

T. A. BACKÉ.
CIRCUIT CLOSER FOR AUTOMOBILES.
APPLICATION FILED MAY 15, 1907.

916,649.

Patented Mar. 30, 1909.

Fig. 1.

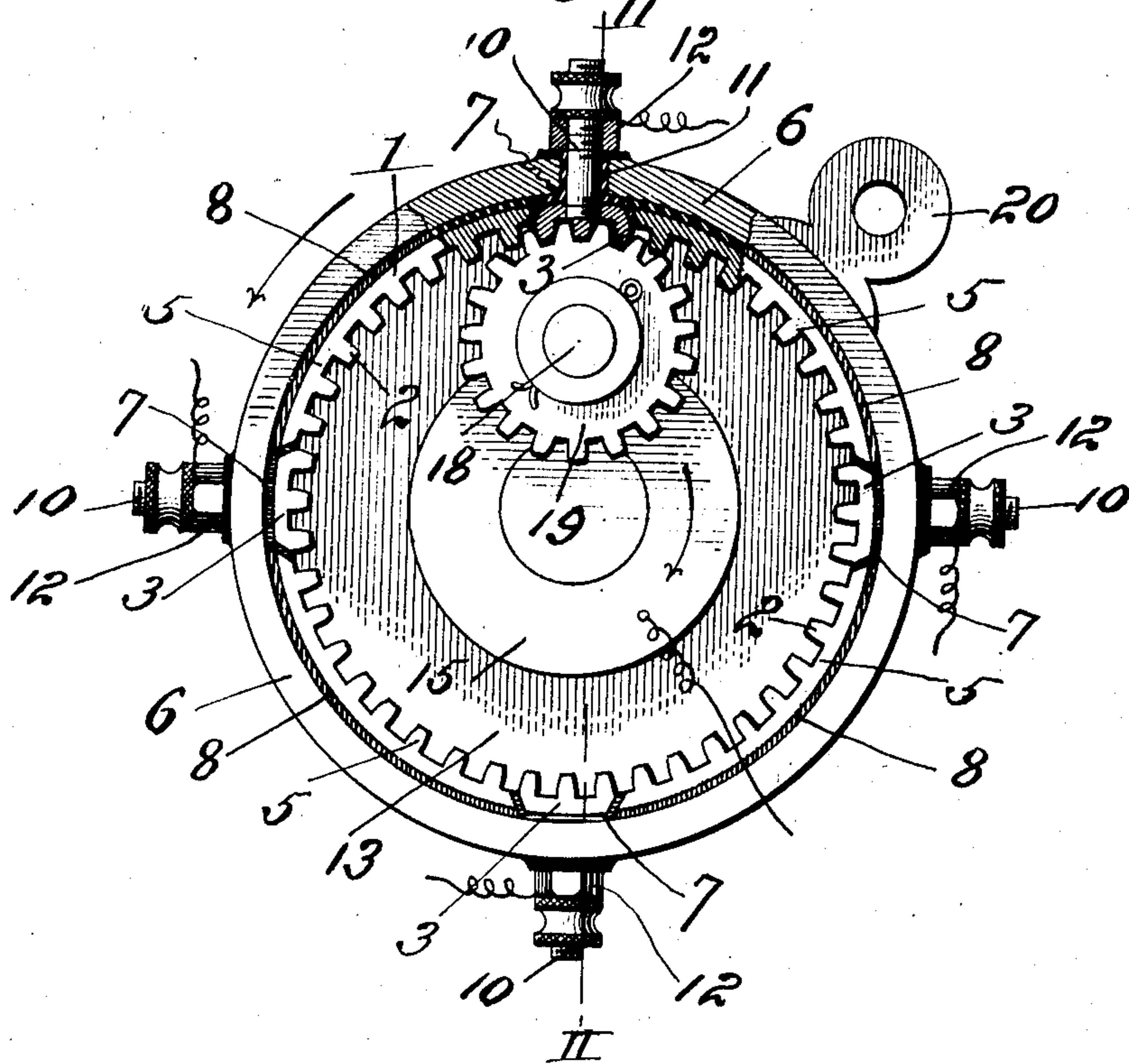
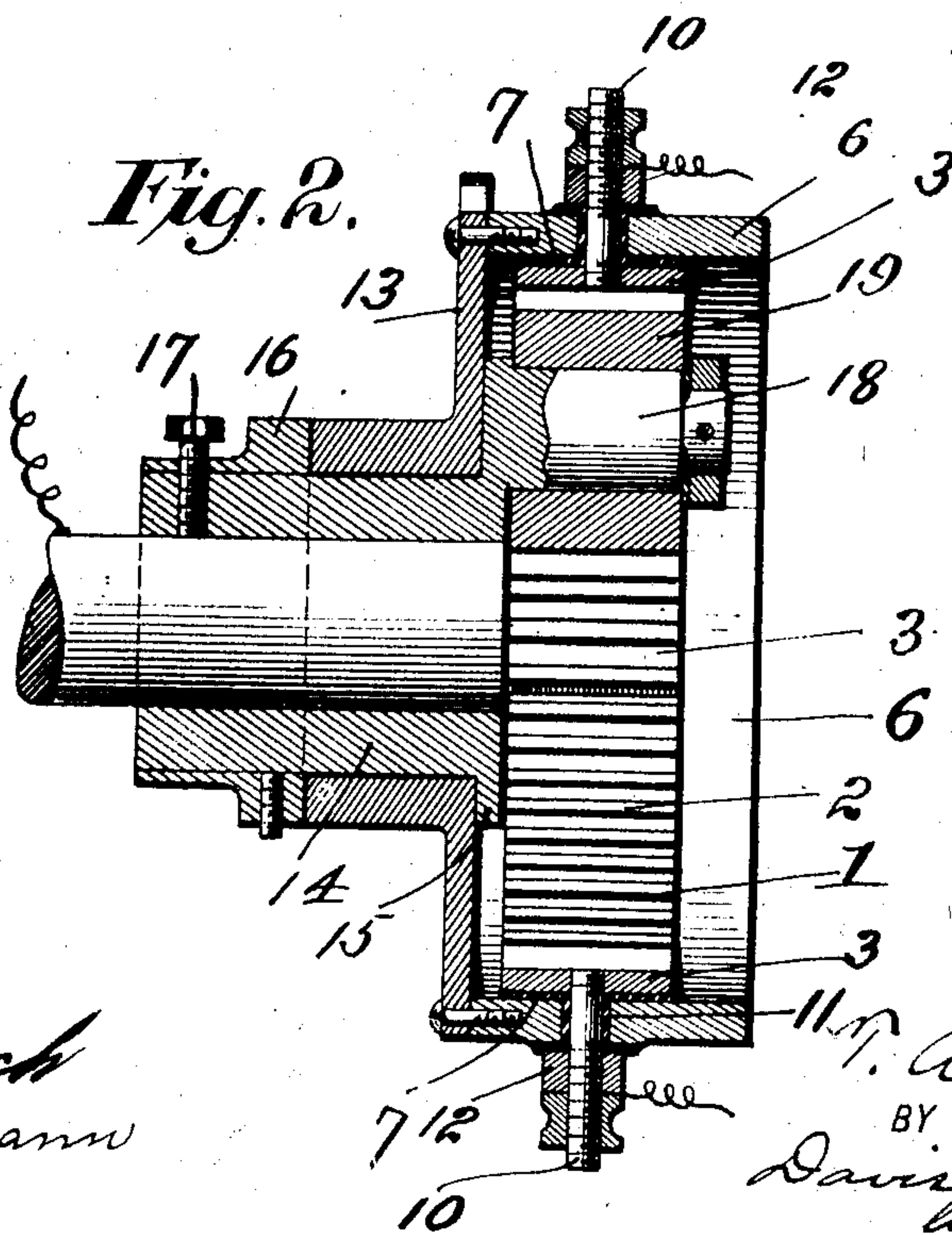


Fig. 2.



WITNESSES

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CIRCUIT-CLOSER FOR AUTOMOBILES.

No. 916,649.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed May 15, 1907. Serial No. 373,754.

To all whom it may concern:

Be it known that I, THEODORE A. BACKÉ, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented new and useful Improvements in Circuit-Closers for Automobiles, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a front elevation of the circuit closer with the usual glass cover removed; Fig. 2 a vertical central sectional view on the line II—II of Fig. 1.

One of the main objects of this invention is to provide a circuit closer, for use on automobiles, to close the circuits to the spark plugs, in which the circuit closer members will be non-sliding.

In the ordinary form of circuit closers now in use the movable contact slides over the stationary contact or contacts with the result that metal is scraped or wiped off in fine particles, and these fine particles of disassociated metal are burned or ignited causing considerable arcing between the movable member and the stationary one. It is clear in this form of circuit closer that the sliding member or shoe forms an imperfect contact with the stationary member. If it is pressed against said stationary member with sufficient force to make a proper contact there will be a great deal of friction between the two members with the result that the material of which said members are composed will be wiped or rubbed off and deposited on the insulating pieces located between the contacts. The result of this is that the current is not broken at the proper time and will often be completed before the proper compression is secured in the expansion chamber. Where arcing occurs the parts are soon burned or pitted to such an extent as to seriously interfere with the operation of the device. With my invention a rolling contact member is provided which is positively engaged by the contact pieces and caused to rotate so that it has a rotating and step-by-step contact with the terminals or stationary pieces.

Other equally important features of my invention will appear hereinafter.

Referring to the various parts by numerals, 1 designates the circuit closer ring. This ring is internally geared, as at 2. At the

desired points in this ring, where it is desired to complete a sparker circuit, contact plates 3 are inserted. Each contact plate is formed with gear teeth which correspond in every way with the teeth formed on the circuit closer ring, and form part of the continuous internal gear or ring. I have shown in Fig. 1 four of these contact plates located equal distances apart, but it will, of course, be understood that any number of them, from one to six, or more, may be used, the number of plates depending upon the number of cylinders in the engine, and consequently upon the number of spark plugs used. These contact plates are shown as provided with three teeth, but it will of course, be understood that they may be formed with fewer teeth or more teeth, as desired. I have found that a plate having a single tooth works very well, but I prefer that each plate should have a plurality of teeth.

Each contact plate 3 is insulated from the adjoining sections 5 of the circuit closer ring, and the supporting case 6 by a plate of insulation 7; and the intermediate sections of the circuit closer ring are insulated from the supporting case by insulation 8.

Each contact plate carries a binding post 10 which extends radially outward through the supporting ring 6 and to the outer end of which one wire of the spark plug circuit is connected. Each binding post is insulated from the case 6 by insulation 11. A lock-nut 12 is screwed on each binding post and against the outer surface of the case 6 and serves to clamp the contact plate in position inside of the circuit closer case. Each contact plate is so shaped that it serves as a means for locking the adjoining intermediate sections of the ring 1 in place. As shown in Fig. 1 of the drawings these plates enlarge inwardly and serve as wedges to force the sections 5 tightly in place so that no additional fastening means is necessary when the parts are assembled.

The inner side of the circuit closer ring is closed by a plate 13 which is rigidly secured thereto, and in the center of which is mounted a rotatable sleeve 14. This sleeve is formed at its inner end with an annular flange 15 which fits within the circuit closer ring on the inner side of the plate 13, and is held in position by means of a collar 16 secured in place on its outer end by means

of a set screw 17. When the circuit closer is used on a two-cycle motor the end of the drive-shaft is secured within the sleeve, but when the circuit closer is used on a four-cycle motor, the valve-controlling shaft is secured within the sleeve, or said sleeve may be secured to any counter-shaft driven from the main shaft and making two revolutions to every single revolution of the driving-shaft, for a purpose well known in automobile practice.

Secured to the sleeve 14, or to the flange 15 thereof, within the circuit closer ring or casing, is an eccentric pin 18 on which is secured a contact member 19. This member is in the form of a metal gear wheel, preferably a brass wheel, which is adapted to mesh with the internal gear of the circuit closer ring and contact plates. It will be readily seen that as sleeve 14 is rotated by the driving shaft, or other shaft connected thereto, the contact member 19 will be rolled around the internally geared circuit closer ring and will in turn engage the teeth of the contact plates, making a rolling step-by-step contact therewith. The teeth of the contact wheel or member will directly impinge against the teeth of the contact plates forming a direct and positive contact between the two members through which the current may pass. Furthermore, because of the inter-meshing of the teeth, the engaging parts of the plates will be kept clean and bright thereby insuring a complete contact and sharp breaks.

It will, of course, be understood, that the internal gear of the circuit closer ring may contain any number of teeth and that the rotatable contact member may be of any convenient size and be provided with any desired number of teeth. I prefer, however, that the rotatable contact member be so proportioned with respect to the internal rack or gear of the circuit closer ring that the same teeth will not engage the contact plates as the rotatable contact member is moved around the circuit closer ring. The purpose of this is to prevent undue wear on a few teeth, and to distribute the wear around the entire gear. It is only necessary that the circuit closer ring shall be provided with a number of teeth which is not a multiple of the number of teeth on the contact member 19.

Secured to the plate 13 is a lever arm 20 to which the usual adjusting rod, by means of which the ignition is advanced or retarded, may be connected. It will be readily understood that by rotating the ring 1 to the left, as indicated by the arrow in Fig. 1, the ignition will be advanced. It will also be observed that by rotating the circuit closer ring toward the right hand, as shown in Fig. 1, the contact member 19 may be brought into engagement with the contact plate 3 to the

left of said member 19, and by rotating it toward the left hand side, contact member 19 may be brought into engagement with the contact shown to the right of the member 19. By this means the charge in any one of the three cylinders whose spark plugs are connected to the three contact plates within moving range of the contact member may be ignited by simply shifting the circuit closer ring. In this way it is possible to start the engine from the seat, and without the necessity of starting it with the usual starting crank. It will, of course, be understood, that any form of rolling contact may be used instead of gear 19; and that any desired form of inter-meshing gears or projections may be used instead of the form of gear shown.

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

1. A circuit closer comprising an internally toothed ring formed of sections insulated from each other, some of said sections forming contact members, means for securing the contact members in place, said members serving as locking means to hold the intermediate sections of the ring in place, and a rotating toothed contact member adapted to be moved around the toothed ring.
2. A circuit closer comprising an internally toothed ring formed in sections, some of said sections forming contact members, a supporting case therefor, means for insulating said sections from each other and from the supporting case, binding posts clamping the contact members to the case, the contact members serving as means to clamp the intermediate sections of the ring to the case, and means to insulate the binding posts from the case.
3. A circuit closer comprising an internally toothed ring formed in sections, a supporting case therefor, means for insulating said sections from each other and from the supporting case, every other section forming a contact member, binding posts connected to the contact members and clamping said members to the case, said members enlarging inwardly and serving as means to clamp the intermediate sections of the ring to the case.
4. A circuit closer comprising an internally toothed ring formed in sections, a supporting case therefor, means for insulating said sections from each other and from the supporting case, every other section forming a contact member, binding posts connected to the contact members and clamping said members to the case, said members enlarging inwardly and serving as means to clamp the intermediate sections of the ring to the case, and means for rotating the toothed ring to advance or retard the closing of the circuits.
5. A circuit closer comprising an internally toothed ring formed of sections insulated from each other, some of said sections

forming contact members, means for securing the contact members in place, said members serving as locking means to hold the intermediate sections of the ring in place, and
 5 a rotatable toothed contact member adapted to be moved around the toothed ring, the center of said toothed rotating contact member being a fixed distance at all times from the center of the internally toothed ring,
 10 whereby the two members will be positively in engagement with each other at all times.

6. A circuit closer comprising an internally toothed ring formed of sections insulated from each other, some of said sections
 15 forming contact members, means for securing the contact members in place, said members serving as locking means to hold the intermediate sections of the ring in place, and
 20 a rotatable toothed contact member adapted to be moved around the toothed ring, the center of said toothed rotating contact member being a fixed distance at all times from the center of the internally toothed ring,
 25 whereby the two members will be positively in engagement with each other at all times, said two contact members being so proportioned with respect to each other that the same teeth will not be engaged in two successive movements of the rotating contact
 30 member around the toothed ring.

7. A circuit closer comprising an internally toothed ring formed in sections insulated from each other, some of said sections forming contact members, means for securing said toothed ring in place, means for

connecting circuit wires to the contact members, a rotatable part projecting into the toothed ring and carrying a rotatable toothed contact member adapted to mesh with the toothed ring, the center of said rotatable toothed contact member being a fixed distance from the center of the toothed ring, whereby the rotatable contact member will be held in positive engagement with the teeth of the toothed ring at all times.

8. A circuit closer comprising an internally toothed ring formed in sections insulated from each other, some of said sections forming contact members, means for securing the contact members in place, said members serving as locking means to hold the other sections of the ring in place, and a rotatable toothed contact member adapted to be moved around the toothed ring.

9. A circuit closer comprising an internally toothed ring formed of sections insulated from each other, some of said sections forming contact members, binding posts connected to said contact members and securing the same in place, the contact members being so formed as to act as locking means to hold the intermediate sections of the ring in place.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 14th day of May 1907.

THEODORE A. BACKÉ.

Witnesses:

WM. R. DAVIS,

EMMA H. H. KAUFMANN.