

UNITED STATES PATENT OFFICE.

FRANZ JORDAN, OF WICKEDE-RUHR, GERMANY.

PROCESS OF PLATING SPOOLED METAL BANDS WITH SPOOLED BANDS OF ANOTHER METAL.

No Drawing.

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To all whom it may concern:

Be it known that I, FRANZ JORDAN, a citizen of the German Empire, residing in the city of Wickede-Ruhr, Germany, have invented a new Process of Plating Spooled Metal Bands with Spooled Bands of Another Metal, of which the following is a specification.

My invention relates to a process of plating with aluminium metal bands or sections while hot.

It is an object of my invention to provide a process in which the buckling due to the different expansions of the two metals is avoided, and this is effected by conducting a band or bands of aluminium directly to the band to be plated from separate spools. In this case the rollers effecting the plating will only take in as much of the band as they are able to pass with consideration of the expansion of the aluminium and the other metal. The bands are in this manner united without buckling, with a good finish and a long life.

My invention consists in a process in which the bands of metal and aluminium which are on separate spools and of equal width, are heated to a certain temperature, for instance, about 350° centigrade in the case of iron, conducted to the rolling mill separately and uniformly, united by rolling, spooled into a ring after rolling and welded by rolling again at about 550° centigrade.

My improved process is performed as follows: Each of the bands to be plated are conducted between the rollers from a separate spool and rolled together under pressure. During this stage, the bands must be held taut and maintained at about 350° centigrade. The bands should be equally wide as otherwise the narrower band will force away or shear the wider one. The rolling pressure should be such as to obtain a reliable adhesion of the aluminium and the iron and thus the plated band will be readily spooled. Finally, the bands are welded together by rolling again at a certain temperature which is 550° centigrade for aluminium. As both metals are stretched equally buckling is impossible.

When, in the welding of aluminium and iron bands, one of the bands is considerably thicker than the other, it is only necessary

to heat the thicker one to the temperature aforesaid, for instance, 350° centigrade while the thinner one remains cold. Under the pressure of rolling, the thinner band immediately absorbs the heat required from the thicker band and welding is as perfect as if both bands had been heated to the said temperature. Plating is thus greatly simplified as only one of the metals requires heating.

When heated beyond 350° centigrade, aluminium may, at temperatures almost up to the melting point, be welded on oxide free faces of other metals whereby, It is possible to effect direct welding of aluminium and iron by heating the aluminium to a higher temperature. In this case, it is not necessary to previously combine the metals by rolling. The iron band is heated to its limit of oxidation, about 350° centigrade, and the aluminium band to about 550° centigrade. When the heated metals meet in the rollers, they are immediately and firmly welded. Plating is here effected in one operation instead of two.

Since it is possible to heat each band as desired zinc bands may be welded with aluminium bands. The zinc band is heated to about 250° centigrade and the aluminium band to about 450° centigrade. Both metals are then welded in one operation.

As demonstrated by the example above described, the welding of aluminium and other metals in the form of bands is greatly simplified by my novel process which comprises direct and separate feeding of the bands to be plated to the rollers by which separate heating of the bands is facilitated.

As practically only iron, zinc and, perhaps, copper, can be plated with zinc, only these metals have been mentioned. Obviously, my novel process is also applicable to other metals and alloys which are capable of being plated with aluminium. Sections of all kinds, provided that it is possible to pass them through a rolling mill, may also be treated.

A further and important advantage of my process is the fact that no scrap of plated, partly plated or unplated metal is formed.

I claim:

1. A method of plating metal bands which consists in the steps of spooling each metal band separately; heating the spooled

metal bands; rolling said bands together; and rolling the band thus formed at welding heat.

2. A method of plating a metal band with an aluminium band which consists in the steps of spooling the bands; heating the spooled bands; rolling said bands together; spooling the band thus formed; and rolling the band at the welding temperature of aluminium.

3. A method of plating a metal band with an aluminium band which consists in the steps of spooling the bands; heating the spooled bands to a temperature not exceeding the oxidation temperature of the metal

band; rolling said bands together; and rolling the band thus formed at the welding temperature of aluminium.

4. A method of plating a metal band with an aluminium band which consists in the steps of spooling the bands; heating the spooled bands to a temperature not exceeding the oxidation temperature of the metal band; rolling said bands together; and heating the band thus formed to the welding temperature of aluminium and rolling it at the welding temperature.

In testimony whereof I have signed my name to this specification.

FRANZ JORDAN.