

No. 717,203.

Patented Dec. 30, 1902.

O. H. HUEBEL.  
INDUCTION COIL OR LIKE INSTRUMENT.

(Application filed Jan. 21, 1902.)

(No Model.)

Fig. 1.

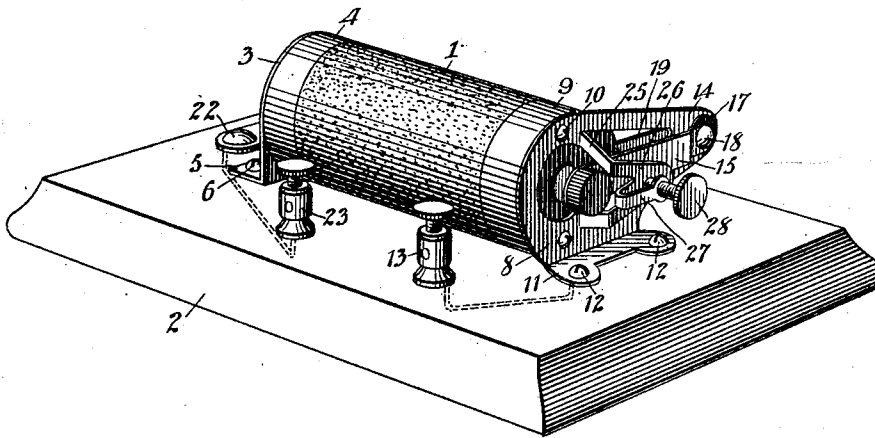


Fig. 2.

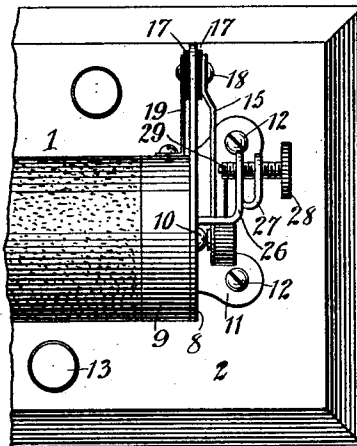


Fig. 4.

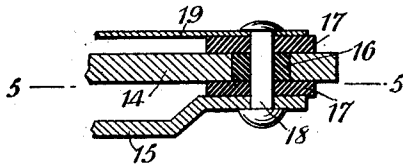


Fig. 5.

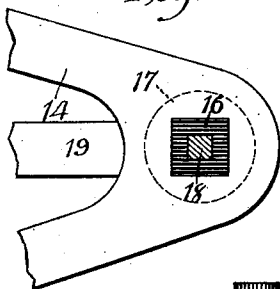
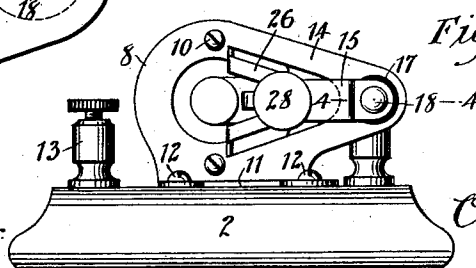


Fig. 3.



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## INDUCTION-COIL OR LIKE INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 717,203, dated December 30, 1902.

Application filed January 21, 1902. Serial No. 90,622. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO H. HUEBEL, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Induction-Coils or Like Instruments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to induction-coils and other electrical instruments having one or more helices and a magnetic core which actuate a vibrating armature or contact-breaking device arranged to cooperate with a contact-point to make and break the circuit through one or more of the helices; and the object of my invention is the provision of an improved device for supporting the vibrating contact-breaking element and the contact-point with which it cooperates.

In the drawings, Figure 1 is a perspective view of an induction-coil embodying my invention in a preferred form. Fig. 2 is a partial plan view. Fig. 3 is an end view. Fig. 4 is a sectional detail on the line 4 4, Fig. 3, on a larger scale, and Fig. 5 an elevation, partly in section, on the line 5 5, Fig. 4.

Similar reference characters are employed to designate corresponding parts in all the views.

Without intending to thereby limit my invention in matters of form and arrangement or its use in the specific form or character of instrument illustrated I will describe my invention as applied to an induction-coil.

The coil 1 is rigidly supported upon and secured to the base 2 at one end by the bracket 3, which is fastened by screws to the ring 4 on one end of the coil in the usual way and which is provided with feet 5, through which screws 6 pass into the base 2. The opposite end of the coil is supported by a plate 8, which is preferably formed of some good conducting metal and which is secured to the end ring 9 by screws 10. The lower side of the plate is provided with a flange 11, which is secured to the base 2 by screws 12, under one of which may be clamped the conducting-wire (indicated in dotted lines, Fig. 1) from the bind-

ing-post 13, which receives one of the battery-wires.

The plate 8 is extended at 14 beyond the side of the coil, and to such extended portion the fixed end of the vibrating contact breaker or interrupter 15 is rigidly secured. The interrupter 15 is completely insulated from the plate 8, and for the purpose of securing such insulation and also for the purpose of holding the interrupter rigidly in alinement the extended portion 14 of the plate is provided with a square or angular opening, Fig. 5, in which is fitted a block 16 of insulating material, having also a central squared or angular opening. A non-conducting washer 17 is placed on each side of the extended portion of the plate 8 over the block 16 to hold the block in place and to prevent the interrupter from contacting with the plate. The parts just described are all secured in place by the squared or angular conducting-rievet 18, which fits the opening in the insulating-block 16 and in the end of the interrupter.

The interrupter is electrically connected with one terminal of the primary coil by the conductor 19, one end of which is clamped under the end of the rivet 18 and the other end of which contacts with the terminal of said coil. The opposite terminal of the coil is connected in the usual manner, through the switch 22, with the binding-post 23, which receives the other battery-wire.

Carried by and rigidly secured to the plate 8 is the contact-screw support 25, which is formed with a double or front and back bearing 26 and 27 for the adjustable contact-screw 28, which is provided with a platinized contact-point 29. As shown in the drawings and as preferably constructed, the support 25 and the bearings 26 and 27 are integral with the plate 8, being formed therefrom by stamping and then bending into shape, the front bearing 26 being first bent outwardly at right angles to the plate 8 and then toward the extension 14 in a plane parallel with the plate. The back bearing 27 is formed by bending it outwardly at right angles and then into a plane parallel with the front bearing, so that they project over the interrupter and overlap each other. The bearings are tapped to receive the screw 28 and may have a slight

spring action or may be bent so that the threaded apertures through which the screw passes will be slightly out of alinement, so as to bind the threads of the contact-screw and prevent it from being rotated and thrown out of adjustment by the vibrations produced by the interrupter.

By supporting the bearings upon or forming them integrally with the plate, which carries the interrupter and is secured to the coil, the relative positions of these parts are always the same, which is a great advantage, not only in the assembling of the instrument, since no adjustment is then required beyond the mere turning of the adjusting-screw, but also in the subsequent operation of the instrument, since the rapid vibration of the interrupter will not loosen or disarrange the parts, as frequently happens when the contact-screw is mounted in an independent post secured directly to the base.

When formed integrally, as shown in the drawings, the parts may be made by simple automatic machinery, in which case exact duplication of the various parts can be obtained with the utmost economy of manufacture and a comparatively large saving in the cost of assembling—a very decided advantage in view of the extremely low margin of profit realized by manufacturers of this class of apparatus.

It is to be understood that I do not intend to limit my invention to a device in which the support for the interrupter is in the form herein illustrated, and I employ the term "plate" in referring to it simply for convenience of description without intending it as a limitation.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electrical instrument the combination with a magnetizing-helix and operating-circuit, of a plate, a contact-point supported thereby in electrical connection with said helix, a vibratory conductive interrupter secured to said plate and insulated therefrom, and an electrical connection between said interrupter and said helix.

2. In an electrical instrument the combination with a magnetizing-helix and its operating-circuit, of a resilient vibratory interrupter, a contact-point in electrical connection with said helix, a plate by which said contact-point is carried and to which one end of the interrupter is rigidly secured to maintain the interrupter in operative position and an electrical connection between the fixed end of the interrupter and said helix.

3. The combination with a vibratory interrupter, a screw-carried contact-point, a plate to which the interrupter is secured and by which it is supported in operative position and a double bearing for the contact-screw carried by said plate.

4. In an electrical instrument the combination with a magnetizing-helix and operat-

ing-circuit, of a plate, a vibratory interrupter secured to said plate and insulated therefrom, of a contact-point in electrical connection with said helix, a support for said contact-point formed integrally with said plate and an electrical connection between the interrupter and said helix.

5. The combination of a vibratory interrupter, a screw-carried contact-point, a plate to which the interrupter is secured and by which it is supported in operative position, and a double bearing for the contact-screw consisting of portions of said plate bent into parallel planes and overlapping.

6. In an electrical instrument, the combination of a helix, a core magnetized thereby, a vibratory interrupter actuated thereby, a plate secured to the helix at one end and provided with an extension to which the interrupter is secured, a screw-carried contact-point and a bearing for the screw carried by said plate.

7. In combination, an induction-coil, a plate secured to one end thereof, a vibratory interrupter carried by said plate, a screw carrying a contact-point, and a bearing for said screw carried by said plate.

8. In combination, an induction-coil, a plate secured to one end thereof, a vibratory interrupter carried by said plate, a screw carrying a contact-point, and a bearing for said screw formed integrally with said plate.

9. In combination, an induction-coil, a plate secured to one end thereof, a vibratory interrupter secured to said plate, a screw carrying a contact-point, a bearing for said screw formed integrally with said plate and bent to project over the interrupter, and a second bearing for said screw formed integral with the plate and bent to overlap the first-mentioned bearing, substantially as shown and described.

10. In combination, an induction-coil, a base, a plate secured to one end of the coil and to the base, an interrupter carried by said plate, a contact screw and point, and a double bearing for said screw comprising a portion of said plate bent to project over the interrupter and a portion of said plate bent to overlap the first portion, substantially as shown and described.

11. The combination of a plate, a contact-point supported thereby, a vibratory interrupter and means for securing the fixed end of the interrupter rigidly to said plate and insulating it therefrom.

12. The combination in an induction-coil of a plate, a contact-point supported thereby, a vibratory interrupter, a conductor connected with the coil, and means for securing and insulating the interrupter, comprising an angular aperture in the plate, an insulating-block fitted in the aperture, an angular aperture in the end of the interrupter and in said block, and a connecting-piece which connects the interrupter with said conductor and is fitted to the angular aperture in the insulating-block and the interrupter.

13. In an electrical device comprising a vibratory element such as the interrupter of an induction-coil the combination with said vibratory element and its support, of an angular insulating-block fitted to said support and provided with an angular aperture, which registers with a similar aperture in the vibratory element, and an angular connecting-piece fitted to said apertures, substantially as shown and described.

magnetizing-helix and operating-circuit, of a vibratory conductive interrupter actuated by said helix, a support to which one end of said interrupter is rigidly connected, means for insulating the interrupter from said support and a conductor connecting the interrupter with the helix.

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Witnesses:

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14. In an electrical apparatus comprising a