No. 762,993. PATENTED JUNE 21, 1904.

C. H. FISCHER.

CIRCUIT INTERRUPTER FOR JUMP SPARK COILS.

APPLICATION FILED APR. 11, 1904.

NO MODEL.

Fig. 1.

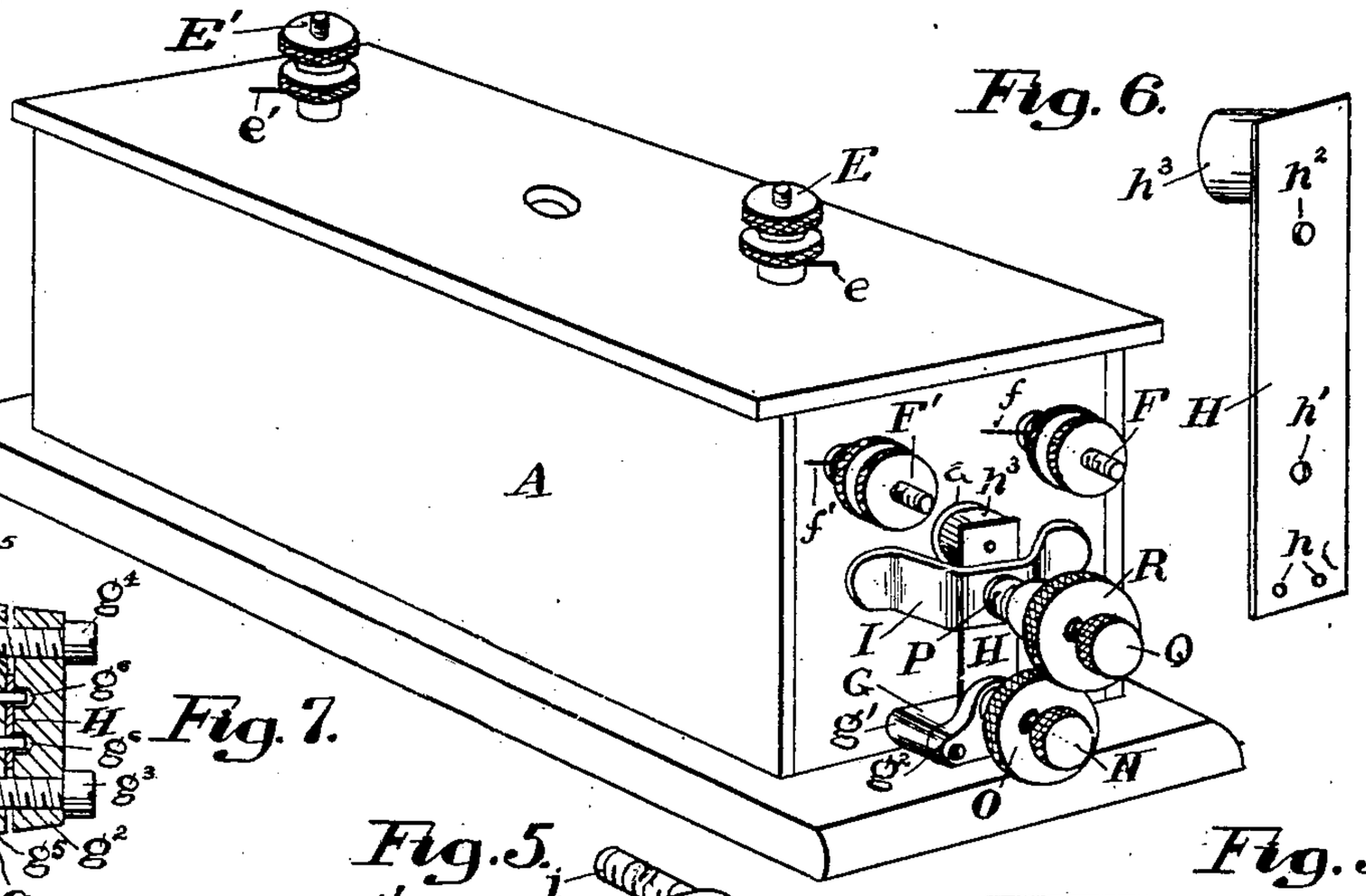


Fig. 6.

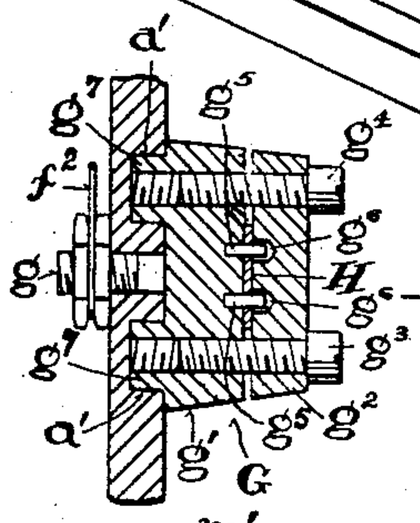


Fig. 7.

Fig. 5.

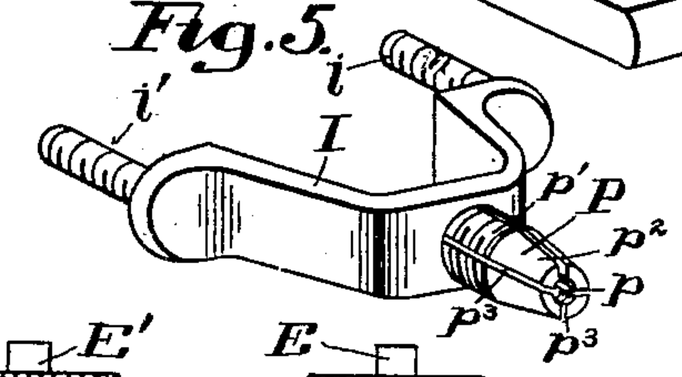
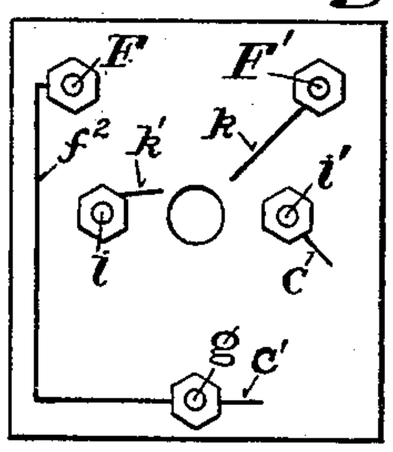


Fig. 3.



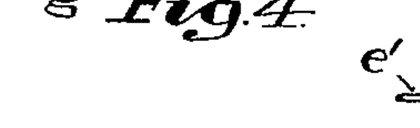


Fig. 4.

Fig. 2.

Witnesses:
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No. 762,993. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

CHARLES HARRY FISCHER, OF CINCINNATI, OHIO.

CIRCUIT-INTERRUPTER FOR JUMP-SPARK COILS.

SPECIFICATION forming part of Letters Patent No. 762,993, dated June 21, 1904.

Application filed April 11, 1904. Serial No. 202,629. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HARRY FISCHER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Circuit-Interrupters for Jump-Spark Coils, of which the following is a specification.

My invention relates to circuit-interrupters for jump-spark coils, and has for its object the providing of a device of the character mentioned in which the vibratory mechanism is capable of very delicate adjustment and firm positioning after adjustment without destroying the adjustment; and the invention will be readily understood from the following description and claims and from the drawings, in which latter—

Figure 1 is a perspective view of my improved device. Fig. 2 is a longitudinal central vertical section of the same, partly broken away. Fig. 3 is a rear view of the front end of the case. Fig. 4 is a perspective view of the bracket and slitted thimble for the tension-screw of the armature-spring. Fig. 5 is a perspective view of the yoke and slitted thimble for the contact-screw of the armature-spring. Fig. 6 is a perspective view of the armature-spring; and Fig. 7 is a detail in section on the line x x of Fig. 2, showing the armature-spring-securing means.

My circuit-interrupter is applicable for use in connection with jump-spark plugs used on explosive-engines—such, for instance, as the gasolene or other explosive engines on automobiles. In automobiles the circuit-interrupter is in practice usually placed in an almost inaccessible position, as under the seat or other place inconvenient for adjustment thereof, and the adjustments required of the armature-spring are delicate ones for creating a spark in the spark-plug of just sufficient intensity and regularity to ignite instantly and unfailingly the explosive charge supplied to the explosion-chamber of the motor, the electric energy supplied to the circuit-interrupter varying at different times, owing to degrees of energy in the battery, speed of motor, or other conditions, the armature-spring of the circuit-interrupter requiring consequent frequent changes of adjustments. In my improved device I have provided means by which these adjustments can be accurately and delicately made and firmly secured after being made without disturbance thereof and by which these adjustments can be readily made when the circuit-interrupter is in inconvenient locations and also while the mechanism is subjected to the jarring caused by the engine in operation, the adjustments being so arranged that they can be made and clamped without the employment of tools.

A represents the case or box, in which an electromagnet B, condenser C, and secondary coils D D′ are located.

E E′ are the posts to which the wires e e', communicating with the spark-plug, (not shown,) are secured. Wires e^2 e^3 connect the coils D D′ with the posts E E′. Suitable primary electric conductors f f' are connected with the posts F F′ from any suitable source of electric energy—a battery, for instance. An electric conductor f^2 connects the post F with a shank g of a support G of a spring H.

I is a yoke or bracket having threaded shanks i i'', taking through apertures into the inside of the box and acting as posts for electric conductors.

One end, k, of the primary coil K of the electromagnet connects with the post F′, while the other end, k', thereof connects with the post i, inducing magnetism in the core b of the magnet, which takes into an opening a in the case. An electric conductor c connects the post i'' with one end of the condenser, and an electric conductor c' connects the other end of the condenser with the post g. A wire d takes about the rubber tube d' and connects the coils D D′.

The spring-support G is composed of two parts g' g^2, connected by screws g^3 g^4, the spring having apertures h h therein, into which pins g^5 on the support take, the pins being preferably secured to the part g' and projecting through the apertures into sockets g^6 on the part g^2. The support has lugs g^7, taking into sockets a' in the case for positioning the support. A bracket L extends from the support, having on it a sleeve M, provided with internal threads m and exter-

nal threads m' and having a tapered end m^2. The sleeve or bushing is provided with longitudinal slits m^3 for dividing it into a plurality of sections or leaves and providing space between the sections for permitting the free ends of the sections to be drawn radially toward each other. A screw N screws into the internally-threaded sleeve, the end thereof taking through an aperture h' in the spring and having collars n n' secured thereto at either side of the spring. A nut O has internal threads o and an internally-tapered portion o', forming a compression-ring for compressing the sections of the sleeve about the screw and firmly securing the screw within the sleeve without danger of shifting the position of the screw in doing so. The construction is such that a rotatively-stationary and radially-movable clamping part is interposed between the rotating clamping-nut O and the screw N. The object of the screw N is to provide tension on the spring H.

The yoke I has thereon a sleeve P, having internal threads p, external threads p', and a tapered end p^2. It is provided with slits p^3 for dividing the sleeve into a plurality of sections or leaves, the free ends of which are adapted to be clamped radially against a screw Q.

R is a nut having internal threads r and an internally-tapered part r', forming a clamping-ring which rides on the tapered end p^2 for forcing the sections of the sleeve P radially toward and clamping the same upon the screw Q without danger of shifting the adjusted position of the screw by reason of the fact that a rotatively-stationary clamping part is interposed between the rotating nut and screw. The screw Q preferably takes against a contact-knob h^2 on the spring H.

The screw Q is an adjusting-screw for regulating the distance between the armature h^3, secured to the spring, and the end of the core of the magnet, the adjusting-screws N and Q regulating the tension of the spring and the distance of the armature h^3 from the pole of the magnet to a nicety and the clamping means described clamping the screws in position without danger of shifting the same in clamping. The sleeves M and P may be parts of the bracket L and yoke I, respectively.

When the parts in the inside of the box have been located and the proper connections made, the inside of the box is filled with paraffin or the like. My construction also permits me to use large clamping-nuts which are easily moved to clamped or non-clamped position in inconvenient locations without the use of tools and without disturbance of adjustment of the screws.

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

1. In a circuit-interrupter for jump-spark coils, the combination, with an electromagnet and vibrator-spring, of an adjusting-screw for said spring, an externally-threaded part, a nut taking about said screw and screwing on said externally-threaded part, and a radially-movable clamping part interposed between said screw and nut, said radially-movable clamping part and nut collectively having engaging faces between the same acting to move said interposed part radially toward said screw for clamping said screw in adjusted position.

2. In a circuit-interrupter for jump-spark coils, the combination with an electromagnet and armature-spring, a support to which said spring is secured, said support having a bracket extending therefrom, an externally and internally threaded sleeve on said bracket, said sleeve being slitted for forming clamping-leaves, a tension-screw in said sleeve and secured longitudinally to said spring, a nut taking over said sleeve, said clamping leaves and nut collectively having inclined face and engaging face therefor for clamping said leaves against said screw, substantially as described.

3. In a circuit-interrupter for jump-spark coils, the combination, with an electromagnet and vibrator-spring, of an internally and externally threaded slitted sleeve having a tapered end, an adjusting-screw for said spring screwing in said sleeve, and a nut screwing over said sleeve, said nut having an inner face taking against said tapered end for clamping said screw in said sleeve, substantially as described.

4. In a circuit-interrupter for jump-spark coils, the combination, with the case, electromagnet and armature-spring, of a pair of internally and externally threaded sleeves rigidly secured on said case, said sleeves being slitted for forming clamping-leaves, a tension-screw secured longitudinally to said spring and screwing in one of said sleeves, an armature-positioning screw screwing into the other of said sleeves, a nut screwing over each of said sleeves, each of said sleeves and its nut collectively having an inclined face and engaging face therefor for clamping said leaves toward said screw by the turning of said nut, substantially as described.

In testimony whereof I have signed my name hereto in the presence of two subscribing witnesses.

CHARLES HARRY FISCHER.

Witnesses:
HERBERT F. HARDEN,
WM. H. SCHMIDT.