UNITED STATES PATENT OFFICE.

W. D. WOOD, OF WILMINGTON, DELAWARE, ASSIGNOR TO A. WOOD, OF PHILADELPHIA, PENNSYLVANIA.

MANUFACTURE OF SHEET-IRON.

Specification forming part of Letters Patent No. **32,341**, dated May 14, 1861.

To all whom it may concern:

Be it known that I, W. DEWEES WOOD, of Wilmington, New Castle county, State of Delaware, have invented certain new and useful Improvements in the Process of Manufacturing Sheet-Iron; and I do hereby declare the following to be a full, clear, and exact description of the same.

The nature of my invention consists, first, in removing the scales of oxide of iron which form on the surface of sheet-iron during the process of rolling it, and which prevent the surface of it from taking a high polish; second, in finishing the surface in imitation of Russia sheet-iron by the employment of graphite or plumbago; third, in finishing the outer surfaces of the sheet-iron, which are exposed to the action of the atmosphere during the process of rolling, by the use of graphite or plumbago.

In the manufacture of sheet-iron the action of the atmosphere on the heated iron during the process of reducing and breaking down the bar to a sheet produces a coat or scale of oxide of iron on the outer surface of the sheet. It is necessary to remove this before the surface can be highly polished in process of manufacture. Heretofore this has been effected by the use of acids, (sulphuric acid is generally used;) but this has the effect of rendering the iron more liable to rust when used subsequently.

In the manufacture of sheet-iron with my improved process I proceed as follows: The iron is first reduced from the bar as thin as possible by one "breakdown heat." I then anneal the sheet-iron at a high temperature—say a dull-white heat, or thereabout. After it is cool I pass it between a pair of corrugated rolls one or more times. I then pass it between a pair of plain rolls, which reduces the corrugations and brings it to its original flat surface. The object of passing it through the corrugated rolls is for the purpose of breaking the scales on the surface of the iron. The passing of it through the plain rolls also assists in breaking the scales and removing any which are left after passing through the corrugated rolls. In this way I am enabled effectually to remove the scales without using sulphuric acid, which is so deleterious to the iron. I then coat both surfaces of the iron with a thin coating of plumbago or graphite ground in oil. The plates are then heated to the ordinary heat for rolling—say a bright-red heat—and then are passed through the rollers together in packs of from two to six plates at a time. The action of the plumbago or graphite on the surfaces of the plates in contact with each other during the final rolling imparts to the surfaces in contact the appearance of Russia sheet-iron, the polishing of the iron being due to the friction of the plates upon each other, in connection with the graphite or plumbago, and the graphite at the same time prevents the plates from sticking.

In order to prevent from scaling or oxidizing the outer surfaces of the pack, which are exposed to the effects of the atmosphere during the last process, I cover the rolls with a thin coating of plumbago or graphite, ground in oil, before passing the plates through. The action of this graphite prevents scaling on the outer surface, and at the same time imparts a polish to the surface similar to the polish on the other surfaces.

Instead of annealing the iron before passing it between the corrugated rolls, it might be annealed after, and before passing it through the plain rolls. Instead of passing the iron between corrugated and plain rolls, it might be placed in a press provided with corrugated surfaces, and then placed in a press with plain surfaces.

The mode of removing the scales by annealing the iron and then passing it successively between corrugated and plain rolls, although intended as a preparatory step to finishing the iron with a Russia-iron surface, may also be used for preparing plates of iron for coating with other metals, such as tin, zinc, &c. I prefer to pass the plates between the corrugated and plain rolls, for the purpose of removing the scales above mentioned while the iron is cold, though it could be done while it is hot.

Having thus described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. Removing the scales of oxide of iron from the plate of iron in the manufacture of sheet-iron by annealing it, and then passing it suc-

cessively between corrugated and plain rolls or presses, substantially as described.

2. The coating of the plates of iron with graphite or plumbago or other carbonaceous matter, ground in oil, prior to the finishing process, in the manner and for the purpose substantially as herein set forth.

3. The coating of the rolls with graphite or plumbago or other carbonaceous matter, ground in oil, for the purpose of finishing the outer surfaces, in the manner herein described.

W. DEWEES WOOD.

Witnesses:
J. GHEINI CHILD,
JAMES MCCAHEN.