May 27, 1930. G. J. ELTZ, JR 1,759,841

MEANS FOR ADJUSTING ELECTRICAL APPARATUS

Filed March 1, 1928

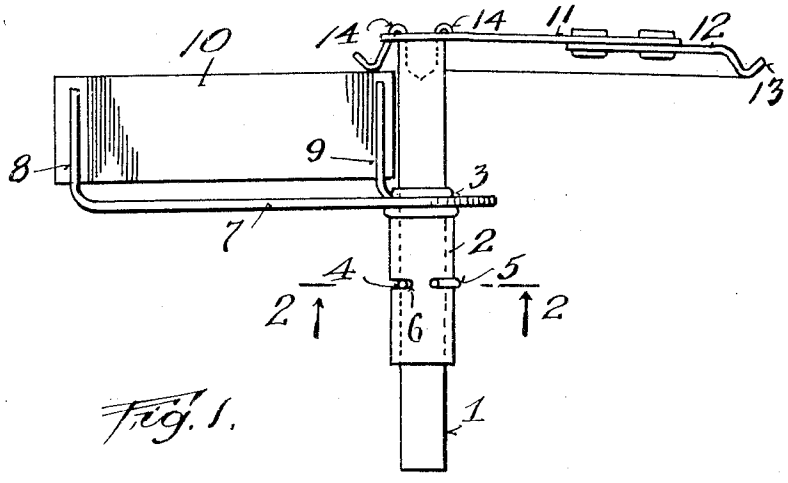


Fig. 1.

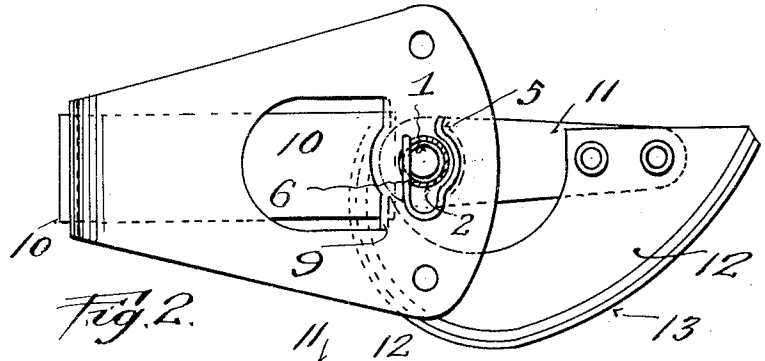


Fig. 2.

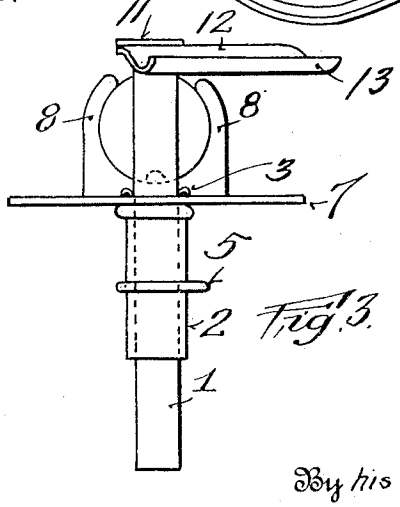


Fig. 3.

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UNITED STATES PATENT OFFICE

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MEANS FOR ADJUSTING ELECTRICAL APPARATUS

Application filed March 1, 1928. Serial No. 258,248.

This invention relates in general to electrical apparatus and particularly to means for controlling inductance, resistance and the like.

One of the objects of this invention is the provision of a novel form of support for inductances and the like.

A further object of this invention is the provision of a unitary structure for supporting an inductance and means for varying the amount of inductance of any circuit connected thereto.

A still further object of this invention is the provision of a novel and simple method of rotatably supporting a shaft and at the same time preventing axial movement thereof.

A still further object of this invention is the provision of an inductance coil, a contact arm cooperating therewith, and means for rotating the contact arm, said contact arm being adapted to vary the amount of inductance in a circuit connected to the coil at other than a constant rate when the means for rotating the arm is rotated at a uniform rate.

A still further object of this invention is the provision of the combination of an inductance coil with a slider which contacts longitudinally with respect to the length of the coil to cause the inductance thereof to vary logarithmically.

These and other objects as will appear from the following disclosure are secured by means of this invention.

This invention resides substantially in the combination, construction, arrangement, and relative location of parts all as will more fully appear hereinafter.

Referring to the drawings—

Figure 1 is a top plan view of the device;

Fig. 2 is a side elevational view of the arrangement showing a cross sectional view of the shaft and bearing on line 2—2 of Fig. 1; and

Fig. 3 is an end elevational view of the device.

In all forms of electrical circuits, such as for instant radio circuits, it has been usual to vary the inductance or resistance of the various circuits at a uniform rate and simultaneously with a uniform movement of the adjusting means whether it be moving linearly or in a curved path. Some circuits require, however, a variation of the electrical constants thereof at a rate other than linear and it is the purpose of this invention to provide means by which the values of the constants may be varied at, for instance, a uniformly accelerating rate.

Referring to the drawings for a specific embodiment of the device employing the principles of this invention there is shown at 1 a rotatable shaft supported in a suitable bearing member 2. The shaft 1 is provided with a shoulder 3 against which a suitable support 7 is held by means of the bearing member 2. As clearly shown in Fig. 1 the bearing member 2 is provided with a slot 4 in alignment with an annular slot 6 in the shaft 1. A spring wire element 5 is provided with a flat side, as appears from Fig. 2, which lies in the slots 4 and 6 and has an arcuate portion which overlies the member 2 as is clearly shown in this figure. As will be apparent then the shaft 1 may rotate in the bearing member 2 but is prevented from moving longitudinally with respect thereto by reason of the spring member 5 lying in the annular slot 6 of the shaft 1. The end of the support 7 is formed at right angles thereto and is made U-shaped to provide the two fingers 8 which may be forced around the inductance 10 to support it at one end. A tab 9 is struck up from the body of the support 7 and is constructed to provide fingers which encircle the coil 10 similar to fingers 8. The end of the shaft 1 has secured thereto by means of the beaded over ends 14 a lever 11 on which is riveted the contact or slider member 12 which is provided with a beaded edge 13. The beaded edge 13 contacts with the wire turns on the coil 10 and the outline of the contact member 12 may be of any desired shape, as for instance heart shaped as shown in the figures. It will be apparent then that as the shaft 1 is rotated at a uniform angular velocity the slider will contact with the various portions on the coil 10 at a different rate, as for instance with the

shape of the slider shown in a uniformly accelerating rate.

I wish it to be understood that the outline of the contact member 12 may be of any suitable form to provide the desired rate of variation of the inductance of the coil 10 so that for uniform velocity of rotation of the shaft 1 any desired rate of inductance variation may be secured. Furthermore, I wish to point out that although I have shown an inductance varied according to the principles of this invention it is apparent that they may be applied to resistances and capacities without departing from the spirit of the invention. I do not, therefore, wish to be limited to the exact disclosure given for purposes of illustration but rather to the principles of the invention as they have been defined in the appended claims.

What I seek to secure by United States Letters Patent is:

1. The combination with a support, of an inductance mounted thereon, a rotatable shaft on said support, and a contact member, attached to said shaft, said contact member having a heart shaped periphery arranged to contact with the inductance.

2. In a device of the type described, the combination with a support of an electrical unit mounted on said support, a shaft journaled in said support, means for rotatably securing the shaft to the support, and a contact plate secured to said shaft and so shaped as to contact with the electrical unit on a longitudinal straight line whereby on rotation of the shaft at a uniform velocity the contact member will vary the value of the electrical unit at a rate different from the rate of rotation of said shaft.

3. In a device of the type described, the combination with a support, an inductance coil, means formed on the support for securing the inductance coil thereto, a shaft journaled in said support, and a contact member secured to the shaft for rotation with it, said contact member having a heart shaped outline and arranged to contact with said inductance at its periphery so that the rate of movement of the contact member with respect to the inductance is different from the rate of movement of the shaft

4. In a device of the type described, the combination with a support having projections formed thereon, of an electrical unit secured to said projections, a shaft rotatably mounted in the support, a bearing member for the shaft, means for rotatably securing the shaft and bearing member together, and a slider secured to the shaft and in contact with the electrical unit, said slider being so shaped at the periphery that the periphery moves over the electrical unit at a rate different from that of the rate of rotation of the shaft.

5. In a device of the type described, a support, an electrical unit attached to said support, rotatable means journaled in said support, and a slider attached to said rotatable means and arranged to contact with said electrical unit and so shaped that the value of the electrical unit varies at a logarithmic rate upon rotation of said rotatable means at uniform angular velocity.

6. The combination of a support and a straight tubular wound inductance mounted thereon of a contact means of predetermined shape arranged for rotation, said means contacting with the wound inductance on a longitudinal straight line parallel to the axis of said inductance in a manner to vary its value at a changing rate while said contact means is rotated at a uniform velocity.

7. In a device of the type described, the combination with a support of an electrical unit mounted on said support, a shaft journaled in said support, means for rotatably securing the shaft to the support, and a contact plate secured to said shaft and adapted to contact with said electrical unit at various points on said plate, all of which points successively fall into one straight line upon rotation of the shaft, said contact member being so shaped as to vary the value of the electrical unit at a rate different from the rate of rotation of said shaft.

In testimony whereof I have hereunto set my hand on this 24th day of February, A. D. 1928.

GEORGE J. ELTZ, JR.