

P. HAMM.
METHOD OF MAKING ELECTROMAGNETS.
APPLICATION FILED MAY 20, 1914.

1,315,365.

Patented Sept. 9, 1919.

Fig. 2.

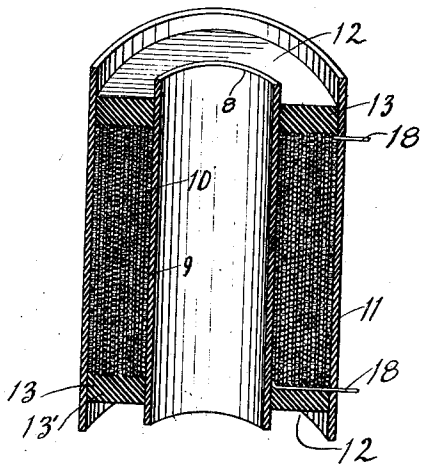


Fig. 1.

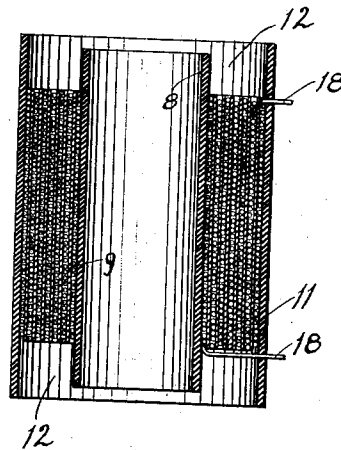
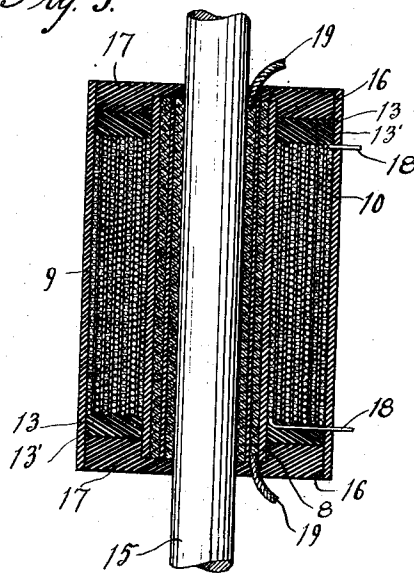


Fig. 3.



WITNESSES

C. F. Miller

E. Schwaibler

INVENTOR

Peter Hamm

By Mossell, Keeney & French
ATTORNEYS.

UNITED STATES PATENT OFFICE.

PETER HAMM, OF MILWAUKEE, WISCONSIN.

METHOD OF MAKING ELECTROMAGNETS.

1,315,365.

Specification of Letters Patent.

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Application filed May 20, 1914. Serial No. 839,891.

To all whom it may concern:

Be it known that I, PETER HAMM, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Methods of Making Electromagnets, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in method of making electromagnets and more particularly with relation to magnets for high tension work.

It is one of the objects of the present invention to provide a method of making electromagnets which will form a coil of simple construction and which is impervious to moisture as well as insulated to a high degree.

A further object of the present invention is to provide an electromagnet of the high tension type in which the secondary winding is completely insulated from the primary winding and the end convolutions are sealed from moisture.

A further object of the invention is to provide an electromagnet in which the use of wood, rubber or fiber heads on the ends of the magnet is eliminated.

A further object of the invention is to provide a magnet construction in which primary and secondary windings of a high tension magnet may be independently formed and then combined to form the high tension coil.

A further object of the invention is to provide a magnet construction which is particularly adapted for forming primary and secondary windings of compound or shunt wound transformers, magneto transformers of high or low tension, spark coils and other magnets of various kinds.

With the above and other objects in view, the invention consists of the improved method of making electromagnets and in the construction and arrangements of parts as set forth in the claim and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Figure 1 is a longitudinal sectional view of a secondary winding magnet preparatory to forming the heads thereon;

Fig. 2 is a longitudinal sectional perspective view of the magnet provided with the improved sealing heads; and

Fig. 3 is a longitudinal sectional view of a similar magnet provided with a primary winding, both primary and secondary windings being sealed by the improved heads.

Referring to the drawing the numeral 8 indicates an inner sleeve or tube upon which the secondary coils of insulated wire 9 are wound. Each layer of wire is insulated from the next succeeding layer by sheets of insulating material 10 and when the last or outer layer is completed an outer tube or sleeve 11 is slipped over the coils. The tubes and sheets are formed of insulating paper or fabric coated with flexible waterproof material.

The outer and inner tubes 8 and 11 are of greater length than the length of the layers of wire so that annular spaces 12 are formed between the said tubes and the ends of the layers of wire and in order to fill the spaces and seal the end portions of the magnet a waterproofing compound 13 in a melted state is poured into the spaces 12 to partly fill the same and when cooled the heads 13' formed of the compound will completely seal the end convolutions of the magnet and in connection with the tubes will form a moisture-proof closure for the secondary coil.

In order to form a moisture-proof joint between the compound and the tubes, the compound will be formed of a flexible material similar to or having an affinity for the material coating the tubes so that the heads will be substantially integral with the tubes. In using the secondary coil in connection with a primary coil, the primary coil 14 is wound in the usual manner on a core 15 and is slipped into the inner tube of the secondary coil and remaining spaces 16 are then filled with additional compound to form the supplemental heads 17 which extend over the secondary heads and over the end convolutions of the primary coil. The ends 18 and 19 of the coils may be extended through the tubes or the compound, as desired.

While the improved construction has only been shown and described in connection with a magnet of simple form it is to be understood that the invention contemplates the invention as applicable to magnets and coils of various kinds.

From the foregoing description it will be seen that the method of making electromagnets is a very simple one and the resultant

magnet is strong and durable and well adapted for the purpose described.

What I claim as my invention is:

5 The method of manufacturing electro-
magnets which consists in placing a second-
ary coil section of wire around a tube of
material of greater length than the coil sec-
tion, placing another tube of material of
greater length than the first mentioned tube
10 around said coil section, the said tubes pro-
jecting beyond one of the end portions of
said coil section to form a head space and
being coated or impregnated with an insu-
lating material, partly filling the said head
15 space with an insulating compound while in
a liquid or plastic state, said compound hav-
ing an affinity for the insulating material of

the tubes to form a homogeneous connection
thereof, inserting a primary coil section of
wire mounted upon a core into the inner 20
tube, said primary coil section extending ap-
proximately to the end of the inner tube and
the core of said section projecting outwardly
from said inner tube, and then filling the
remaining portion of said head space and 25
covering the end of the inner tube and the
end portion of the primary coil with a simi-
lar compound while in a similar state.

In testimony whereof, I affix my signature
in presence of two witnesses.

PETER HAMM.

Witnesses:

KATHERINE HOLT,
C. H. KEENEY.