United States Patent Office.

RUFUS B. FOWLER AND DANIEL F. BRANDON, OF CHICAGO, ILLINOIS.

Letters Patent No. 113,040, dated March 28, 1871.

IMPROVEMENT IN COATING IRON AND STEEL WITH MOLTEN IRON.

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

We, RUFUS B. FOWLER and DANIEL F. BRANDON, both of Chicago, county of Cook and State of Illinois, have invented a certain Process for Applying a Coat of Molten Iron to the Surfaces of Plates or other articles of Wrought-Iron or Steel, of which the following is a specification.

The iron to be applied is melted in a crucible or other suitable receptacle, and thoroughly mixed with borax or other material used for making a flux.

The plate or other article of wrought-iron or steel should be covered, upon the surface to be coated, with a very thin layer of finely-pulverized borax which has previously been burned, and then placed in a closed furnace or oven and heated to a white or welding heat. It is then placed upon a large anvil or block of iron, the upper surface of which is perfectly level. The article to be covered with the molten iron should then be surrounded by an iron frame or form in such a manner that the molten iron may be prevented from flowing off the surface to be coated.

The molten iron which has been mixed with borax, as hereinbefore described, is then poured upon the surface of the heated plate or other article of wrought-iron or steel. When a sufficient quantity of molten iron has been poured on as described, a plate of steel or hard smooth iron of sufficient size to nearly cover the whole of the molten iron, is brought down upon its upper surface, and a pressure immediately applied sufficient to reduce the molten iron to the desired thickness and also to expel all the air or gases that may be contained in the molten iron, and which would otherwise render the coating porous and of no practical value.

The amount of pressure required will depend upon the degree of heat to which the molten iron is brought and the quickness with which the operation is performed. The pressure should be applied, however, while the iron coating is in a molten state, and it may be applied by means of a lever, a hydraulic press, or any of the known mechanisms or devices by which a powerful pressure may be instantly applied; or, in lieu of the smooth plate or die mentioned above, a roller with a smooth surface may be made to pass over the upper surface of the molten iron with a pressure sufficient to produce the desired results.

The mechanism used for pressing should be near the oven or furnace in which the plate or other article of wrought-iron or steel is heated, in order that the heat of the plate or other article may not fall much, if any, below the welding point when the molten iron is applied, and the surface of the plate or other article of wrought-iron or steel to be coated should be free from dirt, scale, or such other substance as would ordinarily prevent two pieces of wrought-iron from forming a perfect weld or union.

The above-described process of applying molten iron to the surfaces of plates or other articles of wrought-iron or steel expels the air or gas from between the molten iron and the surface of the wrought-iron or steel, causing a more perfect union between the two, and renders the coating of molten iron much more compact and gives it a smoother surface.

We do not claim any mechanism or device used for applying the pressure; nor do we claim the employment of molten iron for the purpose of coating articles of wrought-iron or steel.

We claim as our invention—

The process of coating the surfaces of plates or other articles of wrought-iron or steel with molten iron by the use or application of pressure, substantially as described.

RUFUS B. FOWLER.
DANIEL F. BRANDON.

Witnesses:
BALDWIN DAVIS,
ALDEN P. BONES.