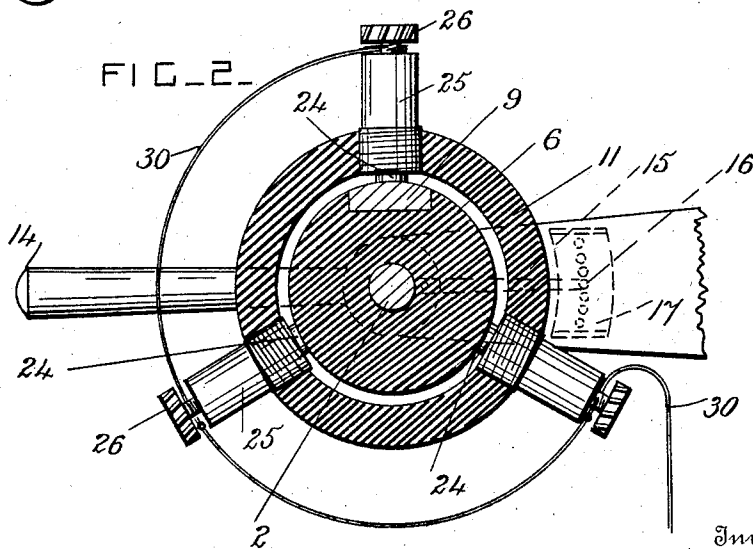
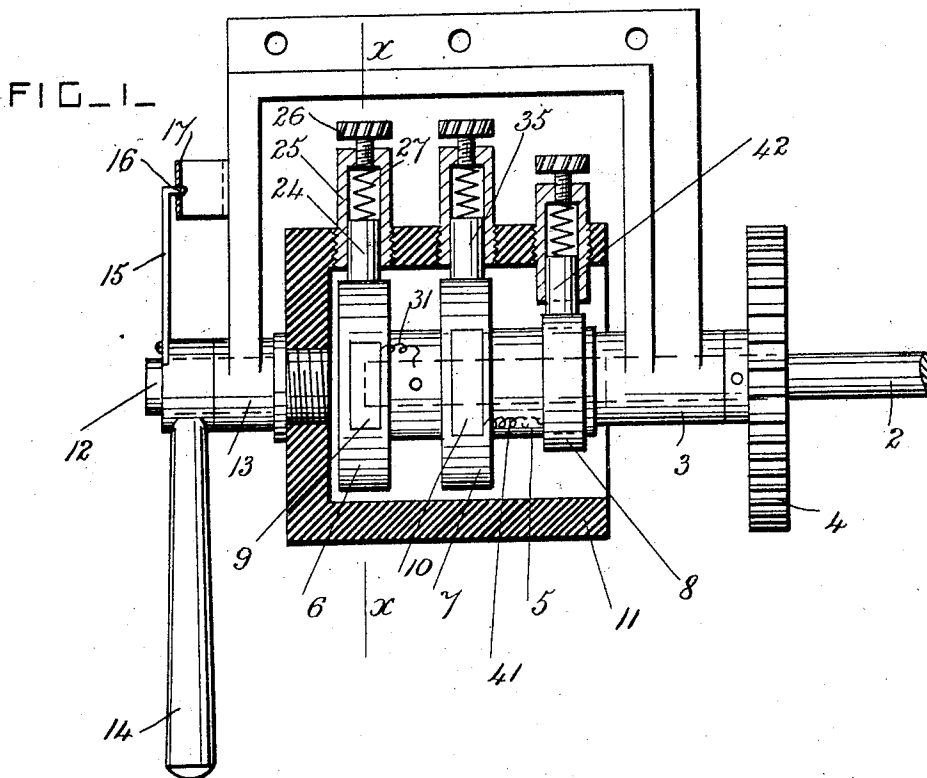


H. F. WHALTON.
SPARKING APPARATUS.
APPLICATION FILED JUNE 12, 1911.

1,013,466.

Patented Jan. 2, 1912.

2 SHEETS—SHEET 1.



Inventor

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Witnesses

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Herbert W. Jenner.

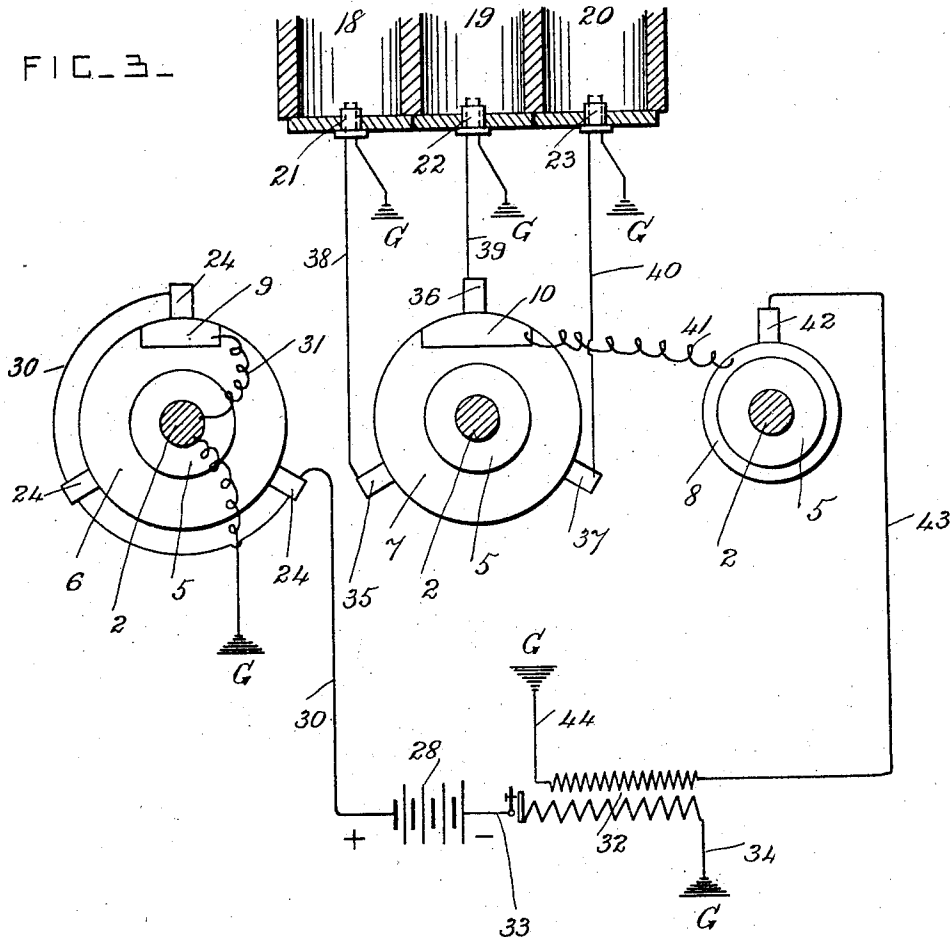
Attorney

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FIG. 3—



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UNITED STATES PATENT OFFICE.

HILARY F. WHALTON, OF KEY WEST, FLORIDA.

SPARKING APPARATUS.

1,013,466.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed June 12, 1911. Serial No. 632,654.

To all whom it may concern:

Be it known that I, HILARY F. WHALTON, a citizen of the United States, residing at Key West, in the county of Monroe and State of Florida, have invented certain new and useful Improvements in Sparking Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sparking apparatus for supplying current to the spark-plugs of internal combustion engines having several cylinders; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed whereby the spark-plugs of the cylinders are operated one after another by a single spark-coil.

In the drawings, Figure 1 is a longitudinal section through the timer of a sparking apparatus, constructed according to this invention. Fig. 2 is a cross-section taken on the line *x-x* in Fig. 1. Fig. 3 is a diagram of the complete apparatus showing the electric circuits.

The driving shaft 2 of the timer is journaled in a suitable stationary bearing or bearings 3, and is provided with a toothed driving wheel 4, or any approved mechanism, for connecting it positively with the engine crank-shaft, so that the shaft 2 always revolves at the same relative speed as the engine crankshaft. A core or sleeve 5 of insulating material is secured on the shaft 2, and is provided with two disks 6 and 7 also of insulating material. A metallic ring 8 is secured on the core 5. A metallic contact-plate 9 is let into and secured on one side of the disk 6, and a similar metallic contact-plate 10 is let into and secured on the corresponding side of the disk 7, but the plate 10 is longer than the plate 9 and is arranged to project beyond it at each end. The timer cylinder 11 is also formed of insulating material, and it is arranged to inclose or encircle the timer sleeve. The timer cylinder is provided at one end with a shaft or pivot 12 mounted to oscillate in a stationary bearing 13. A handle 14 is secured on the shaft 12 and is provided with a locking-device for securing it to the bearing 13. This locking-device is of any approved construction, and it preferably consists of a spring tongue 15 having a projection 16 on its free end which

engages with holes or notches in a plate 17 secured to the said bearing.

The engine may have any number of power cylinders, and, for illustration, portions of three power cylinders 18, 19, and 20, are shown, having spark-plugs 21, 22, and 23, respectively. One electrode of each spark-plug is connected to the ground G.

The timer cylinder 11 has three similar contact-brushes 24, arranged around its periphery at equal distances apart and bearing on the disk 6. These contact-brushes are slidable in guides 25 having binding-screws 26, and 27 are springs in the guides which press the brushes against the periphery of the disk and the contact-plate 9. A battery 28 is provided, and 30 is a wire which connects the positive pole of the battery with the three brushes 24 in series. A wire 31 connects the contact-plate 9 with the shaft 12 which is not insulated from the ground. A spark-coil 32 of any approved construction is provided, and its primary winding is connected to the negative pole of the battery by a wire 33 and to the ground by a wire 34 so as to form a low tension circuit. The timer cylinder 11 has also three spring-pressed contact-brushes 35, 36, and 37, all of which are similar to the brushes 24, and which are arranged at equal distances apart around the periphery of the cylinder. These brushes bear against the periphery of the disk 7 and its contact-plate 10. The brushes 35, 36, and 37, are connected to the spark-plugs of the power cylinders 18, 19, and 20, by wires 38, 39, and 40, respectively. The metallic ring 8 is connected to the metallic contact-plate 10 by a wire 41. A spring-pressed contact-brush 42, also similar to the brushes 24, is secured to the timer cylinder 11, and bears on the metallic ring 8. The brush 42 is connected with the secondary winding of the spark-coil 32 by a wire 43, and the secondary winding of the spark-coil is operatively connected with the ground G by a wire 44, thereby forming a high tension circuit. The spark-plugs are operated one after the other by the current of the high tension circuit. The lower pressure current flows from the battery through one or more of the brushes 24, and through the metallic plate 9 and wire 31 to ground; thence to the primary winding of the spark-coil by wire 34, and to the negative pole of the battery by the wire 33. Each time the spark-coil is en-

ergized the high tension current flows from it through wire 43 and brush 42 to the metallic ring 8, and thence to the metallic contact-plate 10 by wire 41. The high tension
 5 current is caused to flow to the spark-plugs one after the other, and thence to ground, by the three brushes which come in contact with the plate 10 one after the other.

The contact-plate 10 is made longer than
 10 the contact-plate 9 to avoid sparking at the brushes of the high tension circuit, the contact-plate 10 being always in contact with one or another of the brushes pertaining to it at the times when the low pressure circuit is made and broken.

When the sparking apparatus is constructed in this manner two or more spark-plugs can be operated by a single spark-coil and battery.

20 When the engine has a multiplicity of cylinders the wiring of its spark-plugs is thereby greatly simplified, and the apparatus is much less liable to get out of order than when a separate spark-coil is provided for
 25 each power cylinder. The spark-plugs can be operated sooner or later by moving the handle 14 to adjust the position of the timer cylinder circumferentially of the timer sleeve.

30 What I claim is:

1. In a sparking apparatus, the combination, with a cylinder of insulating material, of a sleeve of insulating material provided with means for revolving it and journaled
 35 inside and concentric with the said cylinder, a contact ring secured on the said sleeve, a timer disk and a distributor disk secured side by side on the said sleeve and each provided with a contact plate at its periphery, the timer contact plate being arranged constantly in circuit with the said ring and the distributor contact plate having an earth
 40 connection, a spark coil, a brush carried by the said cylinder in contact with the said

ring and connected to the secondary winding 45 of the spark coil, a series of brushes for connection with the spark-plugs, said brushes being carried by the cylinder and engaged one after the other by the timer contact plate, and a second series of brushes carried by the
 50 cylinder and engaged one after another by the distributor contact plate and connected with the primary winding of the spark coil.

2. In a sparking apparatus, the combination, with a support having two bearings arranged axially in line with each other, of an adjustable cylinder of insulating material provided at one end with a shaft which is journaled in one of the bearings, means for securing the cylinder in position, a driving
 60 shaft journaled in the other bearing, a sleeve of insulating material secured to the said driving shaft and arranged inside the said cylinder, a contact ring secured on the said sleeve, a timer disk and a distributor disk 65 secured side by side on the said sleeve and each provided with a contact plate at its periphery, the timer contact plate being arranged constantly in circuit with the said ring and the distributor contact plate having
 70 an earth connection, a spark coil, a brush carried by the said cylinder in contact with the said ring and connected to the secondary winding of the spark coil, a series of brushes for connection with the spark- 75 plugs, said brushes being carried by the cylinder and engaged one after the other by the timer contact plate, and a second series of brushes carried by the cylinder and engaged one after another by the distributor 80 contact plate and connected with the primary winding of the spark coil.

In testimony whereof I have affixed my signature in the presence of two witnesses.

HILARY F. WHALTON.

Witnesses:

J. N. FOGARTY,

W. J. BRYSON.