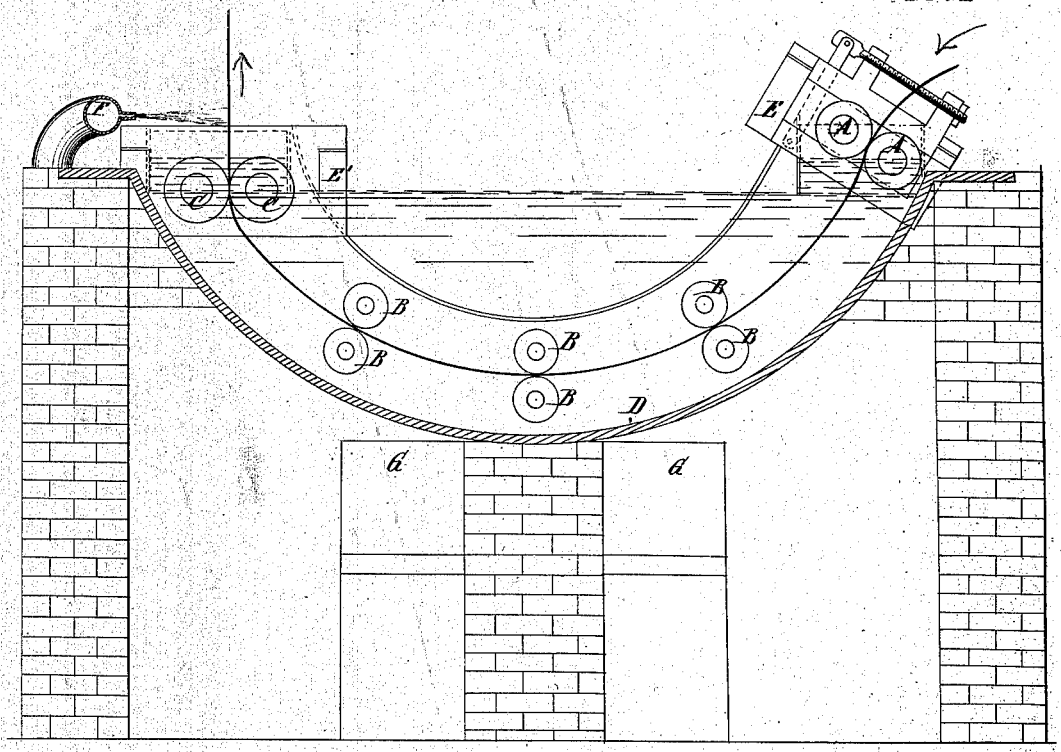
John D. Grey.

Process of Coating Sheets of Iron.

112588

PATENTED MAR 14 1871



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN D. GREY, OF PITTSBURG, PA., ASSIGNOR TO MARGARET GREY.

IMPROVEMENT IN COATING SHEET-IRON WITH ZINC.

Specification forming part of Letters Patent No. **112,588**, dated March 14, 1871.

To all whom it may concern:

Be it known that I, JOHN D. GREY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Process of Coating Sheets of Iron; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to the art of coating sheets of iron with zinc; and consists in the process hereinafter specified.

I will first describe a mechanism by which my process may be illustrated and exemplified, without designing to confine myself to any particular means.

The figure is a sectional view.

A A are feed-rolls; B B, a series of pairs of friction guide-rolls; and C C, a pair of delivering and smoothing rolls. D is a vessel containing the molten metal. E E′ are flux-boxes, partially filled with sal-ammoniac, and placed one at the receiving and the other at the delivery rolls. These boxes are open at the bottom, so that the sal-ammoniac may float on the molten metal and partially envelop the surface of one or both of the rolls at each end.

F is a tube, located so as to force a current of air upon the sheet as it rises from the bath. G G is the fire-place.

The sheet of iron is passed into the rolls at A, then through the sal-ammoniac flux in box E, then between the guide-rolls B B and through the molten metal, then through the flux in box E′, then through the delivery-rolls, and, finally, it receives the cold air from tube M, impinged directly upon the coated surface to fix the film on the iron.

Under the process now known to the public the sheet-iron is passed down edgewise and vertically through the molten zinc, moved under and to the other side of a partition, and then drawn up through sand. The sand prevents the oxidation of the soft film of zinc before it has been fixed and hardened on the iron.

It will be perceived that I accomplish this very important object by the flux and smoothing delivery-rolls. The result which I obtain is also a much smoother surface.

Again, by the old method, the sheet of iron being dipped, moved laterally under the partition, and drawn up on the other side, it will be observed that the end which first passes toward the bottom comes up last, has therefore been longer exposed to the zinc, and is consequently covered with a heavier coat. This want of uniformity in the coating is very objectionable, and is entirely remedied by my process, which exposes every part of the coat for exactly the same length of time.

The object of placing the flux so as to receive the sheet-iron after it passes through the feed-rolls is to remove the acid which has been used to clean the surface of the sheet immediately before the sheet enters the molten zinc.

Having thus described all that is necessary to a full understanding of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The process of coating iron with a film of zinc by passing sheets of the former through a flux of sal-ammoniac, then through the molten zinc, again through the same flux, then through smoothing-rolls, and, finally, impinging thereon a current of cold air as it rises from the bath, all substantially as described.

JOHN D. GREY.

Witnesses:

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