Jan. 2, 1940. R. C. HARRIS 2,185,460

ELECTRIC GENERATOR

Filed July 13, 1937

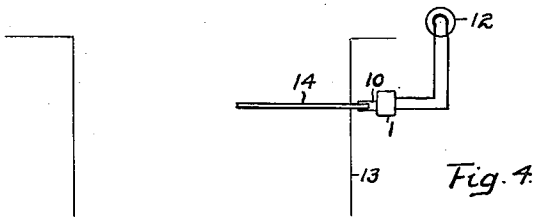



Fig. 4.

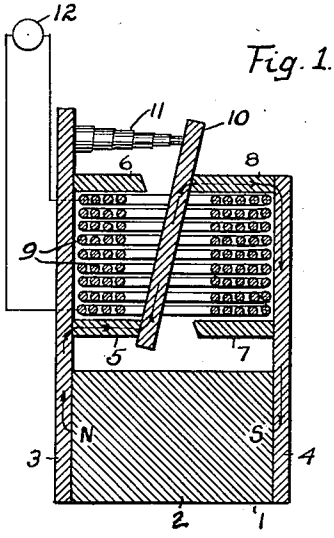



Fig. 1.

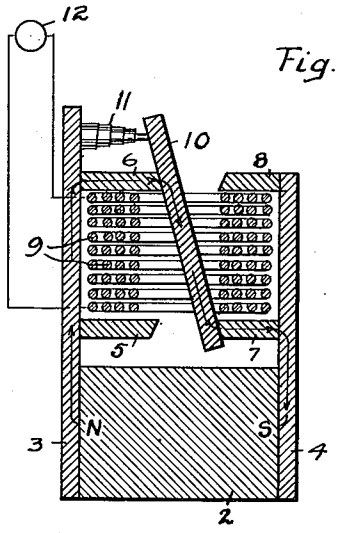



Fig. 2.

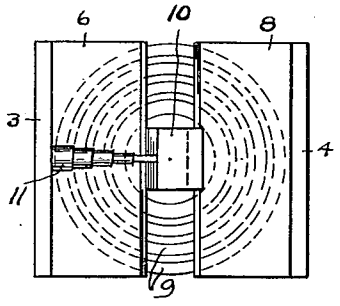



Fig. 3.

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# UNITED STATES PATENT OFFICE

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## ELECTRIC GENERATOR

Robert C. Harris, Fort Wayne, Ind.

Application July 13, 1937, Serial No. 153,344

2 Claims. (Cl. 171—209)

The invention relates to electric generators, and its object is to provide a simple device of few parts, which is void of all bearings and which will produce effective electrical current.

The invention is illustrated in the accompanying drawing, in which:

Figure 1 is a cross-section of a device embodying the invention.

Fig. 2 is a similar cross-section showing the keeper in a position opposite to that shown in Fig. 1.

Fig. 3 is a plan view of the device and

Fig. 4 is a view of the device applied as a highway signal.

The invention involves the use of a permanent magnet and means to break the magnetic circuit, whereby to induce an electrical current in a circuit.

In the illustrative drawing, 1 represents a permanent magnet of suitable form, the magnet shown having a body 2 and two side plate 3, 4. Four arms 5, 6, 7, 8 are secured to or integral with the sides, the arms 5, 6 being preferably in line with the arms 7, 8, respectively. A coil 9 having a selected number of turns of insulated wire is mounted between the arms 5, 6, and 7, 8.

A keeper or armature 10, is movably disposed in the coil with its opposite ends extending into the spaces between the opposed ends of the arms 5, 6, 7, 8. A spring 11 is connected to the keeper and to some fixed part of the magnet, as to the plate 3, and tends to support the keeper in floating condition in the magnetic field of the coil between the said arms. No pivot is provided for the keeper 10.

Normally, the keeper, under the influence of the spring 11, is in contact with the arm 5 and the arm 8 and the magnetic circuit, as shown by the arrows in Fig. 1, is from the North pole of the body 1, through the plate 3, the arm 5, the keeper 10, the arm 8 and the plate 4 back to the body 1. When force is applied to the projecting end of the keeper sufficient to compress the spring 11 and to cause the keeper to release its metal to metal contact with the upper arm 8 and impact arm 6 which acts as a fulcrum and causes the keeper to break its metal to metal contact with the arm 5 and impact the arm 7, the direction of the magnetic lines is changed to arms 6, 7 and in the reverse direction in the keeper thereby securing a maximum of induced current in the coil.

The breaking of the contact of the keeper with the arms 5, 8 induces an impulse of electrical current in the coil 9 and the circuit connected thereto. The contact of the keeper with the arms 6, 7 induces another impulse of current and two more impulses are induced when the spring restores the keeper to normal position. Hence, four impulses of current are induced in the coil at each operation of the keeper.

As an application of the invention in practice, I may connect a signal 12 to the coil 9 and install the same adjacent to a highway 13, say at an intersection, and install a member 14 in the highway and operatively connect it to the keeper 10 so that a vehicle travelling on the highway will contact and depress the member and cause the keeper to reverse its position on the magnet and return to normal position and thereby induce four impulses of current in the coil and the signal circuit. The movements of the keeper are very rapid so that the apparent effect of the impulses is as though there were but one impulse. Traffic on the cross road observing the flash of the signal, will be informed of the approach of traffic on the other road.

The signal may be an electric lamp suitable for the purpose, such as a Neon lamp, and there may be any selected number of actuating members in the highway. The device may be used on a railroad to give signals for various purposes, and there are many other uses to which the invention may be applied.

What I claim is:

1. An electric generator comprising a permanent magnet having two contact shoes on each pole, an insulated coil adjacent to the magnet, an armature floating in the magnetic field of the magnet, a spring exteriorly of the magnet and normally causing the armature to engage on two diagonally opposite contact shoes of the magnet with metal to metal contact, and means to cause the armature to break contact with one of said shoes and impact the corresponding shoe on the other pole, and pivot thereon to break contact with the other shoe on the latter pole and impact the other or corresponding shoe on the first named pole, the spring causing the armature to reverse its contact breaking and impacting movements, whereby four impulses of electrical current are induced in the coil at each cycle of movement of the armature.

2. An electric generator comprising a permanent magnet having two contact shoes on each pole, an insulated coil between the poles of the magnet and between the contact shoes on each pole, an armature floating within the coil and in the magnetic field of the magnet, a compression spring normally causing the armature to

engage on two diagonally opposite contact shoes of the magnet with metal to metal contact, and means to cause the armature to break contact with one of said shoes and impact the corresponding shoe on the other pole and pivot thereon to break contact with the other shoe on the latter pole and impact the remaining shoe on the first named pole, the spring causing the armature to reverse its contact breaking and impacting movements whereby four impulses of electrical current are induced in the coil in each cycle of movement of the armature.

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