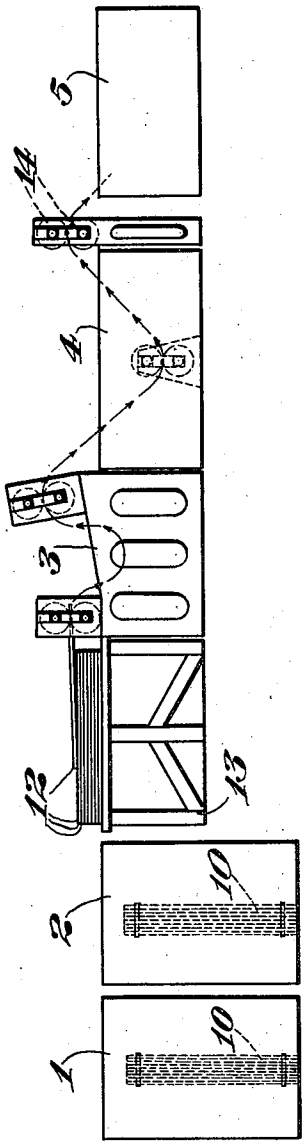
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COATING METAL SHEET

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COATING METAL SHEETS

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8 Claims. (Cl. 148—8)

This invention relates to improvements in methods of preparing metal for coating and is particularly directed to the preparation of sheets of ferrous metal for galvanizing.

In the galvanizing of sheets by the hot dip method, sheets are continuously fed into the pot of molten spelter after being subjected to a preliminary treatment. This preliminary treatment has heretofore consisted usually in pickling to remove scale, storing in a water bosh and finally, just before entering the pot, a short exposure to the action of a very weak solution of acid. This procedure has been open to two objections.

First, since the sheets are pickled in packs, it has been found necessary to throw coarse sand between the sheets to hold them slightly apart and insure the pickling acid reaching the entire surface of the sheet. The subsequent storage of the sheets in packs in water does not completely remove this sand and as a result, frequently quantities of the sand are carried into the galvanizing pot.

Second, the continuous feeding of cold sheets into the galvanizing pot has the effect of lowering the temperature of the spelter and it is consequently necessary occasionally to interrupt the operation to bring the spelter back to the desired temperature. Furthermore, it is necessary to raise the temperature of the sheets to a certain minimum temperature in order to insure proper adherence of the zinc coating. With the sheets entering the pot cold, it naturally takes longer to raise the temperature of the sheets to the desired minimum than it would if they entered the pot at a more elevated temperature. It will, therefore, be readily seen that the feeding of cold sheets into the spelter results in a slowing up of the operation.

I have discovered that if the sheets are passed individually through a tank of hot water which is maintained at a temperature of 150° F. to 200° F. and are immediately thereafter fed into the galvanizing pot the foregoing objectionable features are eliminated.

The novel features of my invention will be more fully understood from the following description and claims, together with the drawing.

The drawing represents schematically the steps constituting the treatment to which the sheets are subjected in the practice of my invention.

Referring to the drawing, 1 is the pickling tank, 2 the water bosh or storage tank, 3 the acid cleaning bath, 4 the hot water tank, 5 the galvanizing pot. While I have shown the acid cleaning bath 3 as preceding the hot water tank 4, this arrangement can be reversed without appreciable effect as the final acid treatment is so brief it does not lower the temperature of the sheets to an extent sufficient to offset the desirable effects of the hot water.

In the practice of my invention, a quantity of annealed sheets secured more or less loosely together in a pack 10 are immersed in sulphuric acid in pickling tank 1 where scale is removed. After pickling the pack is placed in a water-filled storage tank 2 where the sheets are kept until needed. After removal from tank 2 the pack is separated into individual sheets 12 which are transferred to feed table 13. Before entering the galvanizing pot, the sheets are given a brief immersion or dousing with muriatic acid, chiefly to remove such rust spots as may have formed on the sheets during storage in the water tank. As has been pointed out, this may either precede or follow the immersion in hot water. As herein illustrated, the acid treatment precedes the hot water.

After the final acid treatment the sheets are fed through hot water tank 4. The speed of feeding will depend upon the gauge of the sheets, it being my purpose to heat the sheets through. From the hot water tank the sheets pass between rolls 14 which remove surplus water, and then go directly into the pot. The procedure thereafter is the customary, well-known practice.

I have found the above described practice to have highly beneficial results. The immersion in water removes the last traces of sand which otherwise might, and frequently do, travel on into the spelter, contaminating it and causing sand pits on the sheets. The whole operation of galvanizing has been speeded up because first, with the added heat imparted to the sheets it does not take so long a time to raise the temperature of the sheets to that required for proper adherence of the zinc, and secondly, with the sheets entering the pot at a temperature of 150° F. to 175° F. they do not have such a chilling effect on the bath and consequently it is not necessary to interrupt the operation so frequently to bring the temperature of the bath back up to that required.

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

1. A method of coating ferrous metal sheets which comprises pickling the sheets, treating them with a cleaning acid, immersing them in hot water and immediately thereafter coating the sheets with metal.

2. A method of coating ferrous metal sheets

which comprises pickling the sheets, treating them with a cleaning acid, immersing them in water maintained at a temperature above 125° F. and immediately thereafter coating the sheets with metal.

3. A method of coating ferrous metal sheets which comprises pickling the sheets, immersing them in hot water, and immediately thereafter treating the sheets with a cleaning acid and coating them with metal.

4. A method of coating ferrous metal sheets which comprises pickling the sheets, immersing them in water maintained at a temperature above 125° F. and immediately thereafter treating the sheets with a cleaning acid and coating them with metal.

5. In a method of coating ferrous metal sheets the step which comprises immersing the sheets in hot water immediately prior to coating them with metal.

6. In a method of coating ferrous metal sheets the step which comprises immersing the sheets in water maintained at a temperature above 125° F. immediately prior to coating them with metal.

7. In a method of coating ferrous metal sheets with metal the steps which comprise immersing the sheets in hot water and thereafter introducing the sheets into the coating bath while they still retain the heat imparted to them by the hot water.

8. In a method of coating ferrous metal sheets with metal the steps which comprise immersing the sheets in water of a temperature above 125° F. long enough to heat the sheets through, and thereafter introducing the sheets into the coating bath while they still retain the heat imparted to them by the water.

MATTHEW P. WILSON.