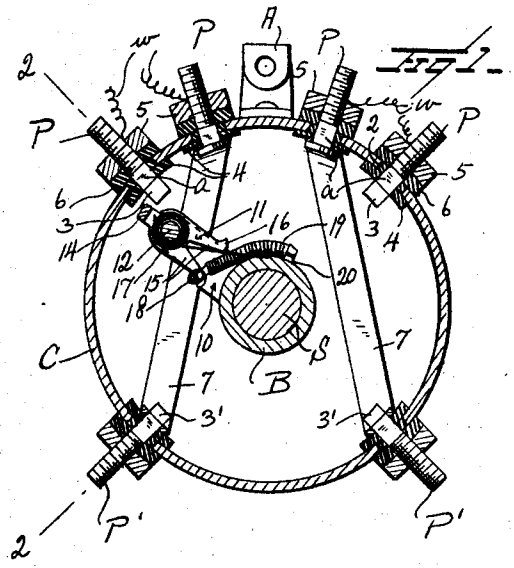
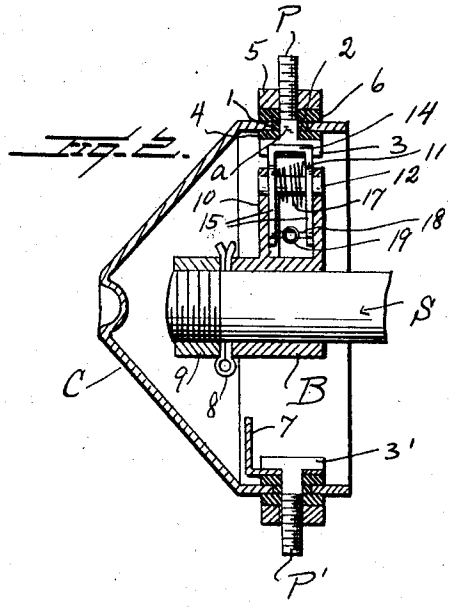
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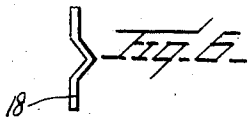
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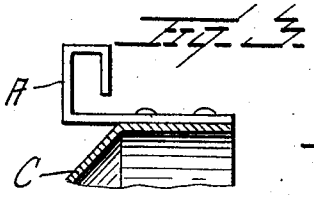
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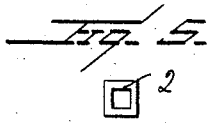
1,420,026. Patented June 20, 1922.

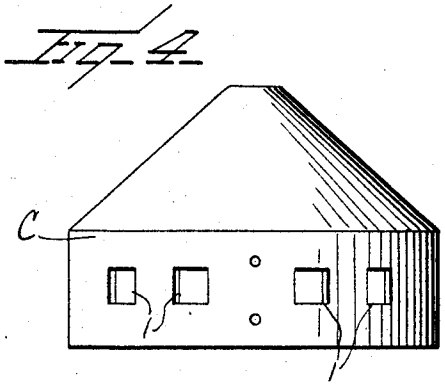


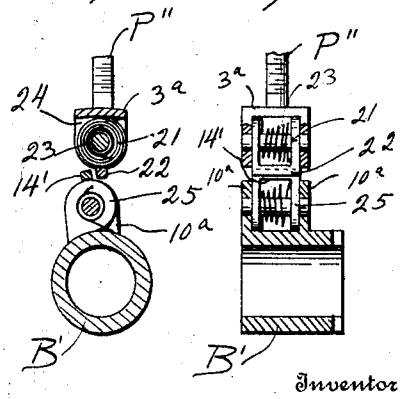












Inventor

O. A. Eckre

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

OLOF A. ECKRE, OF KINDRED, NORTH DAKOTA.

COMMUTATOR.

1,420,026. Specification of Letters Patent. **Patented June 20, 1922.**

Application filed March 25, 1920. Serial No. 368,574.

To all whom it may concern:

Be it known that I, OLOF A. ECKRE, a citizen of the United States, residing at Kindred, in the county of Cass and State of North Dakota, have invented certain new and useful Improvements in Commutators, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in commutators, and it is an object of the invention to provide a novel and improved device of this general character wherein the commutator wires all lead from the upper portion of the commutator or timer case so that the same are substantially free from oil and grease.

Another object of the invention is to provide a novel and improved device of this general character wherein the brush has operatively engaged therewith a rocker or contactor adapted for coaction with inwardly directed contacts carried by the commutator or timer case and wherein said rocker or contactor is provided with means for normally maintaining the same in working position but permitting such part to have requisite movement in the event of a back fire.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved commutator whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in elevation and partly in section of the commutator constructed in accordance with an embodiment of my invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view partly in section and partly in elevation illustrating in detail the bracket embodied herein;

Figure 4 is a view in top plan of the commutator case as herein set forth;

Figure 5 is a view of plan of one of the insulating washers as herein included;

Figure 6 is a view in top plan of the cross rod coacting with the contactor or rocker member;

Figure 7 is a fragmentary view partly in elevation and partly in section, showing a further embodiment of my invention; and

Figure 8 is a sectional view taken vertically through Figure 7.

As disclosed in the accompanying drawings, C denotes the case of the commutator or timer which is preferably of pressed steel and secured to said case C is a bracket A which is adapted to be operatively engaged by a timer lever so as to retard or advance the spark as the occasions of practice may require. This bracket A is also preferably made of sheet steel and riveted to the case C.

The upper portion of the casing C is provided with four openings 1 with adjacent openings in relatively close proximity one to the other and each of said openings 1 is angular in cross section and has snugly fitting therein a washer 2 of insulating material. The bore of the washer 2 is also angular in cross section.

Disposed through the openings 1 and through the bore of the washers 2 are the posts P having their heads 3 arranged inwardly of the case C. Interposed between the head 3 of each of the posts P and the adjacent wall of the case C is an insulating washer 4. Coacting with the outer end portion of each of the posts P is a clamping nut 5, and interposed between said nut 5 and the adjacent wall of the case C is an insulating washer 6.

The heads 3 of the end posts P serve as contacts as will be hereinafter more particularly referred to. In electrical connection with each of the inner posts P is a conductor strip 7 of metal, preferably steel, which leads to a post P′ at the lower portion of the case C and which post P′ is applied to the casing in the same manner as the end posts P and of the same construction, the heads 3′ of the posts P′ also serving as contacts.

Leading from the posts P are the commutator wires *w* adapted for connection in a well known manner with a coil box.

The portion *a* of each of the posts P or P′ extending through the angular bore of the washer 2 is also angular in cross section to snugly fit within said bore of the washer 2 whereby the posts P and P′ are held against rotation. It is also to be noted that the heads 3 and 3′ and the posts P and P′ are disposed transversely of the casing C.

S denotes a cam shaft having mounted thereon the brush B. As herein disclosed, the brush B is held to the shaft S by the cotter pin 8 and also through the instrumentality of the clamping nut 9 threaded upon the shaft S.

Extending outwardly from the brush B and preferably integrally formed therewith is a pair of arms 10, spaced apart in a direction longitudinally of the shaft S. Positioned between the outer or free end portions of the arms 10 is a contactor or rocker member 11 held in applied position through the medium of a pin 12 disposed through said contactor or rocker member and supported by the arms 10. The contactor or rocker member 11 is provided with an outstanding extension or lug 14 which constitutes a contact member and the opposite end portion of the contactor or rocker member 11 is bifurcated to provide a pair of fingers 15, terminating in the outstanding lugs 16. Surrounding the pin 12 is a coil spring 17 operatively engaged with the rocker member or contactor 11 and an arm 10 and which spring serves to constantly urge the rocker member or contactor 11 in one direction around the pin 12 and into a position where the lug 14 is substantially in alignment with the arms 10.

The arms 10 and the lug 14 are of such combined length as to position the lug 14 in a path of travel obstructed by the heads 3 and 3′ of the posts P and P′ so that as the cam shaft S is rotated, the requisite timed closing of the circuits are effected. As the lug 14 comes into contact with the head 3 or 3′, the same will rock in a direction away from said head as the cam shaft rotates until said lug will readily pass said head.

18 denotes a cross rod adapted to bridge the space between the arms 10 and at the rear thereof, said rod 18 overlying and normally contacting with the rear edges of the arms 10 at a point in relatively close proximity to the brush B and intersecting the path of travel of the fingers 15 of the contactor or rocker member 11. Engaged with the central portion of the cross rod 18 is a rectractile member or spring 19 which is directed forwardly between the arms 10 and is engaged with an outstanding pin 20 carried by the brush B. The retractile member or spring 19 constantly urges the cross member 18 toward the arms 10 whereby said cross member 18 serves as a stop coacting with one of the fingers 15 of the contactor or rocker member 11 to limit the movement of said contactor or rocker member under the influence of the spring 17. However, in the event of a back-fire with the resultant reverse rotation of the cam shaft S, the retractile member or spring 19 will permit the requisite rocking movement of the contactor or rocker member 11 so that the same will readily pass the heads or contacts 3 and 3′.

In Figures 7 and 8, I disclose a slightly modified form of invention and particularly as pertains to the contact members proper, and as illustrated in these figures, a post P″ is provided with a substantially U-shaped head 3^a between the arms of which is mounted a rocker member or contactor 21 provided with an outstanding lug 22, normally maintained substantially in alignment with the post P″ by the spring 23. The limit of movement of the contactor or rocker member 21 is effected by a substantially flat facet 24 carried by a rocker member or contactor 21 and which engages the base portion of the head 3^a. The rocker member or contactor 25 carried by the arms 10^a of the brush B′ is constructed substantially the same as the contactor or rocker member 21 but under normal conditions, the rocker member or contactor 21 swings under the influence of the lug 14′ of the contactor or rocker member 25 whereby the requisite closing of a circuit is permitted without hindrance to the requisite rotation of the cam shaft. In the event of back-fire, the contactor or rocker member 25 functions.

It is to be particularly noted that the contactors or rocker members 11, 21 and 25 are each reversible so that the life of said members may be materially prolonged.

From the foregoing description, it is thought to be obvious that a commutator constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason, I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A commutator comprising a casing, a stationary contact extending within the casing, a cam shaft extending within the casing, a rocker contact member carried by the shaft, the stationary contact within the casing intersecting the path of travel of the rocker contact member, said rocker contact

member being substantially U-shaped in form, a coil spring arranged within the U-shaped rocker contact member for constantly urging the same in one direction, and yieldable means for limiting said movement.

2. A commutator comprising a casing, a stationary contact extending within the casing, a cam shaft extending within the casing, a rocker contact member carried by the shaft, the stationary contact within the casing intersecting the path of travel of the rocker contact member, means for constantly urging the rocker contact member in one direction, and means for limiting said movement, said means being yieldable whereby the rocker contact member may have further movement upon retrograde movement of the shaft.

3. A commutator comprising a casing, a stationary contact extending within the casing, a cam shaft extending within the casing, a rocker contact member carried by the shaft, the stationary contact within the casing intersecting the path of travel of the rocker contact member, said rocker contact member being substantially U-shaped in form, a coil spring arranged within the U-shaped rocker contact member for constantly urging the same in one direction, and means for limiting said movement.

4. A commutator comprising a casing, a stationary contact extending within the casing, a cam shaft extending within the casing, a rocker contact member carried by the shaft, the stationary contact within the casing intersecting the path of travel of the rocker contact member, said rocker contact member being substantially U-shaped in form, a coil spring arranged within the U-shaped rocker contact member for constantly urging the same in one direction, and a retractile member engaged with the rocker contact member for limiting the movement of said member by the coil spring.

In testimony whereof I hereunto affix my signature.

OLOF A. ECKRE.