J. O. HEINZE, JR.

SPARK COIL.

APPLICATION FILED JUNE 3, 1908.

909,594. Patented Jan. 12, 1909.

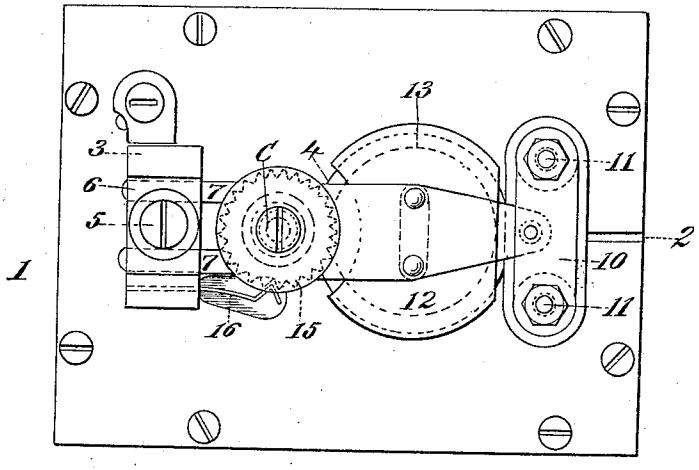


Fig. 1.

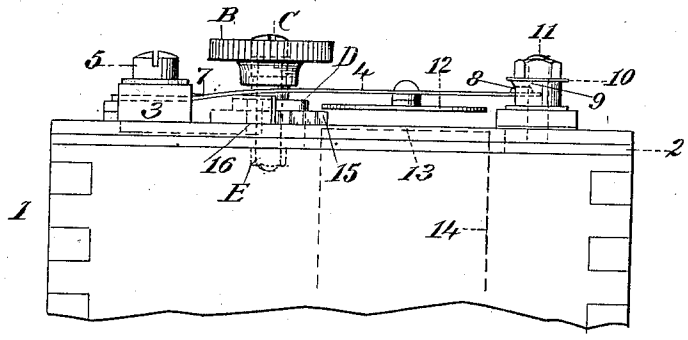


Fig. 2.

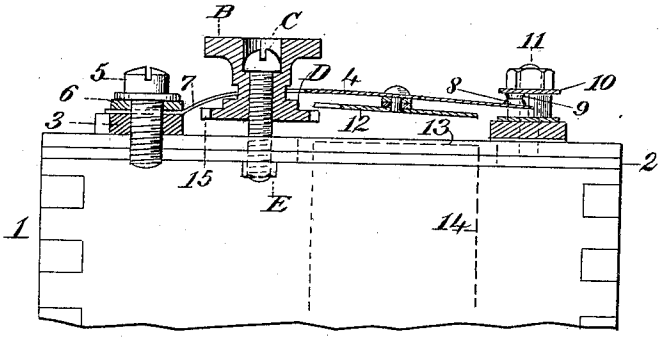


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN OTTO HEINZE, JR., OF LOWELL, MASSACHUSETTS.

SPARK-COIL.

No. 909,594. Specification of Letters Patent. Patented Jan. 12, 1909.

Application filed June 3, 1908. Serial No. 436,356.

To all whom it may concern:

Be it known that I, JOHN OTTO HEINZE, Jr., a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Spark-Coils, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in spark coils. Its principal object is to provide adjustable means whereby the amount of electrical current passing through the primary winding of an induction coil may be varied, but in no event can it exceed a predetermined amount.

Heretofore it has been common in circuit interrupters to provide a tension screw whereby the vibratory armature spring may be given various degrees of tension for the purpose of controlling the amount of electrical current flowing through the primary wire of the coil. Such tension screws and springs are disclosed, for example, in British Patent to Apps, No. 177, of 1867, and in United States Letters Patent No. 762,993, granted to C. H. Fischer, June 21, 1904.

The objection to such construction is that after the armature spring has been given the desired tension to limit the amount of current flowing through the primary wire, it is possible, by turning the screw, to increase the tension of the spring, and thus waste so much of the current as is in excess of what is required.

Now it is the object of my invention to do away with this possibility, by so designing a tension device that it cannot increase the tension on the armature spring beyond the tension, at which a predetermined amount of current will flow through the vibratory armature spring and its contact, which form part of the battery circuit.

In the drawings illustrating the principle of my invention and the best mode now known to me of embodying that principle, Figure 1 is a plan view; Fig. 2 is an elevation; while Fig. 3 is a vertical section.

A wooden case 1 has mounted therein the usual core, primary and secondary windings, condenser and proper electrical connections. Upon the top of the case, but insulated therefrom by a sheet of hard rubber 2, are the elements of the vibratory mechanism.

A metal seat 3, channeled for a bifurcated armature spring 4, is secured to the top of the case by a binding screw 5, which passes through a plate 6 fitting the channel in the seat 3. To removably secure the armature spring 4 in its seat, the bifurcated members 7, 7, of the spring are slipped in between the seat 3 and plate 6, so as to straddle the binding screw, which, when screwed down, binds the armature spring in normal position.

Near the free end of the armature spring is the usual platinum tip 8, which, in turn, normally engages a similar tip 9 on a metallic bridge 10, mounted upon and secured to two posts 11, and secured by nuts; while an armature piece 12 is fixed to the spring 4, and is adjacent to the pole 13 of the core 14 of the magnet.

Between the armature 12 and the spring seat 4 is located the tension device embodying the principle of my invention. A tension block, having a knurled head B, is in screw thread engagement with a headed lock screw C, which is screwed through the top of the case 1, the bifurcated spring straddling the tension block and being engaged on its under side by a shoulder D surrounding the shank of the tension block. This tension block may be provided with teeth 15 which are engaged by a spring 16 to secure the block in its various adjustments on the lock screw.

It will be plain that by turning the tension block from right to left, or vice versa, the tension of the armature spring can be decreased or increased. But it will be equally obvious that so far the principle of operation disclosed, is old.

To fix the relations of the parts so they may embody the principle of my invention, the tension block is turned up the lock screw until it engages the head of the screw; an electrical current from a suitable source is passed through the primary wire of the coil, and, by suitable apparatus, the amount of current is measured. If the tension of the armature spring is too much, so that there is too much current, the lock screw with the tension block is lowered, *i. e.* screwed down farther through the top of the case, until the measuring device indicates that the proper amount of current is passing through the coil and that the tension is right. The lock screw is then rigidly bound in place by a lock nut E which is on the end portion of the lock screw extending through the top of

the case, and which engages the under surface of the top.

If the tension of the spring is not enough, then instead of screwing down the lock screw, it, with the tension block, is screwed out until the proper tension and current are obtained; at which time the lock nut is turned on the freed end of the lock screw until it, the lock screw, is rigidly fixed in relation to the case. It will be evident that as the lock screw C is now rigidly locked to the case, that the tension of the armature spring 4 may, by turning the tension block, be varied from that of normal position, shown in Fig. 2, to that shown in Fig. 3, but that it can never exceed that shown in Fig. 3, at which the predetermined amount of current flows, for the tension block which moves the spring, engages the head of the tension screw C and hence stops.

As the relative positions of the tension block, the lock screw and case are determined at the time the coil is manufactured and assembled, and cannot be changed without dismembering the parts and removing the top of the case, there is no likelihood that even in the hands of an ignorant user, the coil will ever consume more current than was intended by the maker of the coil.

Desiring to protect my invention in the broadest manner legally possible, what I claim is:—

1. In a spark coil, an armature spring; means whereby the armature spring may be moved and held under various operative tensions to control the amount of electrical current passing through the primary wire of said coil; and means to limit the extreme movement of the armature spring at an operative tension, in order to limit the consumption of electrical current by said coil, to a predetermined maximum amount.

2. In a spark coil, an armature spring having an opening therethrough; a screw, fixed in relation to said coil, passing through said opening; a tension block mounted on said screw, and operatively connected with said spring to move and hold said spring under various operative tensions; and a head on said screw, to limit the extreme movement of said block, and said spring at an operative tension, in order to limit to a predetermined maximum amount, the consumption of electrical current by said coil.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN OTTO HEINZE, Jr.

Witnesses:

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E. F. Uniac.