No. 809,235. PATENTED JAN. 2, 1906.

R. VARLEY.

INDUCTION COIL VIBRATOR.

APPLICATION FILED FEB. 25, 1905.

Fig. 1.

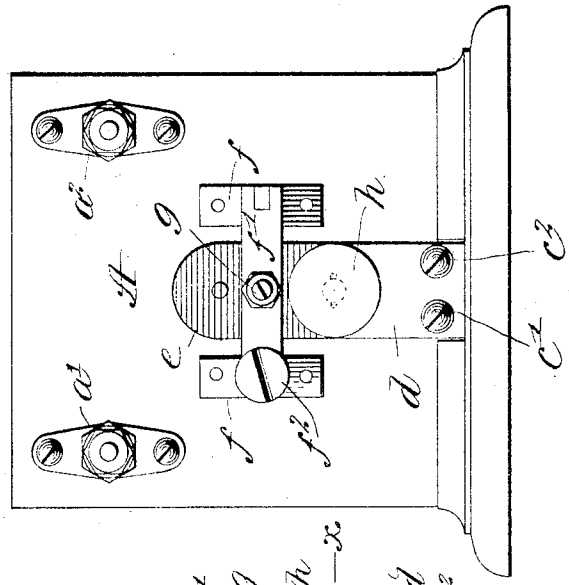


Fig. 2.

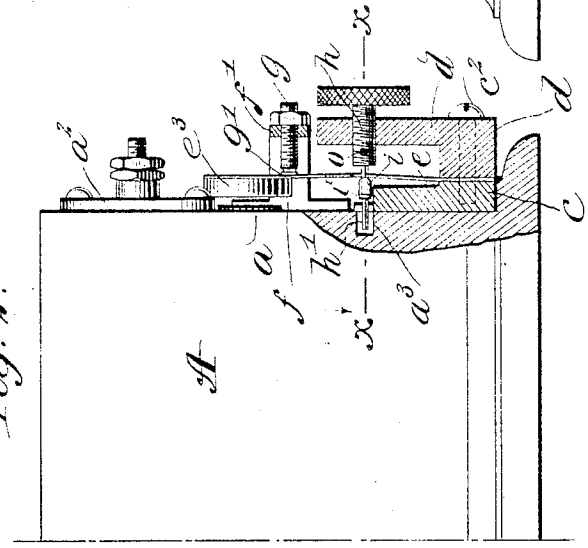


Fig. 3.

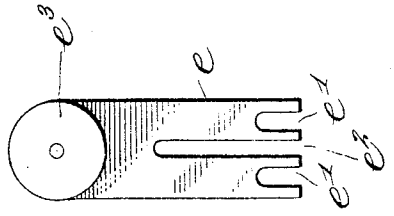
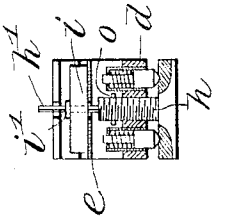


Fig. 4



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UNITED STATES PATENT OFFICE.

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INDUCTION-COIL VIBRATOR.

No. 809,235. Specification of Letters Patent. Patented Jan. 2, 1906.

Application filed February 25, 1905. Serial No. 247,215.

To all whom it may concern:

Be it known that I, RICHARD VARLEY, a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Induction-Coil Vibrators, of which the following is a full, clear, and exact description.

This invention relates to induction-coils, and has special reference to the vibratile circuit-controller sometimes combined with such coils for rapidly interrupting the primary circuit thereof.

The object of the invention is to provide a means for adjusting the vibrator which will permit of the parts being compactly assembled, which will permit of the vibrating tongue itself being quickly and easily removed and replaced without losing the adjustment of its tension, which affords uniform strain upon the spring-tongue, and in which the spring-tongue cannot be strained beyond its elastic limit by unintelligent manipulation.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of an induction-coil casing having the vibratory circuit-controller mounted thereon. Fig. 2 is a side elevation of the front end of the coil-casing with parts of the vibrator in section. Fig. 3 is a detail of the vibratile tongue, and Fig. 4 is a section on line $x\ x$ of Fig. 2.

A is the coil-casing, supposed to contain the usual primary and secondary windings and the magnetic core, one pole of the latter projecting through the front wall of the casing, as seen at a.

a' and a^2 are binding-posts for certain of the circuit connections.

To the front wall of the casing is attached a frame comprising the two parts c and d, the latter having a bracket extension d' and being secured to the former by two screws c' and c^2. These two parts c and d serve as a clamp to hold the fixed end of a vibratile spring tongue or plate e. For this purpose said tongue, which is of considerable width, is provided at its heel with two notches e' c', which straddle the screws c' c^2 when the tongue is inserted between the parts c d. By forcing the tongue inward until both screws are seated against the limits of the notches the tongue is automatically alined and requires no further positioning except its adjustment for tension. The tongue is provided with another and much deeper notch or slot e^2 for a purpose that will appear hereinafter. The tongue carries at its free end a block of soft iron e^3, which is normally presented to the pole a and serves as an armature therefor.

ff are two brackets, and f' a bridge for the support of the contact-screw g. The screw is provided with the usual non-corrodible tip normally engaging a contact g', carried by the tongue e. Bridge f' is hinged at one end to one of the brackets f, while its other end is removably secured to the other bracket by a thumb-screw f^2, by which means the bridge can be lifted to expose the tip of the screw for cleaning and for making more accessible the tongue e when necessary.

For the purpose of adjusting the tension of the tongue a screw h is mounted in the bracket d'. This screw terminates in a stem h', which passes through the inner end of slot e^2 in the tongue and then loosely through a hole in a cross-bar i, the latter being held at a fixed location upon the stem by a nut i'. Beyond the nut the stem has a bearing in a projection from the part c and, if necessary, enters a cavity a^3 in the casing. The cross-bar i is held in a transverse position with respect to the tongue by the end of the part c, against which it closely lies. Screw a has a left-hand thread, so that when rotated from left to right in the natural way the screw instead of working inward will work outward; but the tension of the tongue will be increased, as is the case when the screw is worked inward. Therefore, notwithstanding the fact that an outward movement of the screw accompanies the natural turning movement, the spring is nevertheless stiffened and inexperienced persons as well as others will not require to be specially instructed how to manipulate the adjustment. In rotating the screw the impression gained when it is turned from left to right is that the screw is working inward, and in this case the motion may therefore be continued so long that the spring will be strained

beyond its elastic limit and become permanently injured. To prevent this, a nut or other stop *o* is fixed upon the shank of the screw to limit the outward movement of the screw to correspond to the limit of the tongue's elasticity.

The ridge of the cross-bar bears across the entire width of the tongue, so that there will be no torsion of the tongue when the adjustment is made. The screw *h* is self-locking, as shown in Fig. 4, by means of spring-pins set into the bracket *d'* and engaging a circular row of sockets under the head of the screw. At each fractional movement of the screw the pins drop into two of the sockets and hold it until it is purposely rotated to a different position.

The advantages of the construction described are these: The spring-tongue can be removed by simply loosening slightly the screws c' c^2 and drawing the tongue upward and outward, the adjusting-screw and bracket being undisturbed. To replace a tongue, it is passed inward in the same way, the central long slot e^2 embracing the stem of the screw and the two slots e' e' passing around the screws c' c^2, the latter then being set up tight. This operation is performed without disturbing the tension-screw or removing bracket *d'*. In other vibrators wherein the tension of the vibratile element is increased by working the screw inward said element is usually a lever of the third class, wherein the screw bears upon the rearwardly-projecting end; but this requires a longer tongue, and consequently a more cumbersome device. In the construction described the parts are compactly assembled, are manipulated for adjustment in the usual way, and are readily taken apart and put together.

Having described my invention, I claim—

1. An induction-coil comprising a vibratile element fixed at one end and carrying an armature at the other, in combination with a tension-screw adapted to positively increase the tension of said element when working outward.

2. An induction-coil comprising a vibratile element fixed at one end and carrying an armature at the other, in combination with a tension-screw connected to said element to tension the same when moving outward.

3. An induction-coil comprising a vibratile element fixed at one end and carrying an armature at the other, in combination with a tension-screw having a left-hand thread and connected to positively engage the rear side of said element.

4. In a vibrator for induction-coils, the combination of a vibratile element, an adjusting-screw therefor and means for preventing excessively straining said element when the screw is worked in a direction to increase the tension thereof.

5. In a vibrator for induction-coils, the combination of a vibratile element, an adjusting-screw therefor and a stop limiting the outward movement of the screw.

6. In an induction-coil, a vibratory spring adapted to be drawn in one direction by the magnetic attraction of the coil, means for increasing the tension of the spring and means for preventing excessive increase of such tension.

7. In an induction-coil, a vibratory spring adapted to be drawn in one direction by the magnetic attraction of the coil, a screw for altering the tension of the spring and means for limiting the longitudinal movement of the screw.

8. In an induction-coil, a vibratory spring adapted to be drawn in one direction by the magnetic attraction of the coil, a screw adapted to give the spring an opposing tension and a stop on said screw limiting its ability to strain the spring.

9. A vibratile element for induction-coils comprising a flat spring having a notch in its fixed end and a screw passing through said notch and clamping the spring fast.

10. A vibratile element for induction-coils comprising a flat spring having a notch in its fixed end, a frame in two parts between which the fixed end of the spring is inserted and a screw passing through the two parts of the frame and the notch in the spring, for the purpose set forth.

11. The combination of the core of an induction-coil, a flat spring carrying an armature arranged in front of said core, said spring having at its fixed end two notches, and two clamping-screws passing through said notches and thereby positioning and clamping the spring.

12. In an induction-coil, a spring-plate, a screw passing transversely through the plate and independently mounted thereof and means whereby the plate is removable without removing the screw.

13. In an induction-coil, a spring-plate, a screw passing transversely through the plate and independently mounted thereof and adapted to regulate the tension of the spring and means whereby the plate is removable without removing the screw.

14. In an induction-coil, a spring-plate and an adjusting-screw mounted in front thereof and having an extension positively engaging its rear side.

15. In an induction-coil, a spring-plate having an opening and an adjusting-screw passing through said opening and carrying a cross-head engaging the rear side of the plate.

16. In an induction-coil, a vibratory spring

plate having a notch and an adjusting-screw for said plate straddled by said notch.

17. In an induction-coil, a frame provided with two clamping-screws and an adjusting-screw, in combination with a spring-plate having three notches adapted to straddle the three screws respectively.

In witness whereof I subscribe my signature in the presence of two witnesses.

RICHARD VARLEY.

Witnesses:
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