March 25, 1930. H. N. PACKARD 1,752,023

ALTERNATING CURRENT ELECTROMAGNET

Filed Feb. 11, 1924

Fig. 1.

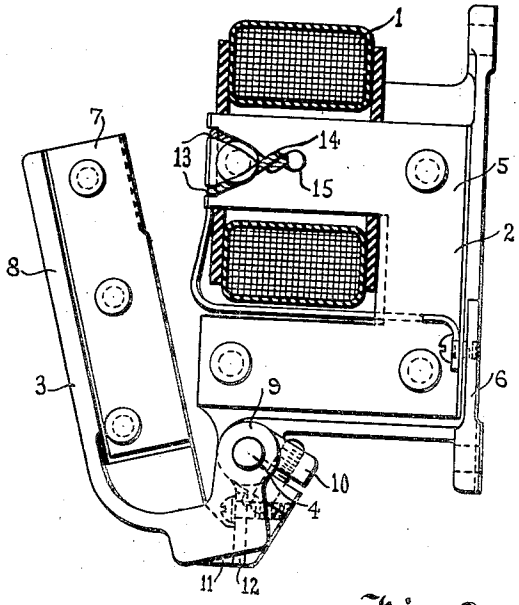


Fig. 2.

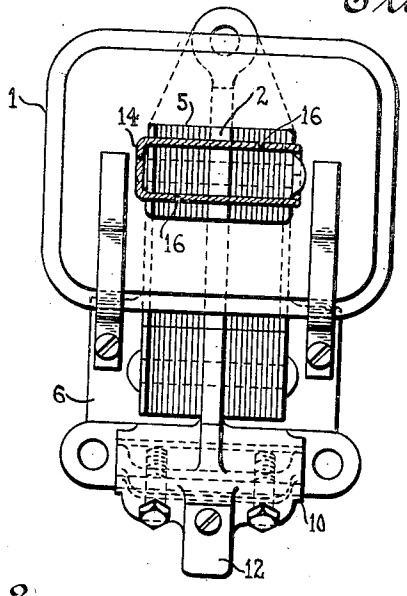
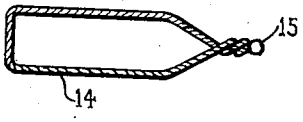


Fig. 3.



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UNITED STATES PATENT OFFICE

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ALTERNATING-CURRENT ELECTROMAGNET

Application filed February 11, 1924. Serial No. 691,897.

This invention relates to alternating current electromagnets and more particularly to shading coils therefor.

Alternating current electromagnets are usually provided with a shading coil to prevent humming or chattering of the magnet armature and it is common practice to employ a shading coil consisting of a single piece of wire formed to provide a loop and having its ends secured together by welding. Such shading coils very often break, especially at or adjacent the weld, after a relatively small number of operations of the magnet, and it has been found that such breakage is largely due to the fact that the coil is relatively rigid and incapable of withstanding shocks caused by impact of the armature member against the field member.

The present invention has among its objects to provide an improved shading coil which will overcome the aforesaid objection.

Various other objects and advantages of the invention will hereinafter appear.

The accompanying drawing illustrates an embodiment of the invention which will now be described, it being understood that the embodiment illustrated can be modified in certain respects without departing from the scope of the appended claims.

In the drawing,

Figure 1 is a side elevational view of an electromagnet embodying the invention, the operating winding of the magnet being shown in section;

Fig. 2 is a front elevational view of the field member shown in Fig. 1, and

Fig. 3 is a detail view of the shading coil shown in Figs. 1 and 2.

Referring to Fig. 1 the same illustrates an electromagnet including an alternating current windings 1 carried by field member 2 and an armature member 3 pivotally mounted on a pin 4 carried by said field member. The field member 2 includes a U-shaped laminated core member 5 fixed to a rigid supporting member 6 while the armature member is made up of a plurality of laminations 7 fixed to a rigid supporting arm 8. Arm 8 is provided with spaced bearing portions 9 for receiving pin 4 (one of said bearing portions being shown in Fig. 1) and said pin is fixed within a projecting lug 10 on the underside of member 6. Outward movement of armature member 3 is limited by engagement of a projection 11 on member 3 with a fixed stop 12 provided on the underside of the lug 10.

Winding 1 is mounted on the upper leg of the U-shaped core member 5 and the outer face of said leg is provided with a pair of parallel transverse recesses 13 for receiving a shading coil 14. As shown in Fig. 3 shading coil 14 comprises a piece of stranded wire formed to provide a loop and having its ends twisted together and fused at 15 by welding, soldering or the like.

Shading coil 14 is placed in the recesses 13 and is held therein by bending portions of the laminations of core member 5 over the same, as shown at points 16 in Fig. 2, and the twisted portion of said coil is arranged to be held against the side of said core member by the interior of winding 1.

In practice it has been found that a shading coil arranged and constructed as above described is capable of withstanding severe shocks without breaking. This advantage is largely due to flexibility of the coil and also to prevention of strains on its fused portion 15 by the twisted portion. The unfused part of the twist provides means to brace relatively the portions of the stranded wire adjacent the fused connection to damp such portions against vibration relative to the connection and thus protect the coil against breakage at or adjacent the connection by vibration. While the aforedescribed coil is mounted on the field member of the electromagnet it is apparent that the same can be mounted on the armature member if desired.

What I claim as new and desire to secure by Letters Patent is:

1. A stranded wire shading coil for alternating current magnets having fused connection of its strands to provide a closed loop and having means to damp its portions adjacent the fused connection against vibration relative thereto.

2. An alternating current electromagnet comprising field and armature members and

a shading coil for one of said members formed of stranded wire, having fused connection of its strands to provide a closed loop and having means to brace relatively the portions of the stranded wire adjacent the fused connection to protect said coil against breakage at or adjacent the fused connection due to vibration.

3. An alternating current electromagnet comprising field and armature members and a shading coil carried by one of said members, said coil being formed of stranded wire having its end portions twisted together and connected by fusion at a substantial distance from the inner end of the twist.

In witness whereof, I have hereunto subscribed my name.

HORACE N. PACKARD.