

E. C. WILCOX.
MAGNETO.
APPLICATION FILED DEC. 17, 1908.

1,027,023.

Patented May 21, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

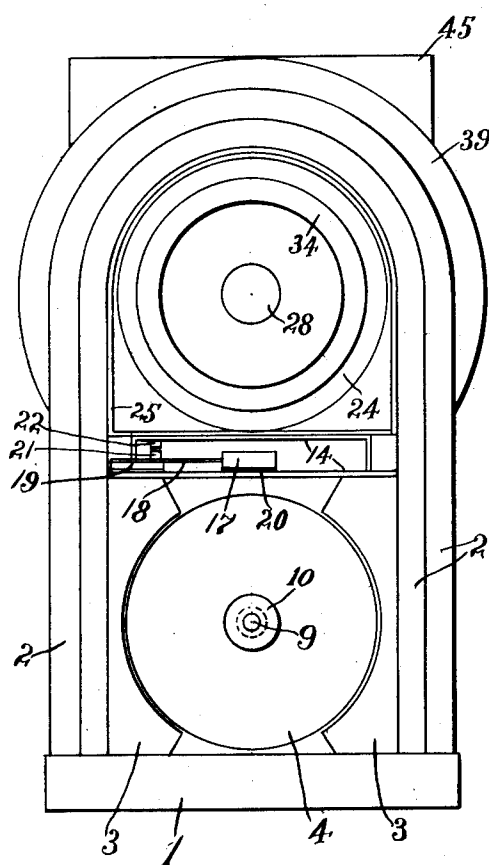
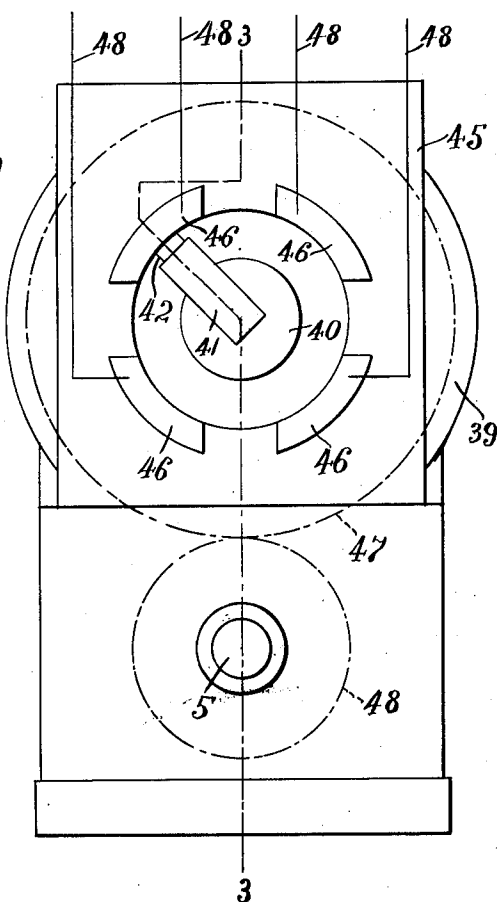


Fig. 2.



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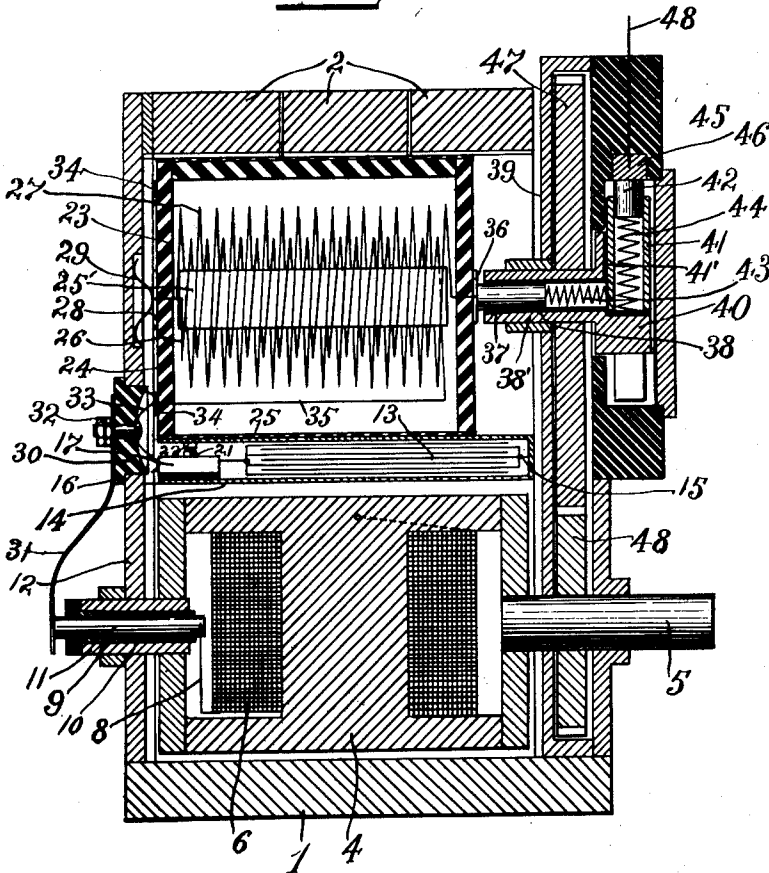
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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MAGNETO.

1,027,023.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ERNEST C. WILCOX, a citizen of the United States, residing at Meriden, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Magnetos, of which the following is a full, clear, and exact description.

My invention relates to magnetos, and particularly, though not exclusively, to such as are adapted for use with ignition mechanisms for hydrocarbon motors and the like.

The magneto forming the subject-matter of the invention is of the low tension type having a single winding upon the armature, with which an induction coil is employed to step up the current to produce the necessary potential for ignition purposes.

The object of the invention is to provide a compact or self-contained structure in which the induction coil and the condenser are mounted upon the magneto, preferably within the bow of the magnets which furnish the magnetic field for the magneto armature.

A further object is to combine in compact arrangement with such structure the usual distributor whereby the apparatus may be employed with a multi-cylinder motor.

A further object of the invention is to so construct and arrange the parts that the elements thereof may be readily removed and replaced to facilitate repairs and the like.

With these objects in view, the invention consists in the construction and arrangement of parts, a preferred embodiment of which is illustrated in the accompanying drawings, in which—

Figure 1 is an end view showing the arrangement of the magneto armature and poles, and the relative position of the induction coil and condenser. Fig. 2 is a view of the opposite end of the device showing the arrangement of the distributor thereon. Fig. 3 is a vertical section upon the line 3—3 Fig. 2, illustrating the relative arrangement of the magneto armature, condenser, induction coil and distributor and the electrical connection therefor.

In the embodiment of my invention herein selected for illustration, the device consists of a base 1, upon which are mounted the field magnets 2 of the magneto, having the pole pieces 3 attached thereto.

4 indicates the usual magneto armature, which is mounted for rotation upon the shaft 5 and which carries the single winding 6, grounded at one end in the usual manner. The opposite end of the winding 6 is led out through a connection 8 and contact member 9, the latter being mounted in an insulating bushing 10 in a sleeve 11, which is journaled in the front plate 12 and forms one bearing for the armature 4. The condenser 13 is mounted within a casing or housing 14 of brass or other non-magnetic material, which rests directly upon the poles 3 of the magnets 2, as shown in Fig. 1, and through which one terminal of the condenser is grounded, as at 15. The opposite terminal 16 of the condenser is connected with a block 17, which forms the support of a vibrator arm 18 having the usual armature 19. The vibrator may be mechanically or magnetically operated but as the specific manner of operation of the vibrator forms no part of the present invention, the same is not herein described. The block 17 is insulated from the condenser casing, as shown at 20, and the vibrating arm carries a contact 21 arranged to cooperate with a contact 22 mounted directly upon the condenser casing. By this arrangement it will be seen that the condenser is connected around the cap between the contact points 21 and 22.

The induction coil 23 is mounted within a casing or housing 24, which may be of fibrous material, the whole being surrounded by a casing 25, Fig. 1, of brass, which is shaped to fit within the bow of the field magnets 2, and rests upon and is supported by the condenser casing 14. The induction coil consists of the core 25' having a primary winding 26 and a secondary winding 27. One terminal each of the primary and secondary windings respectively, is led out to a plate 28 upon one of the heads of the induction coil casing 24, and said terminals are grounded through a spring contact 29 on the front plate 12 of the apparatus.

The manner of connecting up the winding 6 of the magneto armature, condenser and the induction coil 23, is as follows. Upon an insulating plug or plate 30 mounted within a suitable aperture in the front plate 12, is a spring arm 31, which contacts with the contact member 9 of the armature winding, which spring 31 is connected through a contact screw 32 to a spring 33, one end of

which is arranged to contact with the vibrator supporting block 17, and the opposite end with an annular ring 34 carried by one of the heads of the coil casing 24, to which ring also is connected the opposite terminal 35 of the primary winding 26 of the induction coil, whereby said coil is connected in parallel with the vibrator 18. The opposite terminal of the secondary winding of the induction coil is led out to a plate 36 upon the rear head of the condenser casing, which, when the coil is in place within the bow of the magnets, contacts with a carbon brush 37 in the insulating bushing 38 in the hollow shaft 38', journaled in a rear plate 39 at the rear of the field magnets, which plate in turn is mounted upon the base 1 of the apparatus. The shaft 38 forms a part of or may be secured to a support 40, within which is mounted a metallic sleeve 41 insulated at 41', carrying the rotating contact member 42 of the distributor. The carbon brush 37 is held in yielding contact with the contact plate 36 on the rear head of the induction coil casing by means of a spring 43, which is introduced between said brush and the casing 41 and forms electrical connection between said parts. The rotating contact member 42 of the distributor is also yieldingly supported by means of a spring 44, which tends constantly to force it outwardly against the inner face of the distributor ring 45, within which are mounted a plurality of distributor contacts 46 arranged to make contact with the rotating contact member 42 as the same is rotated. To impart the necessary rotation to the contact member 42 of the distributor, the shaft 38' has mounted thereon a gear 47, which meshes with a gear 48 upon the shaft 5 of the magneto armature 4. The current is led out from the distributor contacts 46 by means of the connections 48, Fig. 2, whereby the current may be led to the ignition mechanism (not shown) of a multi-cylinder engine.

By the construction above described, it will be seen that the condenser, the vibrator and induction coil are compactly arranged and carried upon the magneto, and as here shown, within the bow of the magnets 2, and in such manner that any of said parts may be readily removed and replaced without seriously disturbing the arrangement of the other parts of the device. The distributor, also, is conveniently and compactly carried upon the frame of the magneto.

The parts may be readily assembled by simply slipping the condenser casing into place upon the poles of the magnet, which operation at the same time properly positions the vibrator, which is carried upon or within said casing. The induction coil may then be slipped into place over the condenser

until the terminal plate 36 makes contact with the yielding brush 37 of the distributor. The connections between the armature, condenser and coil are thereupon effected by simply replacing the front plate 12 carrying the contact springs 29, 31 and 33.

While I have herein described a particular embodiment of my invention, it is to be understood that the same may be altered in details and arrangement of parts without departing from the spirit and scope thereof.

What I claim is:

1. In a device of the character described, a combination with a magneto of an induction coil adapted to be mounted thereon, a face plate, said coil and face plate having contact plates whereby electrical connections of said magneto and coil may be automatically effected by the placing of said coil and plate in position.

2. In a device of the character described, a combination with the magneto of a condenser, an induction coil arranged to be removably mounted thereon, and a face plate and means for automatically effecting electrical connection of said magneto, condenser and coil by assembling the same and said plate in position.

3. In a device of the character described, the combination with a magneto of an induction coil mounted within the bow of the field magnets thereof, a face plate, said coil and plate having contact plates whereby electrical connections of said magneto and coil may be automatically effected by the placing of said coil and plate in position.

4. In a device of the character described, the combination with a magneto of a condenser, a casing therefor, including a face plate, a vibrator mounted within said casing, an induction coil, said condenser, vibrator and coil being mounted in the bow of the field magnets of said magneto, and means for automatically effecting the electrical connections of said parts by assembling the same and said plate in position.

5. In a device of the character described, the combination in a magneto of a distributor, an induction coil mounted within the bow of the field magnets of said magneto, and electrical connections including a face plate so constructed and arranged as to automatically effect contact between said distributor and the winding of the magneto armature by the operation of placing said coil within the magnets and of placing said face plate in position when the distributor is in position.

6. In a device of the character described, the combination with a magneto and a casing therefor, of a face plate for said casing, a condenser having a casing supported upon the pole pieces of said magneto, a vibrator carried by said casing and an induction coil mounted upon said condenser casing and

within the bow of the field magnets, all of said parts having exposed contacts whereby electrical connections may be effected by placing said parts in operative position.

5 7. In a device of the character described, the combination of a magneto, a casing including a face plate, a distributor carried thereby, a condenser and an induction coil removably mounted within the bow of the
10 field magnets of said magneto, and means to automatically effect electrical connection of said parts by the operation of placing them in position.

15 8. In a device of the character described, the combination of a magneto, a casing therefor comprising front and rear plates, an induction coil having exposed contacts and mounted within the bow of the field magnets of said magneto, said front plate
20 carrying contact members whereby electrical connection may be effected between the armature of said magneto and said coil by placing said front plate in position when the other parts are assembled.

25 9. In a device of the character described, the combination with a magneto and casing therefor comprising front and rear plates, of a condenser and an induction coil each having exposed contacts and mounted within
30 the bow of the field magnets of said magneto, and a face plate for said casing having contact members constructed and arranged to automatically effect electrical connection between the magneto armature, condenser
35 and coil by the placing of said plate in position when the other parts are assembled.

10. In a device of the character described, the combination of a magneto, a casing therefor comprising front and rear plates,

a distributor carried by said casing, a con- 40 denser having a vibrator mounted thereon, an induction coil, said condenser and coil arranged to be carried within the bow of the field magnets of said magneto, and contact points for said front plate vibrator, 45 coil and distributor so arranged as to automatically effect electrical connection therebetween by the assembling of said parts in position.

11. In a device of the character described, 50 the combination with a magneto of a casing therefor comprising front and rear plates, a distributor carried by said casing, a condenser, a casing therefor, a vibrator mounted within said condenser casing, an induction 55 coil, said condenser and coil constructed and arranged to be carried within the bow of the field magnets of said magneto, said front plate for the magneto casing having contact springs arranged to effect electrical 60 connection between the armature winding of said magneto, said vibrator, condenser and coil by the assembling of said parts in position.

12. In a device of the character described, 65 a condenser, a casing therefor, a vibrator mounted on said casing, said casing adapted to effect electrical connection between said vibrator and condenser.

13. In a device of the character described, 70 a condenser and casing therefor, a vibrator mounted on said casing and having one terminal insulated therefrom and the opposite terminal electrically connected therewith.

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