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UNITED STATES PATENT OFFICE.

JOHN THOMAS HAY, OF CANTON, OHIO, ASSIGNOR TO UNITED ALLOY STEEL CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PICKLING STEEL SHEETS.

No Drawing. Application filed January 19, 1925. Serial No. 3,308.

To all whom it may concern:

Be it known that I, JOHN THOMAS HAY, a citizen of the United States, and a resident of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Pickling Steel Sheets, of which the following is a specification.

The invention relates to the pickling of steel sheets or tubes of chrome steel or iron alloy, and which may include silicon and other alloy elements.

In finally finishing the surfaces of such sheets or tubes it has been found that the well known processes of pickling, produce surfaces which are easily stained or rusted; and the object of the present improvement is to provide a pickling method for the final finishing of chrome steel sheets or tubes so that the surfaces are "stainless" and substantially "rustless".

As a preliminary to the treatment herein described it is preferred to subject the sheets to the annealing process set forth in my companion application for patent filed herewith, which includes heating the sheets in an oxidizing atmosphere and then pickling them in a solution including sulphuric and hydrochloric acid; which may be in the proportions of 5% sulphuric acid and 2% hydrochloric acid.

The object of the present invention is attained by thoroughly washing and scrubbing the sheets;

Then immerse the sheets in a 10% hydrochloric acid, heated to about 150° F., for a period of some ten minutes;

Then, thoroughly washing the sheets, and

Finally, completing the process by subjecting the sheet to surface contact, as by immersion or swabbing, with commercial nitric acid, heated to about 70° F., for a period of some fifteen or twenty minutes.

By this method of pickling there is produced on chrome steel sheets a bright silvery surface, which is stainless and substantially rustless.

I claim:—

1. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of hydrochloric acid, and then to action of nitric acid.

2. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of 10% hydrochloric acid and then to the action of nitric acid.

3. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of 10% hydrochloric acid heated to about 150° F., and then to the action of nitric acid.

4. The method of pickling chrome steel sheets which includes first subjecting the hydrochloric acid heated to about 150° F., for a period of some ten minutes, and then to the action of nitric acid.

5. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of hydrochloric acid, and then to the action of commercial nitric acid.

6. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of hydrochloric acid, and then to the action of commercial nitric acid heated to about 70° F.

7. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of hydrochloric acid, and then to the action of commercial nitric acid a period of some fifteen or twenty minutes.

8. The method of pickling chrome steel sheets which includes first subjecting the sheets to the action of 10% hydrochloric acid, heated to about 150° F. for a period of some ten minutes, and then to the action of commercial nitric acid heated to about 70° F. for some fifteen minutes.

9. The method of pickling chrome steel sheets, which includes pickling the sheets in a solution containing sulphuric and hydrochloric acids, and then subjecting them to the action of hydrochloric acid, and then to the action of nitric acid.

10. The method of pickling chrome steel sheets, which includes pickling the sheets in a solution containing 5% sulphuric and 2% hydrochloric acids, and then subjecting them to the action of 10% hydrochloric acid, then washing the sheets, and then subjecting them to the action of commercial nitric acid.

In testimony that I claim the above, I have hereunto subscribed my name.

JOHN THOMAS HAY.