March 12, 1929. J. G. DALOZ 1,705,238

COMMUTATOR

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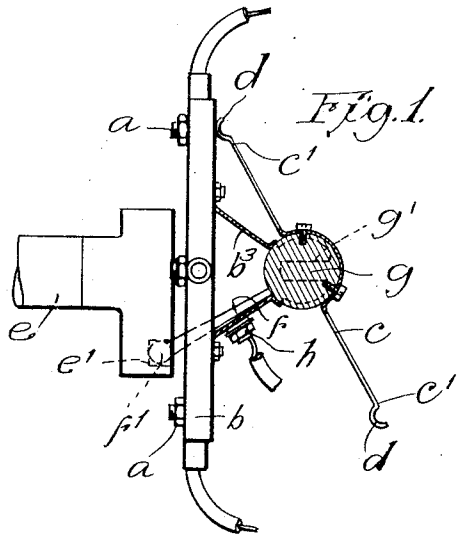


Fig. 1.

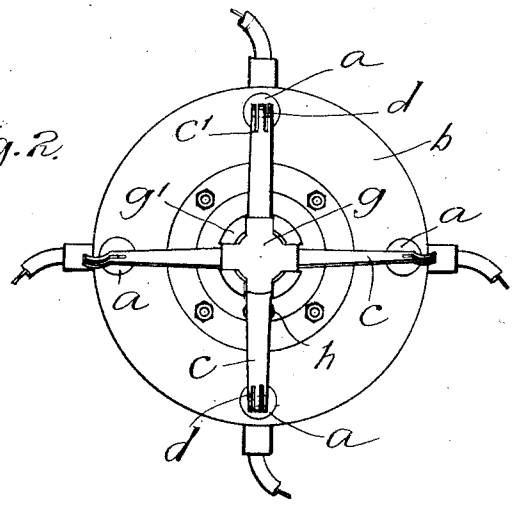


Fig. 2.

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UNITED STATES PATENT OFFICE.

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COMMUTATOR.

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The present invention relates to commutators of the type having contact points arranged in a circular path, and more especially to those adapted to be used in connection with the ignition systems of internal combustion engines.

One of the objects of the invention is to provide a commutator of such construction that its active elements, i. e. those making and breaking circuits, wear less rapidly than is generally the case.

Another object is to provide a commutator construction in which the moving make and break element or its supporting structure is mounted so as to have a back and forth, instead of a circular, movement.

A further object is to provide a make and break element arranged to move simultaneously in a direction both normal and transversally to the surface with which electrical connection is to be made.

Still another object is to provide a construction in which the movable make and break element executes a "drunken wheel" movement relatively to the plane of the surface with which it enters into electrical connection.

Still further objects will appear in the course of the detailed description which will now be given, reference being had to the accompanying drawings in which:—

Fig. 1 shows an axial section of one form of the device.

Fig. 2, represents a front view of the apparatus shown in Fig. 1.

In the various figures of the drawing, a commutator having four contact points or poles has been shown by way of illustration. It is to be understood, however, that devices having a greater or lesser number of poles, can be constructed in accordance with the inventive principle to be described.

Referring to Figs. 1 and 2, there is shown the usual type of flat plate b serving as pole support and having a number of contact poles a distributed over its surface. The moving make and break element, instead of being moved in a circular path as in prior devices, is given a back and forth movement by means of an assembly comprising (1) a ball g carrying fingers c which serve as supports for make and break elements d (2) a fixed spherical shell g^1 having slots therein which guide the movement of fingers c in their back and forth movement (3) a rotatable shaft e having an excentric recess or pocket e^1 at the extremity thereof (4) a pin f attached to or integral with ball g, said pin having a ball f^1 at its free extremity, dimensioned so as to move freely in pocket e^1. When it is desired that make and break elements d make actual contact with pole pieces a, resilient material c^1, preferably metallic, should be interposed between supporting fingers c and the make and break element itself so that the latter yield under the contact pressure. If, on the other hand, it is desired to avoid actual contact between poles a and elements d, elements d and c may be connected together rigidly or made integral. Where elements d are designed to slide over poles a they are preferably given an arcuate or spherical shape. If no contact is to take place between the elements d and a electrical connection is effected by the passage of a spark from d to a. In this case elements d may be spherical or arcuate, but preferably, should carry pointed sparking elements for facilitating electrical discharge. Spherical shell g^1 should be made, preferably, of resilient sheet metal so that it may be bent into shape over ball g. g^1 may be mounted on a convenient fixed frame which together with the whole assembly f, f^1, g, g^1, c, d may be disconnected from shaft e by a simple endwise movement. Current is fed to elements d through a convenient feed terminal h.

The manner in which the device operates is as follows:—Rotation of shaft e results in corresponding movement of ball g. The slots in shell g^1 prevent rotation of fingers c. Since the axis of pin f is inclined relatively to the axis of shaft e, fingers c describe, what may be termed, a "drunken wheel" movement relatively to plate b. If elements d are to make frictional contact with poles a they are resiliently supported and, by rotation of shaft e, are brought successively into contact with poles a. If elements d are designed to form merely a spark discharge with poles a, discharge points are preferably provided and adjusted in position or length so that they sweep past poles a at the proper distance.

What I claim is:—

1. A device of the class described comprising in combination, a feed terminal, a plurality of distributing terminals, fixed poles arranged to lie in a common plane and connected to said distributing terminals, an assembly of movable poles, a plurality of resilient arms supporting said poles and mounted on a movable axis, said movable poles being in con-

ductive relation with the feed terminal, and means for tilting the axis of the assembly of movable poles so that each movable pole successively executes a back and forth movement relatively to a corresponding fixed pole.

2. A device of the class described comprising in combination a feed terminal, a plurality of distributing terminals, fixed poles arranged to lie in a common plane and connected to the distributing terminals, a fixed supporting shell, a ball supported in said supporting shell, movable poles mounted on said ball, said movable poles being in conductive relation with the feed terminal, a pin connected to said ball, and means for tilting the axis of said pin.

3. A device of the class described comprising in combination, a feed terminal, a plurality of distributing terminals, fixed poles arranged to lie in a common plane and connected to the distributing terminals, a fixed spherical supporting shell, said shell having slots therein, a ball supported in said spherical supporting shell, movable poles mounted on said ball and guided in their movement by the slots in the supporting shell, a rotatable shaft, said shaft having an off-set extremity and a pocket in said off-set extremity, and a pin having one extremity engageable with said pocket and having its other extremity rigidly connected to the ball.

In testimony whereof I affix my signature.

JULES GASTON DALOZ.