

(No Model.)

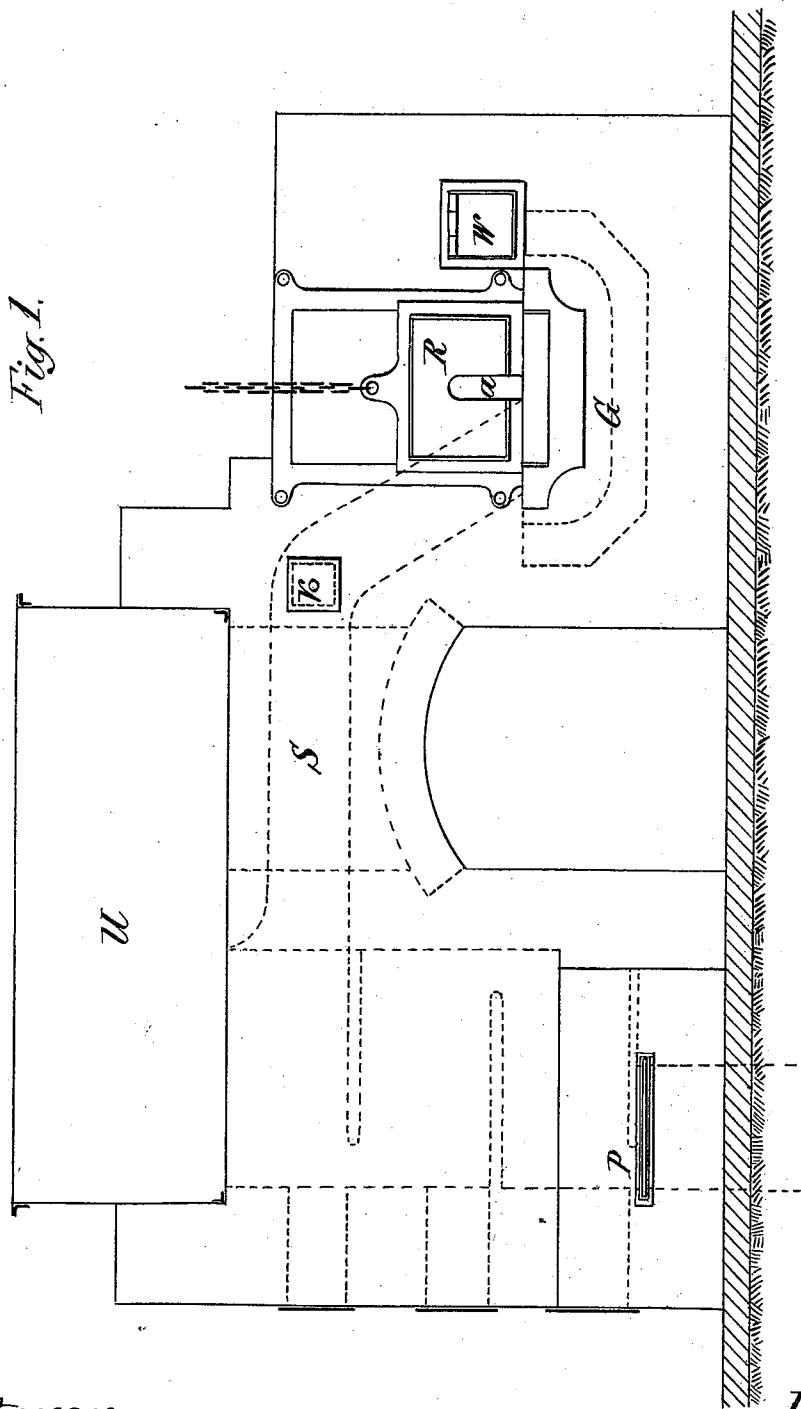
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S. HALLA.

FURNACE FOR MANUFACTURING YELLOW PRUSSIAN OF POTASH.

No. 544,580.

Patented Aug. 13, 1895.



Witnesses

John Revell

George Bannum

Inventor

Sigmond Halla

by his attorneys

Horsman and Horsman

(No Model.)

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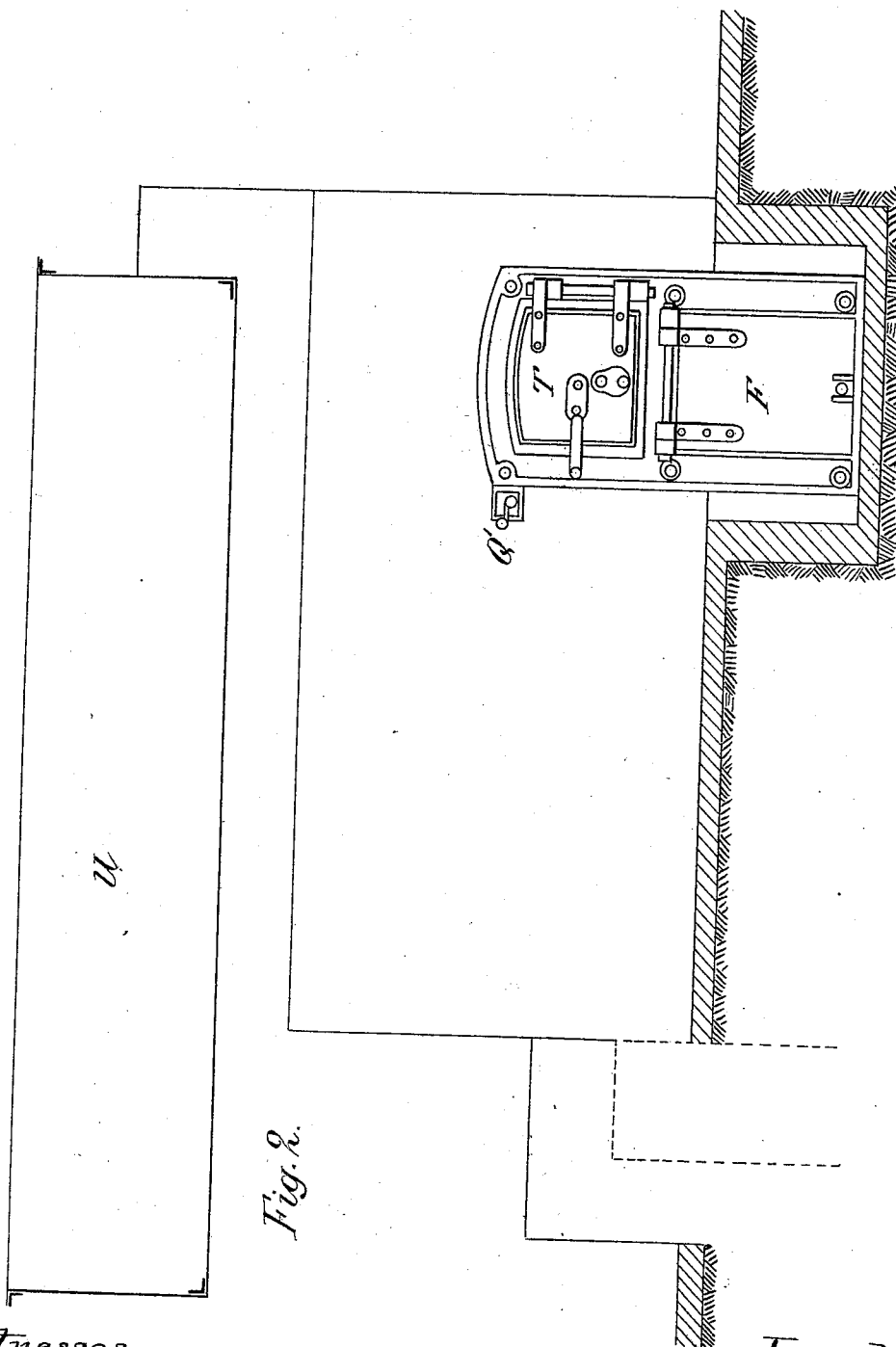


Fig. 2.

Witnesses

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Howson and Howson

(No Model.)

7 Sheets—Sheet 3.

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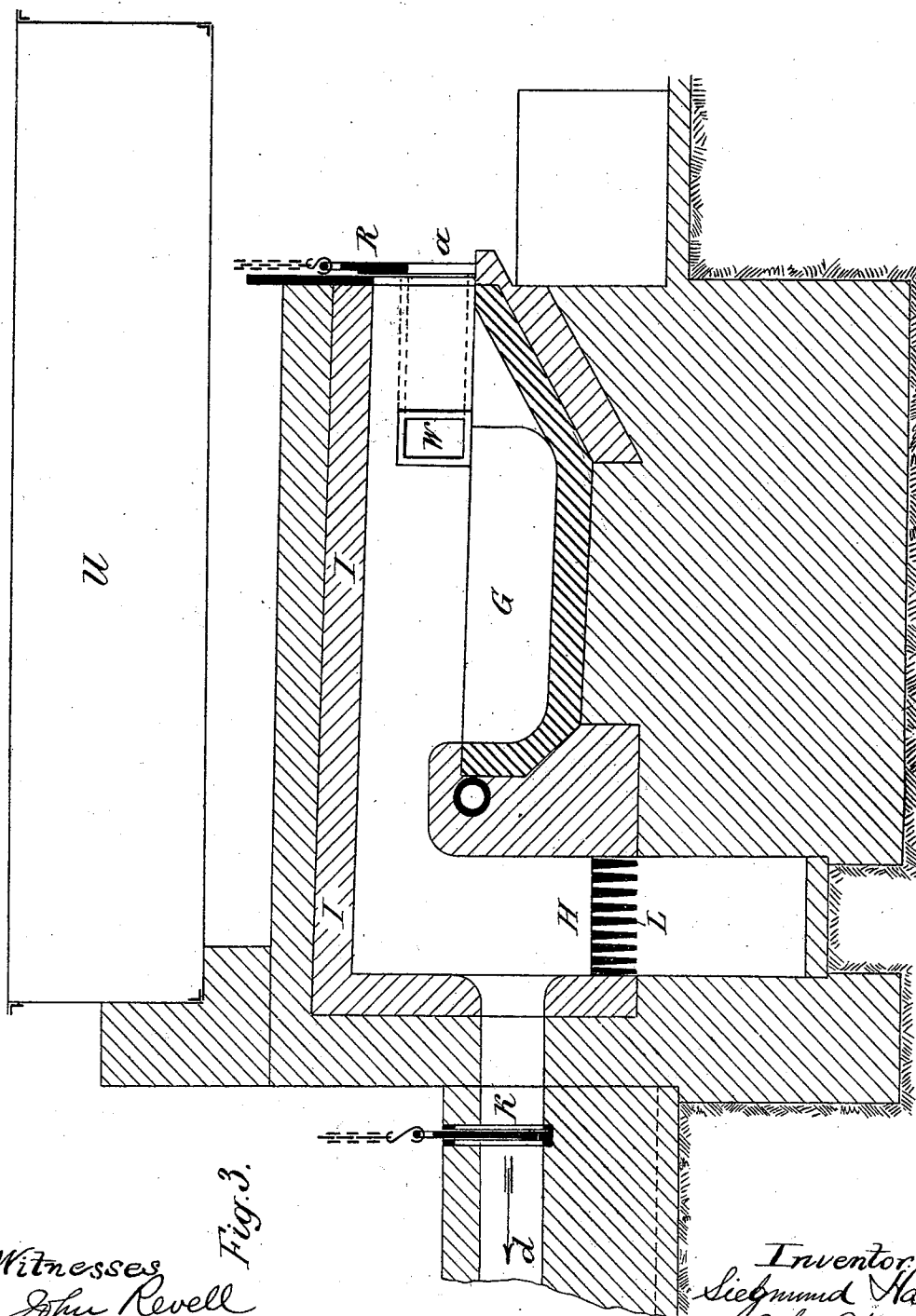


Fig. 3.

Witnesses
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Howson and Howson

(No Model.)

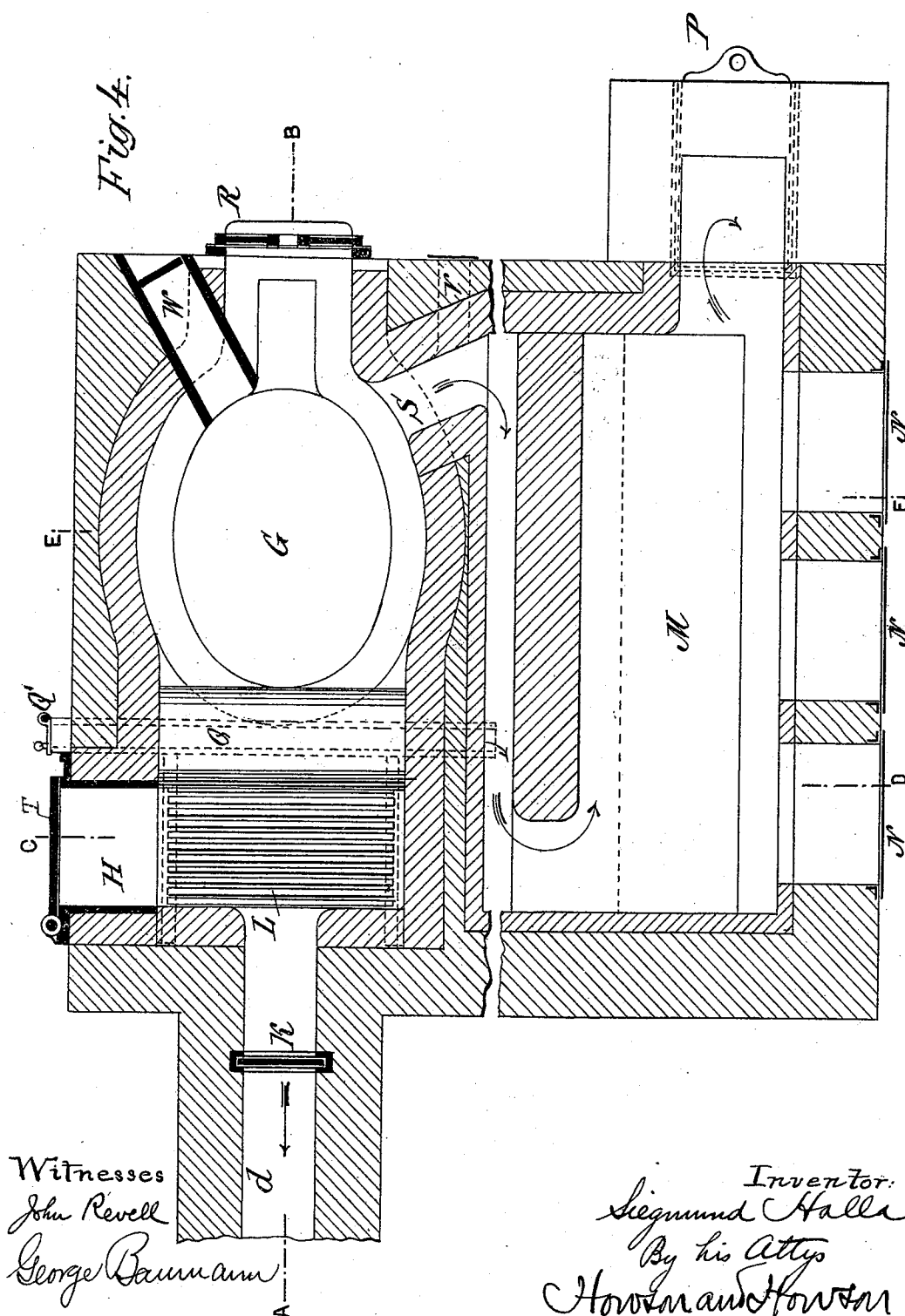
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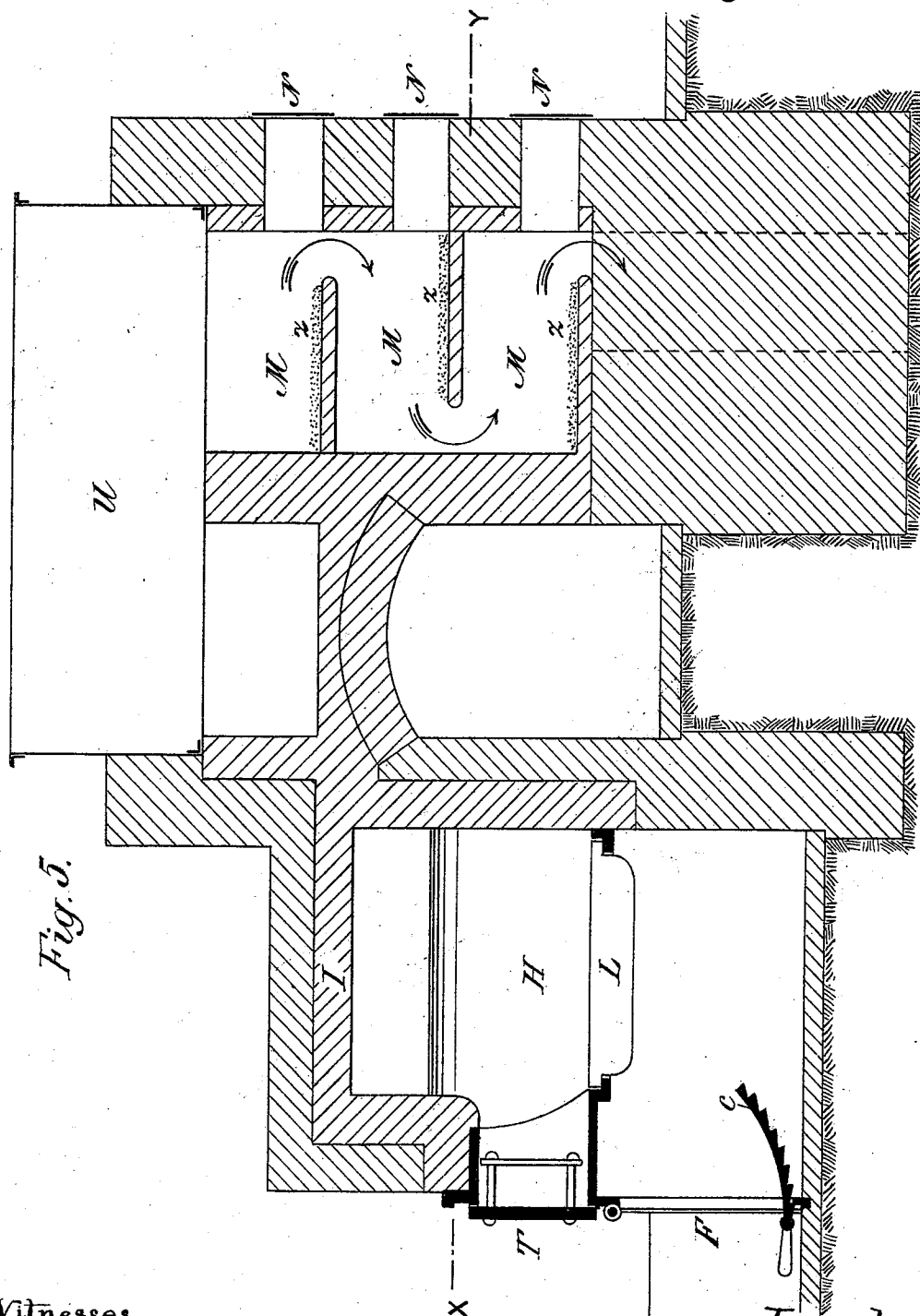


Fig. 5.

Witnesses

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Hornum and Hornum

(No Model.)

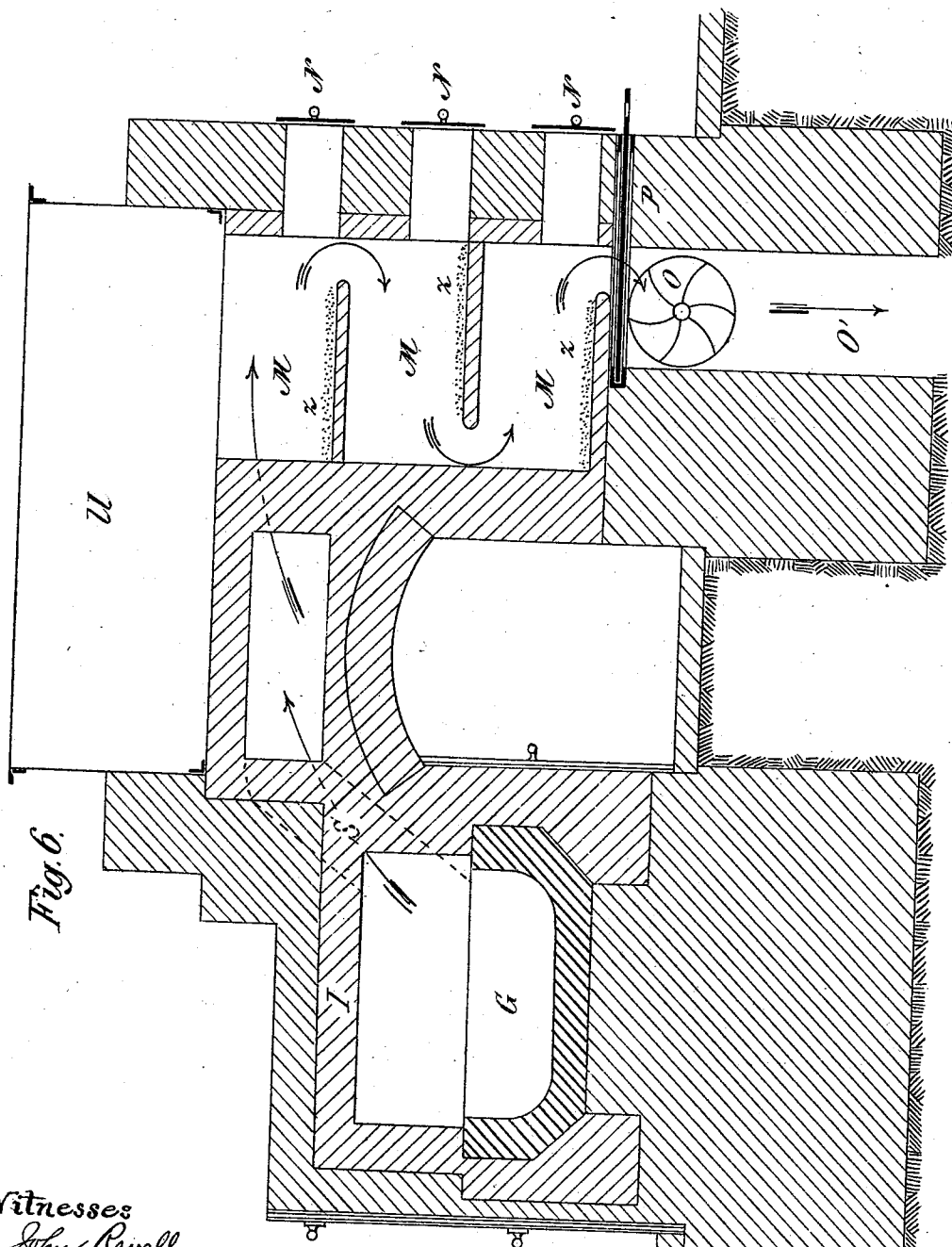
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Witnesses

John Revell

George Baumann

By his Attys

Inventor
Siegfried Halla
Horton and Horton

(No Model.)

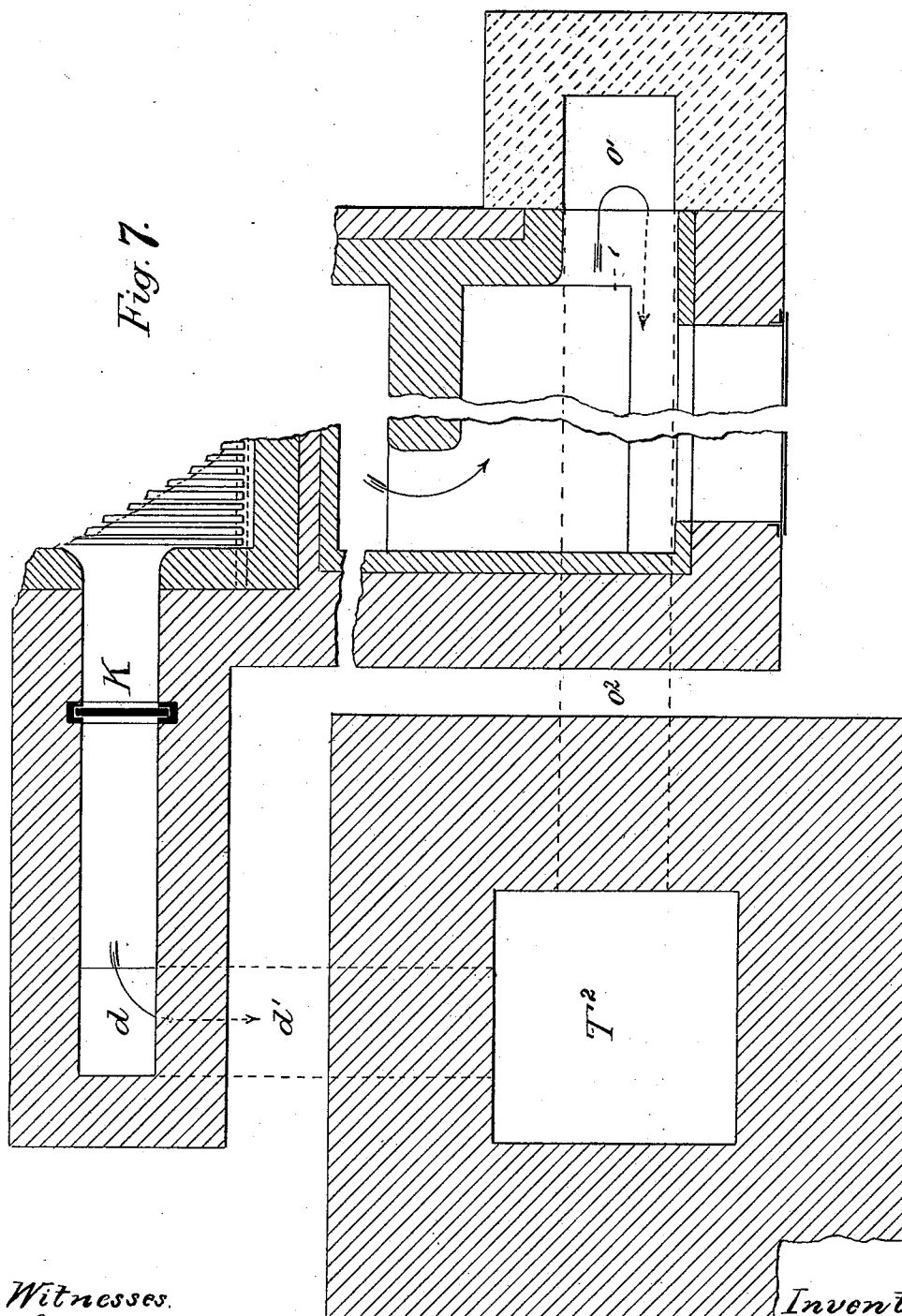
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FURNACE FOR MANUFACTURING YELLOW PRUSSIAN OF POTASH.

No. 544,580.

Patented Aug. 13, 1895.



Witnesses.

George Baumann
James Grauer

Inventor

Siegfried Halla
By his Attorney,
Horton & Horton

UNITED STATES PATENT OFFICE.

SIEGMUND HALLA, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR TO ANTON RAUDNITZ, OF SAME PLACE.

FURNACE FOR MANUFACTURING YELLOW PRUSSATE OF POTASH.

SPECIFICATION forming part of Letters Patent No. 544,580, dated August 13, 1895.

Application filed May 29, 1891. Serial No. 394,476. (No model.)

To all whom it may concern:

Be it known that I, SIEGMUND HALLA, a subject of the Emperor of Austria-Hungary, and a resident of Vienna, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Furnaces for Manufacturing Yellow Prussiate of Potash, of which the following is a specification.

The ordinary reverberatory furnaces for manufacturing yellow prussiate of potash have numerous disadvantages, the chief of which are, first, contamination of the melted product by ash proceeding from the firing; secondly, the loss of nitrogenous products and of potash by the draft from the melting-pan to the chimney; thirdly, the insufficient regulation of the draft; fourthly, the too free admission of air at the feeding-opening of the melting-pan, and, fifthly, the destruction of the fire-bridge by overheating. All these disadvantages are overcome by my improved furnace, which is shown in the accompanying drawings, in which—

Figure 1 is a front view; Fig. 2, a side view; Fig. 3, a side sectional view taken on line A B, Fig. 4. Fig. 4 is a sectional plan through line X-Y of Fig. 5. Fig. 5 is a cross-section through line C-D of Fig. 4. Fig. 6 is a cross-section through line E-F of Fig. 4. Fig. 7 is a sectional plan showing the connections of the flues with the chimney.

G is the melting-pan; H, the furnace; I, the fireproof roof of the pan and the furnace; K, a sliding door for removing ash-dust; L, the firing-grate; M M, chambers for absorbing nitrogenous volatile products; N N, tightly-closing doors for introducing and taking out absorbent materials *z*; O, a fan for drawing off the gases passing through the absorption-chambers; P, a slide for regulating the draft of the fan; Q, Figs. 2 and 4, a tube for conducting air into the absorption-chambers and serving at the same time for cooling the fire-bridge; R, sliding door with working-hole *a*; S, flue for the gases from the melting-pan to the absorption-chambers; T, air-tight firing-door; F, air-tight ash-pan door with regulator *c*; U, reservoir for evaporating potash lye; V, Figs. 1 and 4, opening for cleaning the flue S; W, feeding-hole, and T² chimney.

According to my present invention the au-

tomatic removal of ash-dust proceeding from the firing is effected by the aid of a suction-flue *d*, Figs. 3, 4, and 7, opening into the furnace H and connected with the chimney T² by means of the subterranean flue *d'*. This section-flue *d* can be made of brickwork or of earthenware or iron tubes. The regulation and working of this suction-flue is effected by opening or closing the slide K more or less. As soon as the slide K is drawn up, the draft of the chimney draws the ash-dust collected in the fireplace above the grate at once into the chimney through the flues *d* and *d'*.

Between the melting-pan G and the chimney the absorption-chambers M M are arranged, which are composed of a series of trays, on which absorbents *z z* are placed. The gases and vapors passing off from the melting-pan to the chimney take their path over these trays and yield to absorbents *z z* what they contain of potash or nitrogenous products. The absorbents *z z* may consist of coke, pumice-stone, slag, or the like, and may be moistened with sulphuric acid for improving their action. Air-tight doors N N are arranged for the insertion and removal of these absorbents, and the trays for the same may be made of earthenware or iron.

The proper regulation of the speed of the gases passing off is very important. For this purpose I arrange beneath the last of the aforesaid trays a fan O, which communicates through the flue O' and subterranean flue O² with the chimney. The slide P, arranged above the fan, regulates the admission of the gases to the fan. The rotation of the fan O is effected by the draft of the chimney.

For the purpose of diminishing the quantity of air entering to the melting-pan during the process, the door R has only a small working-hole *a*, through which the stirring of the materials in the pan is effected, and a separate door W is arranged, through which the materials for the melting-pan G are fed.

In the fire-bridge of the furnace a tube Q is arranged. The air passing through this tube serves for cooling the fire-bridge and thereby diminishing its wear and tear, and then for regulating the temperature in the absorption-chambers M M, as too great heat in these chambers would diminish the absorption

power and generally injuriously affect the entire process. The cover Q' to this tube Q is closed as soon as the process is completed, and thus prevents the escape of valuable gases.

5 The method of using the apparatus is as follows: By means of the furnace H the pan G is heated to about 900° centigrade. During this operation the slide P is kept open and the slide K is kept closed, except when the
10 fire is being stoked, in which case the slide P is closed and slide K is opened so as to prevent any ash-dust from entering the melting-space. As long as the slide P is open, the fan O is kept in motion by the draft from
15 the chimney. As soon as the pan is sufficiently hot the necessary quantity of potash is introduced into the same through the door R. When the potash is melted, the draft is reduced by closing the slide P so far as to
20 leave an opening of only about one inch in width, and then the nitrogenous materials—such as horn-shavings and cloth-clippings—are introduced into the pan through the separate opening W. The mixture is stirred about
25 by means of a tool introduced through the working-hole *a* in the door R, and the vapors evolved during this process are collected in the absorption-chambers M M.

When the treatment of the fused mass from which yellow prussiate of potash is to be obtained has been sufficiently completed, the slide P is closed entirely and the door R is open, whereupon the product may be removed from the pan. 30

I claim as my invention— 35

1. In a furnace for making prussiate of potash the combination of a fire-place, a melting pan, a flue leading from the pan to the chimney and containing absorption chambers M with a fan O and a sliding door P in the flue to regulate the speed of the gases from the absorption chamber, substantially as set forth. 40

2. In a furnace for making prussiate of potash, the combination of the fire-place, melting pan, and flue leading from the melting pan to the chimney and provided with absorption chambers, with a tube Q leading from the outer air to the absorption chambers, as and for the purposes set forth. 45

In testimony whereof I have affixed my signature in presence of two witnesses. 50

SIEGMUND HALLA.

Witnesses:

C. O. PAGET,
S. G. HARDY.