UNITED STATES PATENT OFFICE.

EDWARD COYLE, OF VENICE, ILLINOIS.

PROCESS OF TREATING SHEET-IRON.

SPECIFICATION forming part of Letters Patent No. 548,039, dated October 15, 1895.

Application filed July 18, 1895. Serial No. 556,409. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD COYLE, of Venice, Madison county, in the State of Illinois, have invented a certain new and useful Improvement in a Process of Treating Sheet-Iron, of which the following is a full, clear, and exact description.

My invention relates to a process for treating sheet-iron for the purpose of affording a protection to the metal to prevent deleterious effects by the atmosphere, which cause the metal to oxidize or rust.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claim.

In carrying out my improved process I form a composition consisting of the following ingredients, combined in the proportions, or about the proportions, below stated, viz: seventy-five gallons of sulphuric acid, fifty pounds of oxide or salts of cobalt, one hundred and twenty-five pounds of sulphate of copper. These ingredients are to be thoroughly mingled by agitation, in order that the sulphuric acid may thoroughly act upon the other ingredients to dissolve them.

In using the above-named composition the sheet metal should be perfectly clean, in order that no foreign matter be upon it when it is inserted into the composition. The sheet metal is placed in the composition after its ingredients have become thoroughly mingled, and it is allowed to remain therein for a sufficient length of time to thoroughly coat the entire surface of the metal. It is then removed and placed in a suitable position to dry.

By making a mixture of seventy-five gallons of sulphuric acid, fifty pounds of oxide or salts of cobalt, and one hundred and twenty-five pounds of sulphate of copper, the oxide of cobalt is changed to sulphate of cobalt. As soon as the sheet-iron is dipped into this the sulphate of copper and the sulphate of cobalt are decomposed, the sulphuric-acid action on the iron forming sulphate of iron, the metallic cobalt and metallic copper being precipitated on the iron, forming a coating over the surface of the iron. The composition of this coating is a metallic copper and metallic cobalt in composition as an alloy. The bath now consists of the excess of sulphate of copper and sulphate of cobalt and sulphate of iron.

While the sheet-iron is in the bath there is an electrolytical action going on which draws the metallic copper and the metallic cobalt to the surface of the iron. The deposit is only on the surface. Heating the bath will quicken the action.

I claim as my invention—

The herein described composition of matter to be used in treating sheet iron and similar metals, consisting of sulphuric acid, oxide or salts of cobalt, and sulphate of copper, in the proportions or about the proportions herein specified.

EDWARD COYLE.

In presence of—
E. S. KNIGHT,
B. L. FREDERICK.