

UNITED STATES PATENT OFFICE.

ALFRED A. COWLES, OF NEW YORK, N. Y., ASSIGNOR TO THE ANSONIA
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PROCESS OF TINNING SHEET-COPPER.

SPECIFICATION forming part of Letters Patent No. 292,540, dated January 29, 1884.

Application filed November 9, 1883. (No specimens.)

To all whom it may concern:

Be it known that I, ALFRED A. COWLES, of the city and State of New York, have invented an Improvement in the Process of Tinning Sheet-Copper, of which the following is a specification.

Before my invention sheets of copper had been tinned upon one side by the sheet being pickled and cleaned, after which a flux—such as muriate of zinc—had been applied to one surface of the sheet and the sheet was placed in an inclined position and melted tin poured upon the surface of the sheet, so as to flow over and adhere to the same. After this the sheet had been wiped. In the tinning operation the heat necessarily made use of discolored the copper surface, rendering it necessary to scour and clean the same. In this operation the smooth and highly finished surface resulting from the cold-rolling operation was injured. Attempts have been made to obviate this discoloration by endeavoring to exclude the atmosphere; but the circumstances under which the sheet is tinned rendered it practically impossible.

The nature of my said invention consists in the method of preparing the sheet of copper for the tinning operation, whereby the atmosphere is entirely kept from contact with the side of the copper sheet that is not tinned, and injury to the surface, either by the action of the atmosphere, the acids, or the tin, is prevented.

In my improved process the sheet of copper, after it leaves the finishing-rolls, is subjected to the usual pickling or cleaning operation for the removal of grease or any substance that might interfere with the tinning operation. I then apply to one surface of the same sheet a coating which will not be injured by the action of the heating or by the acids employed, and which will be easily removed after the tinning has been completed. I prefer and make use of a liquid silicate of soda as the varnish or coating for one side of the copper sheet, because this varnish or coating is not injured by the heat to which the sheet is subjected; but I do not limit myself to the use of this coating material, as any other suitable material having equivalent properties may be made use of. After the said coating becomes sufficiently dry for handling, the opposite surface of such sheet is prepared in

the ordinary manner for the tinning operation, usually by being rubbed over with a cloth or brush saturated with muriate of zinc. The tinning is then performed, and the surface of such tin wiped off and rendered smooth in the ordinary manner. It is preferable now to immerse the sheet of tinned copper in a bath of boiling water to remove the silicate of soda or other coating material. This may also be done by brushing or by rubbing the surface of such copper sheet with a cloth, or with rollers and hot water, or otherwise, after which the sheet of copper is dried and subjected to the ordinary buffing or finishing operation.

By this process the surface of the copper is not scratched or injured, and there is no discoloration from atmospheric action or from the heat of the table during the operation.

In the ordinary tinning operation the melted tin, or tin and lead if an alloy is used, are poured upon the sheet of copper at the highest end, while the sheet rests in an inclined position upon an inclined rack or table, and the melted tin adheres to the prepared surface, and the surplus is rubbed off. In my improved process the silicate of soda or other protecting varnish is applied to one surface to protect the same. The sheet is usually warmed and the muriate of zinc rubbed thereon. The sheets of copper with tin or other coating metal on the surfaces are much more perfect than those before made, because the heat does not discolor the same, the atmosphere being excluded.

I claim as my invention—

The process herein specified of tinning sheet-copper, consisting in coating one surface of such copper sheet with a material that will not be materially injured by the action of the heat made use of, and which will exclude the air, pouring melted tin or other metal over the sheet, allowing the surplus to run off, and spreading the tin or coating metal and rendering the same uniform by a rubbing operation, and then removing the protecting-coating from the untinned side of the copper, substantially as specified.

Signed by me this 3d day of November, A. D. 1883.

A. A. COWLES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.