To all whom it may concern:

Be it known that I, George Hunter, a subject of the King of Great Britain, residing at 27 Litchfield Street, Westminster, in the county of London, England, have invented certain new and useful Improvements in or Relating to Interrupters for Magneto Machines, of which the following is a specification.

This invention has reference to interrupters for magneto machines capable of being used in connection with sparking plugs of internal combustion engines, the interrupter being of the kind comprising a contact ring or bush internally fitted with a series of electrical contacts and an eccentricaly mounted rotatable ring capable of making contact in successive order during its rotation with the series of electrical contacts.

The interrupter according to this invention is of simple construction capable of production at a comparatively low cost and adapted to be securely attached with ease and quickness to the rotatable shaft whereby the eccentricaly mounted ring is rotated within the contact ring, the eccentricaly mounted ring being capable of movement at right angles to the said shaft for maintaining efficient contact between the same and the said contact ring even after the adjacent surfaces of the contact and rotatable rings have become worn. To this end the interrupter comprises segments which are arranged within the rotatable ring and constitute oppositely disposed parallel faces for engagement with corresponding sides of an eccentric device on the said shaft such device extending from one side of the shaft so as to cause the latter to be disposed eccentricaly relatively to the said rotatable ring.

Between the device and the rotatable ring is arranged a spring for maintaining engagement between the contact and rotatable rings. The rotatable ring is preferably in the form of a ball race fitting or its equivalent of known construction comprising inner and outer concentric rings with balls disposed between the same. If desired, rollers may be used in place of balls.

In order that the said invention may be clearly understood and readily carried into effect one construction of interrupter will now be described by way of example with reference to the accompanying drawings, in which:

- Figure 1 is a sectional side elevation of the interrupter according to this invention.
- Figure 2 is a sectional front elevation taken on the line 2—2 of Figure 1.
- Figure 3 is a front elevation and Figure 4 a section taken on the line 4—4 of Figure 3, of the rotatable ring provided with the segments.
- Figure 5 is a side elevation and Figure 6 a sectional elevation taken on the line 6—6 of Figure 5 with a part removed of the eccentric device and shaft.
- Figure 7 is a perspective view of the segments.

The contact ring a is provided with electrical contact plates b removably fitted in the ring a of insulating material by studs c and nuts c' the contact ring a being arranged within the housing d of the interrupter. The rotatable ring designated e forms a part of the ball race fitting shown separately in Figures 3 and 4, the fitting comprising an inner ring f and balls g arranged between the inner and outer rings f and e respectively. The ball race fitting which may be of any suitable known kind is provided with segments h having oppositely disposed parallel faces j. In the construction shown in Figures 3, 4 and 7 the segments h are connected together by an intermediate piece k in the form of a spring capable of expanding and pressing the curved surfaces l of the segments against the inner surface of the inner ring f thus causing the segments to be gripped within the said ring. As shown the segments are constituted by returning the free ends of the intermediate piece k. The eccentric device designated m in Figures 1, 2, 3 and 6 of the drawings, is provided with curved ends n and parallel sides o the latter of which are arranged in engagement with the parallel faces j of the segments when the device is fitted into position within the rotatable ring. The device m is formed with an aperture in proximity to one end and at a distance from the other end for receiving the reduced end of the shaft p to which the device m is secured the disposition of the aperture thus enabling the device to be arranged eccentricaly with respect to the said shaft p.
The shaft \( p \) is fitted with a shrouding disc or plate \( q \) which abuts against the shoulder \( r \) produced by forming the reduced end thereon, and against such disc or plate \( q \) is disposed on the shaft \( p \) the eccentric device \( m \). In a recess \( s \) formed in the end of the device \( m \) at a distance from the shaft \( p \) is arranged a coiled spring \( t \) which, when the ball race fitting is mounted on the device as hereinbefore described bears against the intermediate piece \( k \) and serves to press the outer ring \( e \) of the fitting into engagement with the contact ring \( c \) and to maintain such engagement when the surfaces in contact become worn by causing the fitting to move relatively to the said contact ring, allowance for such movement being provided for as shown in Figure 2 when the device is fitted into position. The opposite side of the ball race fitting to that of the shrouding disc or plate \( q \) is shrouded by a second disc or plate \( u \) which is secured in position on the reduced end of the shaft \( p \) by a dished or flanged collar \( v \) bearing against an annular shoulder on the said second disc or plate \( u \) and a nut \( w \) secured to the end of the shaft. Where the parts have thus been arranged on the shaft \( p \) the housing is mounted on the fitting with the contact ring in engagement with the outer ring of the ball race fitting, the latter being moved transversely with respect to the shaft by compressing the spring \( t \) to permit of such housing being arranged in position, the housing being suitably secured to permit of the said fitting rotating relatively thereto. If desired the said segments may be secured to the inner ring \( f \) of the ball race fitting to prevent relative movement between these parts.

Although only one construction of interrupter has been hereinbefore described it will be obvious that modifications may be made therein without departing from the nature of the invention, for example the segments may be constituted of blocks provided on the inside of the inner ring, such blocks may be secured in position by welding, screws or their equivalents, or a different type of spring may be employed, such as a C spring disposed between the end of the device and the inner ring or the intermediate piece \( k \) may be shaped so as to bear on the device and serve the function of the coiled spring \( t \), or the device \( m \) may constitute a part of the shrouding disc or plate \( q \).

What I claim and desire to secure by Letters Patent of the United States is:

1. An interrupter for magneto machines, comprising an electrical contact ring, a rotatable ring eccentrically disposed within the contact ring and in engagement therewith, segments connected together by an intermediate piece in the form of a spring removably fitted within the rotatable ring and a rotatable shaft provided with a part having parallel sides.

2. An interrupter for magneto machines, comprising an electrical contact ring, a rotatable ring eccentrically disposed within the contact ring and in engagement therewith, segments removably fitted within the rotatable ring and having one end of each segment connected together by an intermediate piece in the form of a spring and a rotatable shaft fitted with an eccentric device provided with parallel sides and curved ends.

3. An interrupter for magneto machines, comprising an electrical contact ring, a rotatable ring eccentrically disposed within the contact ring and embodying inner and outer rings with balls between the same the outer ring being maintained in engagement with the inner surface of the contact ring, segments having one end of each connected together by an intermediate piece in the form of a spring and removably mounted within the inner ring within which the segments are retained by the elasticity of the intermediate spring piece, a rotatable shaft provided with an eccentric device having parallel flat sides and curved ends and a recess in one of the curved ends and a coiled spring arranged in the recess and bearing against the intermediate piece within the inner ring.

4. For use with a magneto machine interrupter comprising an electrical contact ring and a rotatable ring eccentrically disposed within the contact ring on a rotatable shaft having a part with parallel sides, segments terminating an intermediate spring piece and capable of being removably mounted in the rotatable ring the segments comprising returned oppositely disposed parts capable of engaging and moving in contact with the said parallel sides.

5. For use with a magneto machine interrupter comprising an electrical contact ring and a rotatable ring eccentrically disposed within the contact ring on a rotatable shaft provided with a part having parallel sides, segments having one end of each connected together by an intermediate piece in the form of a spring and capable of being removably mounted between the said part and the rotatable ring.

GEORGE HUNTER.