

W. H. PIERCE & C. R. PARKER.
 MECHANISM FOR MAKING AND BREAKING ELECTRIC CIRCUITS.
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1,010,173.

Patented Nov. 28, 1911.

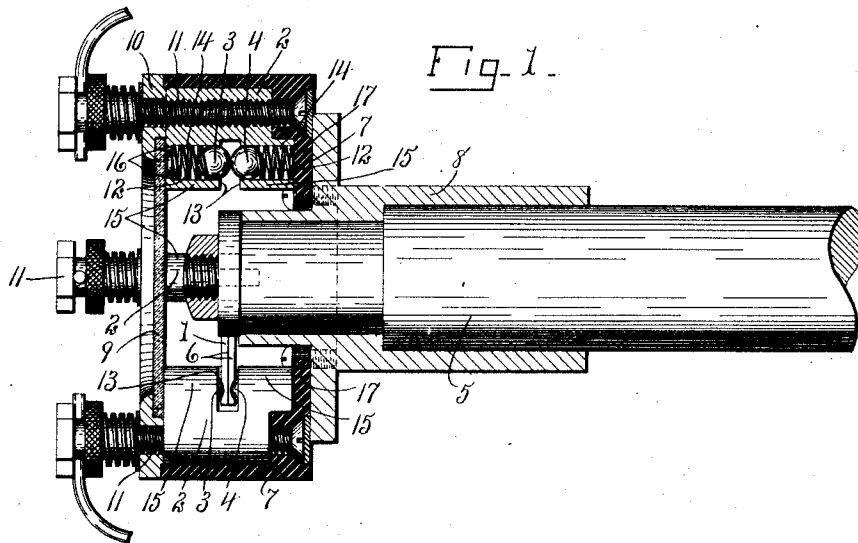
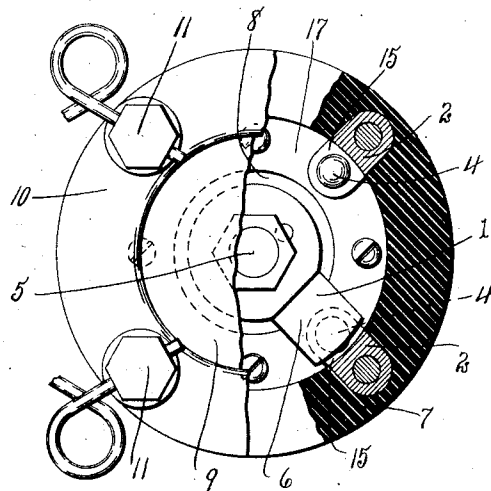


Fig. 2.



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MECHANISM FOR MAKING AND BREAKING ELECTRIC CIRCUITS.

1,010,173.

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Application filed September 25, 1905. Serial No. 279,887.

To all whom it may concern:

Be it known that we, WALTER H. PIERCE and CHARLES R. PARKER, of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Mechanism for Making and Breaking Electric Circuits, of which the following is a specification.

Our invention has for its object the production of a mechanism for making and breaking electric circuits, which is particularly simple in construction and highly efficient in use; and to this end, it consists in the novel combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view, partly in elevation, of our mechanism. Fig. 2 is an end view, partly broken away, of parts seen in Fig. 1.

This mechanism for making and breaking electric circuits comprises fixed and movable terminals 1 and 2, one of said terminals having opposing contact-pieces for engaging opposite sides of the other terminal.

In the illustrated exemplification of our invention, a spark-timing mechanism for a four cylinder internal-combustion engine is shown, a fixed terminal being provided for each of the cylinders, and as shown each of the fixed terminals is provided with the opposing contact pieces 3, 4.

The movable terminal 1 consists of an arm or wiper mounted on the end of a rotatable member or shaft 5, and provided with opposite diverging side-engaging or cam faces 6. Said shaft 5 is usually the crank-shaft of an engine, or a counter-shaft actuated thereby, but may be any other moving part of the engine. The fixed terminals 2 are preferably carried by a part as a cup 7 formed of an insulating substance and projecting from the end of a hub or support 8, which is mounted on the shaft 5 and non-rotatable therewith. The cup 7 encircles the end of the shaft upon which the movable terminal is mounted, and the open end of said cup is closed by the transparent cover 9 which is held in position by a retaining ring 10 secured to the cup by screws 11, forming parts of binding-posts associated with the terminals 2.

The contact-pieces 3, 4 are formed with inclined surfaces for engaging the opposite side faces 6 of the movable terminal 1, are normally engaged with each other and are movable laterally against the action of springs 12 by the movable terminal, in directions at a right angle to the path of the movable terminal and parallel to the axis of the shaft 5. As illustrated, the contact-pieces are preferably spring-pressed balls which are rotatable by the movable terminal, and also forced laterally thereby. The contact-pieces 3, 4 are arranged on opposite sides of a channel 13 formed in each terminal 2 and alined with the terminal 1, and are disposed in sockets 15 leading from opposite sides of the channel, the diameter of each of the balls 3, 4 being greater than the width of the channel so that said balls cannot escape from the sockets. These sockets are formed by boring through the arms 15 on opposite sides of the channel 13, the inner end of the bore being of slightly less diameter than the major portion thereof, forming an annular shoulder 16; and in assembling the parts of the fixed terminal, one of the springs 12 is dropped into the bore against the shoulder 16, then the two balls 3, 4 are passed into the bore, and finally the other spring is inserted in the bore against the ball 4, the bottom 17 of the cup forming an abutment for the last-mentioned spring when the fixed terminal is mounted in the cup 7.

Our mechanism is particularly advantageous in that a positive contact is insured, and corroding at the contact-points is prevented.

The construction and operation of our mechanism for making and breaking electric circuits will now be readily understood upon reference to the foregoing description and accompanying drawing.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a timer, a fixed terminal and a terminal movable about an axis, one of the terminals having opposing contact pieces for engaging opposite sides of the other terminal, the surface of the contact pieces engaging such other terminal being normally engaged with each other, and the last-mentioned terminal having converging sides meeting and forming a knife edge for engaging the contact pieces at the point of engagement of the same and forcing the con-

tact pieces laterally in opposite directions, substantially as and for the purpose described.

2. In a timer, a supporting part, terminals carried by said part and spaced equidistant apart around a common axis, a terminal movable about such axis, each of the first-mentioned terminals having opposing contact pieces for engaging opposite sides of the movable terminal, the surfaces of the contact pieces being normally engaged with each other, and the movable terminal having converging sides meeting and forming a knife edge for engaging the contact pieces of each of the terminals at the point of engagement thereof and forcing said contact pieces laterally in opposite directions, substantially as and for the purpose specified.

3. In a mechanism for making and breaking electric circuits, a fixed and a movable terminal, one of the terminals being formed with a channel alined with the other terminal, and sockets on opposite sides of the channel, said terminal having spring-pressed contact-pieces arranged in the sockets and projecting into the channel, the contact-pieces being normally engaged with each other, and the other terminal having converging sides meeting and forming a knife edge for engaging the contact-pieces at substantially the point of contact of such contact-pieces and moving the contact-pieces laterally in opposite directions, substantially as and for the purpose set forth.

4. In a mechanism for making and breaking electric circuits, a fixed and a movable

terminal one of the terminals being formed with a channel alined with the other terminal, and sockets on opposite sides of the channel, said terminal also having spring-pressed balls arranged in the sockets and projecting into the channel, said balls normally engaging at substantially the center of the channel, and the other terminal having converging sides meeting and forming a knife edge for engaging the balls at substantially the point of contact of such balls and moving the balls laterally in opposite directions, substantially as and for the purpose specified.

5. The combination, with a shaft, a tongue secured at one end thereto and adapted to revolve therewith, a series of electrodes arranged around said shaft, each electrode including balls and springs for yieldingly holding them toward one another, said tongue having thin edges to pass between said balls and separate them, the balls having a rolling contact on the surface of said tongue during such separation, substantially as and for the purpose described.

In testimony whereof, we have hereunto signed our names in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 22nd day of September, 1905.

WALTER H. PIERCE.
CHARLES R. PARKER.

Witnesses:

S. DAVIS,
R. ARONSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."