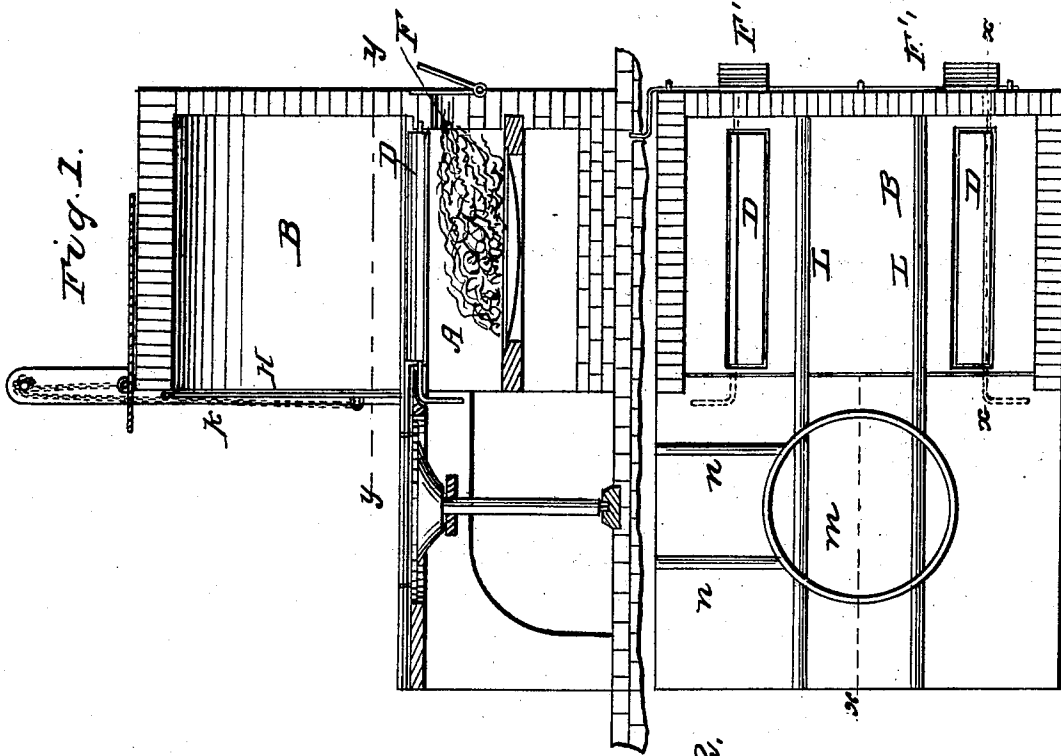


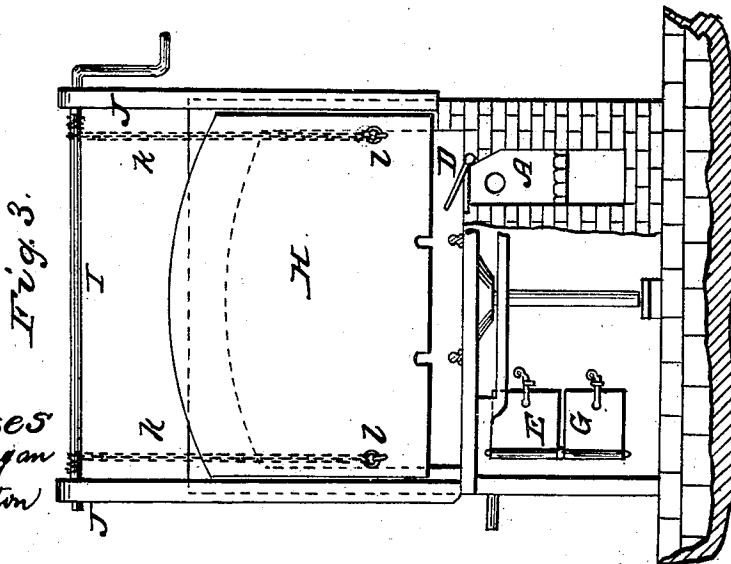
A. CARY.  
Desulpherizing Furnace.

No. 84,534.

Patented Dec. 1, 1868.



*Fig. 2.*



Witnesses  
Jm A Morgan  
G. B. Cotton

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# United States Patent Office.

ALANSON CARY, OF NEW YORK, N. Y.

Letters Patent No. 84,534, dated December 1, 1868.

## IMPROVED FURNACE FOR DESULPHURIZING STEEL AND OTHER WIRE.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, ALANSON CARY, of the city, county, and State of New York, have invented a new and useful Improvement in Desulphurizing-Furnace; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to provide means for desulphurizing steel and other wire, and other materials or substances; and

The invention consists in constructing a furnace in such a manner that the coal or other fuel which is used in the furnace for generating the necessary heat, is entirely freed from sulphurous and other gases, and reduced to an incandescent state, before the heat therefrom is allowed to come in direct contact with the article or substance to be desulphurized, and so that the air of the atmosphere is entirely excluded when communication is opened between the combustion-chamber and the desulphurizing-chamber.

It also consists in the arrangement of a turn-table, and suitable tracks for cars, for moving and facilitating the operation of desulphurization, and in the construction and arrangement of the furnace-door, as will be hereinafter more fully described.

Figure 1 represents a sectional elevation of the furnace, showing the arrangement of the fire-box or combustion-chambers, and the desulphurizing-chamber, with the parts connected therewith, the section being through the line *x x* of fig. 2.

Figure 2 is a horizontal section of fig. 1, through the line *y y*.

Figure 3, sheet 2, is a front view with a portion broken away.

Similar letters of reference indicate corresponding parts.

This furnace is constructed of brick or other good non-conducting material, and of any required size and form.

The combustion-chamber is designed to be large, so as to allow ample space for the combustion of the coal.

A represents the combustion-chamber, of which there may be one or more.

B is the desulphurizing-chamber, which is placed directly above the combustion-chamber or coal-furnace.

C represents the ash-pit.

D represents valves, by which communication between the combustion-chambers and the desulphurizing-chamber is opened and closed.

E represents apertures, for the introduction of coal or fuel into the combustion-chambers.

F represents the apertures for the discharge of the liberated gases during combustion of the fuel.

These apertures are provided with suitable doors or shutters, for tightly closing them when required, as seen at F', as also in the ash-pits beneath, as seen at G.

H represents the door to the desulphurizing-oven, which is raised and lowered by chains attached to the crank-shaft I, as seen in the drawing.

J J are two posts or standards, which support the crank-shaft.

The door H slides up and down in contact with the front of the chamber B, when it is raised or lowered.

When down, as seen in the drawing, it tightly closes the chamber.

It will be noticed that the chains *k k* are attached to the door, near its lower edge, as seen at *l l*.

By this arrangement, when the door is but partially raised, it may be turned back to a horizontal position, and made to rest on the top of the chamber, as seen in red color in fig. 1.

This arrangement obviates the necessity of elevating the crank-shaft, so as to make it inconvenient to operate it.

For the purpose of facilitating the operation of desulphurizing wire or other articles or substances, I place the wire or other article on a rail-car, and provide a suitable track for the same, which track terminates in the chamber.

This track, (provided with a turn-table,) is seen in fig. 2, the rails being marked *L L*, and the turn-table *m*.

The turn-table and the side-track *n n* are provided for the purpose of accommodating two or more cars, so that when one car-load of wire or other material has been desulphurized, it may be run out of the chamber, and another car-load put in, without occasioning delay or much loss of heat.

It is well known that in manufacturing steel or other wire, the metal becomes more or less impregnated with sulphur from the acid used during the process, which sulphur it is necessary to expel.

Heat at a high temperature is the agent employed for this purpose.

In operating with my furnace for desulphurizing the wire, I roll the car loaded with the article into the chamber, with the door H and the valves D tightly closed.

The coal in the combustion-chamber is allowed to burn freely, with a full supply of air to produce perfect combustion, expel all the gases, and reduce the coal to an incandescent state, or to a white heat.

When in this condition, the combustion-chamber is tightly closed, and the valves D are opened so that the heat has free access to the chamber above, while the air of the atmosphere is entirely excluded from both chambers.

By allowing the heat of the combustion-chamber at this high temperature, unmingled with air from without, or with gases escaping from the coal, free access to the wire or material to be operated upon, the desulphurization is perfect, and the result is obtained with an expenditure of time and fuel greatly reduced from that of any former operation for the same purpose.

I claim as new, and desire to secure by Letters Patent

1. A furnace for desulphurizing wire or other articles or substances, constructed with valve-openings between the combustion and desulphurizing-chambers, whereby the heat of the fuel has direct access to the wire or article to be desulphurized, substantially as described.

2. The chambers A and B, with valve-openings between them, substantially as described.

3. The door H, when the same is hung and operated substantially as described.

The above specification of my invention signed by me, this 10th day of July, 1868.

ALANSON CARY.

Witnesses:

FRANK BLOCKLEY,  
ALEX. F. ROBERTS.