Jan. 17, 1956 L. V. MIFFLIN 2,731,608

INDUCTANCE CORRECTOR

Filed Feb. 29, 1952

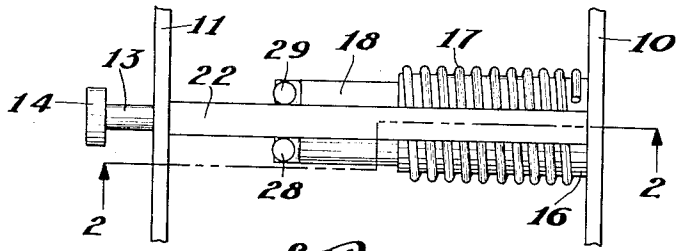


Fig 1

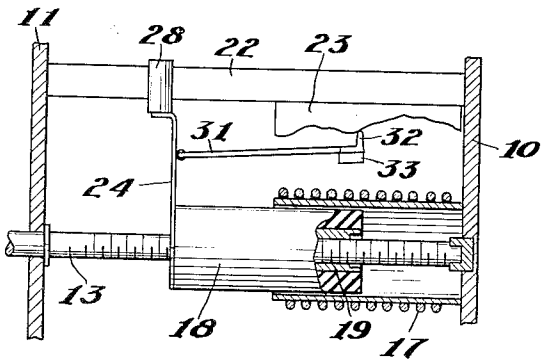


Fig 2

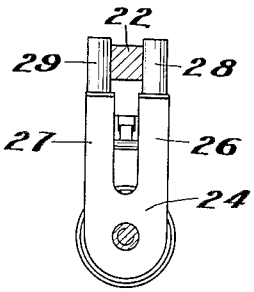


Fig 3

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United States Patent Office 2,731,608
Patented Jan. 17, 1956

2,731,608

INDUCTANCE CORRECTOR

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Application February 29, 1952, Serial No. 274,211
4 Claims. (Cl. 336—130)

This invention relates in general to a variable inductance means and in particular to an apparatus which can automatically be adjusted to conform to a desired tuning characteristic.

It is oftentimes necessary to obtain a variable inductance which has a shaft versus tuning characteristic that is controllable. In a core tuned inductor it is normally impractical to obtain the desired tuning characteristic by winding the coil with a variable pitch or by cutting a variable pitch into the lead screw which moves the core.

It is an object of this invention to provide an inductance adjusting means so that the tuning characteristic of a slug tuned coil may be controlled in the desired manner.

Another object of this invention is to provide a variable inductance wherein a mass of core material is mounted on a pivoted lever arm adjacent the inductance coil and rides on a cam surface which moves it relative to the coil to attain the desired inductance characteristic.

Further objects, features and advantages of this invention will become apparent from the following description and claims when read in view of the drawings, in which:

Figure 1 is a top view of the variable inductance means of this invention.

Figure 2 is a partial section side view taken on line 2—2 of Figure 1 and,

Figure 3 is a detailed view illustrating the cam follower mechanism.

Figure 1 illustrates a pair of end plates **10** and **11** which rotatably support a tuning shaft **13**. The tuning shaft has a tuning knob **14** attached to one end thereof. A hollow coil form **16** is attached to the plate **10** and has a winding **17** formed thereabout.

An inductance core **18** has an inner threaded portion **19** which is threadedly mounted on tuning shaft **13**. As best shown in Figure 2, core **18** has an outer portion formed of a suitable magnetic material, as for example, pressed iron. The inductance of coil **17** is varied as the core **18** is moved longitudinally therethrough.

The shaft rotation versus core travel characteristic of the apparatus thus far described might not be the desired characteristic. So as to adjust this characteristic a guide member **22** is mounted between the plates **10** and **11** and has attached thereto a cam surface **23**. The core **18** has a bifurcated portion **24** attached to it and each of the legs **26** and **27** has a roller **28** and **29**, respectively, attached thereto and engageable with the guide **22** on opposite sides thereof.

A lever arm **31** is attached to the member **24** and is spring loaded so as to always pivot away from the core **18**. The end **32** of the lever arm **31** forms a cam engaging portion. Attached to the rear of the cam engaging portion **31** is a mass **33** of corrector core material which might be, for example, pressed powdered iron. The movement of the mass **33** relative to the coil **17** varies the external reluctance path and consequently, the inductance.

The cam **23** is formed so that the distance between the mass **33** and the coil **17** is such as to attain the desired correction.

Thus, a coil and slug may have its characteristic adjusted merely by varying the shape of the cam **23**. This allows coils and slugs to be mass produced and individually corrected or changed to a desired characteristic merely by cutting cam **23**.

It is seen that this invention provides a simple and inexpensive manner for controlling the inductance of a slug tuned coil.

Although this invention has been described with respect to particular embodiments thereof, it is not to be so limited as changes and modifications may be made therein which are within the full intended scope of the invention as defined by the appended claims.

What is claimed is:

1. Apparatus for controlling the tuning characteristic of a slug-tuned coil comprising, a pair of end plates, guide means connecting said end plates, a tuning shaft rotatably supported between said end plates, a hollow coil form mounted to one of said end plates and concentric about said tuning shaft, a slug threadedly received on the portion of said tuning shaft between said end plates, a bifurcated portion attached to one end of said tuning slug and engageable with said guide, a cam surface attached to said guide, a lever arm attached to said bifurcated member and engaging said cam surface, and a mass of core material mounted on said lever arm and supported adjacent to and external of said coil.

2. Means for controlling the tuning characteristic of a slug-tuned coil comprising, a pair of end plates, a hollow coil form mounted to one of said end plates, a coil formed about said coil form, a tuning shaft rotatably supported between said end plates and passing through said coil form, a tuning slug threadedly received on said tuning shaft, a guide member mounted between said end plates, a bifurcated portion attached to said slug and engageable with either side of said guide, a lever arm attached to said bifurcated portion, a cam surface attached to said guide and engageable with the free end of said lever arm, and a mass of core material mounted to said lever arm and supported adjacent to and external of said coil.

3. Apparatus for varying the inductance of a coil comprising, a base plate, said coil mounted to said base plate, a tuning shaft rotatably supported in said base plate, a powdered iron core slug threadedly mounted on said tuning shaft and receivable within said coil, a guide extending from said base plate, a bifurcated portion attached to one end of said slug and engageable with said guide, a cam portion mounted to said guide, a lever arm attached to said bifurcated portion and engageable with said cam surface, and a mass of core material mounted adjacent the end of said lever arm so as to move it longitudinally and transversely of said coil.

4. A variable inductance comprising a coil, a tuning shaft extending axially of said coil, a main tuning slug in threaded engagement with said shaft and movable axially within said coil by rotation of said shaft, a corrector slug adjacent and exterior of said coil, a cam surface extending axially of said coil, a cam follower movable laterally of said coil engaging said cam surface and supporting said corrector slug, means for producing relative motion in a direction axially of said coil between said cam surface and said cam follower to displace said corrector slug laterally of said coil, said means being drivingly connected to said shaft whereby the position of said corrector slug is a function of the shaft rotation.

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