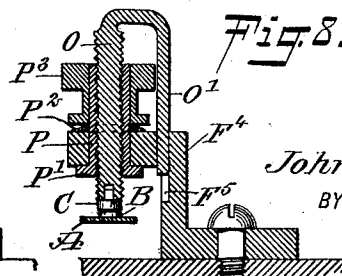
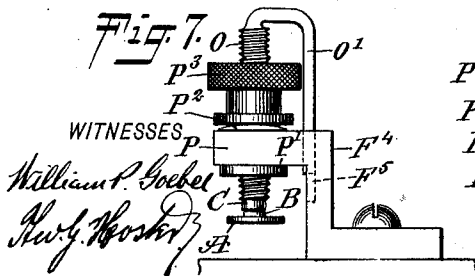
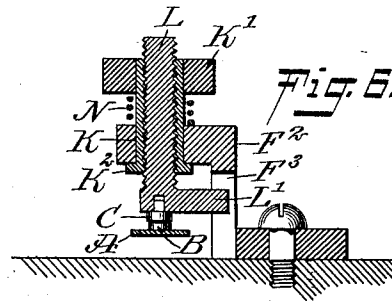
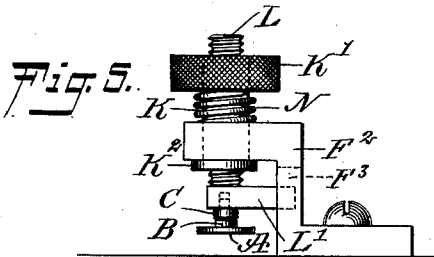
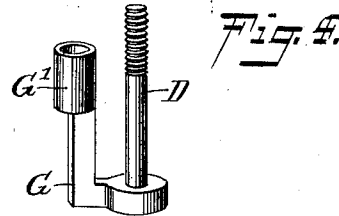
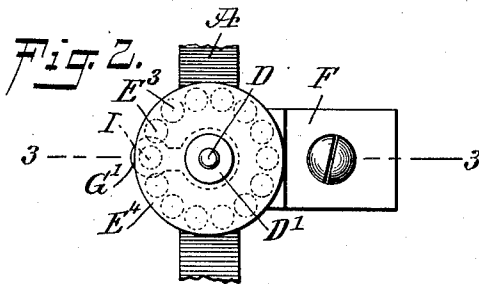
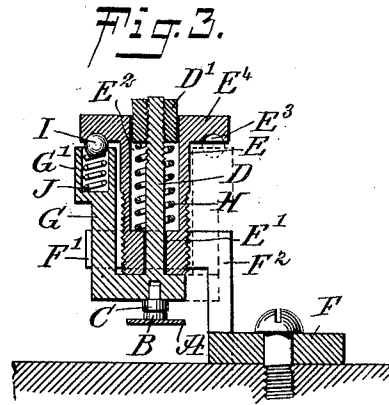
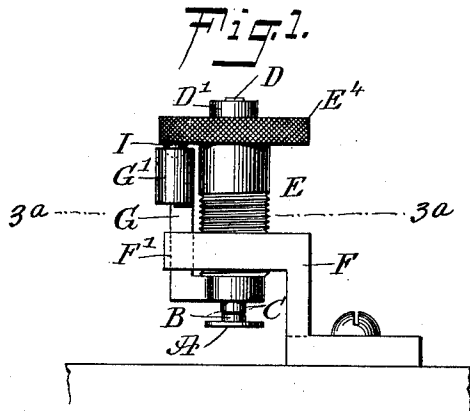


J. McINTYRE.
INDUCTION COIL.
APPLICATION FILED OCT. 24, 1908.

1,003,634.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

Fig. 9.

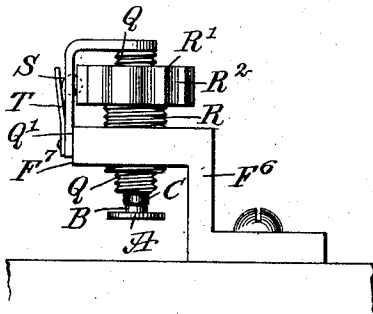


Fig. 10.

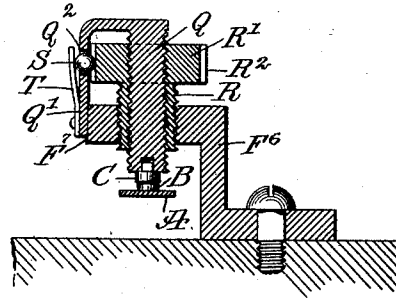


Fig. 11.

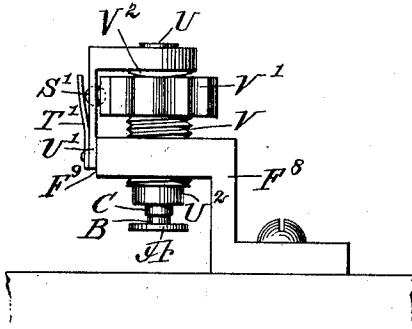


Fig. 12.

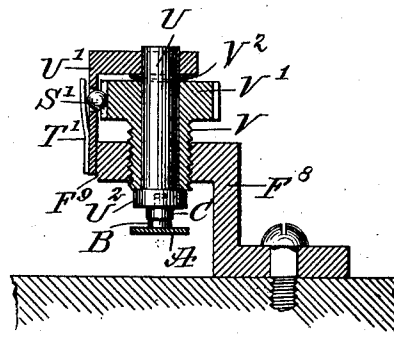
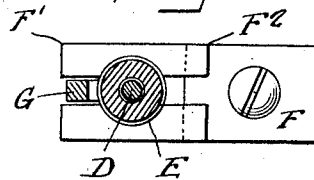


Fig. 3a



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INDUCTION-COIL.

1,003,634.

Specification of Letters Patent.

Patented Sept. 19, 1911.

Application filed October 24, 1908. Serial No. 459,281.

To all whom it may concern:

Be it known that I, JOHN MCINTYRE, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Induction-Coils, of which the following is a full, clear, and exact description.

The invention relates to electro-magnetic apparatus and its object is to provide certain new and useful improvements in induction coils of Ruhmkorff and other types, whereby a non-rotatable contact is bodily moved with its bearing on the bridge or post, to bring this contact in proper relation to the opposing contact and to securely lock the movable contact and its bearing in the adjusted position against accidental movement.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement; Fig. 2 is a plan view of the same; Fig. 3 is a sectional side elevation of the same on the line 3—3 of Fig. 2; Fig. 3^a is a sectional plan view of the same on the line 3^a—3^a of Fig. 1; Fig. 4 is a perspective view of the non-rotatable contact bar; Fig. 5 is a side elevation of a modified form of the improvement; Fig. 6 is a sectional side elevation of the same; Fig. 7 is a side elevation of another modified form of the improvement; Fig. 8 is a sectional side elevation of the same; Fig. 9 is a side elevation of another modified form of the improvement; Fig. 10 is a sectional side elevation of the same; Fig. 11 is a side elevation of another modified form of the improvement; and Fig. 12 is a sectional side elevation of the same.

In the arrangement shown in Figs. 1, 2, 3 and 4, the vibrator A of an induction coil is provided with the usual contact B, located opposite the contact C, held on the non-rotatable contact bar D, carried by a threaded bearing E, screwing in the bridge or post

F of the induction coil. As shown in Fig. 3, the contact bar D extends in a central bore E' in the bearing E, and is provided with a parallel arm G, slidingly engaging a bearing F' in the bridge F, to hold the contact bar D against turning. The bearing E is provided with an enlarged bore E² containing a spring H, coiled around the contact bar D, and resting with its lower end on the bottom of the bore E². The upper end of the spring H abuts against a head D', screwed or otherwise attached to the upper end of the contact bar D, so that the contact bar D moves in the direction of its length and with the bearing E on turning the latter in the bridge F, thus moving the contact C in proper relation to the contact B of the vibrator A. It will also be seen that the spring H by drawing the non-rotatable arm G against the lower end of the bearing E, the latter is held against accidental turning in the bridge F. In order to further hold the bearing E against accidental turning, a suitable locking device is provided, preferably in the form of a ratchet lock, consisting of a ball I held loosely in the open end of a socket G' formed on the arm G, the ball I being pressed on by a spring J set in the socket G', to hold the ball I in contact with one of a series of recesses E³, arranged in a circle on the under side of a head E⁴, secured or formed on the bearing E. The spring J is weaker than the spring H, to prevent the contact bar D from being disarranged relative to the bearing E when turning the latter, it being understood that when the bearing E is turned the ball I engages successive recesses E³, and as the recesses E³ are spaced equi-distant apart, as indicated in Fig. 2, it is evident that the operator can readily measure the fraction of a turn given to the bearing E on the operator turning the head E⁴. When the bearing E is turned by the operator, it carries the non-rotatable contact bar along, in a straight line direction and without turning it, so as to move the contact point C toward or from the contact B, according to the direction in which the bearing E is turned.

In order to allow of changing the positions of the contacts B and C one relative to the other, to compensate for angular wear,

the contact bar D can be given a half turn in its bearing E at the time the latter is unscrewed from the bridge or post F, and then the bearing is again screwed in place in the bridge or post F with the parallel arm G engaging another bearing F² in the bridge or post F, as indicated in dotted line in Fig. 2.

It is understood that when the apparatus is used the contacting faces are liable to burn angularly, that is, until each face has a high and low point, and it is then very desirable to rectify the said angular wearing with a view to bring the high points of the faces of the contacts B and C opposite or in register with each other. This is done by changing the position of the contact bar D in the bearing E and relative to the bridge or post F, as above described. As the contacts B and C are usually made of platinum or other expensive metal, the adjustment described compensates for the angular wear of the contacts B and C and thus the whole contacts are utilized and no portion thereof needs to be filed away or otherwise wasted. It will be understood that if the position of the contacts B and C, one relative to the other, is not changed, the electric spark is liable to burn away the metallic supports of the contacts, and the latter would drop off and be wasted and the apparatus rendered inoperative.

In the modified form shown in Figs. 5 and 6, the bearing K carrying the non-rotatable contact bar L does not screw in the bridge F² but is mounted to turn therein. The contact bar L is provided with an arm L' engaging a slot F³ in the bridge F², to hold the contact bar against turning. A spring N is interposed between the bridge F² and the head K' of the bearing K, to hold the annular shoulder K² of the bearing K against the under side of the bridge F², and thus assist in holding the bearing K against turning. The contact bar L is threaded exteriorly and the bearing K screws on the contact bar L, so that when the operator turns the head K' and the bearing K, the non-rotatable contact bar L is caused to travel in the direction of its length, to move the contact C toward or from the contact B, according to the direction in which the head K' is turned.

In the modified form shown in Figs. 7 and 8, the non-rotatable contact bar O is threaded, and on it screws the bearing P mounted to turn in the bridge F⁴. From the upper end of the contact bar O extends an arm O' engaging a slot F⁵ in the bridge F⁴, to hold the contact bar O against turning. On the lower end of the bearing P is formed a collar P' adapted to rest against the under side of the bridge F⁴, and a spring P² is interposed between the top of the bridge F⁴ and the under side of the head P³ of the bearing

P, to prevent accidental axial and turning movement of the bearing P in the bridge F⁴. The spring P² is preferably cup or saucer-shaped. When the operator turns the head P³, the contact bar O travels in the direction of its length, to move the contact C toward or from the contact B according to the direction in which the head P³ is turned.

The modified form shown in Figs. 9 and 10, discloses a threaded non-rotatable bar Q, on which screws a bearing R, screwing in the bridge F⁶, and on the contact bar Q is formed a spring arm Q' slidably engaging a flat surface F⁷ on the bridge F⁶, to hold the contact bar Q against turning, and to bind the bearing R in the bridge F⁶, to hold the bearing against accidental turning. On the bearing R is formed a head R', having peripheral notches R² for engagement by a ball S held in a recess Q² of the arm Q', and pressed on by a spring T attached to the arm Q'. By the arrangement described, the spring-pressed ball S normally holds the bearing R from turning, but allows the operator to turn the head R' and bearing R, for imparting a traveling motion to the non-rotatable contact bar Q, with a view to move the contact C toward or from the vibrator contact B, according to the direction in which the head R' is turned. The spring-pressed ball S engaging the notches R² forms a ratchet lock for the bearing R, similar to the one above described in reference to Figs. 1, 2, 3 and 4.

In the modified form shown in Figs. 11 and 12, the non-rotatable contact bar U extends centrally through the threaded bearing V screwing in the bridge F⁸, and on the upper end of the contact bar U is secured an arm U' engaging the top of the bearing head V', and slidably engaging a flat face F⁹ on the bridge F⁸, to hold the contact bar U against turning. On the lower end of the contact bar is secured or formed a collar U², abutting against the under side of the bearing V, so that when the latter is turned by the operator it screws up or down in the bridge F⁸ and carries the non-rotatable contact bar U along, to move the contact C from or toward the contact B, according to the direction in which the bearing V is turned. Between the top of the bearing head V' and the arm U' is interposed a spring V² preferably of saucer shape and serving to give an axial tension to the contact bar U, and to hold the bearing V against accidental turning in the bridge F⁸. A ratchet lock formed of a ball S' and a spring T', and similar to the one above described in reference to Figs. 9 and 10, serves to hold the bearing V against accidental turning.

From the foregoing it will be seen that the different forms mentioned and shown in

the drawings, all disclose a contact bar which is non-rotatable and is moved bodily in the direction of its length on turning the rotatable bearing which carries the contact bar, so that the contact C can be brought in proper relation to the opposite contact or contact B on the vibrator A. It will also be noticed that provision is made to lock the parts against accidental movement, so that shock or jar to which the induction coil may be subjected does not affect the relative position of the adjusted contacts B and C.

The value of the non-rotatable feature of the contact bar D is more fully set forth in the specification of the reissued Letters Patent of the United States, No. 12,805, granted to me on June 2, 1908, so that further detail description of this feature is not deemed necessary, it being sufficient to state that by having the contact bar non-rotatable, the faces of the contacts B, C are at all times maintained in a registering position, and require no re-truing. It will be noticed, however, that provision is made to permit changing the relation of the faces of the contacts B and C with a view to compensate for angular wear as above explained.

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

1. In combination, a non-rotatable contact bar for an induction coil, and manually-controlled means carrying the said contact bar and arranged axially therewith to move the non-rotatable contact bar in the direction of its length.

2. In combination, a non-rotatable contact bar for an induction coil, and manually-controlled rotatable means carrying the said contact bar, arranged in axial alinement therewith, and capable of moving the contact bar in the direction of its length.

3. An induction coil provided with a bridge, a rotatable bearing on the said bridge, a non-rotatable contact bar carried by the said bearing and capable of being moved by the bearing in the direction of its length, and means for holding the said rotatable bearing against accidental movement.

4. An induction coil provided with a bridge, a contact bar, means on the said contact bar and engaging the said bridge for holding the said contact bar against turning, and a rotatable bearing on the said bridge carrying the said contact bar and capable of moving the said contact bar in the direction of its length.

5. An induction coil provided with a bridge, a contact bar, means on the said contact bar and engaging the said bridge for holding the said contact bar against turning, a rotatable bearing on the said bridge carrying the said contact bar and capable of moving the said contact bar in the direc-

tion of its length, and means for holding the said rotatable bearing against accidental movement.

6. An induction coil provided with a non-rotatable contact bar, a bearing carrying the said contact bar and capable of moving the contact bar in the direction of its length, and a spring pressed means for holding the bearing against accidental turning.

7. An induction coil provided with a non-rotatable contact bar, a bearing carrying the said contact bar and capable of moving the contact bar in the direction of its length, and a spring interposed between the said rotatable contact bar and the said bearing.

8. An induction coil provided with a bridge, a bearing screwing in the said bridge, and a non-rotatable contact bar axially carried by the said bearing and having means engaging the said bridge to hold the contact bar against turning.

9. An induction coil provided with a bridge, a contact bar, a bearing screwing in the said bridge and carrying the said contact bar for moving the latter in the direction of its length, and an arm on the contact bar engaging the said bridge to hold the contact bar against turning.

10. An induction coil provided with a bridge, a contact bar, a bearing screwing in the said bridge and carrying the said contact bar for moving the latter in the direction of its length, an arm on the contact bar engaging the said bridge to hold the contact bar against turning, and a spring for holding the said bearing against accidental turning in the said bridge.

11. An induction coil provided with a bridge, a contact bar, a bearing screwing in the said bridge and carrying the said contact bar for moving the latter in the direction of its length, an arm on the contact bar engaging the said bridge to hold the contact bar against turning, and a locking device for normally holding the said bearing against turning in the bridge.

12. An induction coil provided with a bridge, a rotatable bearing on the said bridge, a non-rotatable contact bar axially carried by the said bearing and having means engaging the said bridge to hold the said contact bar against turning, and a ratchet lock connection between the said non-rotatable contact bar and the said rotatable bearing to hold the latter against accidental turning.

13. An induction coil having a bridge, a rotatable bearing on the said bridge, and a contact bar carried by the said bearing and capable of being moved in the direction of its length by the said bearing, the said contact bar being normally held against rotation and capable of being changed in its relation to the said bridge.

14. An induction coil having a bridge

formed with a number of bearing surfaces,
a rotatable bearing on the said bridge, a con-
tact bar carried by the said bearing and
moved in the direction of its length on turn-
5 ing the said bearing, the contact bar having
an arm engaging any one of the said number
of bearing surfaces on the said bridge, to
hold the contact bar against turning.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

JOHN MCINTYRE.

Witnesses:

THEO. G. HOSTER,
JOHN P. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
