E. DENIÉPORT.

HIGH TENSION MAGNETO GENERATOR.

APPLICATION FILED MAY 23, 1908.

952,561.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.

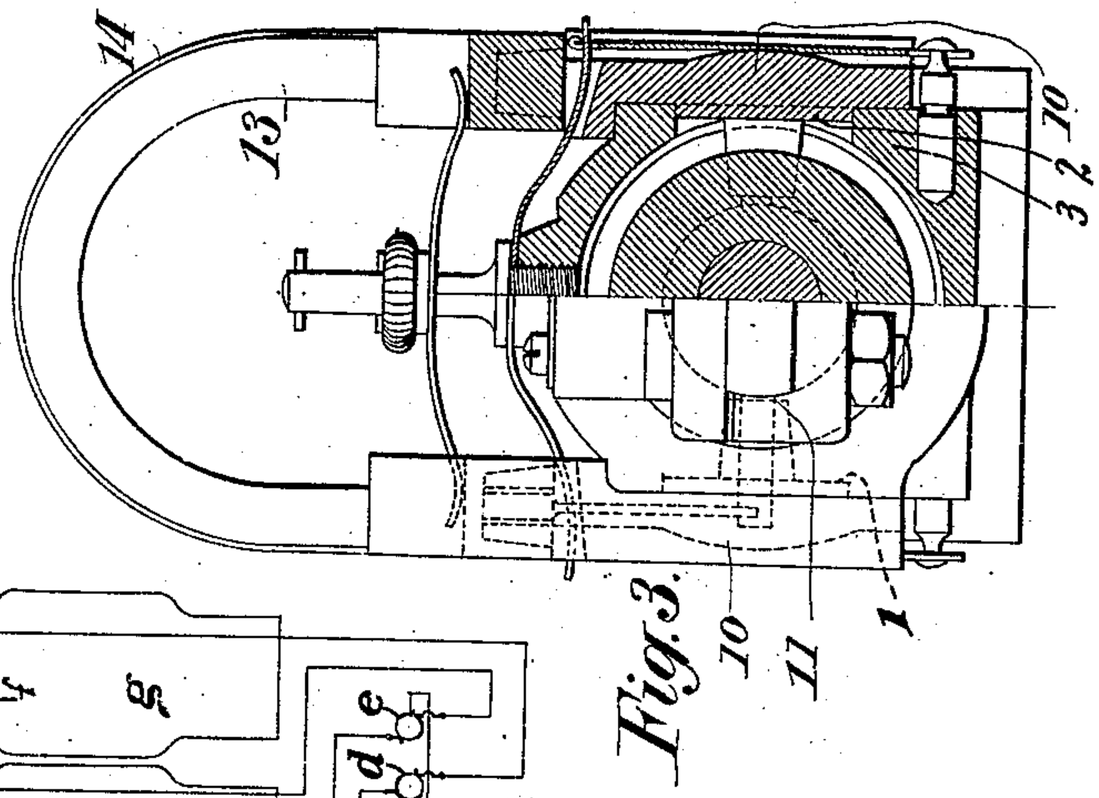

Fig. 3.

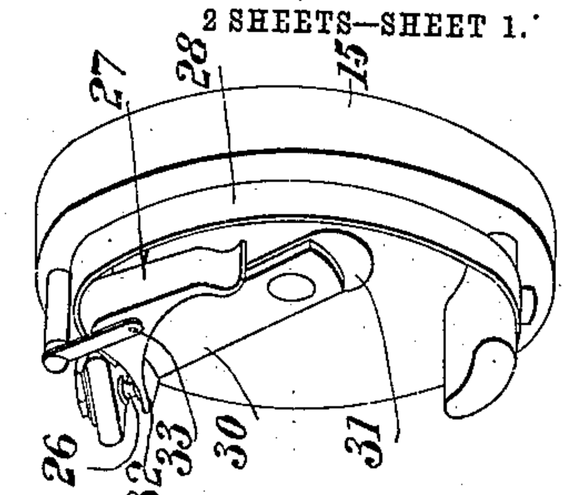

Fig. 4.

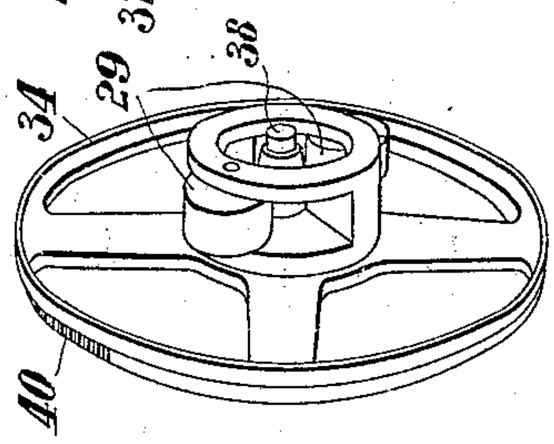

Fig. 5.

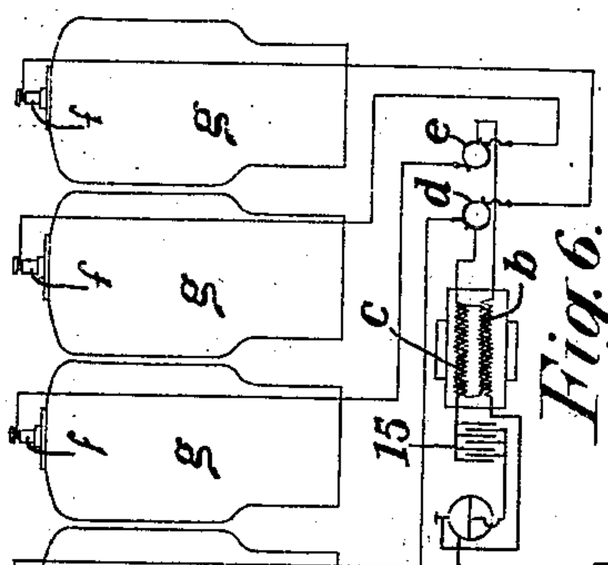

Fig. 6.

Fig. 1.

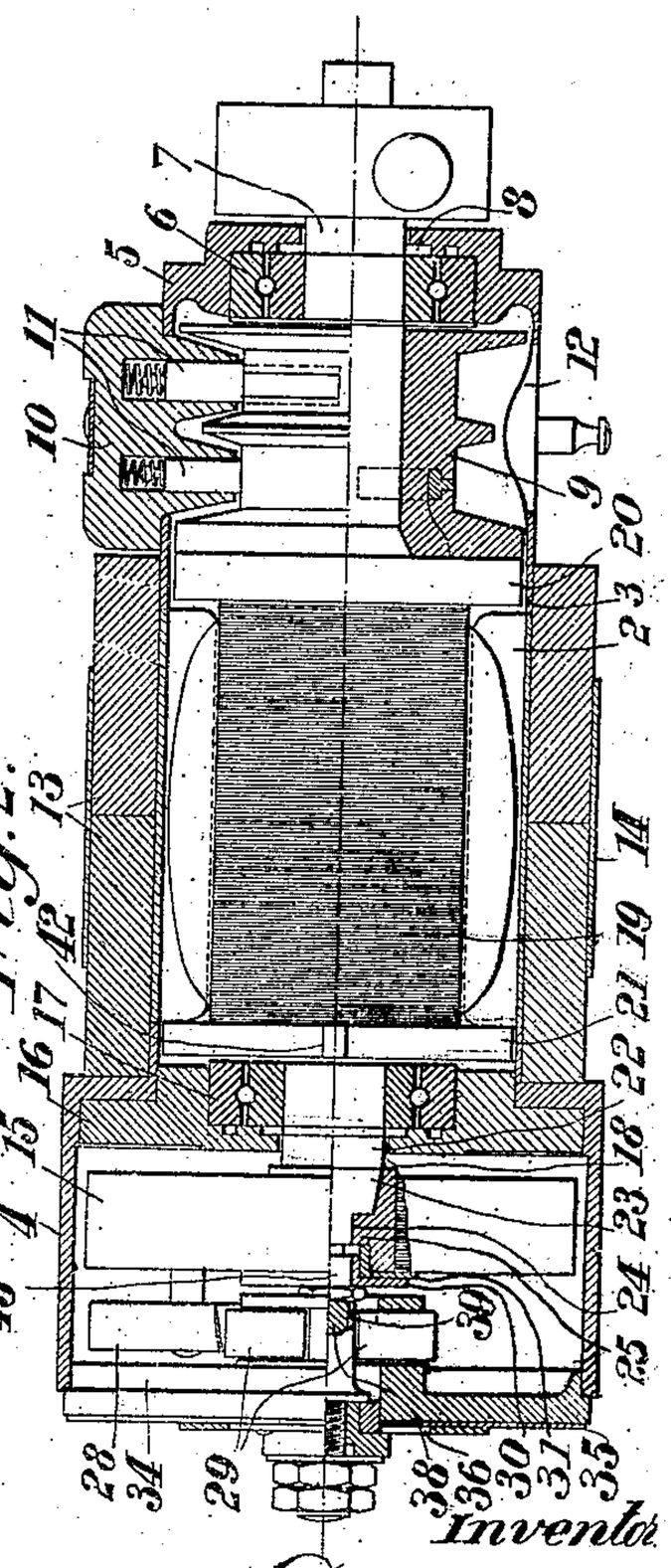

Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 8.

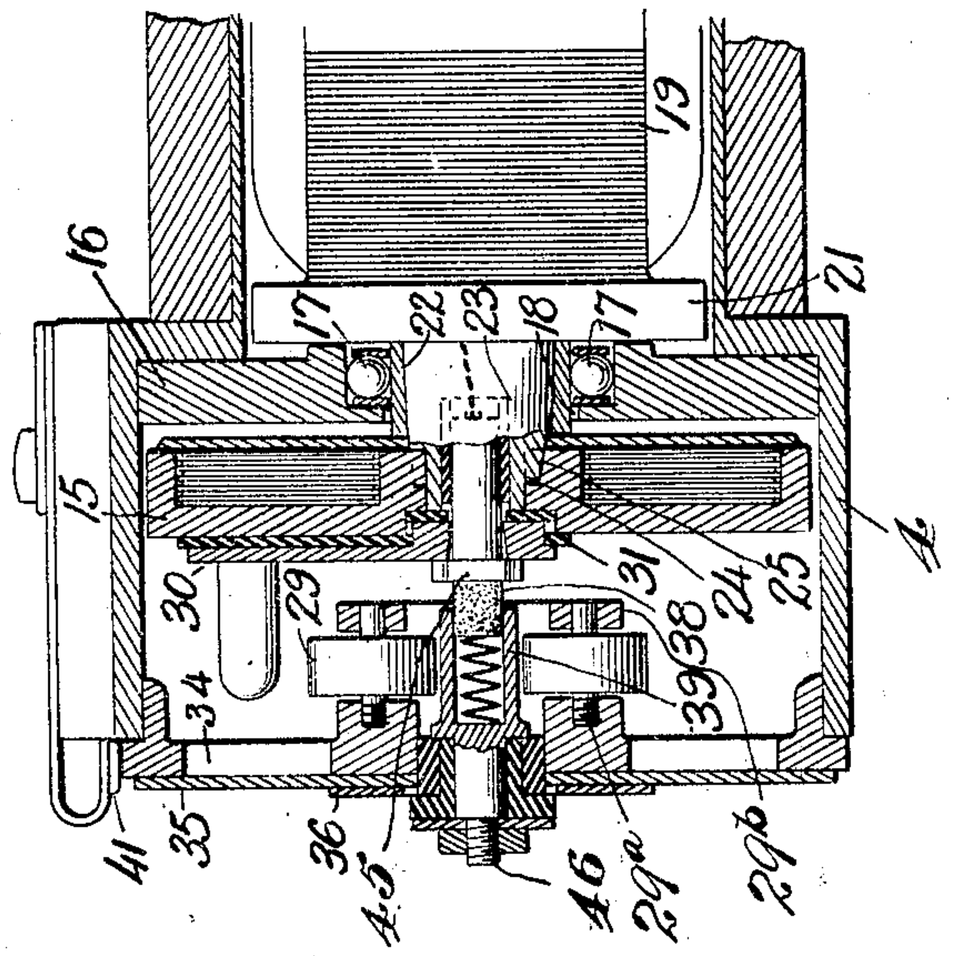
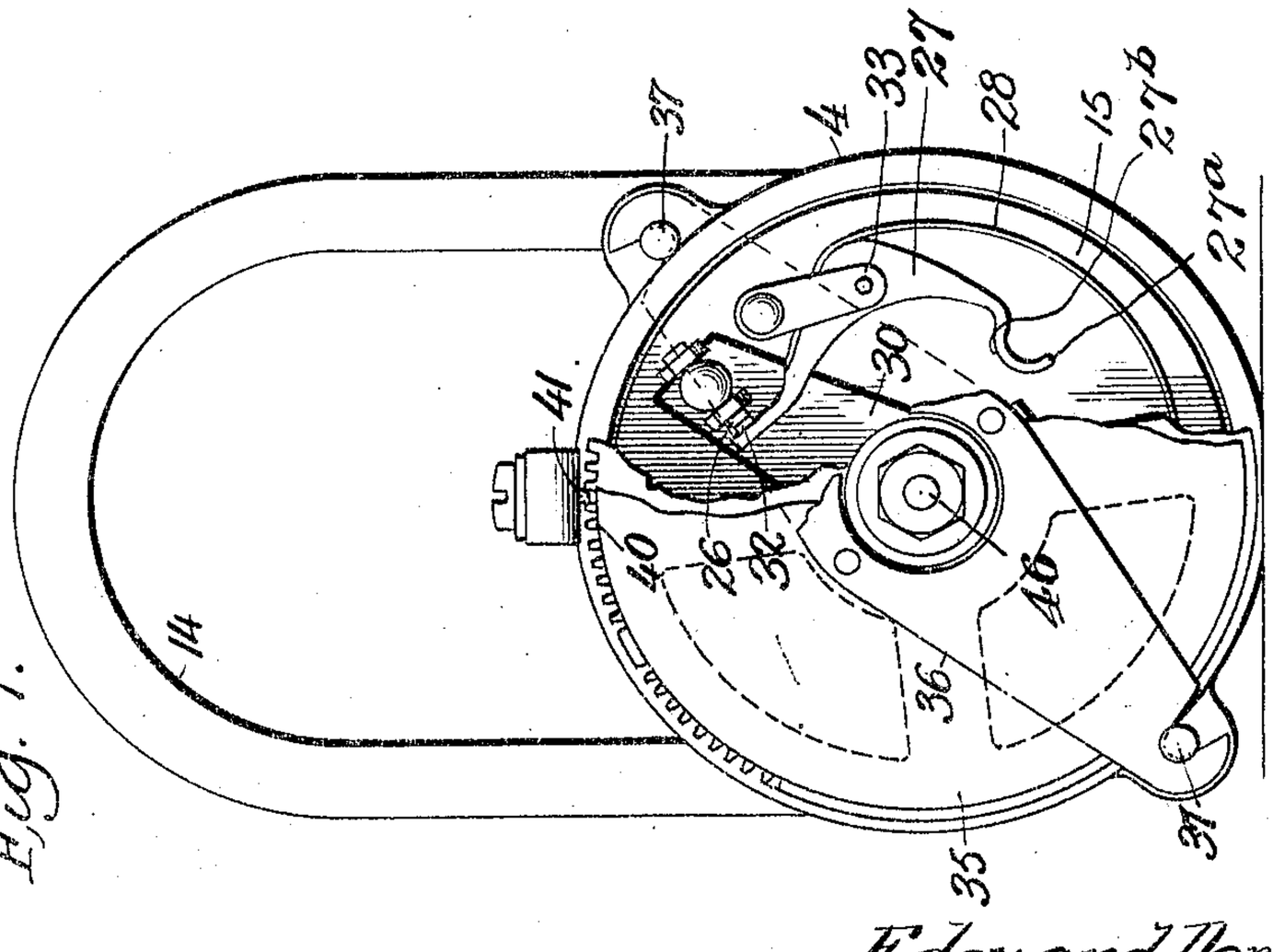


Fig. 7.



WITNESSES

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HIGH-TENSION MAGNETO-GENERATOR.

952,561. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 23, 1908. Serial No. 434,570.

To all whom it may concern:

Be it known that I, EDOUARD DENIÉPORT, a citizen of the French Republic, and resident of Paris, France, have invented certain new and useful Improvements in High-Tension Magneto-Generators, of which the following is a specification.

This invention relates to magneto generators, and particularly to high tension magneto generators, intended for use in connection with explosive engines, the object of the invention being primarily to provide a magneto generator of this character, which will occupy the minimum space and which may be easily controlled and repaired.

In the accompanying drawings in which I have illustrated a preferred embodiment of my invention, and in which like characters designate corresponding parts, Figure 1 is a side elevation. Fig. 2 is a top plan view with portions thereof shown in section on line A—A of Fig. 1. Fig. 3 shows on the right hand, half an end elevation, and on the left hand half a section on line B—B of Fig. 1. Fig. 4 is a perspective view of the condenser which I employ, together with the circuit breaker for the primary circuit. Fig. 5 is a perspective view of the means for operating the circuit interrupter shown in Fig. 4. Fig. 6 is a diagrammatic view showing by way of example, a system of wiring adapted for use in connection with my invention. Fig. 7 is an end view with parts broken away to show the circuit breaker for the primary circuit, and, Fig. 8 is a longitudinal sectional view of a portion of the magneto containing the parts shown in Figs. 4 and 5, certain parts being omitted for clearness of illustration.

In the drawing, 1 and 2 designate the pole pieces of the field magnets employed, these pieces being preferably so secured in the framework of the device during the casting of the latter, that upon the shrinking of the metal, they form a practically unitary mass with such framework.

The framework of the magneto comprises a rectangular armature casing 3, having a cylindrical prolongation 4, of somewhat greater width. The casing 3 is closed at one end by a wall 5 in which is arranged a runway for the ball bearings 6 of the shaft 7. This wall is also provided with opening 8 for said shaft. The armature casing has a cylindrical bore to receive the armature as well as the secondary current collector 9, which is fully described and claimed in my co-pending application, Serial No. 426,063 filed April 9, 1908. Associated with the collector are plates or blocks 10 which are secured to each side of the casing 3, as shown and carry brushes 11 which pass through openings 12 in the casing to contact with the collector 9.

The field magnets consist of two permanent U-shaped magnets 13 secured in position with their ends engaging pole pieces 1 and 2 by means of a copper strip or band 14, having its ends secured by screws to the framework, as shown.

The cylindrical extension 4 of the armature casing contains the condenser 15, and the primary current circuit breaker. Between this extension and the armature casing is a partition wall 16, secured to the armature casing by means of screws. Within the wall is provided a seat for the ball-bearing 17 and an opening 18 for the armature shaft 8.

The armature comprises a laminated iron core 19 of the Siemens type provided with primary and secondary windings. The primary winding circuit is normally closed but the current is interrupted twice during each revolution of the armature, as will be hereinafter explained.

The armature core and windings are supported between circular plates 20 and 21, as shown. To the plate 20 is secured the portion of the shaft 7 upon which the collector 9 is mounted. This portion extends through the partition wall 5 and is mounted in ball-bearings 6. Power is applied to the outer end of the shaft 8 by means of a pinion or the like. The plate 21 carries a hollow sleeve-like extension 22, which passes through the ball-bearings 17 and the partition wall 16 and is continued beyond in the form of a cone 23 upon which the condenser 15 is mounted. The cone 23 is cut away to form two flat surfaces 24 which engage and interfit with correspondingly shaped shoulders 25, provided in the bore of the condenser whereby the condenser is securely locked or keyed to the cone.

Arranged on the outer face of the condenser is the circuit breaker for the primary circuit. This comprises a platinum tipped screw 26 and a tilting or rock arm 27, one

end of which is normally held against the screw 26 by the spring 28. The screw 26 is adjustably mounted within post carried by the plate 30 secured to the outer face of the condenser 15 and is connected with one side thereof but is insulated from the other side by means of the strip 31 of ebonite or like insulating material. The screw 26 engages a platinum stud 32 mounted upon the tilting arm 27, which latter is pivoted upon a stub shaft 33 mounted upon and in electrical communication with the outer face of the condenser 15. The free end of the tilting or rock arm 27 is curved into the form of a cam 27^a. The convex portion 27^b is adapted to be engaged by each of the rollers 29 during its complete rotation and at each engagement the cam 27^a is forced outward and arm 27 is rocked or tilted on its supporting stub shaft 33 causing a separation between the stud 32 and screw 26 and a consequent interruption of the current in the primary circuit in which said stud and screw are included. The rollers 29 are rotatably mounted upon screws 29^a extending between ring 29^b and the removable apertured disk 34 which is secured upon the outer end of the cylindrical extension 4. The apertures in the disk 34 are closed and the interior of the extension 4 protected from dust by a plate 35 which is removably supported against said disk by means of a spring 36 disposed diagonally across the closed end of the extension 4, bearing upon the outer surface of plate 35 with its free ends provided with latches adapted to removably engage under the heads of buttons 37 as clearly indicated in Fig. 7. The disk 34 carries in its center an inwardly extending spring-pressed carbon brush 38, which is mounted within the hollow support 39 and engages a terminal of the primary circuit of the armature winding.

The rim of the apertured disk 34 carries a series of peripheral notches 40 which cooperate with the index 41, carried by the extension 4 and adapted to engage any selected notch of said series to set or regulate the position of the rollers 29 and thus the times of breaking the contact between the screw 26 and the tilting or rock arm 27. It will be evident that the times of breaking the said contact will be earlier or later, according as the disk 34 is turned to bring its right hand or left hand notches 40 into position to interlock with the index 41, and that this regulation can be effected by the very simple operation of removing the plate 35 and disk 34 in the manner described, and bringing any selected notch 40 into position to interlock with index 41. It will also be seen that the position of engagement of the screw 26 and tilting or rock shaft 27, can be observed through the apertures in disk 34, without removing it and further that by removing this disk 34 free access may be had to examine or adjust the circuit breaker or to remove it with the condenser 15 without interfering with the remaining portions of the magneto. This is of particular importance as it will be noted the parts of the magneto which most frequently require adjustment or removal, are thus easily reached.

One terminal of the primary winding of the armature is connected to the metal of the armature, and the other end to one end of the secondary winding, and to a plug 45, which is mounted in the hollow shaft 22, but insulated therefrom as shown (Fig. 8). This plug is in electrical communication with metal strip 30. In the operation of the generator, the primary current passes through metal strip 30, then through the circuit breaking members 26 and 27, through the condenser casing in communication with one side or element of the condenser, back to the other side of the primary winding, through the metal of the armature. At the instant of breaking the circuit at the members 26 and 27, the current passes from metal strip 30, and the metal casing of the condenser into the two series of plates of the condenser which is thus charged as will be well understood.

The distribution of the induced current to the spark plugs of the motor may be performed in the manner described in my copending application, Serial No. 426,063, filed April 9, 1908, and for example, as indicated in the diagram shown in Fig. 6 of the accompanying drawing. In this drawing, 15 designates the condenser hereinbefore referred to, connected with the circuit breaker *a*, consisting of screw 26 and arm 27 (Figs. 5 and 6) and the primary winding *b* of the armature. The secondary winding of the armature *c* is connected with the terminal contacts *d* and *e* of the collector *g*, (Fig. 2,) which contacts are periodically electrically connected with the spark plugs *f*, of the engine cylinders *g*. Finally with a view of facilitating the modification of the angle of keying of the magneto, a notch 42 is provided in the part 21 of the armature in such a manner that when a pin 43 (shown by dot and dash lines in Fig. 1) is inserted into the hole 44 provided in the framework, the pin in its fall engages the notch and thus locks the armature in the position corresponding to the moment of lighting. Furthermore, it allows of the shaft being locked when it is desired to remove the condenser 15.

Having described my invention, I claim:

1. In a magneto of the class described, the combination with field magnets, of an armature comprising primary and secondary windings, a circuit breaker for said primary winding, carried by said armature, and an annular condenser carried by and surrounding a portion of the shaft of said

armature and connected with the opposite contacts of said circuit breaker, substantially as described.

2. In a magneto of the character described, the combination with field magnets of an armature, comprising primary and secondary windings, an annular condenser carried by and surrounding a portion of the shaft of said armature, a circuit breaker for said primary winding mounted upon said condenser, and means carried by a stationary portion of said magneto to operate said circuit breaker during the rotation of said condenser.

3. In a magneto of the character described, the combination with field magnets of an armature comprising primary and secondary windings, a condenser carried by said armature, a circuit breaker for said primary winding mounted upon said condenser, said circuit breaker comprising a relatively fixed and a relatively movable contact element mounted upon said condenser, elastic means to normally hold said elements in contact, the relatively movable contact element consisting of a pivoted tilting or rock arm, and a plurality of rollers carried by a stationary portion of said magneto and adapted to be engaged by said arm in its rotation, and to tilt or rock the same out of engagement with the other contact element, substantially as described.

4. In a magneto of the character described, an armature and armature shaft therefor, said armature comprising primary and secondary windings, a circuit breaker for said primary winding carried by said armature and an annular condenser surrounding and keyed to said shaft and connected with the opposite contacts of said circuit breaker.

5. In a magneto of the character described, an armature and armature shaft therefor, said armature comprising primary and secondary windings, a circuit breaker for said primary winding, and a condenser connected to opposite contacts of said circuit breaker, said condenser being keyed for rotation and the elements of said circuit breaker being mounted upon the outer portion of said condenser.

6. In a magneto of the character described, an armature, and armature shaft therefor, said armature comprising primary and secondary windings, a circuit breaker for said primary winding and a condenser connected to opposite contacts of said circuit breaker, said condenser being keyed for rotation and said circuit breaker comprising a contact member secured to the outside of the condenser, a platinum pointed screw supported by said contact member, a tilting or rock arm, pivoted upon the outside of the condenser and normally spring pressed against said platinum pointed screw and a plurality of rollers carried by a stationary portion of said magneto and adapted to be engaged by said arm in its rotation and to tilt or rock the same out of engagement with the other contact element, substantially as described.

7. In a magneto of the character described, the combination with a frame work and field magnets associated therewith, of an extension to said framework, an armature comprising primary and secondary windings, a circuit breaker for said primary winding, and an annular condenser surrounding a portion of the shaft of said armature and connected with the opposite contacts of said circuit breaker, said condenser and said circuit breaker being mounted for rotation with said armature, an apertured disk adapted to close the free end of said extension, and means mounted upon said disk for engaging and operating said circuit breaker during its rotation.

8. In a magneto of the character described, the combination with a frame work and field magnet associated therewith, of an extension to said framework, an armature comprising primary and secondary windings, a circuit breaker for said primary winding and a condenser connected with the opposite contacts of said circuit breaker, said condenser and said circuit breaker being mounted for rotation with said armature, an apertured disk carrying means to operate said circuit breaker, said disk being adapted to close said extension, buttons carried by said extension and a spring adjacent the outer surface of said disk having its free ends provided with latches adapted to engage said buttons to hold said disk in position, substantially as described.

9. In a magneto of the character described, the combination with a frame work and field magnet, associated therewith, of an extension to said framework, an armature comprising primary and secondary windings, a circuit breaker for said primary winding and an annular condenser surrounding a portion of the shaft of said armature and connected with the opposite contacts of said circuit breaker, said condenser and said circuit breaker being mounted for rotation with said armature, an apertured disk adapted to close the free end of said extension, and a spring controlled plug mounted in the center of said disk, and adapted to convey current to one side of said condenser, substantially as described.

10. In a magneto of the character described, the combination with a framework and field magnet, associated therewith, of an extension to said framework, an armature comprising primary and secondary windings, a circuit breaker for said primary winding, and a condenser connected with the

opposite contacts of said circuit breaker, said condenser and said circuit breaker being mounted for rotation with said armature, an apertured disk adapted to close the free end of said extension, means carried by said disk for engaging and operating said circuit breaker during its rotation, said disk being provided with a plurality of notches in its periphery, and an index member carried by said extension and adapted to engage a selected one of said notches to regulate the angular position of the means for engaging and operating the circuit breaker, whereby the time of breaking of the primary circuit may be regulated, substantially as described.

11. In a magneto of the kind described the combination with the framework and the field magnets of an extension made integral with the said framework an armature, an armature shaft, a condenser keyed upon the said shaft inside the said extension of the framework and the circuit breaking means for the primary circuit also arranged in the said extension, and an apertured disk adapted to close the extension and to hold the members together, substantially as and for the purpose set forth.

12. In a magneto of the kind described the combination with the framework and the field magnets of an extension made integral with the said framework, an armature, an armature shaft, a condenser keyed upon the said shaft in the said extension, a contact member secured to the outside of the said condenser and extending from the periphery to the center thereof, a platinized contact screw secured to the said contact member, a tripping member pivotally secured to the outside of said condenser, a spring for said tripping member, a small contact plug secured to said tripping member and adapted to coöperate with the said contact screw, an adjustable apertured plate adapted to close the end of said extension, two rollers mounted in the center of said plate and adapted to actuate the said tripping member so as to break the contact at the contact plug thereof, a guard plate removably mounted on the outside of said apertured plate and means for conducting current from the outside to the said contact member, substantially as and for the purpose set forth.

13. In a magneto of the kind described the combination with the framework and the field magnets of an extension made integral with the said framework, an armature, an armature shaft, a condenser secured to said shaft in the said extension, a contact member secured to the outside of said condenser and extending radially thereof, a platinized contact screw secured to the said member near the periphery thereof, a tripping member pivotally secured to the outside of said condenser, a spring for said tripping member, a small contact plug secured to the said tripping member and adapted to coöperate with the said contact screw, an apertured disk rotatably secured into the free end of said extension, a plurality of notches on the periphery of said disk, an index mounted on the said frame work and adapted to coöperate with the said notches to lock the said apertured disk in position, a cage mounted in the center of said disk on the side directed toward the said condenser, two rollers rotatably mounted at diametrically opposite places in said cage, and adapted to actuate the said tripping member, a guard plate removably mounted on the outside of said apertured disk and adapted to close the latter and a spring controlled contact plug mounted in the center of said disk and adapted to contact with the central part of said contact member of the condenser and to convey current thereto, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

EDOUARD DENIÉPORT.

Witnesses:
ADOLPHE STURM,
H. C. COXE.