P. TORCHIO.

REACTOR.

APPLICATION FILED APR. 24, 1914.

1,157,066. Patented Oct. 19, 1915.

3 SHEETS—SHEET 1.

Fig. 1

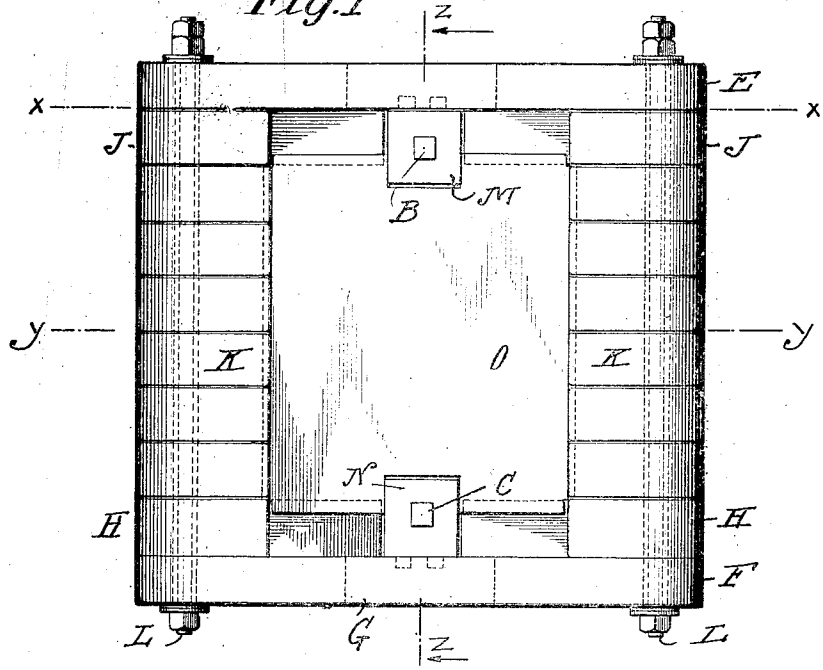
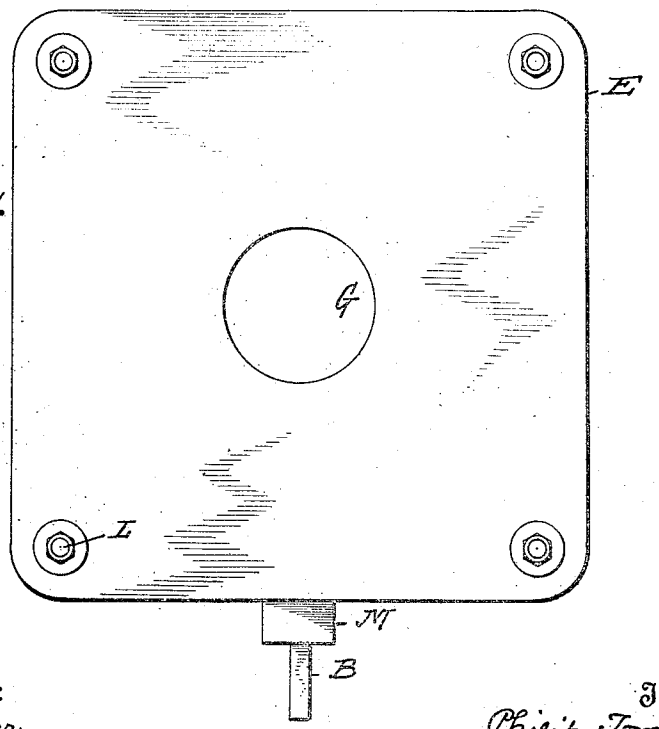


Fig. 2.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 3.

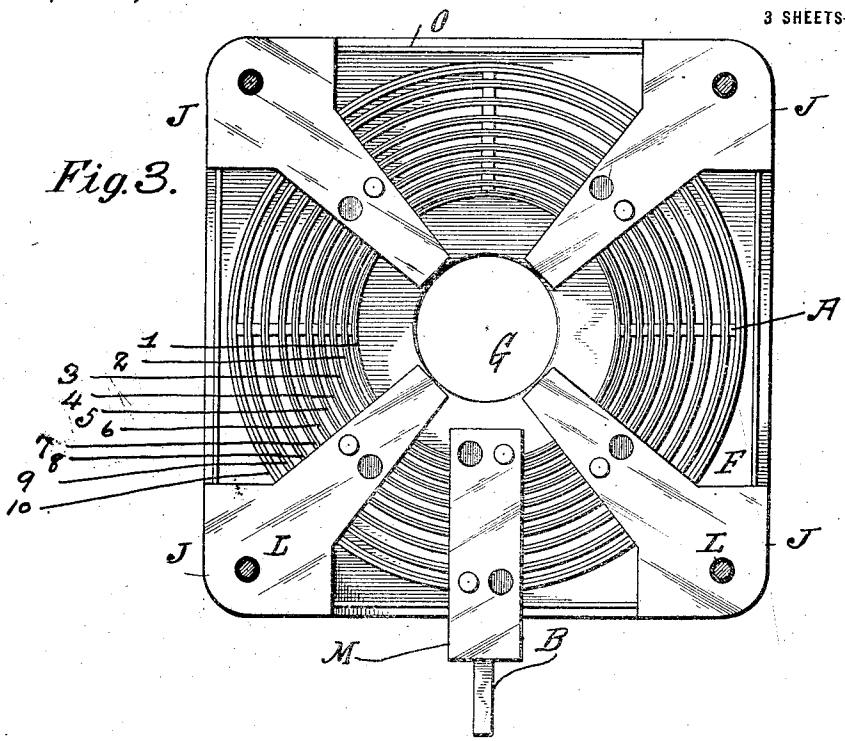
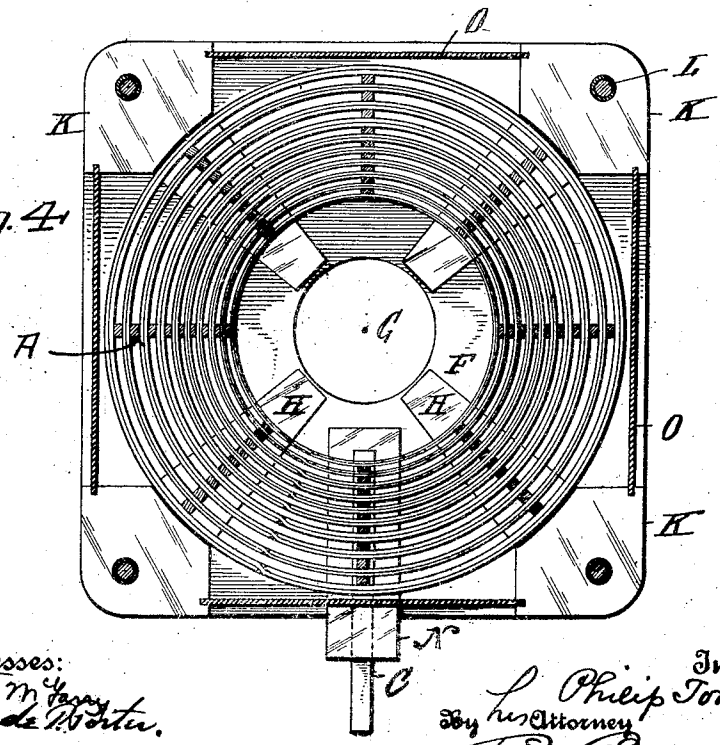


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

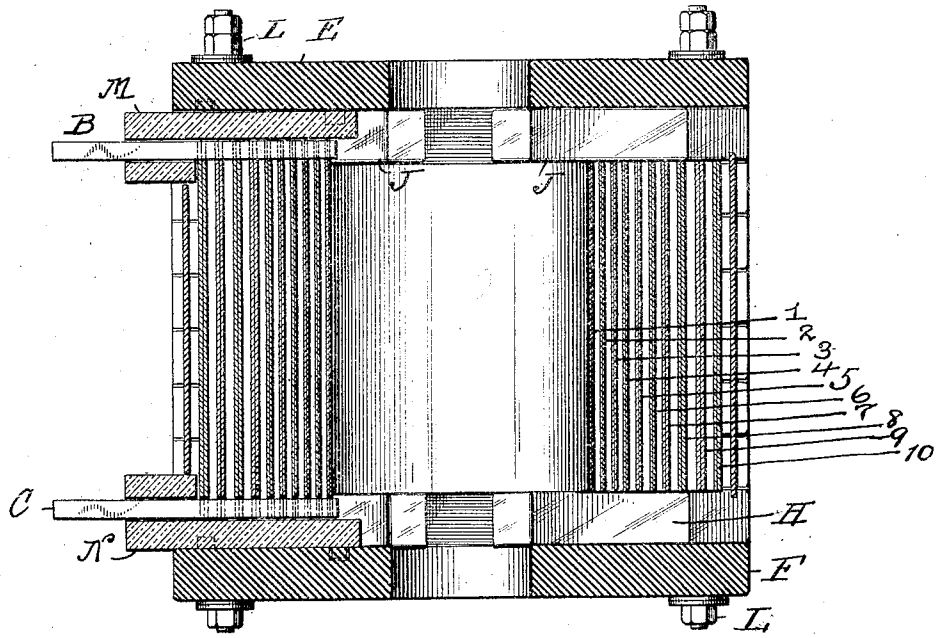
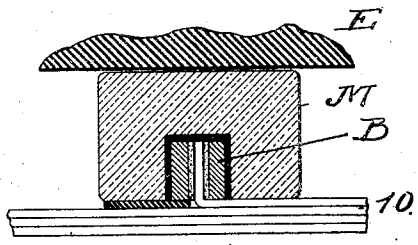


Fig. 6.



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UNITED STATES PATENT OFFICE.

PHILIP TORCHIO, OF NEW YORK, N. Y.

REACTOR.

1,157,066. Specification of Letters Patent. Patented Oct. 19, 1915.

Application filed April 24, 1914. Serial No. 834,068.

To all whom it may concern:

Be it known that I, PHILIP TORCHIO, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Reactors, of which the following is a specification.

The invention is a reactor designed for high tension voltage and large amperage.

The invention consists in forming the coil in a plurality of helical windings seated one within the other, and connected in parallel, in eliminating the iron core commonly employed, and in the construction of the frame of refractory insulating material which incloses and holds said windings.

In the accompanying drawings—Figure 1 is an elevation of my reactor. Fig. 2 is a top view. Fig. 3 is a horizontal section on the line x, x of Fig. 1. Fig. 4 is a similar section on the line y, y of Fig. 1. Fig. 5 is a vertical section on line z, z of Fig. 1. Fig. 6 is an enlarged detail view showing in section the mode of connecting the terminals to the ends of the coils.

Similar numbers and letters of reference indicate like parts.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10 are concentric helical coils of wire disposed one within the other and separated by spacers A of insulating material. The upper ends of said coils are connected to terminal B, and the lower ends to terminal C, so that said coils are connected in parallel between said conductors B and C. The terminals B and C are preferably bars of polygonal cross section having openings to receive the ends of the coils, which ends may be sweated in said openings, as indicated in Fig. 6.

In order to support and hold the coils, I provide the following construction.

E and F are top and bottom header plates of porcelain or other refractory insulating material, each having a central opening G. Upon the bottom header F and at the corners thereof are placed four porcelain blocks H, each having an extension preferably extending inwardly to the opening in said header. The coils 1 to 10 rest upon said blocks H. Above the coils are placed four porcelain blocks J, similar to blocks H, and above the blocks J is the top header E. Between the blocks H and J and filling the intervening space are porcelain spacing blocks K, piled one above the other. At each corner of the headers are bolts L which extend through blocks H and J and the spacing blocks K, thus completing the frame or crate, binding all parts thereof together, and clamping the coils 1 to 10 therein. On the under side of top header E and on the upper side of bottom header F are secured bars M, N of insulating material, through which pass respectively the terminals B, C. Said bars are cut away to permit the ends of the coils 1 to 10 to be connected to said terminals in the manner already described.

The object of providing a number of helical coils connected in multiple is to eliminate Foucault losses which would occur if a single coil of large cross sectional area were used. The object of separating the individual coils at intervals by spacers A is to form vertical ventilating air spaces between them. The receiving and supporting frame may have its sides closed by sliding doors O of porcelain or the like inserted in grooves in the spacing blocks K, and all of its parts in contact with the coils are of insulating refractory material.

I claim:

1. A reactor, comprising a plurality of coaxial helical coils seated one within the other and connected in parallel and having a permanently maintained air space within the innermost coil.

2. A reactor comprising a plurality of coaxial helical coils seated one within the other, connected in parallel and having ventilating spaces between them and a permanently maintained air space within the innermost coil.

3. A reactor, comprising a plurality of coaxial helical coils seated one within the other and connected in parallel, top and bottom headers, blocks adjacent to each of said headers having inward extensions receiving said coils between them, intermedi-

ate spacing blocks between said first-named blocks, and bolts extending through said headers, blocks and spacing blocks.

4. A reactor, comprising a plurality of coaxial helical coils seated one within the other and having a permanently maintained air space within the innermost coil.

In testimony whereof I have affixed my signature in presence of two witnesses.

PHILIP TORCHIO.

Witnesses:
JOSEPH F. SINCLAIR,
A. H. LAWTON.