A. R. MOSLER.

CIRCUIT BREAKER FOR ELECTRIC IGNITION DEVICES.

APPLICATION FILED JAN. 15, 1906.

1,042,814. Patented Oct. 29, 1912.

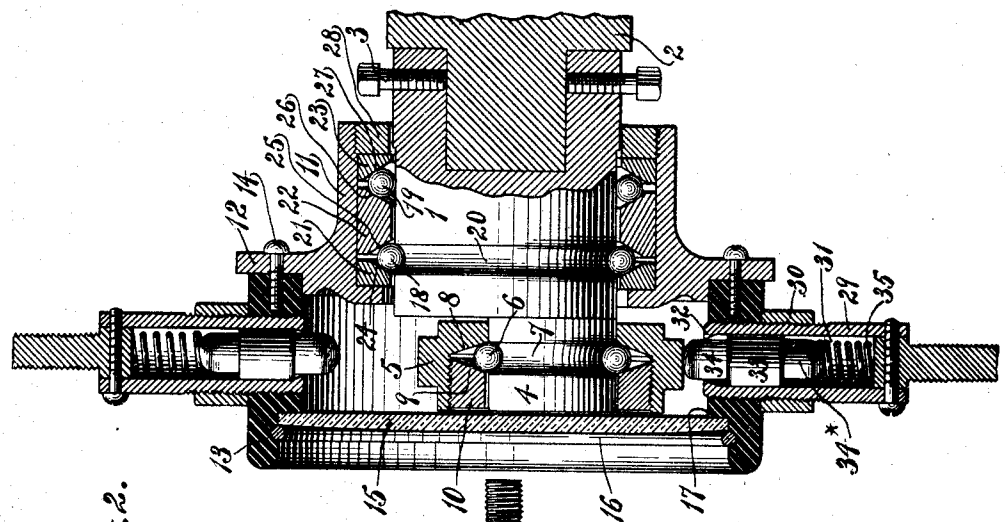

Fig. 2.

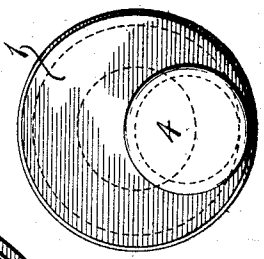

Fig. 3.

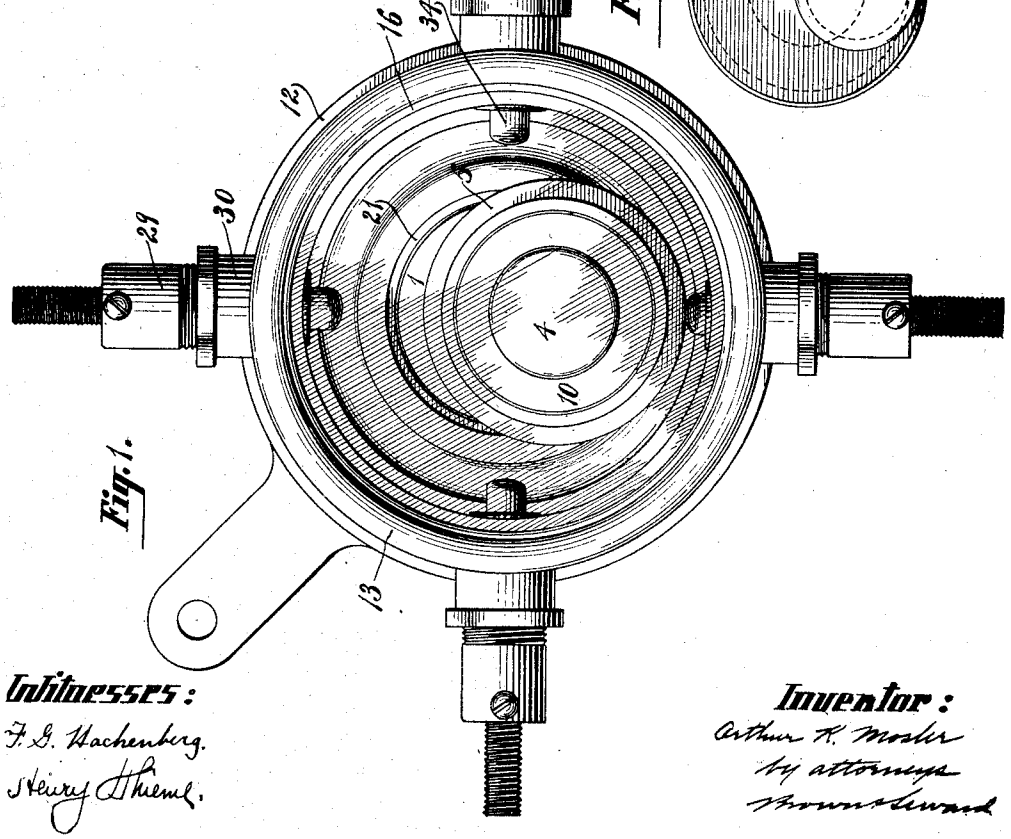

Fig. 1.

Witnesses:

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UNITED STATES PATENT OFFICE.

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CIRCUIT-BREAKER FOR ELECTRIC IGNITION DEVICES.

1,042,814. Specification of Letters Patent. Patented Oct. 29, 1912.

Application filed January 15, 1906. Serial No. 296,230.

To all whom it may concern:

Be it known that I, ARTHUR R. MOSLER, a citizen of the United States, and resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Circuit-Breakers for Electric Ignition Devices, of which the following is a specification.

My invention consists in certain improvements in circuit breakers for electric ignition devices which are more especially adapted for use in connection with the ignition of the gas in explosive gas engines.

The object of my invention is to provide certain improvements in the construction, form and arrangement of the several parts of the circuit breaker whereby the wear upon the parts is reduced to a minimum, thus insuring the production of a circuit breaker which will be longer alive and in which the making and breaking of the circuit is assured.

A further object is to provide a circuit breaker in which the rotary contact is mounted eccentrically on the rotary shaft whereby the contact may be caused to constantly present new surfaces to the different yielding contacts carried by the casing, thus preventing undue wear on the eccentric rotary contact at any one point.

A further object is to provide a device of the above character in which the longer or shorter engagement of the yielding contact with the rotary contact is obtained by the adjustment of the yielding contact.

A still further object is to provide a device in which antifriction bearings are interposed between the rotary shaft and casing and between the rotary contact and the eccentric shaft stud.

In the accompanying drawings, Figure 1 represents the circuit breaker in end elevation, Fig. 2 is a central longitudinal section through the same, the eccentric shaft stud and a portion of the shaft being shown in side elevation, and Fig. 3 is a detail end view of the rotary shaft indicating more clearly the position of the eccentrically arranged shaft stud.

The portion of the rotary shaft which extends into the casing of the circuit breaker is denoted by 1 and it may be secured to the other portion 2 of the shaft by suitable fastening devices 3. This shaft portion 1 is provided with an eccentrically arranged stud 4 projecting a short distance from its end. A rotary contact 5 is mounted on the stud 4, which contact has a cylindrical periphery arranged in position to successively engage the yielding contact point of the casing to be hereinafter described.

An antifriction bearing is interposed between the rotary contact 5 and the stud 4, which bearing is constructed and arranged as follows. An annular row of balls 6 is arranged in a circumferential groove 7 in the stud 4. The rotary contact 5 is of cup form and the balls are held in position between the inclined bottom 8 of the cup and the inclined end 9 of a screw-threaded cap 10 engaged with the contact 5. The bearing may be adjusted by tightening or loosening the cap 10 as is obvious.

It will be seen that the circumferential groove 7 in combination with the balls 6, serves to properly position the rotary contact on the stud 4.

The casing which carries the yielding contacts of the circuit breaker is constructed and arranged as follows. A hub 11 surrounds the rotary shaft and is spaced therefrom which hub is provided with a circumferential flange 12 to which is secured a cylindrical shell 13 of insulating material such, for instance, as vegetable fiber. In the present instance, I have shown this shell as secured to the flange 12 by means of a plurality of fastening screws 14. A glass front 15 is secured in the shell between a locking ring 16 and an annular shoulder 17 in the inner wall of the shell.

An antifriction bearing is interposed between the casing and the rotary shaft, which bearing comprises two rows of balls 18, 19, the balls 18 being located in the circumferential groove 20 in the shaft and the balls 19 being engaged with the periphery of the shaft without the use of a groove. Inner intermediate and outer bearing rings 21, 22, 23, are inserted in the hub 11, the balls 18 being engaged by the adjacent inclined walls 24, 25, of the rings 21, 22, and the balls 19 being engaged by the inclined adjacent walls 26, 27, of the rings 22, 23. A cap 28 has a screw-threaded engagement with the inner wall of the hub 11 of the casing and bears against the outer bearing ring 23 so that the bearings may be adjusted to the proper degree by the screwing and unscrewing of the cap 28.

It will be seen that the shell or groove 20 in the shaft 1 permits the balls 18 to properly position the casing with respect to the rotary shaft.

The shell 13 of the casing is provided with one or more yielding contacts. In the present instance, four of these contacts are shown arranged to be successively engaged by the eccentric rotary contact 5. Each one of these yielding contacts is constructed and arranged as follows. A plug 29 has a screw-threaded engagement in the wall of the shell 13, said plug being provided with a locking nut 30 arranged to clamp the plug in any desired adjustment. This plug 29 is provided with a socket 31 having a contracted mouth 32.

A yielding contact comprises an enlarged portion 33 fitted to slide in the socket 31 and reduced end portions 34, 34*, one reduced end portion 34 projecting inwardly through the contracted mouth 32 and the other reduced end portion 34* projecting toward the bottom of the socket 31. A spring 35 is located within the socket 31 in position to yieldingly hold the contact at the limit of its inward movement toward the rotary contact.

In operation, as the shaft is rotated, the eccentrically mounted rotary contact will be caused to successively engage the yielding contacts, the engagement of the contacts serving to keep the rotary contact constantly moving, thus causing it to present new surfaces to the yielding contacts. The length of time in which the rotary contact is in engagement with each of the yielding contacts may be accurately determined by screwing the plugs 29 a greater or lesser distance into the shell of the casing. Furthermore, the antifriction bearing between the rotary contact and the eccentrically arranged shaft stud is directly in the plane of the yielding contacts so that the friction between the rotary contact and the stud is reduced to a minimum. The antifriction bearing interposed between the rotary shaft and the casing also serves to not only reduce the friction between the shaft and the casing but to properly position the casing so that its yielding contacts will be at all times held accurately in the plane of the antifriction bearing for the rotary contact.

What I claim is:

1. A circuit breaker comprising a rotary shaft having an eccentrically arranged stud projecting from the end of the shaft and provided with a circumferential groove, a rotary contact mounted on the stud and provided with an internal groove, an annular row of balls interposed between the rotary contact and stud and located in the said grooves for positioning the rotary contact on said stud, a casing, and a longitudinally sliding spring-actuated contact carried thereby in position to be directly engaged by the rotary contact.

2. A circuit breaker comprising a casing, a contact carried thereby, a rotary shaft having a stud eccentrically arranged thereon provided with a circumferential groove, a rotary contact mounted on the said stud and provided with an internal groove, a row of balls located between the contact and stud in said grooves for positioning the rotary contact with respect to the contact carried by the casing, the said shaft having a circumferential groove and the said casing having an internal groove, and a plurality of rows of balls interposed between the shaft and casing, one of said rows of balls being located in the grooves in the shaft and casing for properly positioning the casing on the shaft.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this 10th day of January 1906.

ARTHUR R. MOSLER.

Witnesses:

FREDK. HAYNES,

F. GEORGE BARRY.