

UNITED STATES PATENT OFFICE.

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METHOD OF TREATING METAL ARTICLES.

No Drawing.

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This invention relates to the manufacture of articles such, for example, as sheets, shapes or the like, from chromium iron alloys and more particularly to the finishing 5 of the surfaces of such articles.

Articles made from high chromium iron alloys (I refer particularly to those alloys having a chromium content somewhere between 8% and 60%) if annealed, or heat 10 treated attain a hard tenacious coating resembling a dense scale which is extremely difficult to remove for the reason that it will not yield to acid pickling nor can it be removed satisfactorily by dry scrubbing.

15 An object of this invention is to provide a method of treating the surfaces of metallic articles so as to quickly and effectively remove scale and oxide therefrom.

A further object is to provide a method of 20 treating the surfaces of articles made from chromium iron alloys which have been heat treated so as to clean the same and simultaneously provide a satin or semi-lustrous finish.

25 I have discovered, after many trials, that the tenacious coating on the surface of a chromium iron alloy article can be removed if such surfaces are simultaneously subjected to a vigorous scrubbing or scouring action and to a nitric acid bath or solution. Such 30 a procedure not only cleans the surfaces of the undesirable coating or scale but gives to such surfaces a highly attractive, satin finish resembling a mat or silver finish.

35 The scrubbing action may be obtained in various ways as, for example, by tumbling the articles in a tumbling barrel with solid particles, or it may be obtained in any other desired manner.

40 If a tumbling barrel is used it is preferable to provide one which is made from chromium iron or chromium steel having small perforations in its walls and which is revolved in or partly submerged in a tank or 45 bath containing a nitric acid solution. Any closed tumbling barrel may, however, be used if provision is made for a vent pipe or air valve to allow any possible hydrogen gas to escape. The commercial oblique barrel

revolving on a 45 degree angle may be used 50 for all kinds of small articles, especially if the container is made from chromium iron or chromium steel instead of wood.

Various forms and types of friction agents may be employed to subject the surfaces of 55 the articles being treated to the necessary frictional action. I preferably use pieces of hardened chromium iron or chromium steel or some other substance which is harder than the surface of the articles being treated. 60 For example, hardened chromium iron shot, preferably screened, is satisfactory as is also chromium iron punchings of various sizes.

I have also obtained satisfactory results by using small river stones or pebbles where 65 a high finish is not required, and glass balls can also be used, but hardened chromium iron or chromium steel particles are the best for all purposes and are practically inde- 70 structible.

A satisfactory acid bath can be made of 75 from one to ten per cent solution of nitric acid which may be either cold or warm. Heating the acid will shorten the process and produce a whiter finish.

What I claim as new and desire to secure by Letters Patent is:—

1. The method of treating the surfaces of articles made from chromium iron alloys which consists in subjecting said surfaces to 80 the frictional action of solid particles in the presence of a nitric acid solution.

2. The method of treating the surfaces of articles made from chromium iron alloys which consists in subjecting said surfaces to 85 the frictional action of solid particles of the same material in a solution of nitric acid.

3. The method of removing the hard tenacious coating from chromium iron alloys, caused by heat treating, which consists in 90 subjecting the surfaces of such alloys to the frictional action of solid particles in the presence of a nitric acid solution.

In testimony whereof, I have hereunto subscribed my name this 17th day of April 95 1926.

LOUIS SCHULTE.