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MOLTEN SALT BATHS

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1 Claim. (Cl. 252—156)

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This application relates to molten salt baths and more particularly to a process for maintaining such baths in satisfactory operating or functioning condition.

I have discovered that in the use of molten salt baths of the type with which I am familiar, namely, the non-electrolytic molten salt bath containing sodium hydroxide, sodium nitrate, and 4% or more of sodium chloride, or the electrolytic bath containing sodium hydroxide, sodium chloride, and at least one-half of one percent of sodium aluminate, the functioning of the bath is impaired by the formation in the bath of objectionable compounds. I have discovered that such compounds are formed as reaction products of the molten salt with the surfaces of the metals being cleaned in such baths and with oxygen. In the case of a molten sodium salt bath used in cleaning ferrous work pieces, the objectionable compound is in the form of sodium ferrite. In this application, I disclose that sodium ferrite in such a bath may be removed simply by bubbling moisture in the form of steam into the bath, using any suitable apparatus for such purpose.

For an understanding of the operation of the moisture for this purpose, let us consider the following. The bath contains objectionable compounds in the form of metal-alkali-oxide compounds, such as sodium ferrite. This has a for-

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mula of $\text{Na}_2\text{Fe}_2\text{O}_4$. This is considered as if it were $\text{Na}_2\text{O}:\text{Fe}_2\text{O}_3$. By adding moisture, we form by hydrolysis a mixture of $\text{Na}_2\text{O}:\text{H}_2\text{O}$ and Fe_2O_3 . In this mixture, the Fe_2O_3 is considered as having been released from the Na_2O . The Fe_2O_3 is the objectionable metal oxide. It precipitates in the bath and drops to the bottom to form a sludge which can be removed by commonly known suitable mechanical means for removing sludge. The $\text{Na}_2\text{O}:\text{H}_2\text{O}$ returns to the bath in the form of NaOH , an original ingredient of the bath.

Now having described the herein disclosed method for maintaining a bath satisfactorily, I claim the following:

- 15 A process for removing objectionable sodium ferrite from a molten alkali-salt bath comprising molten alkali salts, molten sodium hydroxide and said objectionable sodium ferrite comprising passing steam into said bath to precipitate the ferrite, as a removable sludge, from the bath.

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REFERENCES CITED

- 25 The following references are of record in the file of this patent:

Mellor, Inorganic and Theoretical Chemistry, vol. 13, page 906.