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ACTIVATING PROCESS FOR PLATING

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This invention has to do with an activating process of treating chromium plate so that a strongly adherent coating of metal may be electrodeposited thereon without the necessity of stripping the chromium plate from the base metal.

Prior to my invention difficulties have been encountered in attempting to obtain a satisfactory plating of metal on a metallic part previously plated with chromium. Especially has this been so when attempts have been made to plate bright, decorative chromium on a part previously plated with chromium and, so far as I am aware, no commercial production processes prior to my invention have permitted this to be done. In all those prior production methods of which I am aware, parts which have been rejected because of incomplete coverage in the chromium plating bath, have had the chromium stripped therefrom and then have been replated with chromium. My invention makes it possible to replate directly with chromium without stripping the previously applied chromium.

The primary object of my invention is to provide a process of activating parts previously plated with chromium whereby strongly adherent metallic coatings may be electroplated thereover and particularly such process in which chromium may be plated directly on the activated chromium plating.

My invention consists essentially in cathodically treating metallic parts entirely or partially plated with chromium in a bath or solution consisting essentially of nickel sulfate within the range of 6 to 32 ounces per gallon of water and hydrochloric acid within the range of 6 to 32 fluid ounces of commercial concentrated hydrochloric acid (37% by volume HCl) per gallon of water for approximately ten to thirty seconds at a cathodic current density of fifteen to one hundred and fifty amperes per square foot. The temperature of the solution may range from room temperature, approximately 70° F., to 125° F. Nickel anodes are used. A preferred solution is one consisting of approximately 16 ounces of nickel sulfate and 8 fluid ounces of commercial concentrated hydrochloric acid per gallon of water.

After the activating treatment the chromium plated parts may be plated with copper and/or nickel and/or chromium by any of the known electroplating baths with good adherence and appearance. The time which may elapse between the activation and subsequent plating is not critical. Chromium plated parts which have been activated have been allowed to stand in air as high as twenty-three hours prior to plating and strongly adherent electrodeposits have been obtained. It appears that even longer times can elapse between activation and subsequent plating.

The original part having the chromium plating thereon may be composed of any desired metal, metals, alloy, or alloys; for example, copper, brass, nickel, steel, etc., singly or in combination.

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I claim:

1. A process of activating a metallic part having a plating of chromium thereon so that an adherent, metallic coating may be electrodeposited thereover which consists essentially in making the chromium plated part the cathode in a solution consisting essentially of 6 to 32 ounces of nickel sulfate and 6 to 32 fluid ounces of commercial concentrated hydrochloric acid per gallon of water, and passing direct current from a nickel anode through said solution to the chromium plated part at a cathodic current density within the range of 15 to 150 amperes per square foot for a time within the range of approximately 10 to 30 seconds, said solution having a temperature within the range of approximately 70° F. to 125° F.

2. A process of activating a metallic part having a plating of chromium thereon so that an adherent metallic coating may be electrodeposited thereover which consists essentially in making the chromium plated part the cathode in a solution consisting essentially of approximately 16 ounces of nickel sulfate and 8 fluid ounces of commercial concentrated hydrochloric acid per gallon of water, passing direct current from a nickel anode through said solution at a cathodic current density within the range of 15 to 150 amperes per square foot for a time of approximately 15 seconds, said solution being at approximately room temperature.

3. The process of claim 1 followed by electrodepositing a metallic coating on the activated chromium plated part.

4. The process of claim 1 followed by electrodepositing a coating of chromium over the activated chromium plated part.

5. The process of claim 2 followed by electrodepositing a coating of chromium directly on the activated chromium plated part.

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