No. 840,531. PATENTED JAN. 8, 1907.

T. M. WALSH.

ELECTROMAGNET.

APPLICATION FILED MAY 14, 1906.

Fig. 1.

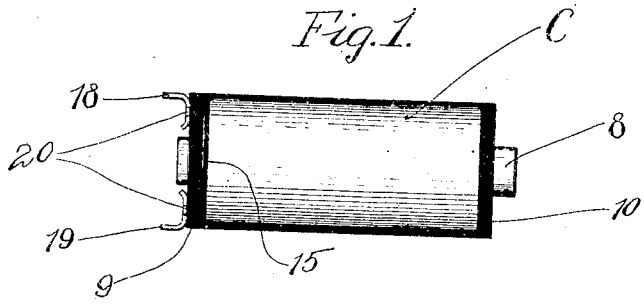


Fig. 2.

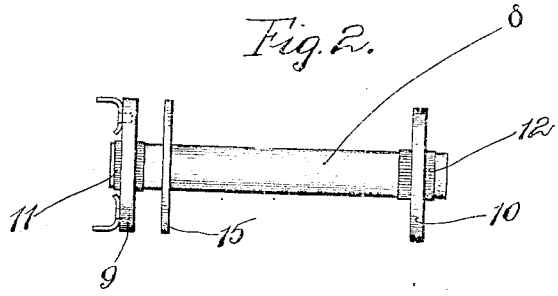


Fig. 3.

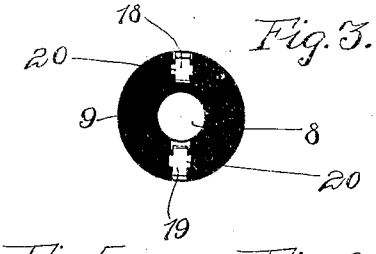


Fig. 4.

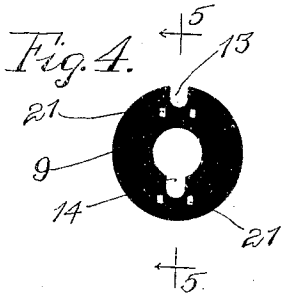


Fig. 5.

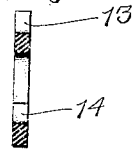


Fig. 6.

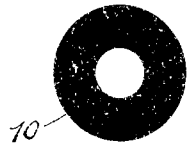
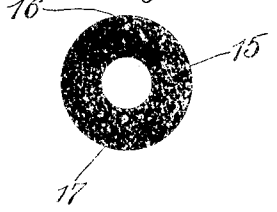


Fig. 7.



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UNITED STATES PATENT OFFICE.

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ELECTROMAGNET.

No. 840,531. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed May 14, 1906. Serial No. 316,629.

To all whom it may concern:

Be it known that I, THOMAS M. WALSH, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Electromagnets, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electromagnets, and has for its object the provision of an electromagnet which will be durable and of simple construction and in which the various parts may be easily constructed and assembled.

As is well known in the art, it is a usual practice to make the heads of the electromagnet-spool of a composition or fiber. It is usual, as is well known in the art, to dispose the wire ends of the coil within these heads, and it has been found that this has given rise to difficulties due to the corrosive substances in the fiber which cause the wire to be eaten off, thereby opening the circuit and disabling the apparatus. In order to overcome somewhat this defect, rubber heads have frequently been substituted for the fiber heads; but it has been found that this construction is not only too expensive for ordinary use, but that it is inefficient and unreliable, because the rubber is so readily affected by heat, this causing the rubber heads to become soft and to expand, thereby allowing the terminals of the coil to become loose and often causing the destruction of the head.

The object of this invention is to overcome these difficulties and to provide a spool-head and terminal which is strong and durable and which will in no way affect the wire terminals of the electromagnet-coil.

In general it may be stated that I provide fiber heads for forming the end supports of the spool and in conjunction therewith a rubber disk in which the terminals are disposed. This construction eliminates the difficulties due to the corrosive substance in the fiber and still retains the strength and durability given to electromagnet-coils by the fiber heads.

My invention will be more clearly understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation view of the electromagnet of my invention. Fig. 2 is an elevation view with the coil removed. Fig. 3 is an end view of the electromagnet. Fig. 4 is a view showing one of the fiber heads of the spool. Fig. 5 is a sectional view on the line 5 5 of Fig. 4. Fig. 6 is a view showing the other fiber head, and Fig. 7 is a view showing the rubber disk heretofore referred to.

To a core 8 are secured the spool-heads 9 and 10. In order that the spool-heads may be mounted upon the core in a durable and secure manner, the core 8 may be provided with the knurled portions 11 and 12. The head 9 is provided with the openings 13 and 14, which serve a purpose, as will be hereinafter described. This construction is clearly shown in Figs. 4 and 5. Also mounted upon said core and in close association with the head 12 is the rubber disk 15, which is provided with the openings 16 and 17, these openings being of small size and adapted for the reception of the wire terminals of the coil C, which is mounted upon the core between the disk 15 and the head 10. The disk 15 is so disposed with reference to the head 9 that the openings 16 and 17 will register with the center of the openings 13 and 14, respectively. Mounted upon the head 9 are the crimped metal terminals 18 and 19, which are provided with the lugs 20 20 for engagement with the openings 21 21 in the spool-head 9. These metal terminals are placed proximate to the openings 13 14, so that the wire terminals of the coil leading through the openings 16 and 17 may be soldered to the metal terminals 18 and 19, respectively, the openings 13 and 14 being of sufficient size, so that the wire ends of the coil will not make contact with any part of the fiber. It is thus seen that the wire terminals of the coil are mounted in rubber, which, as is well known in the art, is a safe and efficient means for supporting electrical conductors. It is further seen that the spool is rendered durable and of solid construction on account of the employment of the strong fiber heads 9 and 10. The metal terminals are insulated from each other by the fiber, and the wire terminals are soldered directly to these crimped metal terminals, whereby the wire is prevented from in any way making contact with the fiber. It is thus seen that the difficulties hereinbefore pointed out are overcome by a simple and efficient structure, which does not incur additional expense and

which may be easily constructed and assembled.

While I have herein shown but one embodiment of my invention, it is evident that changes and modifications may be made by those skilled in the art without departing from the spirit or scope of my invention, and I do not wish to be limited, therefore, to the precise construction herein shown.

I claim as new and desire to secure by Letters Patent—

1. In an electromagnet, a core, a winding disposed upon said core, a head secured at either end of said core, a disk of non-corrosive material associated with one of said heads for supporting the wire terminals of said winding, and metal terminals upon the associated head to which may be secured the wire terminals of the winding.

2. In an electromagnet, a core, a winding upon said core, a head at either end of said core, an annulus of non-corrosive material associated with one of said heads, said annulus being provided with openings for the reception of winding-terminals and clips or metal terminals upon said associated head to which said wire terminals may be secured, said wire terminals passing through openings in said associated head, said openings being of sufficient size so that said wire terminals may not engage the said head.

3. In an electromagnet, a core, a head mounted at each end of said core, a disk associated with one of said heads, a coil mounted between said disk and the other of said heads, said disk being provided with openings wherein are disposed the terminals of the coil, metal terminals mounted upon the associated head to which said terminals may be secured, said associated head being provided with openings approximate to said clips and said openings in said disk of sufficient size whereby said wire terminals may pass through said openings without engaging the side of said opening.

4. In an electromagnet, the combination with a core and a winding thereon, of a head at either end of said core, an annulus associated with one of said heads, said annulus being provided with openings for the reception of the wire terminals of said winding, metal terminals mounted upon the said associated head to which may be secured the wire terminals of said winding, said head being provided with openings of sufficient size so that said wire terminals may not engage said head.

5. In combination, an electromagnet-core, a disk on said core, an auxiliary disk on said core adjacent to the first disk and having openings for receiving the terminals of a winding on said core, there being passage-ways or openings through the first disk in register with but larger than the holes through the auxiliary disk whereby the winding-terminals extending through said holes will be out of contact with the first disk.

6. In combination, the core for supporting a winding, end disks or heads engaging said core for confining said winding, an auxiliary disk adjacent to one of the heads and having holes, passage-ways or holes through the adjacent head in register with but larger than the holes in the auxiliary disk, terminal clips on the outside of the head adjacent to the passage-ways thereto, said holes and passage-ways serving to lead the terminals of the winding to said terminal clips, said large openings through the head preventing contact of the terminal wires with the material of the head.

7. In combination, a core, a winding thereon, comparatively heavy heads at the ends of the core for confining the winding, large openings through one of said heads, terminal clips secured over said openings to the outside of the head, an auxiliary comparatively thin disk on said core and associated with said terminal head, there being openings through said auxiliary disk smaller than the openings of the head and in register with the center thereof, said holes and openings serving to lead the ends of the winding to said termina clips, the size and disposition of the openings in the head and auxiliary disk preventing contact of the wires with the material of the disk.

8. In combination, a core, a comparatively heavy disk secured to said core, openings of large diameter through said heavy disk, terminals mounted on the outside of said disk over said openings, a comparatively light disk on said core adjacent to the inner side of the heavy disk, said lighter disk having openings concentric with the larger openings in the heavy disk but of less diameter whereby the ends of a winding on said core may pass through said openings to be secured to said terminal clips but held out of contact with the material of the heavy disk.

In witness whereof I hereunto subscribe my name this 9th day of May, A. D. 1906.

THOMAS M. WALSH.

Witnesses:
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ALBERT C. BELL.