No. 890,482. PATENTED JUNE 9, 1908.

A. WINTON.

CIRCUIT CLOSER AND BREAKER.

APPLICATION FILED SEPT. 15, 1904. RENEWED MAR. 12. 1908.

Fig. 1.

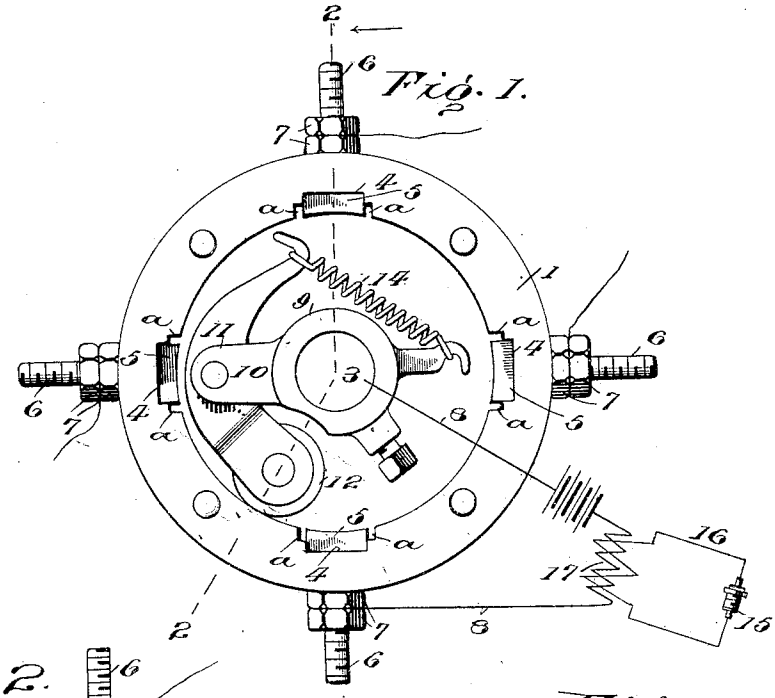


Fig. 2.

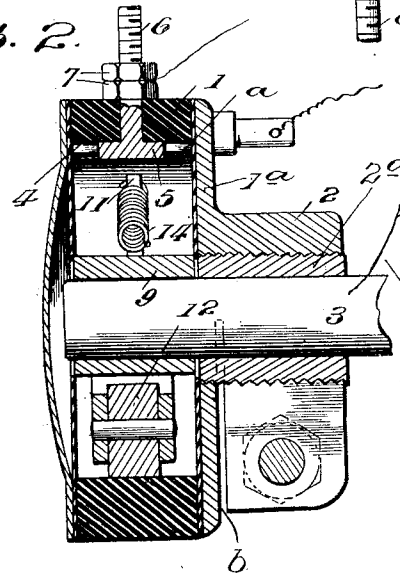
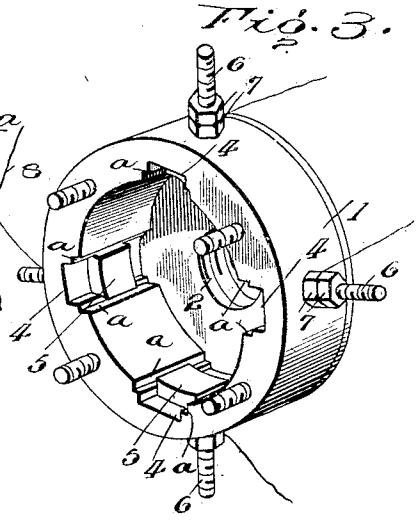


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CIRCUIT CLOSER AND BREAKER.

No. 890,482. Specification of Letters Patent. Patented June 9, 1908.

Application filed September 15, 1904, Serial No. 224,584. Renewed March 12, 1908. Serial No. 420,695.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Circuit Closers and Breakers, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in circuit closers and breakers, for the sparking or igniting devices of explosive engines, and is especially intended for use in connection with gasolene engines for propelling motor vehicles.

The object of this invention is to prevent short circuiting in devices of the character herein disclosed, by the formation of an electric conductor between the contacts, due to the spreading of small particles of metal from the contacts upon the fiber between them.

In the accompanying drawings, Figure 1, is an end elevation of a circuit closer and breaker, which embodies my invention, the cover of the inclosing case being removed, and one of the circuits diagrammatically shown. Fig. 2, is a sectional view on the line 2—2 of Fig. 1, looking in the direction indicated by arrow. Fig. 3, is a perspective view of the casing with the cover removed.

Referring now to the drawings, 1 is a ring or band of insulating material which is attached to a disk 1^a, and this disk 1^a is provided with a laterally projecting sleeve portion 2 which is provided with a transverse slit *b* and internally screw-threaded, and embraces an externally screw-threaded bearing 2^a, to which it is suitably clamped. The inner periphery of the ring is provided with recesses 4, in which the contacts 5 are seated, and projecting through the casing from the contacts are the screw-threaded stems 6, to receive the nuts for clamping the wires of the primary circuit 8.

Attached to the end of the shaft 3 and within the casing 1 is a collar 9 having an arm 10, and a lever 11 is intermediately pivoted to the arm. One end of the lever carries a roller 12, and the opposite end has attached to it a spring 14 that keeps the roller constantly in engagement with the inner periphery of the casing or ring 1.

The shaft 3 is driven by the engine in any well known way, and is so timed that the roller will engage and disengage the contacts 5 at the proper time to cause a spark through the sparking plug 15, which is in the induction circuit 16. This operation is so well known that any further description is unnecessary.

As here shown, the device is constructed for a four-cylinder engine, there being one contact 5 for each cylinder. I have shown diagrammatically but one complete primary and induction circuit, but it will be understood that there will be one of each for each cylinder, though there need be but one coil 17, though if desired, there may be a separate coil for each cylinder. The manner of wiring in either event is so well known that it is neither necessary to show or describe them.

Circuit closers and breakers in general like that here shown, have been heretofore used, but it is found in practice, that the spark caused when the roller 12 is leaving the contacts fuses the metal (no matter how hard it is) to an infinitesimal amount, and that small particles of the fused metal are gradually deposited upon the inner periphery of the fiber ring or casing 1, and to such an extent that a metallic conductor is actually formed of these particles from one contact 5 to the other, which causes short circuiting and an improper working of the device. In fact, when this happens (which is actually true in practice) the device is useless for its purpose, and the collected particles must be scraped from the fiber, which is a tedious and troublesome operation.

The object of my invention, is to prevent this formation from electrically connecting the contacts 5, so that the deposit of the particles on the inner periphery of the casing or ring is immaterial, and will not affect or disturb the proper operation of the device. This is accomplished by forming a space, slot or recess *a* at each side of the contacts 5, so that it is not possible for the roller to deposit the particles gathered by it from the contacts in this space or groove. With this construction the formation of an electrical conductor by the deposit of the metallic particles on the fiber between the slots is immaterial, because the slots prevent the formed conductor from reaching the contacts 5.

I desire it to be understood that variations in the arrangement and construction of the coöperating parts of the device may be made without departing from my invention, so long as the idea of spaces or slots are retained.

The inner periphery of the casing or ring 1 forms a running surface for the traveling con-

tact or roller 12, and the contacts 5 are embedded therein so as to be practically flush with the running surface.

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

1. An explosive engine ignition system including an annular non-conducting contact running surface, an electrical contact depressed therein and flush therewith, the non-conducting running surface cut away at the side of the contact for the purpose described, and a roller contact spring-held against and rolling on said running surface, whereby the roller contact travels smoothly across said cut-away portion.

2. In a commutator, the combination with an electric igniting circuit, of a metal disk electrically connected in said circuit, a ring of insulating material secured to one face of the disk, terminals of said circuit embedded in the rings and insulated from each other, a rotary shaft journaled in the disk and having one end terminating centrally within the ring, oppositely projecting arms secured to the inner end of the shaft and revolving within the ring, a lever fulcrumed on one arm and extending in opposite directions from its fulcrum, a spring connecting one end of the lever to the other arm, and a roller journaled on the other end of the lever and traveling in contact with the inner face of the ring and its terminals.

3. An explosive engine ignition system, including a plurality of electrical contacts arranged with their engaging surfaces in the arc of a circle, a non-conducting running surface between these contacts and arranged in the arc of a circle coincident with the arc of the engaging surfaces of the contacts, the non-conducting running surface cut away at the side of each of the contacts for the purpose described, and a spring-held running or movable electrical contact running on the non-conducting surface and across the engaging surfaces of the said electrical contacts.

4. An explosive engine ignition system including an elongated non-conducting running surface, an electrical contact flush therewith, the non-conducting surface having a transversely-arranged groove for the purpose described, and a movable contact member adapted to travel on said running surface and said contact.

5. A commutator for explosive engines, comprising a plurality of separated contact points arranged in the arc of a circle, a non-conducting circular running surface arranged between said contacts and flush therewith, the running surface provided with transverse grooves cut therein and located between said contacts, and a movable contact member adapted to travel on said running surface and said contacts.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER WINTON.

Witnesses:

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