UNITED STATES PATENT OFFICE.

JONATHAN W. HARRIS, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MAGNET-CORE.

1,381,460. Specification of Letters Patent. Patented June 14, 1921.

No Drawing. Application filed December 31, 1919. Serial No. 348,692.

To all whom it may concern:

Be it known that I, JONATHAN W. HARRIS, a citizen of the United States, residing at Montclair, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Magnet-Cores, of which the following is a full, clear, concise, and exact description.

This invention relates to magnet cores and particularly to loading coil cores composed of finely divided magnetic material and insulating material separating the particles of magnetic material, the mass being compressed into a self-sustaining solid by high pressure. Magnet cores of this general type are described and claimed in United States patents to Speed No. 1,274,952 and Elmen No. 1,286,965.

The present invention is the result of the discovery that a magnetic core of this type has characteristics which are advantageous under certain conditions, if the particles before compression into a core have been formed into thin flakes.

The invention is applicable to any magnetic material, such as iron, nickel, cobalt or alloys containing said metals. The particles to be flattened may be obtained in any suitable manner, for example, in the case of iron, nickel or cobalt, by grinding up electrolytically deposited sheets of those metals. Preferably, the particles should be large in comparison with those usually used in making magnet cores of this general type, for example, as large as will pass through a 16-mesh screen. If electrolytically produced material is used, the particles should be annealed in any suitable form of furnace in order to make them mechanically soft so that during the subsequent flattening operation they will not merely break up into smaller particles of substantially the same shape as the larger ones. The flattening may be accomplished by any suitable stamping, hammering or rolling apparatus. The smaller particles are flattened out and the larger particles are broken up and the resultant pieces are flattened out, until the whole mass consists for the most part of small thin flakes.

Flattened particles of magnetic material, obtained in the manner explained above, may be coated with insulating material and a mass of such insulated particles may be compressed into a self-sustaining solid, in the manner described in the hereinbefore mentioned patents. Owing to the fact that the flattening process mechanically hardens the particles, magnet cores made therefrom have a low hysteretic characteristic and good magnetic stability, characteristics which are particularly desirable in cores of loading coils which are to be used in combined telephone and telegraph circuits.

What is claimed is:

1. The method of making magnet cores which consists in reducing magnetic material to the form of particles, flattening said particles, coating said particles with insulating material, and submitting a mass of said particles to pressure sufficient to compress the mass into a self-sustaining solid.

2. The method of making magnet cores which consists in reducing electrolytic magnetic material to the form of particles, annealing said particles, flattening said particles, coating said particles with insulating material, and submitting a mass of said particles to pressure sufficient to compress the mass into a self-sustaining solid.

3. A magnet core composed of magnetic material in the form of flattened particles, and insulating material separating the particles, said compound being compressed into a self-sustaining solid.

In witness whereof, I hereunto subscribe my name this 30th day of December, A. D. 1919.

JONATHAN W. HARRIS.