

William Harris & Daniel Hall.

PATENTED MAY 31 1870

Apparatus for Enamelling Sheet Iron.

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Fig. 4.

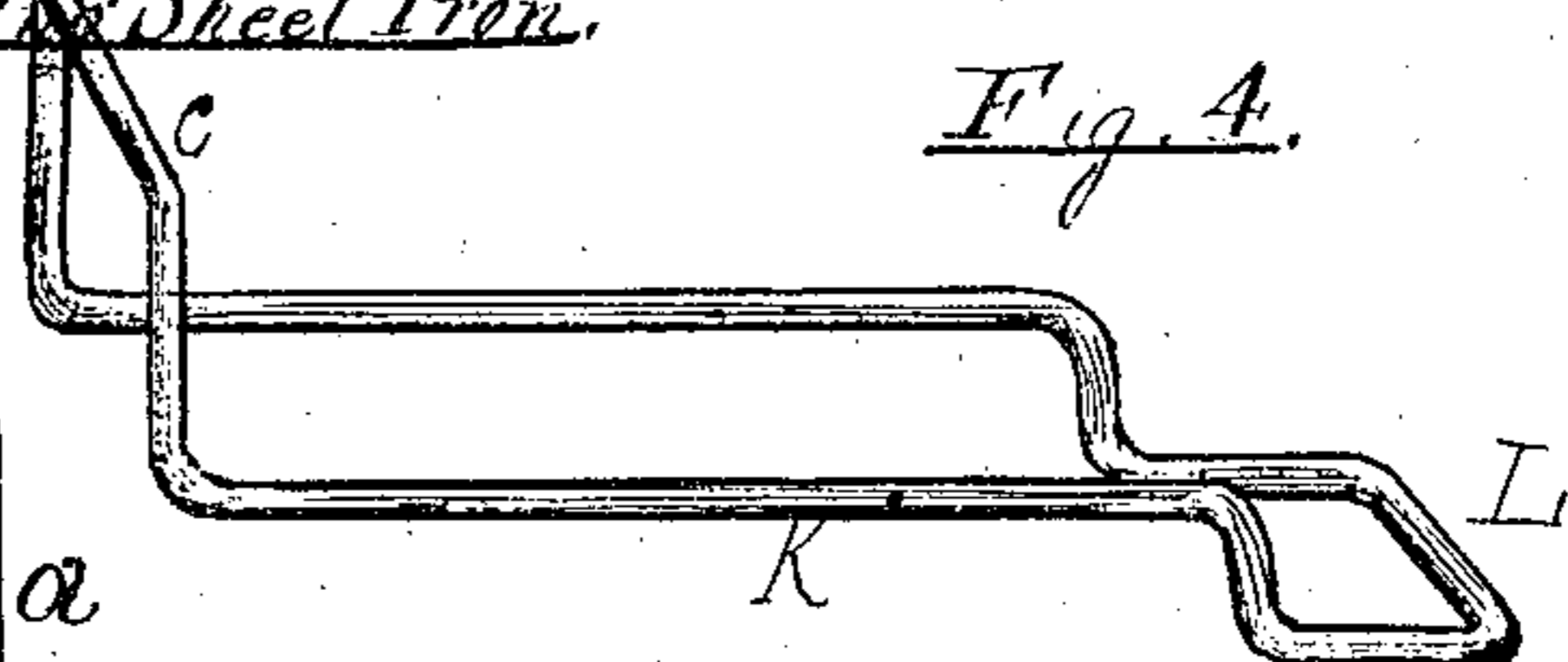


Fig. 1.

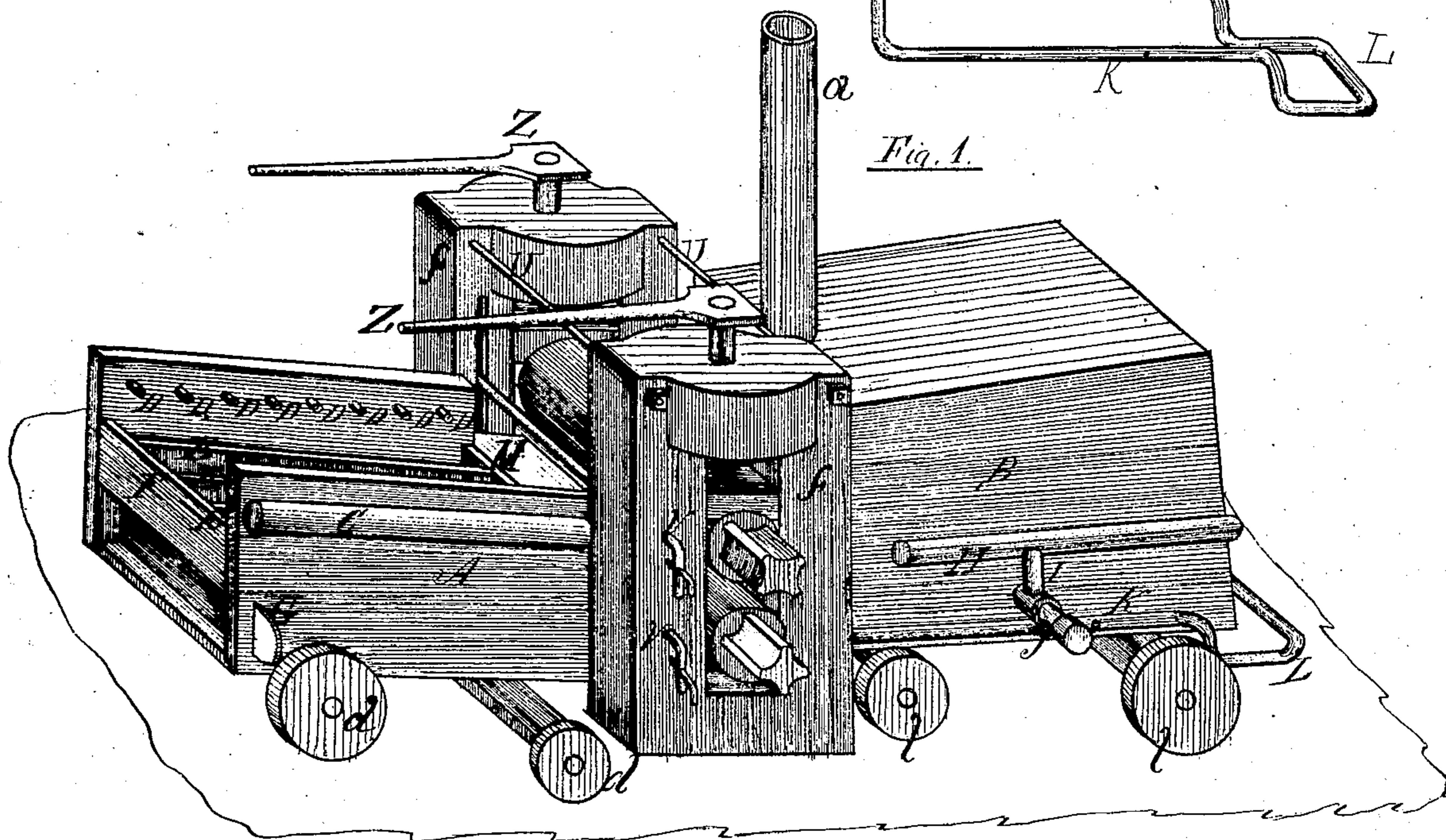


Fig. 2.

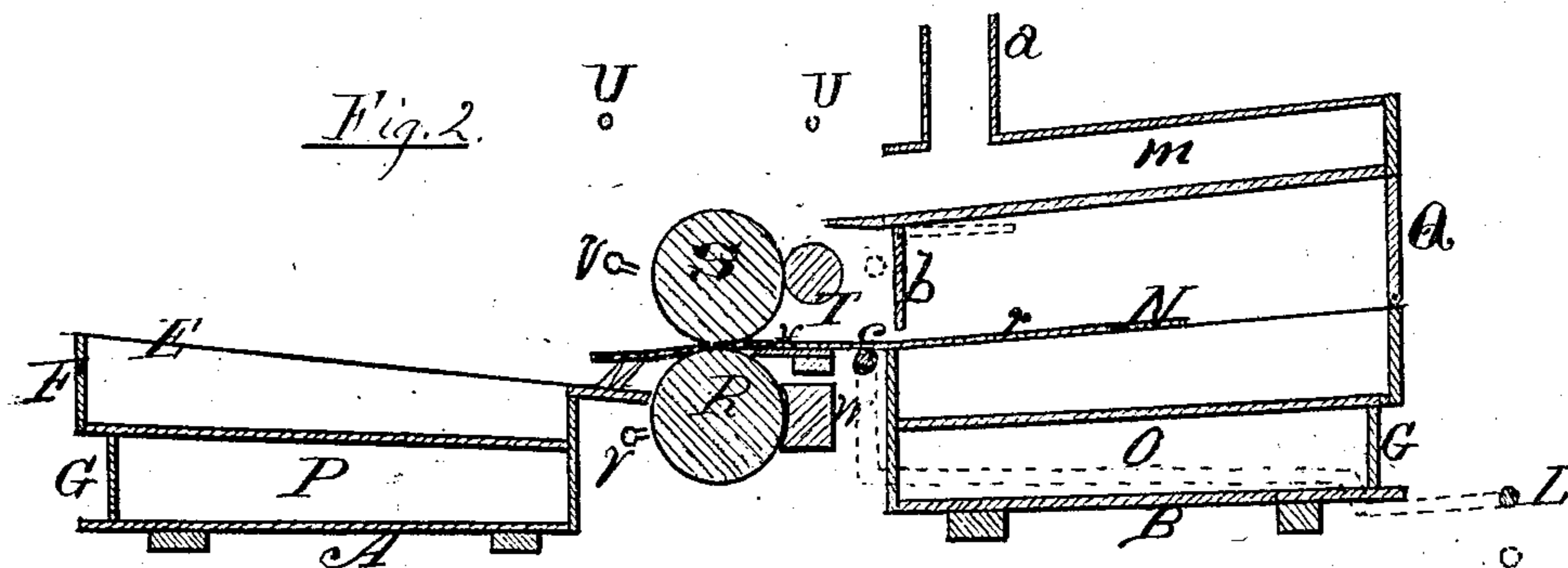
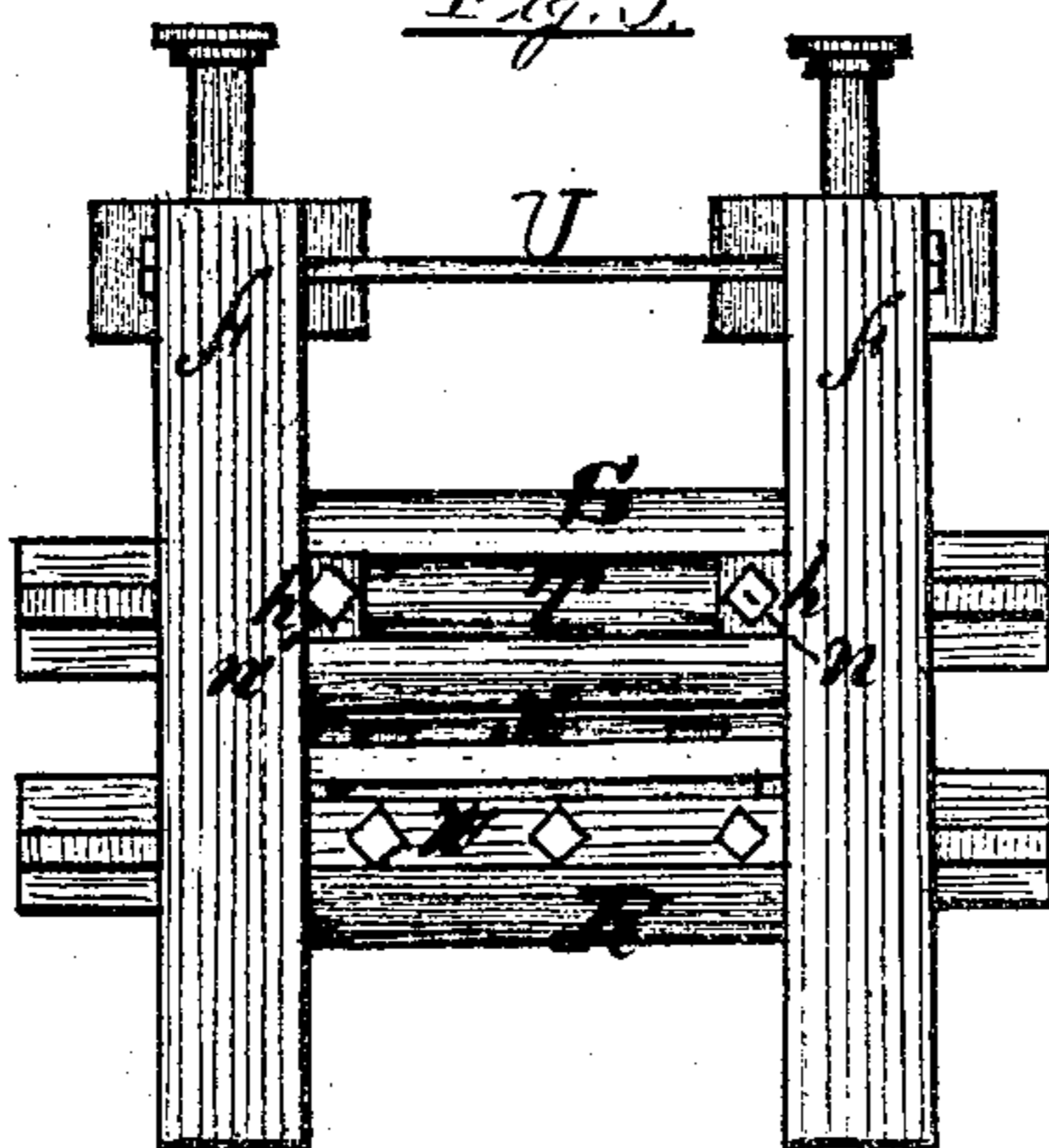


Fig. 3.



Witnesses.

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# United States Patent Office.

WILLIAM HARRIS AND DANIEL HALL, OF CHICAGO, ILLINOIS.

Letters Patent No. 103,741, dated May 31, 1870.

## IMPROVEMENT IN APPARATUS FOR ENAMELING SHEET-IRON.

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

To all whom it may concern:

Be it known that we, WILLIAM HARRIS and DANIEL HALL, of Chicago, in the county of Cook and State of Illinois, have invented an "Apparatus for Enameling Sheet-Iron;" and we do hereby declare that the following is a full and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing and letters marked thereon making a part of this specification, in which—

Figure 1 is a perspective representation of our improved apparatus for enameling sheet-iron.

Figure 2, a longitudinal section of the same.

Figure 3, an end view of the rolling part.

Figure 4, a view of the adjusting lever.

This invention consists of two removable furnaces and a rolling device, whereby sheet-iron, when being rerolled and enameled, may be constantly subjected to a nearly uniform heat.

The rolling device consists of the ordinary rollers, and, in addition to them, an enameling roller, whose substance is, by contact and friction, distributed to one of the plating-rollers, from which it is laid on the sheet-metal plate as it passes through the apparatus, gas-pipes being used in addition to the furnaces, in order that lighted gas may be used to provide heat at such places as the furnaces are defective in that respect, other devices being used for the convenience of handling the metal plate, as the whole is hereinafter fully described.

A represents an open furnace, mounted on wheels *d*, and provided with a grated fire-box, *E E*, &c., and an ordinary ash-pit, *P*.

The sides of this furnace project above the grates *E*, and attached to them longitudinally are gas-pipes *C*, which are provided with a series of burners, *D*, and projecting through said sides, in order that a gas-flame may be brought over the sheet-iron as it is passing between the rollers *R S*.

An apron, *M*, attached to the end of the furnace, is arranged to fill the space between the furnace and rollers, so that the sheet metal may have a suitable guide in its forward movement.

*ff* is a strong frame, having a suitable support on a floor or foundation, and supporting the plating-rollers *R S*, a composition-distributing roller, *T*, and a guide, *W x*.

There is nothing claimed to be new as to the rollers *R S*, but a roller, *T*, consisting of a compound of zinc and copper, in combination with rollers *R S*, is considered novel, inasmuch as by friction, a portion of its periphery is constantly distributed on the roller *S*, with which it comes in contact, and from the roller

*S* laid on the sheet metal as it passes through between the rollers *R S*.

The roller *T* has bearings *h* projecting inward from the frame *ff*, as shown in fig. 3, and it is caused to bear with suitable force against the roller *S*, by means of set-screws *n n*, same figure.

Below the roller *T*, and between the rollers *R S*, is arranged a platform or guide, *W x*, which guides the sheet metal into the furnace *B*.

This guide, working in vertical grooves made in the inner side of the frame *ff*, may be raised or lowered, as the case may require.

The furnace *B* has a construction similar to furnace *A*, except that it is covered, and has a hot-air chamber, *m*, over the grates *N*, shown in the section at fig. 2, said grates having the same form as those shown at *E*, fig. 1, and beneath them is an ash-box, *O*, similar to ash-box *P* in furnace *A*.

In the front of rollers *R S* are gas-pipes *V*, which serve to keep the rollers up to the desired heat. And on either side of the furnace *B* is a gas-pipe, *H*, which is provided with a series of burners, projecting inwardly, similarly to the burners at *D* in furnace *A*.

The pipes *H* communicate with vertical pipes *I*, which communicate with trunnion pipes *J*, so arranged that, while they conduct the gas to pipes *H*, they will serve to support the furnace *B* instead of using the wheels *l l*, if desired.

The operation is as follows:

After the fires have been properly started, and gas lighted, the sheet of iron, of any desired thickness, is placed on the grates *E*, and, when properly heated, is run through between the rollers *R S*, into furnace *B* and onto grates *N*.

The end of the sheet adjoining the rollers is then lifted up, after opening a door, *b*, fig. 2, carried back over roller *S*, and placed again on the grates *E*.

The device for lifting up said sheet consists of a stirrup-lever, *L c*, which is pivoted to the furnace *B* at *K*, and is so turned up at *c* as to come near the sheet-iron.

To use said lever, bear down upon it at *L* with the foot.

During the entire operation care should be used not to have the roller *T* bear too hard against the roller *S*, as too much metallic enamel will be transferred to the sheet.

This invention, for making sheet metal similar to "Russia iron," is found by experiments to be of great value, as the enamel put on by it is smooth, glossy, and does not scale.

When, however, the distributing-roller *T* does not dispense enamel enough, a stationary friction dis-

tributing-plate or bar, W, is placed against the roller R.

Having thus described our invention,

What we claim, and desire to secure by Letters Patent of the United States, is—

1. Broadly, in manufacturing enameled iron, the use of the composition roller T, composed of zinc and copper, or their equivalents, in combination with rollers R S, and with or without bar W, when used with any suitable heating apparatus, as set forth.

2. The combination of the heating-furnaces A B,

provided with gas-pipes O V H J I, and suitable burners D, as and for the purpose set forth.

3. The stirrup-lever, pivoted to the furnace B, when used in combination with the furnaces A B and rollers R S, to assist in transferring sheet metal from one furnace to the other, as set forth.

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Witnesses:

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G. L. CHAPIN.