports alternately and externally controlled at O¹ and P¹.

Q and Q¹ are openings between the port openings and the respective checker-work chambers.

S¹ and S² are ports of the chambers communicating both with the inlet S, for admission of cold air and with the stack.

T is the cold air and waste gas reversing valve.

V is the entrance to the stack.

Air is supplied to the combustion chamber B from the hot air chamber L, admitted from without through the port S and passing through the checker chambers E and D alternately from ports S¹ and S² controlled by valve T. Admission into the hot air chamber L is controlled by ports M and K while ports H and N make the connections between the flue F and the chambers and are closed or opened in alternate pairs as shown in Fig. 4 one interior and one exterior port comprising the respective pairs. With the ports M and N opened, air from the checker-work chamber E flows through the passage Q and through port M to the hot air chamber L and from thence to the combustion chamber B. Hot waste gas from the hearth A passes down the flue F into the port N through the passage Q¹ and thence through chamber D heating the

checker-work. Having given up part of its heat it passes to the stack through the port S².

When chamber D has been sufficiently heated, the reversal of the valves O, P and T reverses the course of the air and the hot gases from one of the checker-work chambers to the other, the supply to the hot air chamber L now proceeding from the chamber D and through the port K. The closing of port N shuts off the hot air from the furnace from chamber D and it proceeds through port H to chamber E. The reversal of valve T opens port S² to the air and closes port S¹ which now conducts the gases from chamber E to the stack V.

The advantages of my device consist essentially in the fact that all products of combustion must pass through the regenerating checker-work chambers and the incoming air flows from the coldest port of the regenerator to its hottest port. The fact that the valves O and P are always hot and in contact with hot gases tends materially to diminish the loss of heat sustained by a valve which is alternately cold and hot such as have been heretofore employed.

I claim:—

In combination with a furnace, a regenerating apparatus, interposed between the furnace and its smoke stack; said apparatus being provided with two independent re-

generating chambers having checkered inner walls; a valve chamber adjacent the furnace for each regenerating chamber; a port between each valve chamber and its regenerating chamber; a passage from each valve chamber to the combustion chamber of the furnace; a second passage from each valve chamber to the waste gas flue of the furnace; an inter-communicating passage between said second passages; a swing valve in each valve chamber adapted to close the one while opening the other of either of said passages of the valve chamber; a valve housing adjacent the smoke stack common to both regenerating chambers; an air inlet port in said housing; a port for each of said regenerating chambers in said housing; a passage in said housing leading to the smoke stack; a valve in said housing adapted to make communication between the atmosphere and one of said regenerating chambers while simultaneously making communication between the other regenerating chamber and the smoke-stack.

The foregoing specification signed at (Resica) Budapest this 29th day of March, 1911.

MORITZ WEISS.

In presence of—

HUGH KEMÉNY,
IRENE C. ROSHMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."