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EXAMINER
DIV. 8

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UNITED STATES PATENT OFFICE.

ARTHUR V. DAVIS, OF PITTSBURG, PENNSYLVANIA.

METHOD OF IMPROVING SURFACES OF ALUMINIUM.

SPECIFICATION forming part of Letters Patent No. 528,513, dated October 30, 1894.

Application filed January 24, 1894. Serial No. 497,912. (No specimens.)

To all whom it may concern:

Be it known that I, ARTHUR V. DAVIS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Improving Surfaces of Aluminium, of which the following is a full, clear, and exact description.

I have discovered that by treating the aluminum with a combination of hydrofluoric acid and nitric acid, its surface appearance can be greatly improved, and the dullness of the metal removed so as to enhance its value in the arts. Neither hydrofluoric acid alone nor nitric acid alone will afford the desired result satisfactorily, but by a mixture of them, or by their conjoint and successive use, excellent results are obtained.

To determine the proper proportions of hydrofluoric acid of any given commercial strength to be added to the concentrated nitric acid of commerce in order to prepare a desirable mixture for my purpose, I may proceed as follows:—Nitric acid of commerce having specific gravity of about 31.4° Baumé is preferably diluted with, say, about one to twenty parts of water. The proportion of water used is variable according to the temperature of the mixture of acids ultimately employed for treating the aluminum, for when the mixture is to be used hot a less proportion of acid will answer, than when the mixture is cold. A good working test of the proportion of hydrofluoric acid to be added to the nitric acid is to place in the dilute nitric acid a piece of aluminum, and to add hydrofluoric acid until gas is evolved freely from the surface of the aluminum. Such evolution of gas will indicate that the acids have been combined properly. Having ascertained the proper proportions (which are, of course, variable because of the uncertain strength of the hydrofluoric acid of commerce, and variable also according to the temperature of the mixture, for a hot solution of the acid may be used when more dilute than a cold solution), the aluminum to be treated is immersed therein and is allowed to remain until its surface becomes bright. It is then removed and washed, preferably with hot water, and having been dried by sawdust or otherwise, the operation is complete.

I do not limit myself to the use of the acids in any given proportion, nor do I disclaim the addition of other materials or steps in the practice of my process; but

What I claim is—

The method of improving the surface appearance of aluminum, which consists in treating the surface with a mixture of hydrofluoric acid and nitric acid, substantially as described.

In testimony whereof I have hereunto set my hand.

ARTHUR V. DAVIS.

Witnesses:
EDGAR HEFFLEY,
W. B. CORWIN.

No references

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