R. JARDINE.

DISTRIBUTER.

APPLICATION FILED NOV. 7, 1906.

912,683.

Patented Feb. 16, 1909.

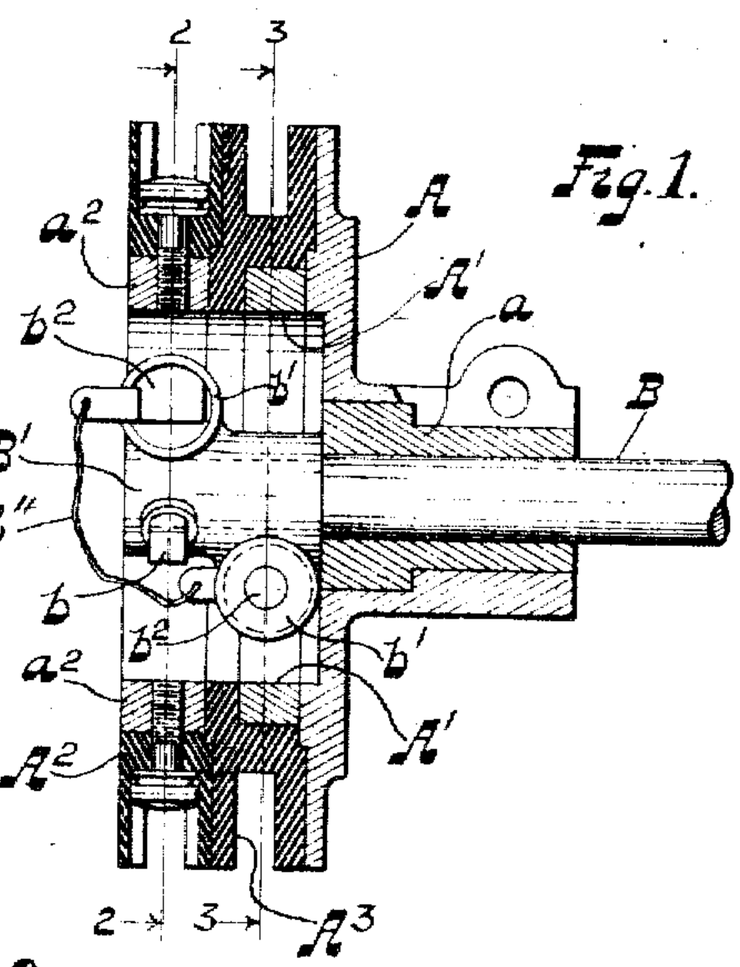



Fig. 1.

Fig. 2.

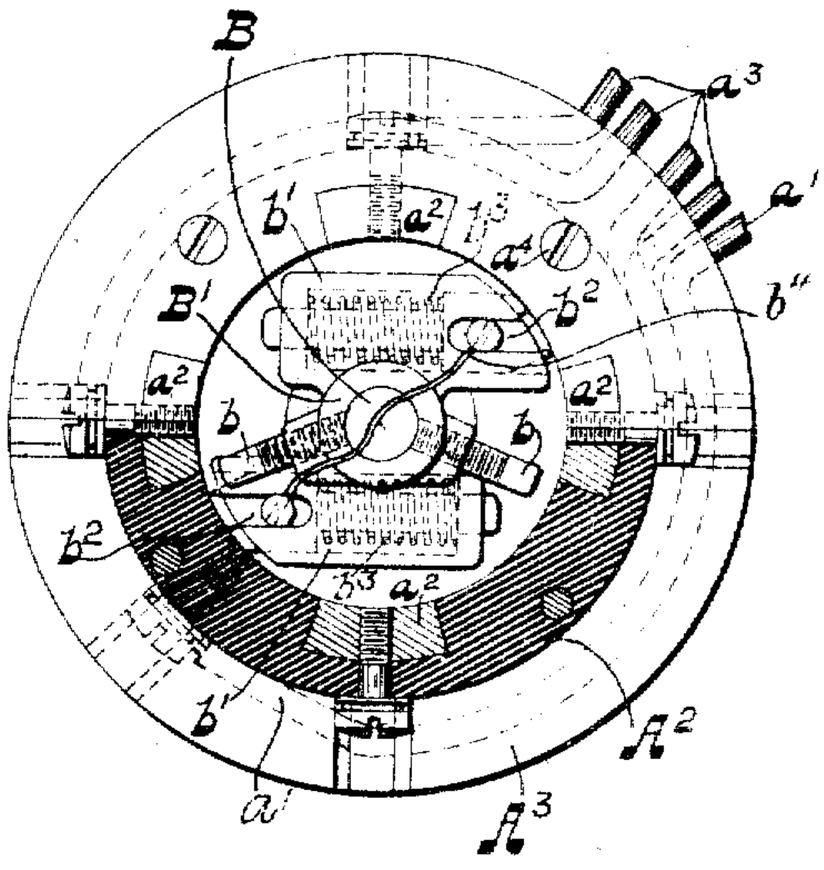
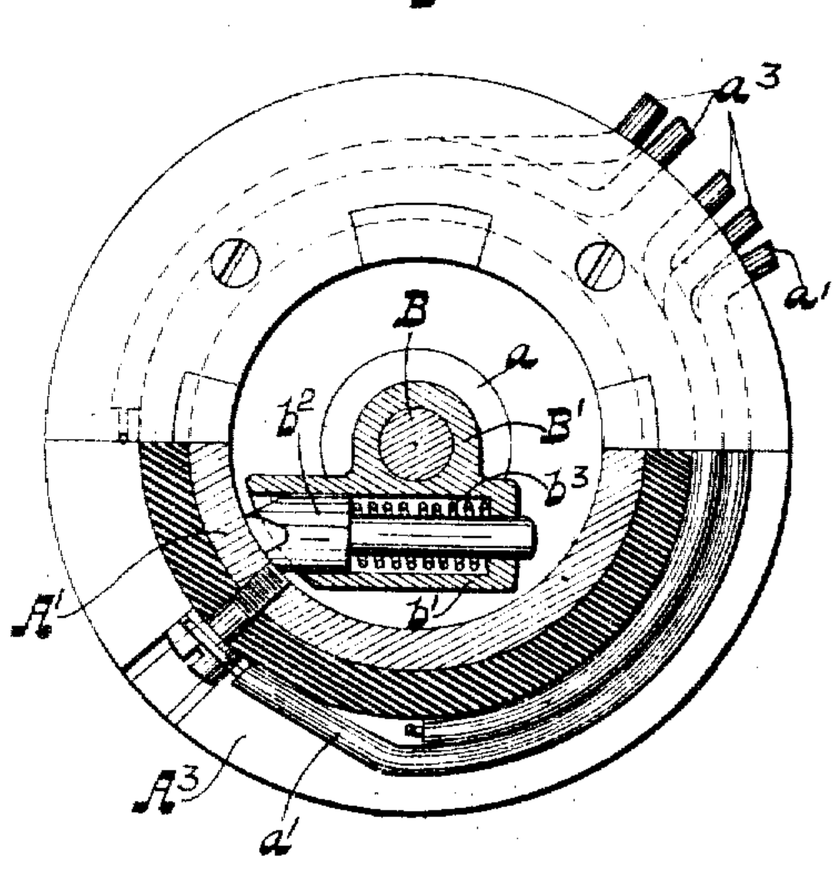



Fig. 3.

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# UNITED STATES PATENT OFFICE.

ROBERT JARDINE, OF CLEVELAND, OHIO.

## DISTRIBUTER.

No. 912,683. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed November 7, 1906. Serial No. 342,314.

*To all whom it may concern:*

Be it known that I, ROBERT JARDINE, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Distributers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to devices in use in connection with internal combustion, or explosion, motors in which an electrical system of ignition is employed, to "time" the spark whereby the charges in the several cylinders usually composing such engine are exploded. Such devices have been more or less indifferently styled circuit controllers, timers, and distributers.

The object of this invention is the provision of a device of the above character in which simplicity of structure has been combined with increased efficiency, whereby such device is rendered particularly, although by no means exclusively, adaptable to the arduous requirements of automobile service. The details of construction whereby this result is accomplished are hereinafter fully described, and those constituting my present invention later particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain means embodying the invention, such disclosed means constituting but one of various forms in which the principle of the invention may be used.

In said annexed drawing: Figure 1 represents an axial cross-section of an approved form of my distributer; Fig. 2 is a view of the same partly in plan and partly in transverse cross-section on a plane passing through line 2—2, Fig. 1; while Fig. 3 is similar to Fig. 2 except that the cross-section is taken on a plane passing through line 3—3, Fig. 1.

The base of the distributer is a suitable support A, in which is formed a bearing *a* for the upper end of the distributer shaft B. Base A is ordinarily rotatably mounted to permit the operator to advance the spark by turning it from its normal position. The lower end of shaft B is supported in other alined bearings, not shown, and is connected, by means of any approved form of gearing, with the crank-shaft of the engine whereby the distributer shaft may be made to rotate at the proper speed. Directly upon base A is mounted a primary contact-ring $A'$ composed throughout of conducting material. This ring is connected by means of a lead $a'$ with the ground wire in the coil and for this reason does not require to be insulated from the base of the distributer, such base, along with shaft B and the other parts of the automobile structure, being all grounded in their relation to the ignition system's circuit. Above primary contact ring $A'$ is mounted another ring $A^2$, a layer $A^3$ of insulation being interposed between the two rings and laterally inclosing the former, as well. Ring $A^2$, which I shall term the distributer contact ring, is also composed for the major part of insulating material; there are, however, embedded therein and suitably spaced about its inner circumference as many segmental contact blocks $a^2$ as there are cylinders or spark-plugs to which the current is to be successively directed. Lead wires $a^3$ make proper electrical connection between these contact blocks $a^2$ and the several coils corresponding with the different spark-plugs.

The end of distributer shaft B is designed to extend within the hollow cylindrical space inclosed by the superimposed rings $A'$ $A^3$ and $A^2$, and upon such shaft end is adjustably mounted, by means of set screws *b*, a head B'. Head B' comprises essentially a sleeve formed on each side with a barrel *b'*, such barrels being disposed parallel with each other and on a line with primary contact ring $A'$ and distributer contact ring $A^2$, respectively. They furthermore open in opposite directions. Within each barrel is reciprocably mounted a brush or plunger $b^2$, the outer end of which is urged forward into contact with the adjacent ring by means of a spring $b^3$ such brush end being planed off or flattened so as to narrow its contacting face to the width of the corresponding ring. Electrical connection between the two brushes $b^2$ is insured by joining them through a flexible conductor $b^4$, as shown, Figs. 1 and 2. A suitable cover, not appearing in the drawing, closes the top of the distributer against the entrance of moisture and dirt.

The operation of the device should be perfectly clear from the foregoing description of its construction. As the shaft B rotates, head B' is of course carried with it. During

each rotation of the head, brushes $b^2$ are carried once around their corresponding rings. In the case of ring A′, the primary contact ring, this means a continuous electrical connection, whereas in the case of the distributer ring $A^3$, such connection is made only when contact blocks $a^2$ are encountered. The result is an intermittent momentary flow of current and attendant spark at the corresponding spark-plug every time the upper brush sweeps across one of the blocks. It is thus seen that I do not depend for the continuity of my current upon the more or less doubtful ability of a four to six volt current, such being the strength ordinarily employed in this connection, to cross the insulating film of oil that should properly intervene between the shaft B and its bearings. In other words, instead of making the ground connection through such shaft, it is made through a separate conductor $a'$ and by terminals, *i. e.* ring A′ and lower brush $b^3$, that have a continuous metal to metal contact. The disposition of the brushes furthermore is such as to insure an equal pressure between the members of both sets of contacting terminals and to equalize the wear on the bearing $a$ by relieving it of all side thrust. The friction between the brushes and the contact rings should be just sufficient to keep the contacting surfaces bright, and so insure the perfect electrical connection essential to the regular firing of the gaseous-charges in the engine cylinders. The simplicity before referred to as forming a characteristic of my distributer is evidenced by the fact that by simply removing screws $a^4$ the contact rings may be completely disassembled, while a simple turn of set screws $b$ permits of the brush-head B to be readily adjusted upon, or removed from, shaft B. This simplicity of construction involves a corresponding economy in manufacture, and combined with the accuracy of operation above pointed out, produces a distributer of enhanced value.

Having thus described my invention in detail, that which I particularly point out and distinctly claim is:

1. In a distributer for an explosion motor, the combination with a support, of axially alined primary contact and distributer contact rings mounted in said support and insulated from each other, a member rotatably mounted within said rings, and plungers borne by said member and contacting with said rings, respectively.

2. In a distributer for an explosion motor, the combination with a support, of axially alined primary contact and distributer contact rings mounted in said support and insulated from each other, a shaft axially mounted with respect to said rings, a head mounted thereon and oppositely directed plungers mounted in said head and adapted to contact with said rings respectively, said plungers being electrically connected.

3. In a distributer for an explosion motor, the combination with a support, of axially alined primary contact and distributer contact rings mounted in said support and insulated from each other, a shaft mounted in said support so as to extend axially within said rings, a head adjustably mounted upon said shaft, said head being formed with two parallel barrels each on a line with one of said rings, respectively, and opening in opposite directions, a plunger mounted in each of said barrels, resilient means maintaining said plunger in contact with the corresponding ring, and a flexible conductor electrically connecting said plungers.

4. In a distributer for an explosion motor, the combination with a support, of axially alined contact-rings mounted in said support and insulated from each other, one of said rings being formed of conducting material throughout and being connected to ground, the other thereof being provided about its inner circumference with spaced contact blocks of conducting material respectively connected with appropriate cylinders of said motor, a shaft mounted in said support so as to extend axially within said rings, a head adjustably mounted upon said shaft, said head being formed with two parallel barrels each on a line with one of said rings, respectively, and opening in opposite directions, a plunger mounted in each of said barrels, resilient means maintaining said plunger in contact with the corresponding ring, and a flexible conductor electrically connecting said plungers.

Signed by me, this 5th day of November, 1906.

ROBERT JARDINE.

Attested by—
D. T. Davies,
Jno. F. Oberlin.