No. 747,755. PATENTED DEC. 22, 1903.

C. P. L. NOXON.

SPARK COIL.

APPLICATION FILED AUG. 20, 1902.

NO MODEL.

Fig. 1.

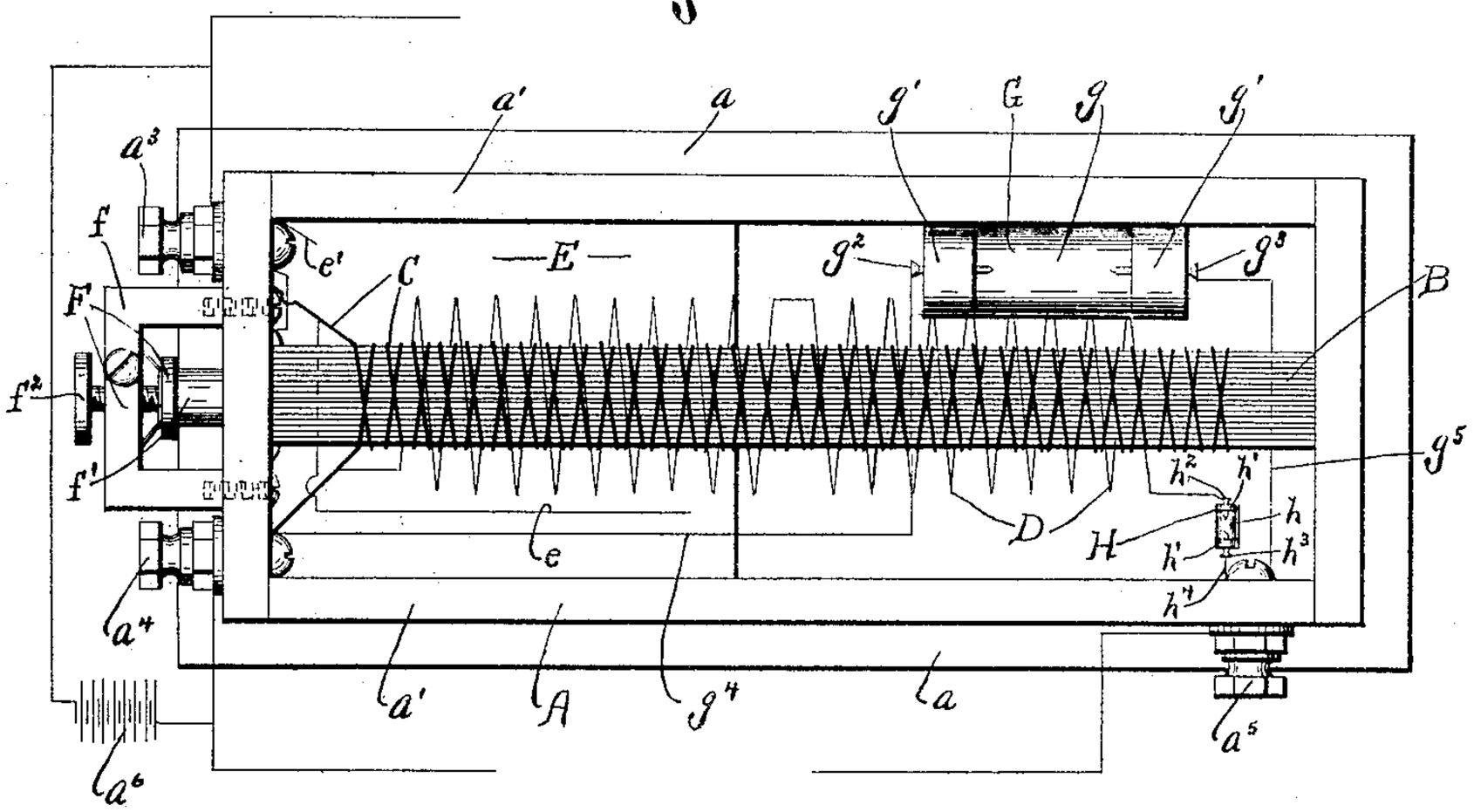


Fig. 2.

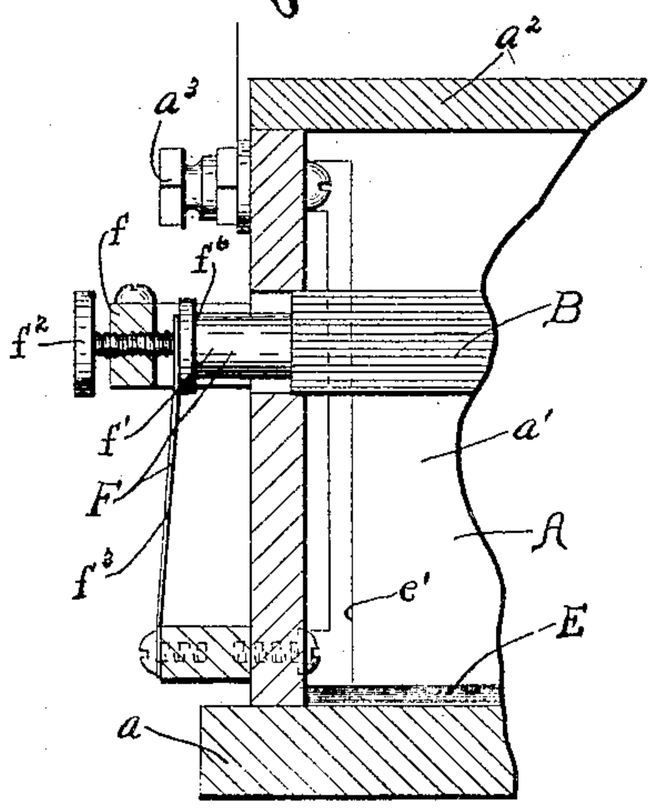
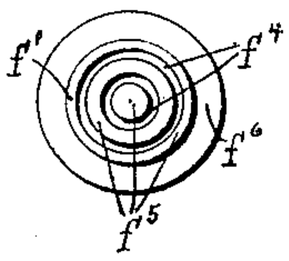


Fig. 3.



WITNESSES:

Chas. J. Toner.

Chas. Young.

INVENTOR

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No. 747,755. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

CHARLES P. L. NOXON, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO H. H. FRANKLIN MANUFACTURING COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

SPARK-COIL.

SPECIFICATION forming part of Letters Patent No. 747,755, dated December 22, 1903.

Application filed August 20, 1902. Serial No. 120,372. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. L. NOXON, of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Spark-Coil, of which the following is a specification.

My invention has for its object the production of a spark-coil which is particularly effective and durable in use; and it consists, essentially, in the novel combinations and constructions hereinafter fully described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is a top plan view of my spark-coil, the cover being removed and a battery, shown diagrammatically, being operatively connected to the spark-coil. Fig. 2 is a detail sectional view showing the current-interrupter and part of the connections from said interrupter to the condenser. Fig. 3 is an end view of the detached armature.

As preferably constructed my spark-coil consists of a case A, a core B, primary and secondary coils C D, a condenser E, a current-interrupter F, a normally broken electric connection G between the terminals for the secondary coil, and a normally broken electric connection H in circuit in the secondary coil.

The case A is of any desirable form, size, and construction, being usually formed with a base a, sides a', and a removable cover a^2. It is obvious, however, that the case A may be supported upon one of its sides as a base. Said case A is provided with a pair of terminals a^3 a^4, fixed to one of its sides, and an additional terminal a^5, fixed to another of said sides. The terminals a^3 a^4 are connected to a battery a^6, and the terminals a^4 a^5 are connected to an apparatus, as a gasolene-engine, in which it is desired to produce the sparks.

The core B, the primary and secondary coils C D, the condenser E, and the current-interrupter F are of any suitable form, size, and construction. Corresponding ends of the coils C D are preferably connected to the terminal a^4, and the other ends of said coils are respectively connected to the yoke f of the interrupter F and to the terminal a^5. It will be understood, however, by those skilled in the art that where it is necessary to have the secondary and primary coils insulated from each other a separate pair of terminals is provided for each coil.

The condenser E is generally connected in circuit with conductors e e', respectively connected to the yoke f and to the vibrating armature f' of the current-interrupter F. As best seen in Fig. 1, the yoke f is fixed to the side of the case A, provided with the terminals a^3 a^4, and is provided with the usual adjustable stop f^2. The armature f' is shown in Fig. 2 as mounted on the vibrating spring-support f^3, and, as illustrated in Fig. 3, its portion directly opposed to the core B is formed with a face provided with a plurality of grooves f^4 and separated surfaces f^5, and its opposite portion is formed with a laterally-projecting surface f^6. The separated surfaces f^5 by concentrating the lines of force passing through the armature tend to cause the core to attract the armature with maximum power, and the surface f^6 by presenting additional surface exposed to the surrounding space facilitates the leakage of the lines of force from the armature.

The normally broken electric connections G H consist of tubes g h, composed of glass or other non-electric-conducting material, plugs g' h' for the ends of the tubes g h, and terminals g^2 g^3 h^2 h^3, adjustable longitudinally in the plugs g' h'. The terminals g^2 g^3 are arranged with their opposing ends separated and are respectively connected by conductors g^4 g^5 with the terminals a^4 a^5, and the terminals h^2 h^3 are also arranged with their opposing ends separated and are respectively connected to one end of the coil D and to a conductor h^4, connected to the terminal a^5. The normally broken electric connection G permits the passage of the current from the secondary coil through said connection when the electromotive force of the current reaches a predetermined strength, and thus prevents the electromotive force from rising to an undue degree. The connection H presents a

break in circuit with the secondary coil, which is insufficient to retard the passage of the current in the secondary coil, but prevents the great increase of the current which would result in case the terminals a^4 a^5 should inadvertently become short-circuited.

The construction and operation of my spark-coil will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be particularly noted that more or less change may be made therein without departing from the spirit of my invention.

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

1. In a spark-coil, the combination of a core, and an armature having its face adjacent to the core provided with a plurality of separated surfaces, substantially as and for the purpose set forth.

2. In a spark-coil, the combination of a core, and an armature having its face adjacent to the core provided with a plurality of grooves, substantially as and for the purpose described.

3. In a spark-coil, the combination of a core, and an armature having a portion thereof formed with a face provided with a plurality of separated surfaces and its opposite portion formed with a laterally-projecting surface, substantially as and for the purpose set forth.

4. In a spark-coil, the combination of a pair of terminals connected in the circuit in which the spark is produced, a secondary coil connected in said circuit, and an electric conductor connecting the terminals for making a shunt-circuit, said shunt-circuit offering greater resistance to the current than said first circuit, substantially as and for the purpose described.

5. In a spark-coil, the combination of a pair of terminals connected in the circuit in which the spark is produced, a secondary coil connected in said circuit, and a device arranged in said circuit offering greater resistance to the current than the remaining part of said circuit, substantially as and for the purpose specified.

6. In a spark-coil, a pair of terminals connected in a circuit in which a spark is produced, a secondary coil connected in said circuit, a device arranged in said circuit offering greater resistance to the current than the remaining part of said circuit, and an electric conductor connecting the terminals for making a shunt-circuit, said shunt-circuit offering a greater resistance to the current than the first circuit, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 18th day of August, 1902.

CHARLES P. L. NOXON.

Witnesses:

S. DAVIS,

D. LAVINE.