Dec. 30, 1941. D. A. THOMPSON 2,267,849

COIL HEAD

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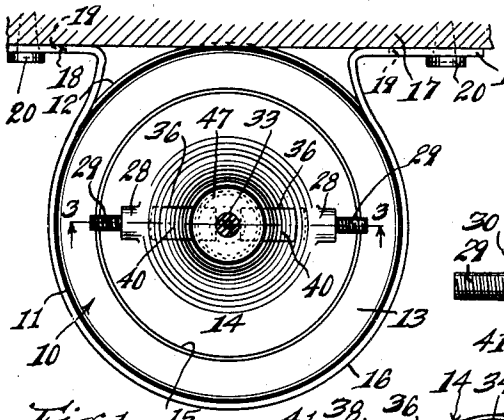


Fig. 1.

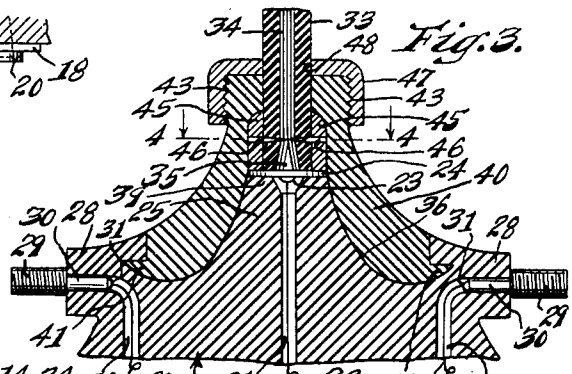


Fig. 3.

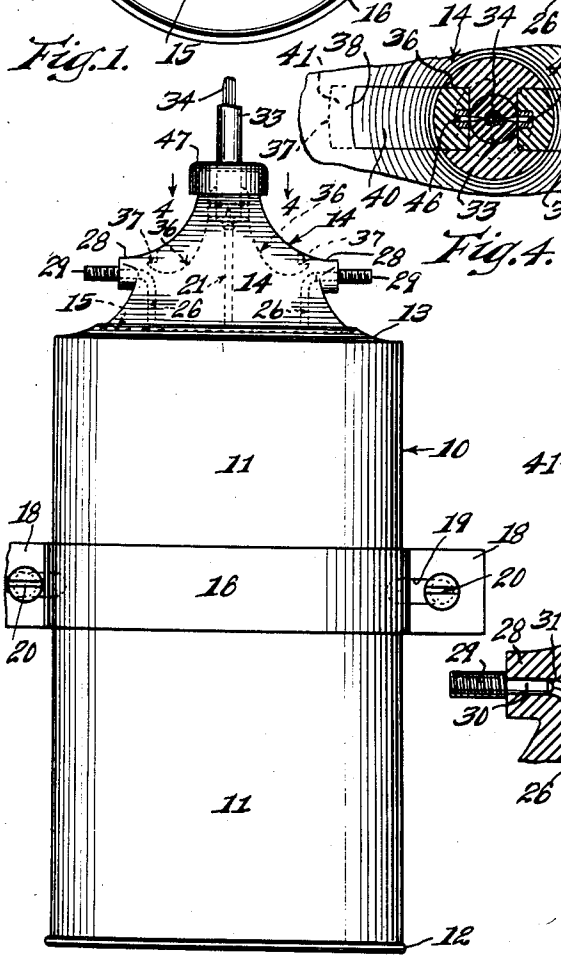


Fig. 2.

Fig. 4.

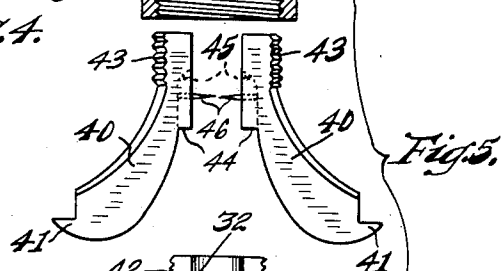
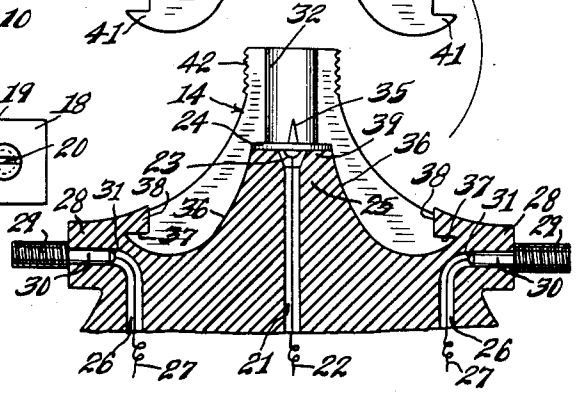


Fig. 5.



Witnesses:
C. E. Wessels
Anita E. Nelson

Inventor:
Donald A. Thompson,
By Joshua R. H. Potts
his Attorney.

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COIL HEAD

Donald A. Thompson, Chicago, Ill.

Application June 10, 1940, Serial No. 339,633

9 Claims. (Cl. 175—361)

This invention relates to induction or ignition coils such as used in connection with the ignition systems of internal combustion engines and more particularly to a novel coil head or terminal structure by which connections are made from the secondary and primary windings of the coil to the high tension cable or wire leading to the usual high tension distributor and the conductors of the primary circuit of the induction coil are connected to the primary coil.

The object of the invention is to provide a novel and simple construction by which the high tension cable is centered and positively connected to the secondary coil, as well as prevented from jumping out as is common and objectionable in connection with ordinary wire terminals, and to facilitate the assembly as well as to insure proper draining of moisture from the primary terminals or posts which are so arranged as to eliminate a short circuit or shorting out of the coil as results from older types of construction.

Fig. 1 is a plan view of an inductor coil constructed in accordance with the invention;

Fig. 2 is a front elevation thereof;

Fig. 3 is a fragmentary vertical enlarged section taken on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 3; and

Fig. 5 is an exploded or disassembled view of the parts shown in Fig. 3.

Referring to the drawing in detail, 10 designates an ordinary induction or ignition coil as commonly used in connection with the ignition system of an internal combustion engine or the like and has a case 11 of cylindrical or other form which may be sheet metal lacquered or of some insulation or dielectric material such as Bakelite or even fibre. The case has a bottom 12 and the upper edge is adapted to be turned in to form a retaining flange 13 for retaining the head 14 of the present invention in position over its base flange 15. A strap or strip of metal 16 may be employed for mounting the device on a vertical support indicated at 17 and the angular bent ends 18 may be provided with slots 19 for receiving securing means 20 for this purpose.

The head 14 is substantially of conical formation with the base flange 15 held beneath the flange 13 of the case and the latter accommodates the usual primary and secondary coils or windings and inner and outer magnetic cores such as set forth in Patent No. 1,474,152, dated November 13, 1923, or otherwise as is common in the art. This head is of Bakelite or other dielectric material and has a passage 21 axially thereof for accommodating the conductor 22 from the secondary coil and is soldered or otherwise secured as at 23 to a brass or similar washer or plate 24 mounted on the reduced upper end portion 25 of the head. The head is also provided with passages 26 on diametrically opposite sides thereof for accommodating conductors 27 of the primary coils or windings which extend through axial horizontal passages of similarly located and diametrically opposite bosses 28 molded or otherwise formed with the head 14. Binding posts 29 having shank portions 30 are mounted in the horizontal portions of the passages and soldered or otherwise fastened at 31 to the conductors 27. The substantially conical or sloping formation of the head at the top provides an effective drain for moisture and by positioning the binding posts or terminals 29 at diametrically opposite sides and horizontally as described, short circuiting or shorting out of the coil as caused in older types of induction coils is substantially prevented. This is eliminated due to the wide spaces between the conductors with the interposed insulation, which substantially prevents the jumping of the sparks across the gaps thus produced in view of their extreme widths.

The top of the head is provided with a bore or socket 32 designed to receive a high tension cable or wire 33 usually of rubber or waterproofed wire with a series of conductor wires 34 embedded therein axially and which is snugly received in the socket 32 down to the plate or washer 24 so that a tapered pin or needle 35 also soldered as at 23 to the conductor 22 and washer 24 or extending through a central aperture in the washer or plate 24 and headed at the bottom, will extend upwardly and into the embedded conductor wires 34 to make a positive electrical connection at this point. Diametrically opposite sides of the head are recessed as at 36 with undercut portions 37 somewhat hook shaped beneath overlying lugs 38 and forming slots at their upper ends communicating with the bore or socket 32 with shoulders 39 at the bottom. Removable sections or coil flaps 40 also of Bakelite or other suitable material are adapted to be inserted in the recesses 36 and are in the form of narrow strips substantially one-half inch wide with hook extensions 41 engaging the recesses 37 to retain them in position and conforming to the contour of the head externally. The upper portion of the head is substantially cylindrical although it may be slightly tapered and externally threaded, as indicated at 42. The

removable sections 40 are also externally threaded as indicated at 43 to coact with the threaded portion 42 and shoulders 44 are formed facing downwardly at the inside of the removable sections above the tapered portion 25 to seat upon the washer or plate 24 where the shoulders 39 are formed, thus limiting the downward displacement of the removable sections or coil flaps at the brass or other metal inserts 45 provided at the inner faces thereof above the shoulders 44 and made preferably rectangular or the like. These inserts may be molded in position with the sections 40 and have embedded inwardly extending horizontal pins or needles 46 tapering to a sharp point so as to pierce the insulated rubber coating of the high tension cable 33 and project into the conductor wires 34, thus firmly holding the cable seated upon and in electrical contact with the pin 35 and plate or washer 24 and prevent the cable from jumping out of position. Before the cable is inserted, it is passed through a cap nut 47 which is adapted to engage the threads 42 and 43 and has a central opening 48 for receiving the cable therethrough. The cable having its end cut off squarely is pressed against the needle or pin 35 and plate 24. The removable sections 40 are then inserted so that the hook portions 41 will engage beneath the lugs 38 and into the undercut recesses 37 with the lower ends of the metallic inserts 45 bearing on the plate 24 and the needles or pins 46 piercing the insulated covering of the cable 33 to extend into the conductor wires 34, after which the cap nut 47 is screwed into position to tightly clamp the parts in assembled relation and insure against accidental displacement of the cable as well as to clamp the removable sections or coil flaps against the cable at the outside. This may be facilitated by making the bore of the cap nut and the threaded portions of the head and coil flaps or removable sections slightly tapered. In view of the foregoing it is thought that the use and operation of the device will be apparent and that further description thereof is unnecessary.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A coil head of the class described including an insulated member having diametrically opposite bosses, terminals set in said bosses forming binding posts and adapted for connection with primary coils of an ignition or induction coil, said head having opposite cut outs, removable sections held in said cut outs and a vertical bore at the top with a conductor plate at the bottom connected by an axial conductor with the secondary of the coil, metallic inserts in said removable sections, said inserts and plate having tapered pins extending horizontally and vertically respectively into a top bore in the head and adapted to extend into and pierce a high tension cable inserted in the bore for positive electrical connection therewith and a cap nut on the head and removable sections.

2. A coil head of the class described having diametrically opposite recesses with undercut portions, removable sections seated in said recesses flush with the top of the head and having hook portions engaged in the undercut portions, the head and removable sections adapted to be jointly held in assembled position and forming a vertical bore at the top, a secondary contact point at the bottom of the bore, metallic inserts at the inner faces of said removable sections and supported at the bottom, said metallic inserts having contact points extending inwardly toward each other to pierce the cable and horizontal binding posts at diametrically opposite sides of the head for connection with the primary windings of the coil.

3. A coil head for induction or ignition coils comprising a body of insulating material having outwardly projecting bosses, terminals in said bosses constituting primary connections and a socket at the top with a secondary connection leading from the bottom of the socket, said head having separable sections forming part of the body and conforming to the exterior contour thereof, means at the bottom of the socket connected to the secondary connection to pierce the end of a high tension cable inserted in the socket, means carried by said separable sections and electrically connected to the secondary connection to pierce the cable laterally for electrical connection with the conductor thereof and displaceable from the cable to permit removal of the latter and means to hold the separable sections in assembled relation to the body.

4. A coil head for induction or ignition coils comprising an upwardly tapered body of insulating material, primary conductors extending outwardly through bosses at opposite sides of the body and having binding terminals, said body having a high tension cable socket centrally at the top, oppositely related removable insulating sections mounted in recesses in the body and held from displacement at their lower ends by interlocking engagement with the body, means encircling the upper end of the body and sections to hold the latter against the cable, needles projecting in from said sections to engage the conductor of the cable through the cover thereof and a contact plate at the bottom of the socket in electrical connection with said needles and having a needle extending upwardly into the conductor of the cable and connected with a secondary conductor leading from the plate.

5. A coil head of the class described including an insulated body having a top bore and spaced bosses, terminals in said bosses for connection with the primary windings of an ignition or induction coil, said head having spaced recesses, removable sections held in said recesses against outward displacement, an upwardly extending pin provided at the bottom of the top bore having a conductor connected with the secondary winding of the coil, tapered pins anchored in said removable sections and extending inwardly into said top bore to pierce the insulated covering of a high tension cable for electrical connection with the conductor thereof and electrically connected with the first pin and the secondary conductor and means coacting with the body to retain said removable sections in position.

6. A coil head of the class described having diametrically opposite recesses, removable sections seated in said recesses and held from displacement, the head and removable sections adapted to be jointly held in assembled relation and forming a vertical bore at the top, a sec-

ondary contact at the bottom of the bore, inserts at the inner faces of the removable sections, said inserts having contact points and being held in the removable sections and electrically connected to the secondary contact to pierce the cable for connection with the conductor thereof and binding posts at opposite sides of the head for connection with the primary windings of the coil.

7. A coil head for induction or ignition coils comprising a substantially conical head member of insulating material having a high tension cable socket centrally at the top, a center secondary conductor and bosses horizontally positioned at diametrically opposite sides, primary conductors with terminals extending outwardly through and from said bosses and means including removable sections of the insulating material of the head member and constituting a part thereof for clamping a high tension cable in said socket in electrical connection with the secondary conductor, said clamping means including needles carried by said removable sections and adapted to extend into and pierce said cable for connection with conductor wires therein.

8. A coil head for induction or ignition coils including an insulated body having diametrically opposite lugs with central bores horizontally positioned, terminals mounted therein, removable insulating sections set in recesses in the head and forming a socket for receiving a high tension cable in conjunction with said body, means carried by said sections adapted to pierce the cable and engage the conductors thereof for anchoring the cable in the socket and a needle at the bottom of the socket for connection with a conductor and adapted to pierce the conductor of the cable at the lower end of the latter.

9. An ignition coil head comprising a body having an insulation socket provided with a bottom contact plate, a pointed pin carried thereby and projecting upwardly into the socket axially to penetrate the end of an insulated high tension cable and having connection with a secondary conductor, one or more removable insulation sections seated in recesses in the body and forming a part thereof, the removable sections having metallic inserts anchored therein and engaging the plate, pointed pins carried by the inserts and projecting inwardly to pierce the cable horizontally and means engaging the body and sections to hold the latter in assembled relation.

DONALD A. THOMPSON.