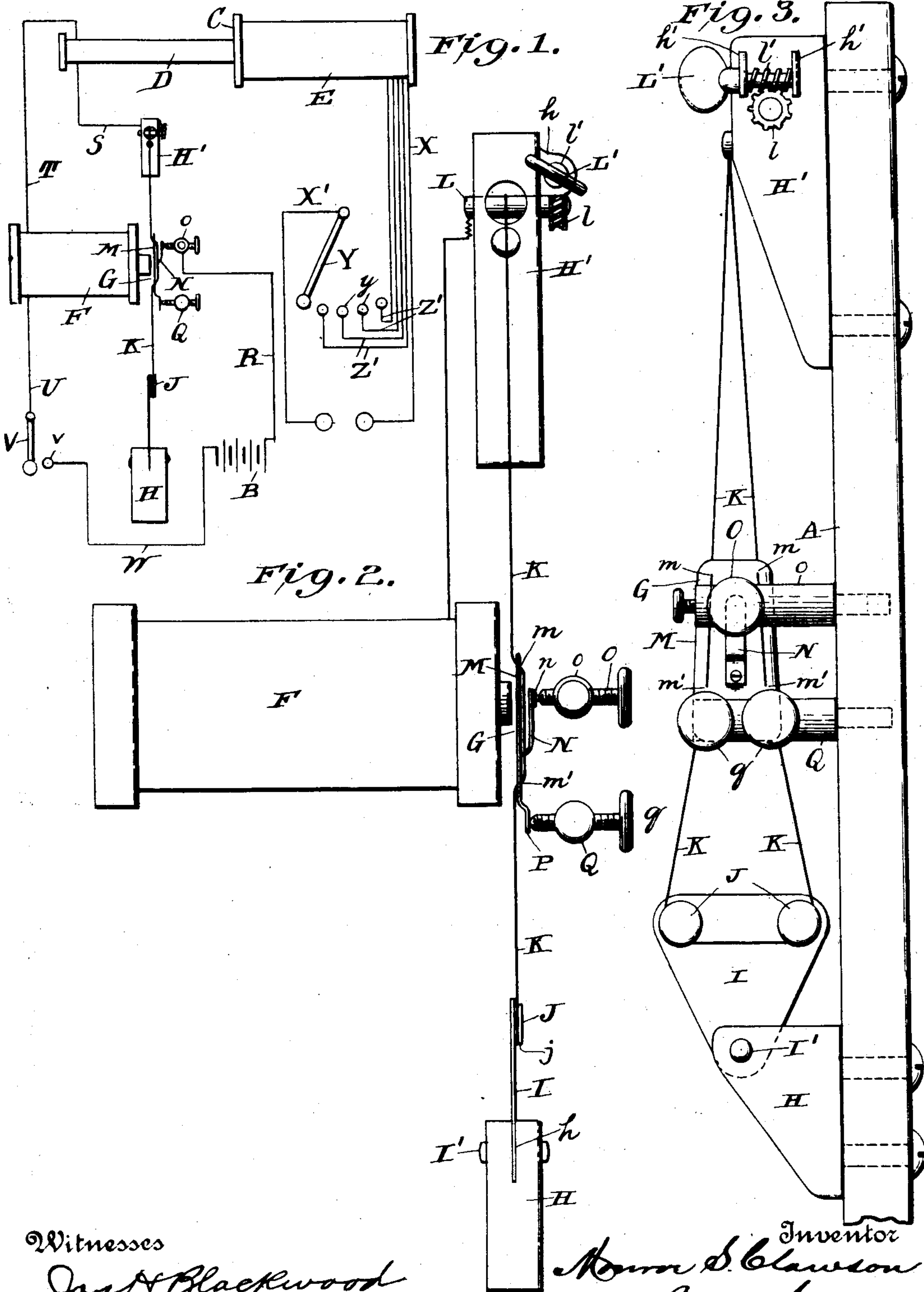


M. S. CLAWSON.  
INDUCTION COIL.

(Application filed Dec. 24, 1901.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

MONROE SCHUYLER CLAWSON, OF NEW YORK, N. Y.

## INDUCTION-COIL.

SPECIFICATION forming part of Letters Patent No. 711,695, dated October 21, 1902.

Application filed December 24, 1901. Serial No. 87,111. (No model.)

*To all whom it may concern:*

Be it known that I, MONROE SCHUYLER CLAWSON, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Induction-Coils, of which the following is a specification.

My invention relates to induction-coils used in therapeutic electrical apparatuses, and especially to the circuit-interrupter employed in these devices, and has for its object to provide a suspended armature capable of adjustment to a relatively high or low number of vibrations per second, as may be desired by the operator. I attain these advantages by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of an induction-coil with my invention attached thereto; Fig. 2, an enlarged plan view of my form of circuit-interrupter, and Fig. 3 a side view in elevation of same.

Referring to the drawings, in which similar reference characters indicate corresponding parts throughout the several views, A indicates the base of my device, and B a galvanic battery, of any suitable make or construction.

C is the induction-coil, having the sliding primary coil D and the stationary secondary coil E.

F is the magnet-coil for operating the interrupter G.

The interrupter G is secured to the base A by means of the blocks H H', screwed thereto, and consists of a triangular-shaped plate I, of rigid material, mounted in a slot h in the block H by means of a pin or screw I' passing through holes in said block and plate.

J represents circular lugs fixed to one side of the plate I, which are grooved, as shown at j, to retain a strand of wire K passed around said lugs J. The two ends after leaving said lugs converge and pass over a drum L, pivoted in the block H', which is actuated by means of the pinion l meshing with the worm l' on the finger-bolt L', mounted on the block H' by means of brackets h'.

M represents a soft metallic plate suspended on the wires K through the holes m m' in said plate, the wires passing upwardly through the holes m and downwardly through holes m'.

Secured to the plate M is a vibrator or contact-spring N, made of any desired spring metal and provided with the platinum plate n, to contact with the end of the screw O, mounted in the contact-post o, which is in turn secured to the base A by any suitable means.

P represents projections on the plate M, which may be made by pressing said plate, or, if desired, a tongue may be formed by a slit in the plate and then bent to form the projection.

Q represents a post secured to the base A, and q screws mounted therein and adapted to bear against the projections P. The purpose of the screws bearing against the contact-plate is to keep the surface of the plate at right angles to the core in the magnet-coil F and also to increase the number of vibrations, if desired, of said plate by causing the screws to bear hard against the plate, thus causing it to swing from said screws instead of from the lugs J. By this construction of interrupter it will be readily seen that its vibration may be regulated by means of the tension device, comprising the drum L, the pinion l, the finger-bolt L', and the worm l', which corresponds in construction to a guitar-key, which will tighten or loosen the wires K, as desired, or if a higher number of vibrations is desired it may be secured by means of the screws q bearing against the projections P.

R represents a wire connecting the positive pole of the battery B with the contact-post o; S, the wire connecting the drum L with the primary coil D in the induction-coil C; T, the wire connecting said primary coil D with the magnet-coil F; U, the wire connecting the magnet-coil F with a switch-arm V for opening and closing the battery-circuit, and W the wire connecting the switch-peg v with the negative pole of the battery B. This constitutes the primary circuit. The secondary circuit is represented by the wire X, connected to the secondary coil of the induction-coil, the wire X', connected to the switch-arm Y, and the wire Z, connected to the switch-peg y.

The operation is as follows: The circuit being closed, the current passes through the wire R, contact-post o, screw O, platinum plate n, vibrator N, plate M, wires K, drum L, wire S, primary coil D, wire T and magnet-



coil F, where it magnetizes the core thereof, which attracts the plate M and draws the vibrator N and platinum plate *n*, thus opening the circuit, demagnetizing the core, and  
 5 allowing the plate and vibrator to return to their normal positions. The current after leaving the magnet-coil F returns through the wire U, arm V, post *v*, and wire W back to the battery. It will be understood that  
 10 the passage of the current through the primary coil of the induction-coil will cause an induced current in the secondary coil, the intensity thereof being governed by the distance the primary coil is pushed into the sec-  
 15 ondary coil, the number of vibrations of the current being governed by the tension on the wires K, regulated by the drum L and worm-bolt L', and the screws *q*.

Having thus described my invention, what  
 20 I claim is—

1. In an apparatus for causing induced currents of electricity, an armature-plate suspended on wires, means to vary the length of  
 25 said wires, and screws bearing against said plate, as and for the purpose described.
2. In an apparatus for causing induced currents of electricity, an armature-plate suspended on wires, a spring-vibrator fixed to  
 30 said plate, a revoluble drum to receive one end of said wires, means to rotate said drum, and screws bearing against said plate, as and for the purpose described.
3. In an apparatus for causing induced currents of electricity, a rigid plate suitably  
 35 mounted, wires connecting said plate with a revoluble drum, a contact-plate mounted on said wires, and means to vary the tension in said wires, substantially as shown and described.
- 40 4. In an apparatus for causing induced currents of electricity, a rigid plate suitably mounted, wires connecting said plate with a revoluble drum, a contact-plate mounted on  
 45 said wires, a spring-vibrator fixed to said contact-plate, means to rotate said drum, and screws bearing against said contact-plate, as and for the purpose described.

5. In combination with a magnet-coil, a contact-plate suspended on wires, and means for changing the tension of said wires, sub- 50  
 stantially as shown and described.

6. In combination with a magnet-coil, a contact-plate suspended on wires, a drum to receive one end of said wires, and means for rotating said drum, substantially as shown 55  
 and described.

7. In combination with a magnet-coil, a contact-plate suspended on wires, a spring-vibrator fixed to said contact-plate adapted to bear against a screw connected with the 60  
 positive pole of a battery, and means for changing the tension of said wires, substantially as shown and described.

8. In combination with a magnet-coil, a contact-plate suspended on wires, a spring- 65  
 vibrator fixed to said contact-plate, a drum to receive one end of said wires, and means for rotating said drum, substantially as shown and described.

9. In combination with a magnet-coil a 70  
 contact-plate suspended on wires, a revoluble drum to receive one end of said wires, a pinion fixed to one end of said drum, and a worm-shaft meshing with said pinion, substantially as shown and described. 75

10. In an apparatus for causing induced currents of electricity, the combination with a battery, an induction-coil and a magnet-coil, of an armature consisting of a rigid plate suitably mounted, lugs on said plate, a drum 80  
 revolubly mounted, a pinion on said drum, a worm-shaft meshing with said pinion, a wire passing around the lugs on said rigid plate and over said drum, a contact-plate suspended on said wire, a vibrator-spring fixed to said 85  
 contact-plate, lugs on said contact-plate, and screws bearing against said lugs, as and for the purpose described.

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

MONROE SCHUYLER CLAWSON.

Witnesses:

WM. A. WINTER,  
 W. J. WIGLEHNER.