No. 753,879. PATENTED MAR. 8, 1904.

W. D. GREGORY.

ELECTROMAGNET.

APPLICATION FILED APR. 9, 1903.

NO MODEL.

FIG. 1.

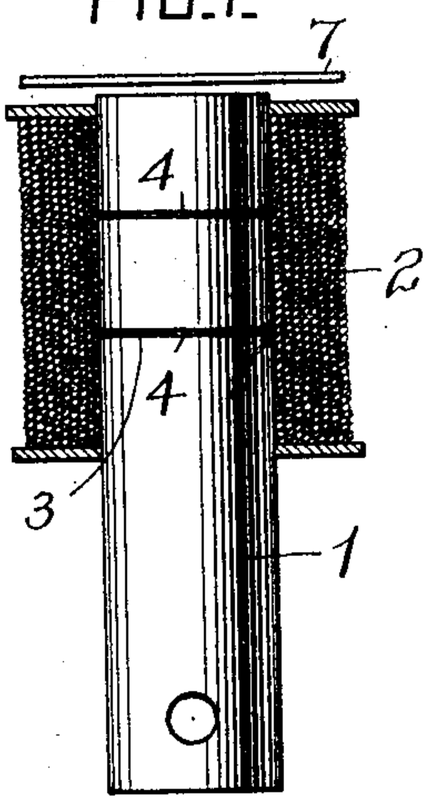


FIG. 2.

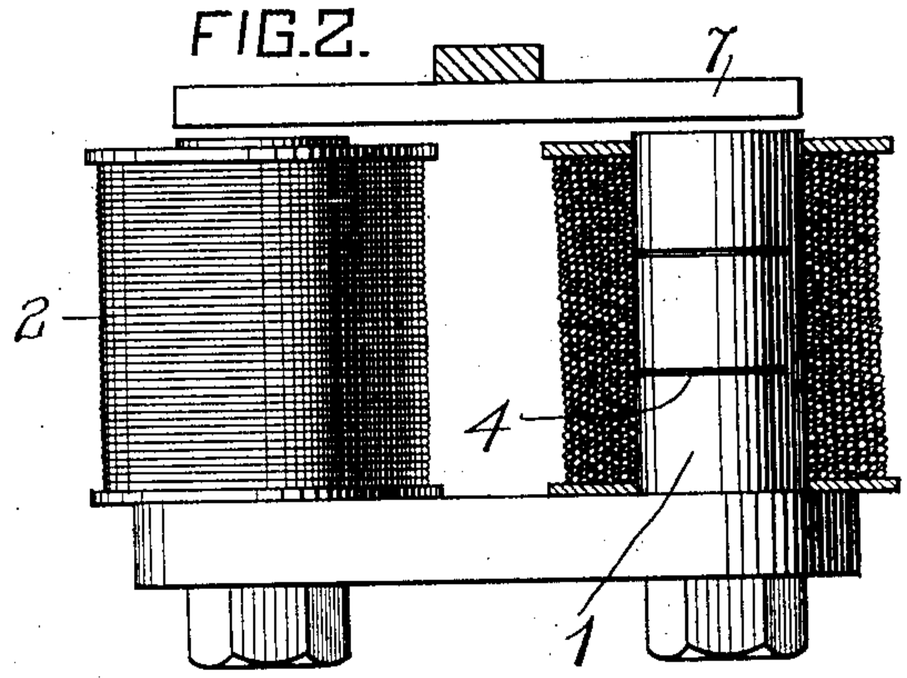


FIG. 3.

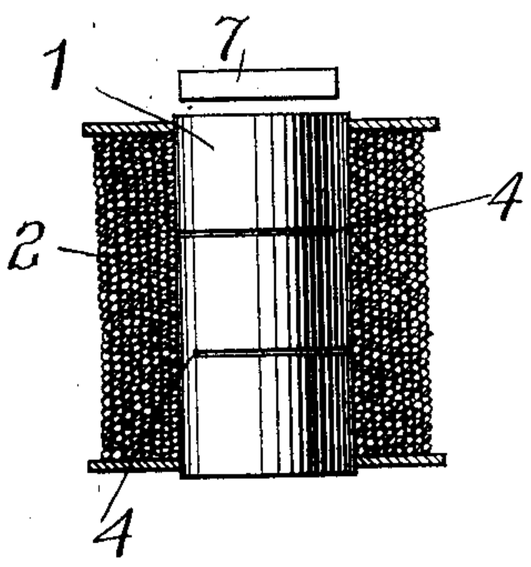


FIG. 4.

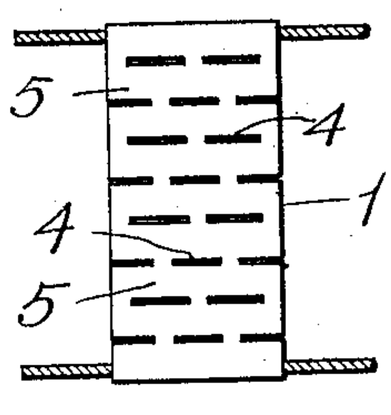


FIG. 8.

FIG. 7.

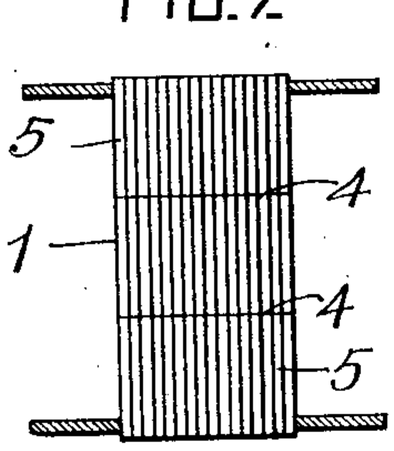


FIG. 5.

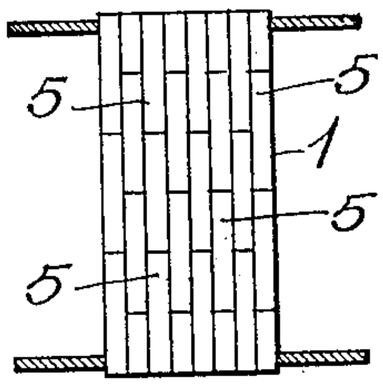
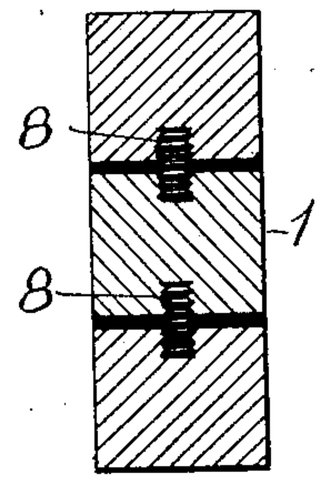
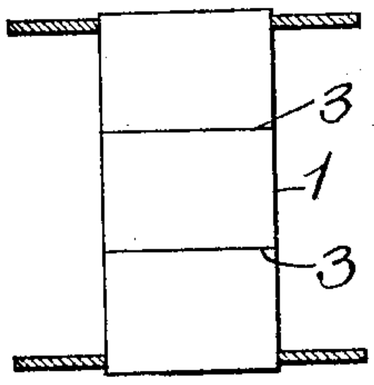


FIG. 6.





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No. 753,879. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

WILLIS D. GREGORY, OF PITTSBURG, PENNSYLVANIA.

ELECTROMAGNET.

SPECIFICATION forming part of Letters Patent No. 753,879, dated March 8, 1904.

Application filed April 9, 1903. Serial No. 151,874. (No model.)

To all whom it may concern:

Be it known that I, WILLIS D. GREGORY, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Electromagnets, of which improvements the following is a specification.

The invention described herein relates to certain improvements in electromagnets, and has for its object a construction whereby a quicker discharge or neutralization of the magnet is effected when the circuit including the coil is broken.

As is well known in the art, it requires an appreciable time for such a complete discharge of magnetism from the core of an electromagnet as to permit a release of the armature and its being shifted by its back spring. The time required for the discharge or neutralization of the magnet is to a certain extent proportioned to the length of the core—*i. e.*, the longer the core the slower the neutralization. I have found that if the structural integrity of the core be broken or interrupted in a plane or planes at an angle to the magnetic lines a quick discharge of magnetism will occur.

In general terms the invention consists in an electromagnet having a core structurally divided more or less completely at an angle to its axis or to the direction of the magnet—*i. e.*, lines passing through the core.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view, partly in section and partly in elevation, of an electromagnet for telephones having my improvement applied thereto. Fig. 2 is a similar view of a telegraph relay or sounder magnet, illustrating a modification of my improvement. Fig. 3 is a similar view of a single-pole magnet, illustrating a further modification of the improvement. Figs. 4, 5, 6, 7, and 8 are views in elevation of cores, illustrating different forms or embodiments of the improvement.

In the practice of my invention the structural integrity of the core 1 of the electromagnet 2 can be interrupted in many ways, each resulting in a greater efficiency as regards the discharge of magnetism and the consequent quick movement of the armature 7 away from the magnet. In the construction shown in Figs. 1, 2, and 3 a partial transverse division of the core is effected by cuts 3, extending nearly through the core. In these constructions the sections formed by the cuts are connected together by necks 4 of comparatively small transverse areas. In the construction shown in Fig. 1 the cuts 2 are circumferential and the necks are central of the core, while in the construction shown in Figs. 2 and 3 the cuts or interruptions extend from one side nearly to the opposite side, so that the connecting-necks are eccentric of the core. As shown in Fig. 2, the necks may be on one side of the core in line with each other or may be formed out of line with each other, as shown in Fig. 3.

As shown in Fig. 4, the cuts need not be continuous; but the core may be interrupted by a series of cuts in the same or different planes, forming a series of connecting-necks. This construction can be most easily attained by forming the core of longitudinal laminations 5, which are divided transversely, as shown in Fig. 5.

In the construction shown in Fig. 6 the core is completely divided transversely into sections. It is preferred that the adjacent faces of these sections should be so finished that when two sections are placed together their entire surfaces will bear against each other as far as practicable. The sections are held together to form a mechanically-integral core in any suitable manner—as, for example, by "sweating."

As shown in Figs. 5 and 7, my improvement may be applied to cores formed of longitudinal sections or laminations. In Fig. 7 the core is shown as formed of a bundle of wires and then divided transversely into sections, which are held together by sweating or other suitable means.

As shown in Fig. 8, the sections may be connected together by a screw 8, engaging adjacent sections. This screw may be formed of iron or steel or brass or other non-magnetic material, and, if desired, a thin disk of non-magnetic material, as mica, may be interposed between adjacent sections.

In using electromagnets having their cores structurally divided, as described, I have found that the attractive efficiency of the magnet is somewhat, but not materially, lessened and that the rapidity of discharge of magnetism from the entire core is approximately proportional to the length of the sections composing the core—*i. e.*, the shorter the sections the quicker neutralization is effected—and thereby the interference of successive vibrations or vibratory conditions is completely lessened or avoided, so as to render my improvement especially applicable for use in telephones and other instruments where a rapid movement of the diaphragm or armature is necessary or desirable.

I claim herein as my invention—

1. An electromagnet having in combination a movable armature and a fixed core structurally interrupted in one or more planes transverse of the direction of magnetic lines, the portions or sections of the core being in permanent relationship to each other, substantially as set forth.

2. An electromagnet having in combination, a movable armature, and a fixed core consisting of transverse sections in permanent relationship to each other, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIS D. GREGORY.

Witnesses:
DARWIN S. WOLCOTT,
F. E. GAITHER.