Patented June 26, 1928. 1,675,134

UNITED STATES PATENT OFFICE.

HENRY A. ROEMER, OF CANTON, AND DAVID A. WILLIAMS, OF LOUISVILLE, OHIO.

METAL-COATED SHEET AND METHOD OF MAKING THE SAME.

No Drawing. Application filed October 4, 1924. Serial No. 741,778.

This invention relates to the coating and treating of metal sheets and particularly to a new method of applying and treating the metallic coating on such sheets.

It is well known that the usual zinc or zinc alloy coated iron or steel sheets now in common use will not withstand high temperatures and that the coating frequently scales or peels from the sheet after it has been in use a short time.

It has also been found by experience that zinc or zinc alloy coated sheets such as are now in common use, cannot be formed or bent into any shapes which require a sharp angle without breaking the coating and causing the same to scale or peel from the sheet.

The objects of the present invention are to provide a method of applying and treating the metallic coating which causes said coating to adhere to the sheet, and prevents the coating from scaling or peeling when in use, and permits the coated sheet to be bent into sharp angles without causing the coating to peel or scale.

Sheets coated by our improved method will also resist higher temperatures in use, such, for example, as in oven linings without peeling or scaling than sheets coated by the ordinary method and they may be also spot welded and are capable of being painted or enameled if desired without special preparation of their coated surfaces.

In carrying out the invention, the iron or steel sheets are first cleaned or pickled in a solution of sulphuric acid in the usual manner. After the sheets are cleaned and dried, they are passed through the usual sheet galvanizing pot, to receive the metallic coating.

The molten metal in the galvanizing pot may be the usual molten zinc, but we have found that best results are obtained by the use of an alloy of zinc, lead and tin, the proportions varying with respect to the particular use to which the coated sheets are to be subjected.

After coating the sheets are dried in the usual manner, and then preferably washed in hot water, although this washing is not absolutely essential to the carrying out of the process.

It is at this point that our process deviates substantially from the ordinary sheet coating processes, in that, the sheets are passed through a cold rolling mill, the pressure of the rolls not only causing the coating to adhere tightly to the sheet but also materially smoothing said coating. The sheets are then passed through a suitable buffing machine, although this latter step may be dispensed with if a high polish is not desired.

In some cases it is desirable to heat the rolls of a cold rolling mill through which the sheets are passed and it should be understood that the term "cold rolls" or "cold rolling mill" applies to a well known standard rolling mill equipment.

It has been found by actual experience that sheets coated and treated in this manner may be bent or formed into any desired shape without danger of the coating scaling or peeling at sharp corners or angles; neither will the coating peel or scale from the sheet under any ordinary use and said coating will resist high temperatures without danger of scaling.

Sheets treated in this manner may be easily spot welded and paint or enamel will adhere to said coating making it possible to use such coated sheets for a great many purposes which in the past have been considered impossible.

We are aware that it is not new to coat an iron or steel sheet with zinc or a zinc alloy; also, we are aware that cold rolling, per se, is not new; but we are not aware that an iron or steel sheet coated with zinc or a zinc alloy and then cold rolled to produce the results disclosed by our invention has ever been used.

The word "spelter" where used in the claims has reference to zinc or a zinc alloy.

We claim:

1. The method of coating and treating iron or steel sheets, which consists in coating such sheets with spelter and then subjecting the coated sheets to a cold rolling in order to produce a coating which will withstand severe forming or be subjected to high temperatures without scaling or peeling and which may be spot welded or have enamel or paint applied directly thereon.

2. The method of coating and treating iron or steel sheets, which consists in coating such sheets with spelter and then subjecting the coated sheets to a cold rolling and buffing in order to produce a highly polished coating which will withstand severe forming or be subjected to high temperatures without scaling or peeling and which may be spot welded or have enamel or paint applied directly thereon.

3. The method of coating and treating iron or steel sheets, which consists in coating such sheets with a zinc, lead, tin alloy and then subjecting the coated sheets to a cold rolling in order to produce a coating which will withstand severe forming or be subjected to high temperatures without scaling or peeling and which may be spot welded or have enamel or paint applied directly thereon.

4. The method of coating and treating iron or steel sheets, which consists in coating such sheets with a zinc, lead, tin alloy and then subjecting the coated sheets to a cold rolling and buffing in order to produce a highly polished coating which will withstand severe forming or be subjected to high temperatures without scaling or peeling and which may be spot welded or have enamel or paint applied directly thereon.

5. A sheet composed of iron or steel with a coating of spelter, said coated sheet having a cold rolled surface so as to make the coating withstand severe forming and high temperatures without scaling or peeling.

6. A sheet composed of iron or steel with a coating of spelter, said coated sheet having a cold rolled and buffed surface so as to make the polished coating withstand severe forming and high temperatures without scaling or peeling.

In testimony that we claim the above, we have hereunto subscribed our names.

HENRY A. ROEMER.
DAVID A. WILLIAMS.