

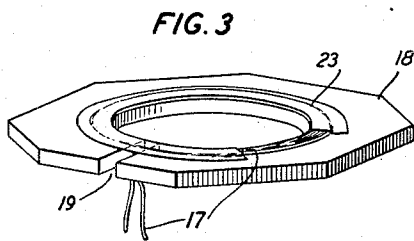
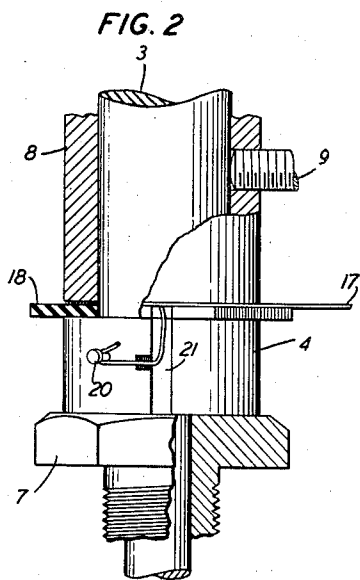
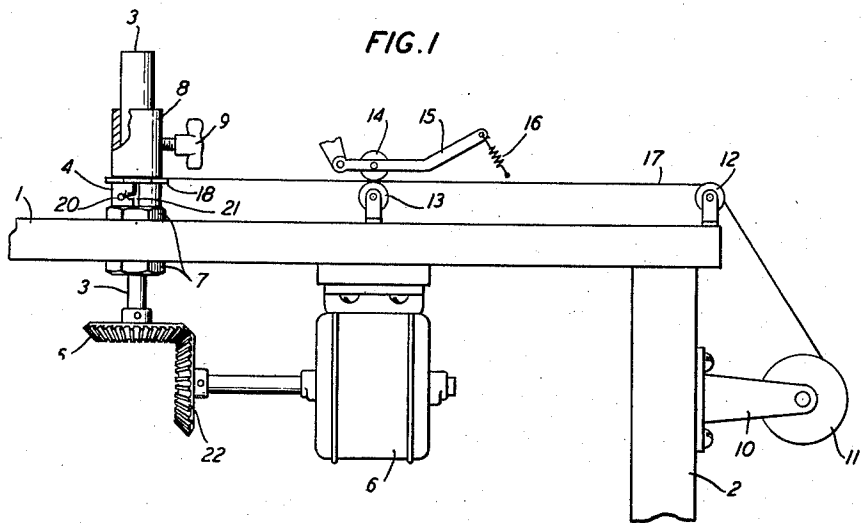
Nov. 12, 1940.

W. J. THOMPSON

2,221,390

APPARATUS FOR AND A METHOD OF MAKING COILS

Filed Sept. 9, 1939



INVENTOR
W. J. THOMPSON
BY
T. H. Jackson
ATTORNEY

UNITED STATES PATENT OFFICE

2,221,390

APPARATUS FOR AND A METHOD OF
MAKING COILS

William J. Thompson, Brooklyn, N. Y., assignor to
Bell Telephone Laboratories, Incorporated, New
York, N. Y., a corporation of New York

Application September 9, 1939, Serial No. 294,106

5 Claims. (Cl. 242—9)

This invention relates to apparatus for and a method of making coils and, more particularly, to apparatus for and a method of winding and assembling flat, spiral coils of wire.

5 For some purposes and particularly for use in certain electrical devices used in the communication arts, it is desirable to have coils of insulated wire comprising a coplanar plurality of turns arranged in single-layered flat spirals. 10 Such coils may be useful, for example, as auxiliary windings to be associated with transformers used in various types of communication apparatus.

15 An object of this invention is a simple and inexpensive device for winding strand into a coil having a plurality of turns arranged in a flat spiral.

This and other objects of the invention as will appear hereinafter are attained in one embodiment of the invention which comprises, substantially, a cylindrical rod provided with a shoulder on which the coil is to be wound. A notch across the shoulder and a small stud near the edge of the notch provide means for holding the ends of the strand. A tubular piece 20 fits over the rod and is attached thereto a sufficient distance from the shoulder to permit winding the coil between the shoulder and the tubular piece. After the required number of turns 25 are wound, a thin paper disc having adhesive applied to one side is pressed on the coil to hold the turns together.

The invention will be better understood from the following description and attached drawing 30 forming a part thereof, in which:

Fig. 1 is a front elevation of the device with one part shown in partial section;

Fig. 2 is an enlarged view partly in section showing details of a section of the device; and

40 Fig. 3 is a perspective of a finished coil with a part of the paper disc removed to show the turns.

Referring to Fig. 1, the device is shown mounted on a base 1 supported by legs 2, only one of 45 which is shown. The device proper consists of a cylindrical rod 3 provided with a shoulder 4. The rod extends through base 1 and at its lower end is provided with a gear 5 or other means by which the rod may be rotated, for 50 example, by an electric motor 6 attached to the under-side of base 1.

To provide a bearing for shoulder 4 and to maintain rod 3 in a substantially vertical position two threaded bushings 7 are screwed into 55 the base substantially as indicated.

A tubular piece 8 provided with a wing-type set screw 9 or equivalent means fits over rod 3 and is held thereon at any desired distance from shoulder 4 by means of set screw 9.

A pair of supports 10 are adapted to hold 5 strand reel 11 from which the strand may be withdrawn over pulley 12 and between pulleys 13 and 14. Upper pulley 14 is mounted on arm 15 to the end of which is attached a spring 16 adapted to hold pulley 14 against strand 17 to 10 maintain a desired tension therein.

To wind a coil, tubular piece 8 is removed from rod 3 and a spool-head 18 of insulating material is slipped over rod 3 and down until it rests 15 firmly on shoulder 4. A length of strand is withdrawn and the end passed through notch 19 in spool-head 18 and notch 21 in shoulder 4, and a few turns wrapped around stud 20 on shoulder 4 to anchor the strand.

20 One or two turns of the strand are wound about rod 3 so that they rest on spool-head 18. Tubular piece 8 is now replaced on rod 3 and moved down until it rests on the turns of the strand. Tubular piece 8 is then attached to rod 3 by set screw 9. 25

Motor 6 is then started and by means of gears 5 and 22 rotates rod 3 until the desired number of turns have been wound. After the desired number of turns have been wound and the motor stopped, the strand is cut near the shoulder and 30 the end passed through notches 19 and 21, and around stud 20 to maintain the tension in a wound strand.

Tubular piece 8 is then removed and a paper disc 23, having adhesive applied to the lower 35 side, is slipped over rod 3 and over the coil. Tubular piece 8 is then replaced and forced down on the paper disc and maintained in that position until the adhesive dries, thereby sealing the turns in position on spool-head 18. The 40 ends of the strand which were anchored to stud 20 are then removed and the finished coil, as shown in Fig. 2, is removed from rod 3.

While a specific form of the invention has been shown and described, it is to be understood 45 that the invention is not to be limited thereto but is to be limited only by the scope of the attached claims.

What is claimed is:

1. An apparatus for winding a coil having a 50 substantially flat spiral winding, which apparatus comprises a rotatable support having a substantially flat supporting surface transverse to the axis of rotation, means on the support to secure one end of a strand thereto for winding 55

thereon, means to maintain the strand in contact with the supporting surface while being wound to cause successive turns of strand to lie upon the surface in substantially coplanar spiral relation, and means to secure the turns of the wound coil together.

2. A method of making a coil comprising winding a strand under tension for a plurality of turns, causing the turns of the strand to successively build one upon the other in substantially coplanar spiral formation, and applying an adhesive material to one side of the wound strand while under tension to hold the turns thereof against relative displacement.

3. A method of making a coil comprising winding a strand under tension for a plurality of turns, causing the turns of the strand to successively build one upon the other in substantially coplanar spiral formation, applying an adhesive member to one side of the wound strand while under tension to hold the turns thereof against relative displacement, and compressing

the wound strand and the adhesive member to cause intimate association of the former with the latter.

4. An apparatus for winding a coil having a substantially flat spiral winding, which apparatus comprises a rotatable support having a substantially flat supporting surface transverse to the axis of rotation, a projection extending from said rotatable support and an adjustable member mounted on said projection and adapted to be attached thereto so as to rotate therewith whereby a desired spacing may be maintained between said adjustable member and said rotatable support.

5. An apparatus in accordance with claim 4 in which said adjustable member comprises a tubular piece which fits over said rotatable support extension and which is provided with a set screw for attaching said tubular piece to said extension.

WILLIAM J. THOMPSON.