Oct. 6, 1936. O. BAYERDÖRFER 2,056,557

LIGHTING GENERATOR

Filed June 4, 1935

Fig. 1

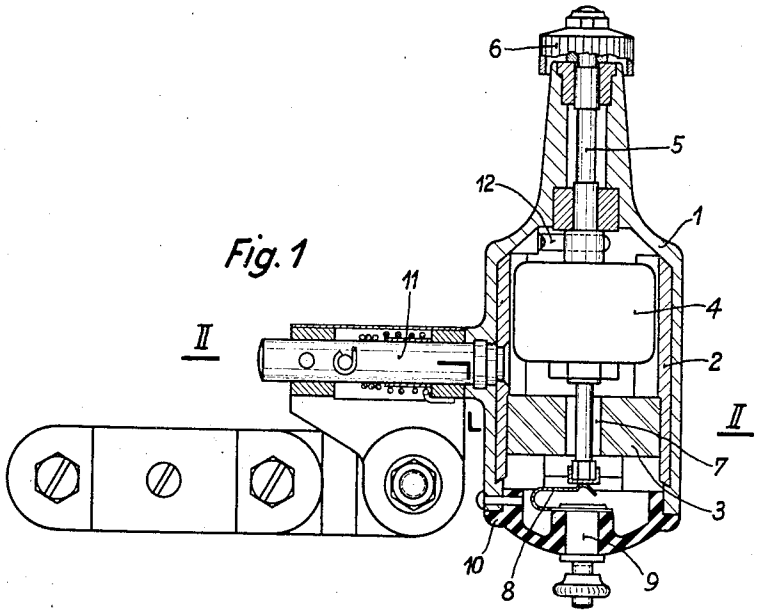


Fig. 2

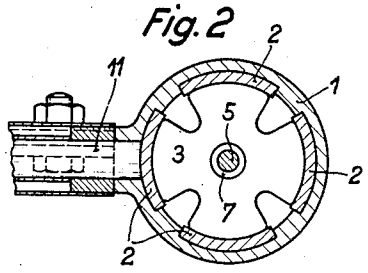
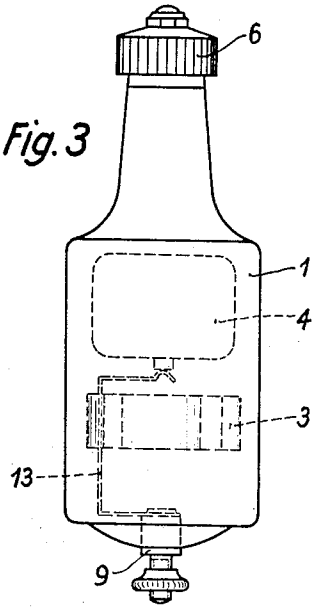


Fig. 3



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LIGHTING GENERATOR

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In Germany July 3, 1934

2 Claims. (Cl. 171—252)

This invention relates to dynamo electric machines, and more particularly to lighting generators which employ a permanent magnet to provide the magnetic field. In the application of such generators to vehicles, the factors of permissible size and weight frequently impose severe limitations on the shape and structure of the permanent magnets.

An object of this invention is to provide a generator which is more efficient in operation and simple in construction.

Another object is to provide a generator which is more compact.

Other objects and advantages will in part be specifically stated and in part be obvious when the specification is read with reference to the drawing, in which:

Fig. 1 shows a sectional view of the generator and supporting member; Fig. 2 is a cross section taken on line II—II of Fig. 1; and Fig. 3 is a partial diagrammatic view of a modification of Fig. 1.

While the generator shown and described is especially suited for use on a motorcycle, and is intended to be driven by a friction roller in contact with one of the tires or rims, the invention may be applied to generators other than the type employed here for purpose of illustration.

Referring to Fig. 1 in more detail, the numeral 1 represents a non-magnetic housing which may be die cast with the pole pieces 2 as inserts. A magnet 3 of cruciform shape, and having four polar projections, is inserted in the housing 1. Each polar projection is pressed into contact with one of the pole pieces 2 by a force fit. As the flux traversing the pole pieces does not reverse in direction, they may be of solid iron instead of laminations. An armature 4 is positioned inside the magnetic structure thus formed, and is supported on a shaft 5 which is rotatably journaled in two bearings carried by an extension of the housing 1. A friction roller 6 is secured on the end of the shaft 5, the other end of which projects through an opening 7 in the magnet 3 and bears against a spring contact 8 connected to the electrical terminal 9. A cap 10 of insulating material may be molded with the terminal 9 as an insert.

A supporting pin 11 is secured to the magneto structure, as by riveting to one of the pole pieces 2, and is rotatably journaled in a suitable supporting bracket to permit the magneto to be moved out of driving engagement with the vehicle tire or rim. One end of the armature winding is connected to the insulated terminal 9 as stated before, and the other end is connected to the housing 1 by a spring contact 12.

In the modification shown in Fig. 3, the magnet 3 has no central opening. A long contact spring 13 extends from the terminal 9 through one of the peripheral slots of the magnet and into engagement with the end of the armature shaft 5.

The magnet employed in the preferred form of the generator is composed of an aluminum-nickel-iron alloy of high coercive force as is described in the French Patent 731,361. According to known formula, the efficiency of a magnet is greatest when the cross section bears a certain relation to length, and in low output generators the magnet material cannot ordinarily be proportioned to conform with the formula. In this present invention the effectiveness of the magnet is increased by positioning it perpendicular to the armature axis and employing the soft iron pole pieces as contacting magnetic conductors. In this manner the inherent disadvantages of a short magnet are overcome. The magnet may also vary as to the number of polar projections, according to the requirements of any particular machine.

Many changes and modifications may be made by anyone skilled in the art without departing from the spirit and substance of the invention as expressed in the following claims.

I declare that what I claim is:

1. In a dynamo electric machine, a substantially tubular housing, a plurality of arcuate pole pieces arranged as inserts in the inner surface of said housing and extending longitudinally therein, a multipolar permanent magnet positioned transversely in said housing adjacent one end and contacting said pole pieces intermediate their length, an armature rotatably mounted adjacent said pole pieces, and an output connection leading from said armature.

2. In a dynamo electric machine, a substantially tubular die cast housing, a plurality of arcuate pole pieces cast as inserts in the inner surface of said housing and extending longitudinally therein, means including a chamfered end surface for retaining said pole pieces in said housing, a multipolar permanent magnet positioned transversely in said housing and contacting said pole pieces adjacent the chamfered ends thereof, an armature rotatably mounted adjacent the opposite ends of said pole pieces, and an output connection leading from said armature.

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