THE PRESENT INVENTION RELATES TO ROTATING BANDS FOR PROJECTILES.  

The rotating bands for projectiles obtained, according to the invention, by sintering of soft nitrided iron powders differentiate from ordinary metallic bodies which have undergone a soft nitriding treatment because said sintered bands have properties uniform throughout their mass whereas ordinary nitrided metallic bodies are only nitrided in their superficial layer. I will now give an example of my method of manufacturing rotating bands.

Example

An iron powder suitable for sintering and having for instance a grain size ranging from 0.1 to 0.15 mm. in diameter is treated in a stream of ammonia gas at a temperature ranging from 300 to 400° C. Advantageously the powder undergoing this treatment is stirred by the gaseous stream which forms eddies in the treatment chamber and if the treatment is performed in this way, it may be completed in about fifteen minutes.

After cooling in a protective gas such as nitrogen, the iron powder thus treated is chemically coated with copper. For this purpose, I may advantageously use a bath consisting in:

500 gr. of distilled water
17 gr. of copper sulfate
1 gr. of tartaric acid
3.5 cm.³ of 30% ammonia

This bath is mechanically stirred and during this operation 250 gr. of iron powder treated as above stated are added thereto. The copper depositing reaches its optimum value in three minutes. This bath can easily be determined in such a manner that the copper deposit on the iron powder grains does not exceed the desired amount. The iron powder obtained after this operation forms the material which is sintered to form the rotating bands. The compression applied for sintering ranges from 3 to 4 metric tons per square centimeter. The sintering operation is conducted at a temperature ranging from 820 to 900° C. for a time ranging from 1 to 2 hours in a reducing gas preferably constituted by hydrogen.

Rotating bands obtained as above stated can be machined without difficulties if it is found necessary.

What I claim is:

1. A process of making a rotating band for a projectile comprising forming a mass of substantially pure iron powder of suitable character for sintering, contacting the mass of powder with gaseous ammonia at a temperature of about 300 to 400° C, to soft nitride the powder, and compacting and sintering the soft nitrided iron powder to the shape of said rotating band.

2. A rotating band for a projectile made by the process of claim 1.

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