Patented July 18, 1950

2,515,788

UNITED STATES PATENT OFFICE

2,515,788

PROCESS FOR COATING MAGNETIC MATERIALS

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No Drawing. Application October 22, 1945, Serial No. 623,866

3 Claims. (Cl. 148—4)

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The present invention is a method for coating magnetic materials and more particularly a method for coating a high permeability continuous strip material such as nickel iron alloys, silicon steel, and the like, prior to anneal.

Heretofore in annealing high permeable continuous strip such as nickel-iron alloys or silicon steel in pure dry hydrogen, it has been customary to punch from the strip small irregular shaped punchings which are employed in the fabrication of devices such as transformers and the like. These punchings usually are annealed at temperatures high enough to cause them to stick together unless a suitable separating medium is employed. To prevent such sticking the punchings usually have been stacked by hand and each one carefully dusted with a refractory separating medium such as magnesium oxide.

It is one of the objects of the present invention to simplify the prior coating process. A further object of the present invention is to provide a simple and economical process for coating magnetic strip material prior to annealing. Another object of the invention is to provide a tightly adhering solid film of an organic material containing refractory particles on the magnetic material which film will not become loose when subjected to a punching operation.

In carrying out the present invention a continuous strip of magnetic material is coated with a film forming organic material which is completely decomposable at heat treating temperatures into volatile components such as an alkyd resin, cellulose acetate, or the like, in which extremely fine or colloidal particles of a refractory material such as magnesium oxide or the like are suspended. The liquid mixture of organic and refractory materials has about the consistency of paint and may be applied to the magnetic strip material by any suitable means such as might be employed in applying a coat of paint. The coated magnetic material is dried by heating at a relatively low temperature thereby providing a solid, thin, tightly-adhering film on the magnetic material. The coated strip thus formed may be fed through presses which punch out small punchings each having a tightly adhering insulating film. These punchings or laminations

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may be taken from the punch press stacker and packed into boxes for subsequent high temperature anneal in a dry hydrogen atmosphere. During the early stages of such an anneal the organic carrier disintegrates into completely volatile components leaving no decomposition products but only the refractory material still in contact with the punchings.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The method which comprises providing a continuous strip of magnetic material with a coating of a liquid mixture of (1) a film forming organic material which is decomposable into volatile components at temperatures employed during anneal of said magnetic material and is selected from the group consisting of alkyd resins and cellulose acetate, (2) a finely divided refractory, said mixture on drying forming on the magnetic material a tightly adhering solid film of said organic carrier and refractory, drying said coating, punching laminations from the coated magnetic material having the tightly adherent film thereon, stacking said punchings and annealing the stacked laminations to decompose the organic carrier component of the film into completely volatile components leaving a layer of the refractory separating the stacked and annealed laminations.

2. The method of claim 1 in which the organic material is an alkyd resin.

3. The method of claim 1 in which the organic material is cellulose acetate.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,867,362	Lathrop	July 12, 1932
1,869,025	Seastone	July 26, 1932
2,102,208	Kronquest	Dec. 14, 1937
2,312,229	Anderson	Feb. 23, 1943
2,390,025	Deyrup et al.	Nov. 27, 1945
2,410,220	Langworthy	Oct. 29, 1946
2,413,498	Hill	Dec. 31, 1946