Feb. 22, 1949. F. WOOD 2,462,822

VARIABLE INDUCTANCE

Filed April 19, 1946

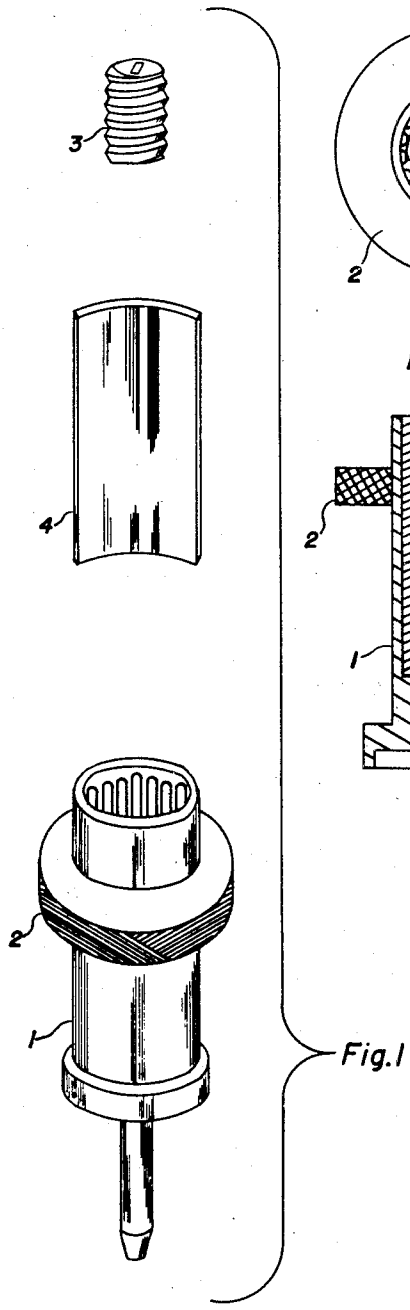


Fig. 1

Fig. 2

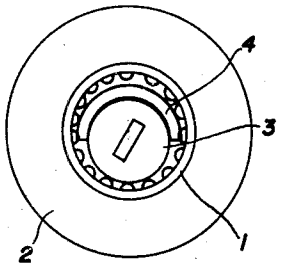


Fig. 3

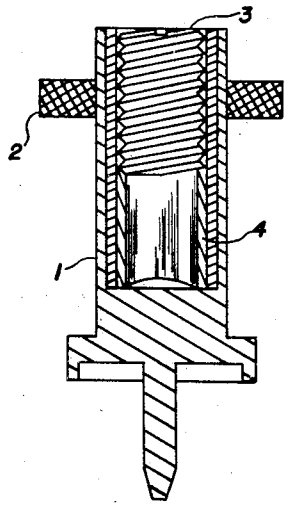


Fig. 4

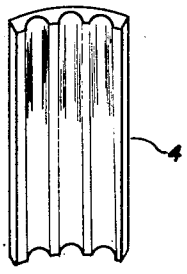


Fig. 5



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VARIABLE INDUCTANCE

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Application April 19, 1946, Serial No. 663,279

1 Claim. (Cl. 171—242)

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The present invention pertains in general to variable inductances and in particular to inductances arranged to be adjusted through variation of the position of a movable core member associated therewith.

Variable inductances have to a considerable degree replaced variable condensers in present day radio receivers due to the increased stability, compactness and economy attendant with their use. In order to obtain the highest possible "Q" in such inductances the coil form on which they are wound must be made of low loss material. The coil form must also be non-hygroscopic and must not be subject to deformation with temperature or time, if the inductance of the coil wound thereon is to remain constant. As the volume of the coil form included in the magnetic field of the inductance affects the total losses in the inductance, a thin coil form is desirable. These considerations are readily met by employing coil forms of extruded or molded phenolic resin. In order to vary the inductance of such coils, a movable core member is oftentimes employed. While a coil form of phenolic resin might possibly be threaded in order to receive a threaded core member, this practice is undesirable due to the poor machinability of such materials and also the fact that a much thicker coil form would be required to withstand such machining. In the prior art such movable core members have been fitted with threaded rods which extend through a threaded hole in a closed end of the coil form. The latter practice imposes limitations on the mounting arrangements and necessitates the use of lock nuts to prevent undesired movement of the core members.

It is accordingly an object of the present invention to provide an improved variable inductance which is simple and economical to construct, which eliminates the need for locking means to prevent undesired movement of the movable core member, which enables the core member to be adjusted from an open end of the coil form, and which eliminates the need for threaded rods or the like extending from the core member.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claim. The present invention itself, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawing in which:

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Figure 1 is an exploded view of a variable inductance constructed in accordance with the invention,

Figure 2 is a top assembly view of the variable inductance disclosed in Figure 1,

Figure 3 is an elevational view taken on section line 3—3 in Figure 2,

Figure 4 is a perspective view to an enlarged scale of a modification of a portion of the assembly disclosed in Figure 1, and

Figure 5 is a cross-sectional view of the modification shown in Figure 4.

The embodiment of the invention illustrated in Figure 1 comprises a molded phenolic coil form 1 having an inductance coil 2 wound thereon, a threaded core member 3, and an insert 4 which is cemented within the coil form and in which threads are cut when the core member 3 is driven into the coil form and insert.

The insert 4 is preferably made in the form of a tape with an adhesive coating on one side thereof. The tape may be made of any suitable plastic resin, or plastic impregnated material, of a hardness such that threads may readily be cut therein by the core member 3. One example of a suitable plastic resin is that known to the trade as "Styraloy," which is a styrene monomer. A suitable length of such tape is cut from a continuous strip or roll thereof and is inserted into the coil form 1 and adhesively secured to the inner wall thereof with the aid of a suitable expansion tool.

When the core member 3 is driven into the coil form and insert the threads of the core member cut corresponding threads in the innermost surface of the insert whereby the core member 3 may be adjusted readily. The insert is also somewhat compressed thereby firmly holding the core member 3 so as to prevent undesired movement thereof. The core member 3 may be machined of brass or similar material, or may be molded from powdered iron and a suitable binder.

If desired, the coil form 1 may have longitudinal ribs, of a groove, molded therein to prevent movement of insert 4 relative to the coil form. In such case it is unnecessary to cement the insert to the coil form.

The modified form of tape insert 4 disclosed in Figures 4 and 5 is preferably extruded of a suitable plastic resin, such as "Styraloy." As may best be seen in Figure 5, the tape is formed in an arc corresponding in radius to the inner radius of the coil form. The convex side of the tape may be coated with an adhesive if desired. The concave side of the tape has longitudinally ex-

tending corrugations therein which enable threads to be cut in the insert by the core member 3 with greater ease than for a plain tape.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects, and, therefore, the aim in the appended claim is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

I claim:

A variable inductance assembly, comprising, a tubular coil form having a plurality of longitudinal ribs formed on the internal surface of said form, a winding wound about the periphery of said coil form, a threaded core member movably positioned within said coil form to adjust the magnitude of the inductance of said winding, a resilient plastic-like tubular shaped insert between said core member and the inner surface of said form and having longitudinally extending corrugations on the internal surface of said insert, said insert being adapted to have threads formed on the internal surface thereof when said core member is driven into said coil form, and said resilient insert exerting a pressure against said ribs upon introduction of said core member sufficient to prevent movement of said insert with respect to said coil form.

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