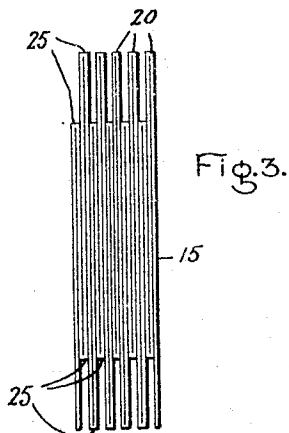
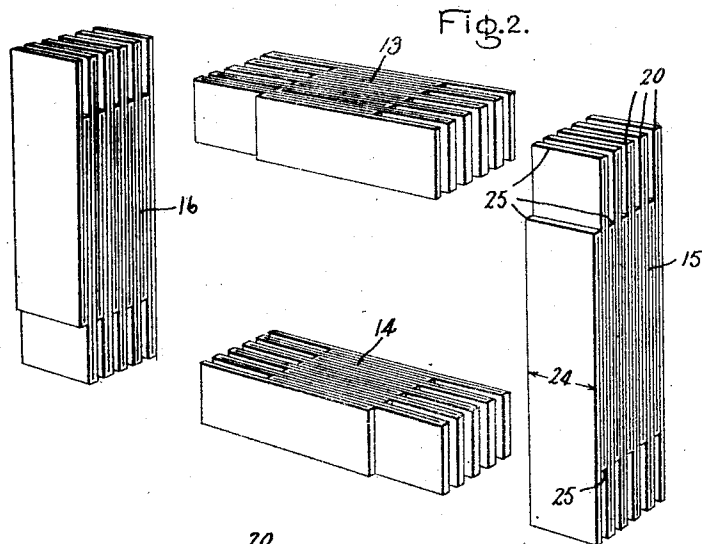
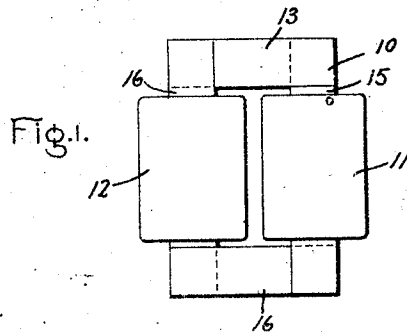


M. O. TROY.
ELECTROMAGNETIC APPARATUS.
APPLICATION FILED FEB. 3, 1919.

1,365,569.

Patented Jan. 11, 1921.



Inventor
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by *Albert G. Davis*
His Attorney.

UNITED STATES PATENT OFFICE.

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ELECTROMAGNETIC APPARATUS.

1,365,569.

Specification of Letters Patent.

Patented Jan. 11, 1921.

Application filed February 3, 1919. Serial No. 274,757.

To all whom it may concern:

Be it known that I, MATTHEW O. TROY, a citizen of the United States, residing at Pittsfield, in the county of Berkshire, State of Massachusetts, have invented certain new and useful Improvements in Electromagnetic Apparatus, of which the following is a specification.

My invention relates to electromagnetic apparatus. More particularly, my invention relates to cores and core parts of electromagnetic apparatus.

Objects of my invention are to provide a novel core for electromagnetic apparatus, a novel core part, and a novel method of making core parts for electromagnetic apparatus, whereby the core operating losses and the waste of material are less than heretofore.

In the practice of my invention a strip (preferably having a width equal to the depth of the core part to be produced) is cut from a rolled sheet of magnetic material, such strip extending in the direction of the rolling of the sheet. To use economically the material the strip is bent back on itself at a plurality of substantially uniformly spaced points throughout its length, until a substantially solid block of close convolutions of the strip of magnetic material is produced, alternate convolutions at each end of the block projecting beyond intermediate convolutions. A core according to my invention is assembled from a number of blocks produced in this manner, each, however, of a closely convoluted strip of material, these blocks forming the legs and yokes (and any other parts there may be) of the core with the projecting convolutions of each block interleaving with the projecting convolutions of the adjacent block. I prefer to employ strips of magnetic material which extend in a direction substantially parallel to the general direction of the crystal structure or grain thereof, since this results in the magnetic flux traversing the core with a minimum of losses.

My invention will be better understood from the accompanying drawings and the following description, in which I have illustrated and described in some detail the best embodiment of my invention, of which I am now aware. Figure 1 illustrates very simply in outline a stationary transformer or reactor embodying my invention. Fig. 2 is a disassembled view in perspective of the core

of the device of Fig. 1. Fig. 3 is an edge view of one of the core or yoke portions of Fig. 2.

The transformer or reactor of Fig. 1 comprises a rectangular core 10 of magnetic material, on the two parallel legs on which are placed the windings 11 and 12. Yoke members 13 and 14 connect the adjacent ends of the leg members 15 and 16.

Figs. 2 and 3 disclose particularly the construction of the legs and yokes of Fig. 1. It will be observed, for example, that the leg 15, or block forming a part of the core of the electromagnetic apparatus of Fig. 1, comprises a single strip of magnetic material so closely convoluted as to provide a substantially solid block. Alternate convolutions project equal distances beyond intermediate convolutions and terminate in substantially a single plane which is at right angles to the length of the block. This appears from both Figs. 2 and 3. The core 10 is built up of four such blocks, 13, 14, 15 and 16, differing only in size as may be required. The four blocks are arranged together in the form of a rectangle as more clearly appears from Fig. 1, the projecting convolutions of adjacent blocks being interleaved as is clearly indicated in Fig. 2. Preferably the strips are so procured or so chosen, that the grain of the strip forming each block extends in the direction of the length of the strip, whereby the magnetic flux traverses the material of the core substantially in the direction of the grain of the material. As before indicated, this makes for minimum losses in the core.

The preferred method of my invention consists in the following: I start with a strip of magnetic material of the width 24 (see Fig. 2) equal to the depth of the core part to be produced. Preferably a strip is procured, or chosen in which the grain of the material extends in the direction of the length of the strip. This strip is then bent back on itself at a plurality of points 25, preferably uniformly spaced apart, to provide a block of a plurality of layers. To secure a strip in which the grain extends in the direction of the length of the strip, I prefer to add to the method above described as the first step thereof, cutting from rolled sheets of magnetic material a strip extending in the direction of the rolling.

While I have illustrated and described in

some detail the best embodiment of my invention, of which I am now aware, it will be understood that this embodiment is illustrated and described merely for better dis-
5 closing my invention, and that my invention is not limited thereto but is set forth in the following claims.

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

- 10 1. A closely convoluted strip of magnetic material forming a part of a core of an electromagnetic apparatus, the grain of the material extending in the direction of the length of the strip.
- 15 2. A block of a closely convoluted strip of magnetic material forming a part of a core of an electromagnetic apparatus, some of the convolutions projecting beyond others at one end of the block.
- 20 3. A block of a closely convoluted strip of magnetic material forming a part of a core of an electromagnetic apparatus, alternative convolutions projecting equal distance beyond the intermediate convolutions at one
25 end of the block and terminating in substantially the same plane at right angles to the length of said block.
4. A block of a closely convoluted strip of magnetic material forming a part of a core

of an electromagnetic apparatus, convolu- 30
tions projecting beyond intermediate convolutions at one end of the block, and some convolutions projecting beyond other convolutions at the other end of the block.

5. A core for electromagnetic apparatus 35
comprising adjacent blocks, each of a closely convoluted strip of material with convolutions projecting beyond intermediate convolutions at one end of the respective block, the projecting convolutions of the said blocks 40
being interleaved.

6. The method of making a core part for electromagnetic apparatus, which consists in bending back on itself at a plurality of points to provide a plurality of layers, a 45
strip of magnetic material in which the grain extends in the direction of the length of the strip.

7. The method of making a core part for electromagnetic apparatus, which consists 50
in cutting from rolled sheets of magnetic material a strip extending in the direction of the rolling; and bending the strip back on itself at a plurality of points to provide a plurality of layers. 55

In witness whereof, I have hereunto set my hand this 30th day of January, 1919.

MATTHEW O. TROY.