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UNITED STATES PATENT OFFICE.

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REACTANCE COIL.

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To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, and State of New York, have invented certain Improvements in Reactance Coils, of which the following is a specification.

My invention aims to provide an improved construction for reactance coils by which such coils can be built cheaply and strongly and will have other advantages referred to in detail hereinafter.

The accompanying drawings illustrate a coil embodying my invention.

Fig. 1 is a vertical section on the line 1—1 of Fig. 2;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a block used in building up the coil.

Referring to the embodiment of the invention illustrated, the coil is of a type similar to that shown in the patent of Murray and Torchio, No. 1,017,348, February 13, 1912, comprising a series of spirals arranged above one another and supported by successive courses of radiating arms.

The base is built of concrete or other non-conducting material comprising a central ring 1 and an outside ring 2 united at intervals by radiating arms 3 of a number depending on the dimensions and use of the coil. On this base and in vertical alignment with the arms 3 thereof are laid successive courses of radial blocks 4 and 5 also of concrete or the like, each of which is provided with transverse notches 6 in its upper face. The course of blocks 4 being laid, a layer of conducting wires 7 is arranged in a spiral with its successive convolutions lying in notches 6. The next course of blocks 5 is then placed on top of the lower course and the wire is brought up from the lower layer and wound in a second spiral layer with its convolutions resting in the notches; this process continuing until the desired number of layers of the wire has been secured. On the last course of blocks 4 is laid a top course of plain blocks 8 in vertical alignment with the blocks 4 and 5.

After laying up the parts in this way they are tied directly to each other and to the base. The blocks 4, 5 and 8 are formed with vertical passages 9, Fig. 3, through their centers, and preferably the radiating arms 3 of the base are formed with similar pas-

sages. When the structure has been built up as described the several vertical passages in each column of blocks, and in the arms 3 beneath them, are in register with each other. Concrete or other suitable plastic medium is then poured into these passages filling them from top to bottom, and thus tying them together with all the parts of the structure. This tying concrete also imbeds the wires where they cross the blocks and thus holds them rigidly in position with proper spacing. The wire, being thus fastened to the several arms, holds them firmly in position and reinforces the entire structure.

In the finished structure, as we have said, the blocks are all held together by the tying concrete and by the wires. In building up the successive courses, however, it is preferable to use temporary guides which will hold the blocks in position. For this purpose I have illustrated in dotted lines a central post 10 mounted on the central ring 1 of the base, and an outside cylinder 11, these parts serving to fix the inner and outer ends of the blocks and being withdrawn after the several courses have been laid and tied together as described.

The construction described might be used for spacing the successive layers of wires equidistant from each other at the center and from the outside as in the patent above referred to, by making blocks rectangular in side elevation. I prefer, however, to arrange the successive layers of wires so that they shall be closer together at the point where the wire passes up from one layer to the next, and wider apart at the opposite side. For example, Fig. 1, the wire is led in to the center of the lowest course at 12. After passing spirally around this course it passes up as at 13 at the outside of the spiral to the outside next course, about which it is wound spirally inward so that it passes as at 14 at the inner end of the spiral up to the inner end of the next layer. The gap between the outer convolutions of the first and second course is made less than the gap 15 between the inner convolutions of the same course; the gap between the inner convolutions of the second and third courses is made less than the gap 16 between the outer convolutions of the same two courses; and so on through the height of the structure. This is accomplished by making the blocks 4 with their outer ends higher than

their inner ends and making the blocks 5 with their outer ends lower than their inner ends thus bringing the layers of wire closer together alternately at the outside and at the
6 inside as the wire passes up first at the outside and then at the inside from one layer to the other.

This has an advantage in providing a wider gap between adjacent turns which are
10 impressed with a greater difference in voltage. For example, the difference between the voltages on the convolutions 7^a and 7^b will be only a small fraction of the difference on the convolutions 7^b and 7^c, and the distance apart should be correspondingly increased in the latter case. In actual practice, mechanical considerations prevent us
15 from arranging the spacing in exact proportion to the drop in voltage, but the nearer
20 we come to such a proportion the better.

Though I have described with great particularity of detail a specific embodiment of my invention, yet it is not to be understood

therefrom that the invention is restricted to the particular embodiment disclosed. 25 Various modifications thereof may be made by those skilled in the art without departure from the invention as defined in the following claim.

What I claim is—

A reactance coil including in combination
30 successive courses of separate blocks having at their edges recesses for the wire so that the latter is embraced between blocks of successive courses and formed with registering passages 9 through them forming continuous passages through the several blocks
35 in each vertical line and a plastic medium in said continuous passages tying the blocks of each line together and imbedding the wires
40 at these points while leaving them free between the blocks.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY.