Nov. 4, 1941. F. C. WILSON 2,261,199

CORE FOR WINDING FIELD COILS

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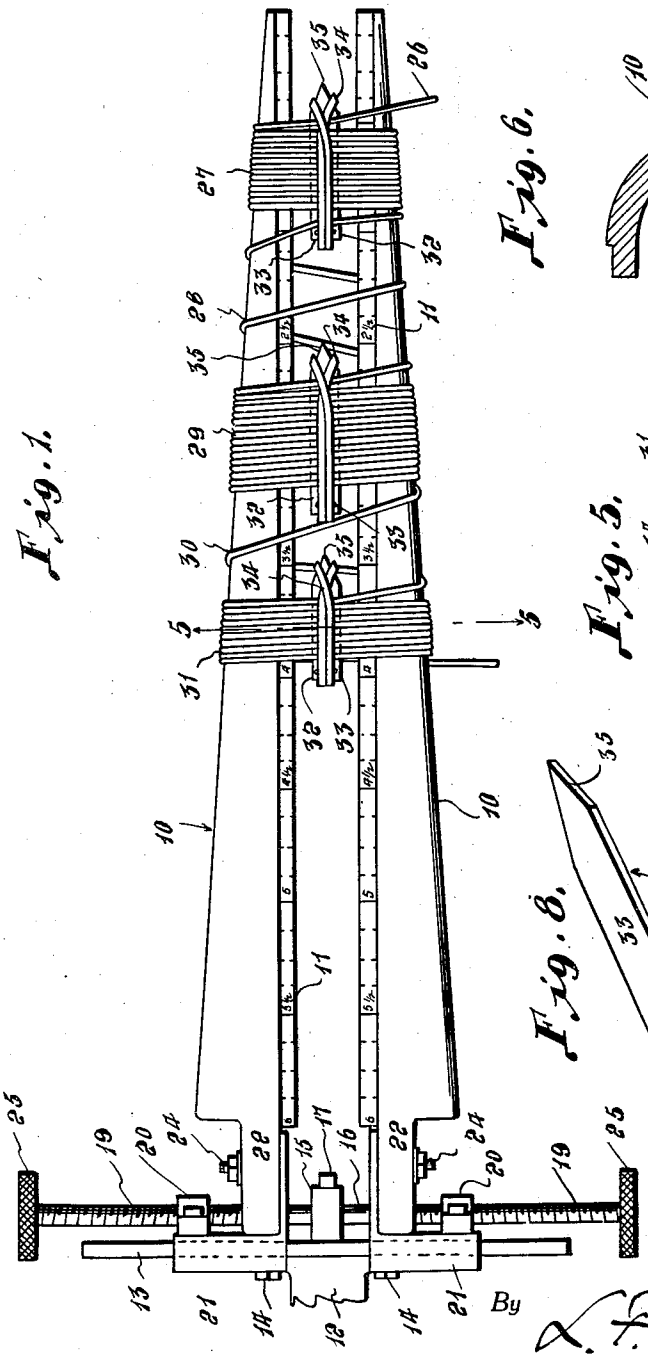


Fig. 1.

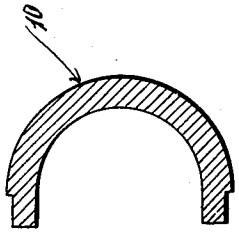


Fig. 6.

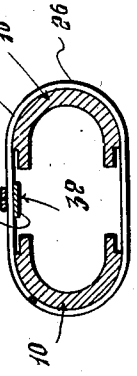


Fig. 5.

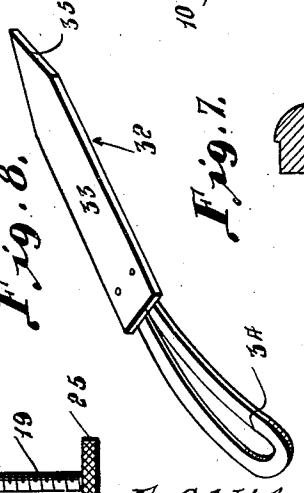


Fig. 8.



Fig. 7.

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Fig. 2.

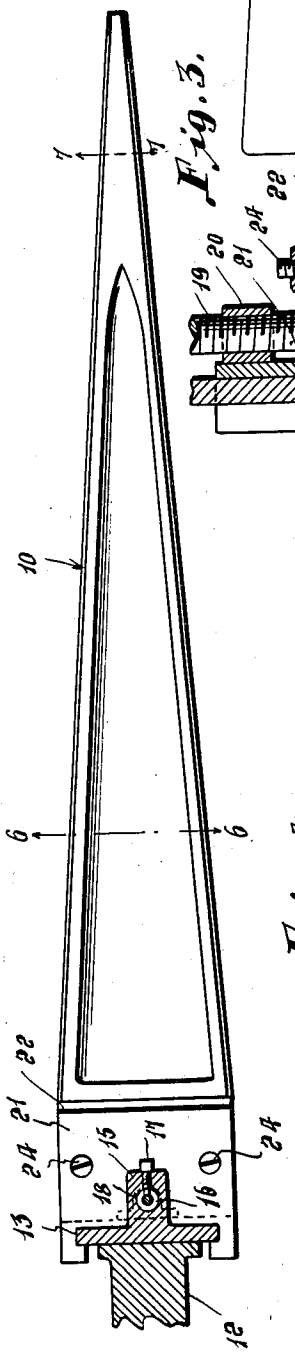


Fig. 3.

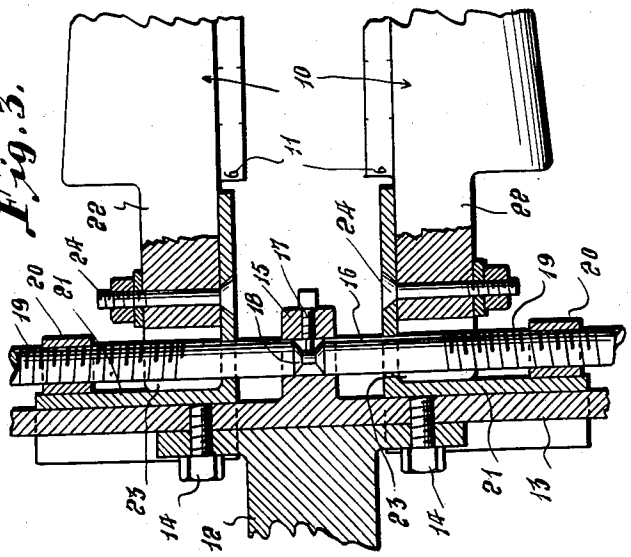
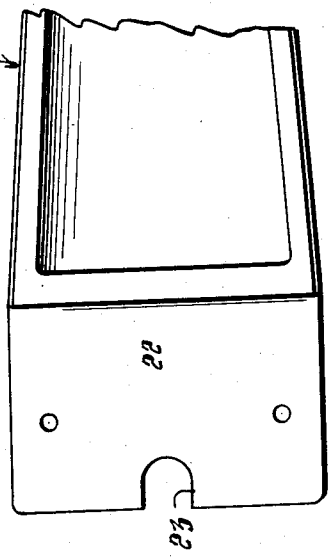


Fig. 4.



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CORE FOR WINDING FIELD COILS

Fletcher C. Wilson, Macon, Ga.

Application December 7, 1939, Serial No. 308,080

4 Claims. (Cl. 140—92.2)

This invention relates to a core primarily adapted for the winding of coils for the field of electric motors.

It is aimed to provide a novel core which is adjustable so that the coils wound may be of different shapes of and the desired size according to the particular motor, a construction wherein the core consists of relatively movable parts each substantially half of a cone, and a construction whereby the coils are wound in connected, successive series from the smaller end of the cone, and are removed by movement of the series, accompanied by nesting thereof in the direction of the smaller end of the cone.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:

Figure 1 is a view in elevation showing the cone in connection with and adjustably mounted on a winding head;

Figure 2 is a longitudinal section taken between the sections of the cone and looking toward the inner surface of one of them;

Figure 3 is an enlarged sectional view taken through the cone sections and the mounting head;

Figure 4 is an enlarged elevation looking toward the inner surface of the inner end of one of the cone sections;

Figure 5 is a cross section taken on the line 5—5 of Figure 1;

Figure 6 is a cross section taken on the line 6—6 of Figure 2;

Figure 7 is a cross section taken on the line 7—7 of Figure 2, and

Figure 8 is a detail perspective view of one of the coil engaging clips which may be used.

Referring specifically to the drawings wherein like reference characters designate like or similar parts throughout the different views, the core consists of two parallel sections 10 which are similar in construction and collectively form substantially a cone in that the outer surfaces thereof are at all points arcuate in cross section and tapered as shown. Such sections 10 are hollow throughout most of their length, being open at their inner faces and along their longitudinal edges are flattened and provided with measurement marks or calibrations as at 11.

Said cone sections 10 during winding operations are adapted to be rotated through the rotation of a head or element 12 which is connected to the shaft of an electric motor, for example, or otherwise rotated. Such head 12 has a plate or bar 13 removably bolted thereto as at 14. Plate 13 has a central bearing 15 in which a shaft or rod 16 is journaled, being held against longitudinal movement through the engagement of the inner end of a screw 17 in an annular groove 18 about such shaft. At opposite ends, said shaft 16 is screw threaded in opposite directions as at 19 and engaged with fixed nuts 20 on brackets 21 slidably mounted on the bar or plate 13.

The core sections 10 at their larger ends are reduced to form attaching shanks 22, whose inner ends are notched or cut away as at 23 so that they will fit around the shaft 16 and provide ample clearance for rotation of the latter. In addition, removable bolts 24 detachably secure the core sections 10 to the brackets, the same passing through the shanks 22, as shown. Knurled knobs or the like 25 are provided at opposite ends of the shaft 16, either of which may be operated to rotate the shaft 16 and according to the direction of rotation, move the core sections 10 closer together or wider apart.

In winding coils for motor fields, the metallic wire 26 is supplied from the smaller end of the cone or sections and wound about the same toward the larger end of the core and first in a series of contacting coils 27 forming a layer. The wire is then spread by one or more separated coils 28 and then wound into a layer of contacting coils at a group 29, then the wire is spread again at one or more coils 30 and finally wound into a group or layer of contacting coils 31. Rotation of the core is then stopped and suitable clips 32, as detailed in Figure 8, are applied about the groups 27, 29 and 31 to prevent the groups of coils from springing out, twisting and tangling. The clips 32 are accommodated in the grooved edges of the sections wherein calibrations 11 are provided, when such sections are in close proximity. Such clips may consist of bars 33 of metal, having elastic rubber loops 34 fastened to one end thereof and adapted to engage the groups on opposite sides to the bars, and thereafter engage the reduced ends 35 of such bars as shown in Figure 1.

Following the winding operation mentioned, the wound structure is removed from the core sections as follows. First, the group 31 is pulled toward the smaller end of the cone sections and over the group 29, thereby becoming nested in and concentric with the group 31, and thereafter, the nested groups 29 and 31 are further pulled toward the smaller ends of the core sec-

tions and incidental to which the group 29 is moved over the group 27, the latter being nested within the group 29 and concentric therewith and with the group 31, and thereafter all of the groups as a nested unit are removed from the core sections so that such groups may be wound into the usual motor slots to form the field coils of the motor, the winding in the slots starting at the smaller end of the group 27 and being wound in the motor slots one coil at a time, it being understood that the clips 32 are removed one at a time as winding proceeds.

It will be understood that the core sections 10 may be made in any desired size and dimensions according to the motor or work wherein the windings are to be used, and that the measurements or calibrations 11 may vary, as preferred, and that they serve as gages in winding, in order to provide the groups of the desired diameter, numbers of coils according to the motor, and the distances apart at which the winding groups should start and end. The method disclosed herein is covered in my application Serial No. 340,407, filed June 13, 1940, forming a continuation in part of this application.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:

1. A core for the winding of coils for motor fields consisting of sections adapted for movement relatively, angular brackets, an element adapted for rotation on which the brackets are slidable, a non-slidable rod journaled on said element and passing through angles of said brackets having oppositely directed screw portions, fixed nuts on said brackets engaging said screw portions, and means securing said sections to said angles.

2. A core for the winding of coils for motor fields consisting of sections adapted for movement relatively, angular brackets, an element adapted for rotation on which the brackets are slidable having a bearing, a rod journaled on said bearing and passing through angles of said bracket having oppositely directed screw portions, fixed nuts on said brackets engaging said screw portions, bolts securing said sections to said angles, the adjacent ends of said sections being cutaway to accommodate said rod.

3. A core for the winding of coils for motor fields consisting of sections, means to move said sections toward and away from a position relatively close to each other, said sections being cutaway along adjacent edges thereof to accommodate clip means engaged with coils on the core.

4. A core according to claim 2 wherein adjacent edges of the sections are cutaway to accommodate clip means engaged with coils on the core.

FLETCHER C. WILSON.