

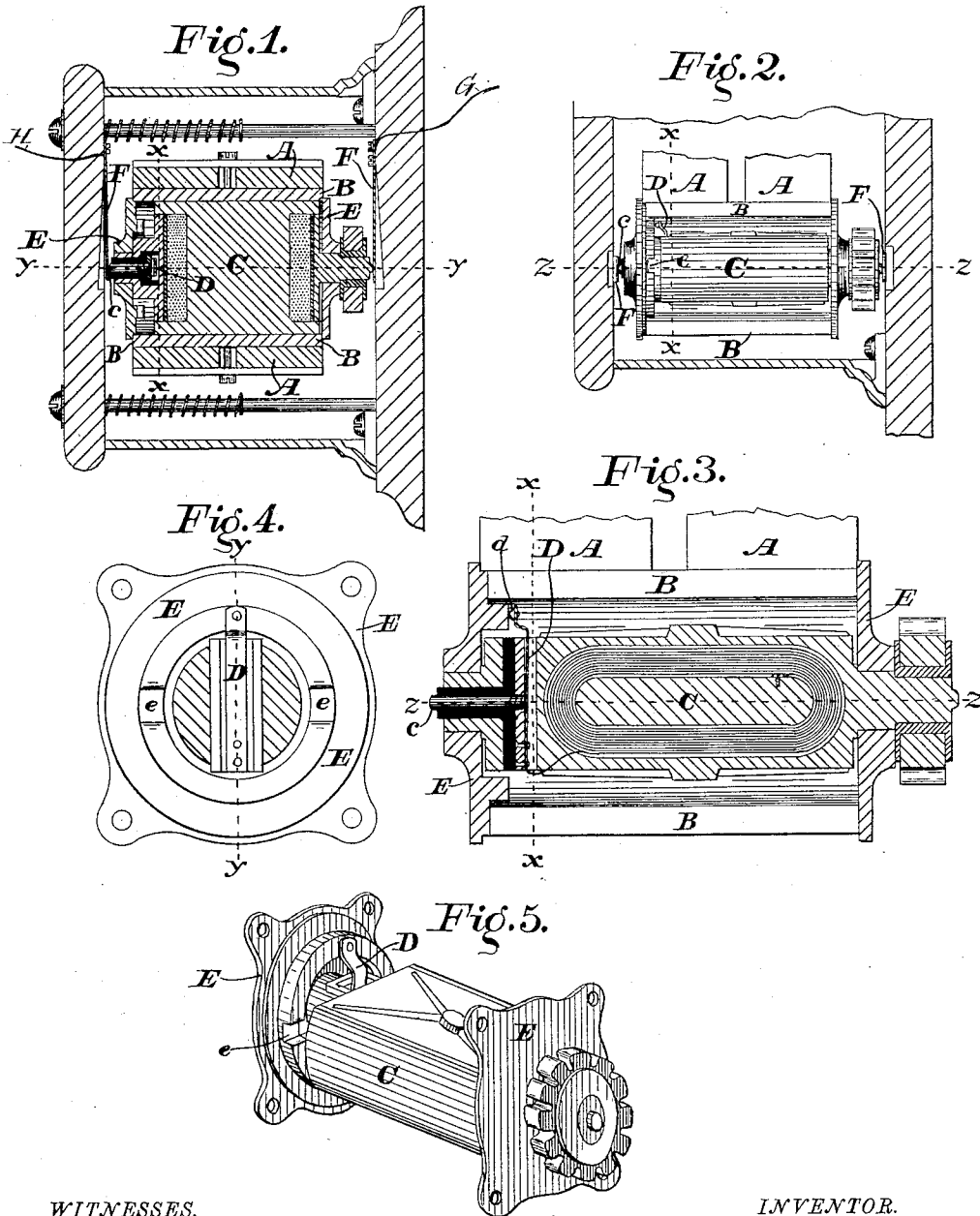
(No Model.)

E. T. GILLILAND.

AUTOMATIC SHUNT FOR MAGNETO ELECTRIC GENERATORS.

No. 272,234.

Patented Feb. 13, 1883.



WITNESSES.

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## AUTOMATIC SHUNT FOR MAGNETO-ELECTRIC GENERATORS.

SPECIFICATION forming part of Letters Patent No. 272,284, dated February 13, 1883.

Application filed October 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, EZRA T. GILLILAND, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Automatic Shunts for Magneto-Electric Generators, of which the following is a specification.

The object of my said invention is to provide a shunt for magneto-electric generators which shall be strictly automatic—*i. e.*, wherein the magnetic force existing in the generator itself shall operate to keep it short-circuited at all times, except when power is applied to rotate the armature.

The invention consists essentially in combining with the rotary armature of a magneto-electric generator a contact spring or bar, which is attached to said armature at one end and is in contact with the cylinder-head at the other, thus bridging the space between said armature and said head and permitting the electric current to freely pass from one to the other, thus short-circuiting the helix at all times, except when the contact is broken, which may be done by means of a notch or notches (or pieces of insulating material) in the face of the cylinder-head over which said spring passes, as will be hereinafter more particularly described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a horizontal sectional view on the dotted line *z z* of a call-signal box for telephonic purposes containing a magneto-electric generator provided with my invention; Fig. 2, a vertical section thereof at such a point as will show the armature in elevation; Fig. 3, a central vertical section of the same on the dotted line *y y* on an enlarged scale; Fig. 4, a transverse section of Fig. 3, looking to the left from the dotted line *x x*, and Fig. 5 a perspective view of the armature and cylinder-heads.

In said drawings the portions marked A represent the lower ends of the permanent or horse-shoe magnets of a magneto-electric generator; B, the pole-pieces thereof; C, the rotary armature; D, the spring or bar, which is an essential feature of my improved shunt; E, the cylinder-heads; F, contact-springs bearing against

the points extending from the ends of the armature, and G H wires or strips representing the incoming and outgoing lines.

The magnets A, pole-pieces B, armature C, contact-springs F, and line-connections G H may be constructed in any ordinary or suitable form, (the form shown being, however, preferred,) and as the construction of such apparatus generally is well understood need no special description. The particular form shown will be described in another application for Letters Patent which I intend to make.

The spring or bar D is attached to the pin *e*, over which the electric current usually passes out of the armature, or to a cross-bar attached thereto, and extends out until its end rests against the cylinder-head. This spring is preferably provided with a projection, *d*, which makes a better contact-point and operates with less wear and friction than the bare spring would if so used. The effect of this spring while its contact with the cylinder-head is maintained is, as will be readily seen, to render inoperative the insulating material and to permit the electric current to pass through the armature from one end to the other without passing through the helix, or, in other words, to "cut out" said helix.

The cylinder-head E is preferably constructed with a raised annular portion, as shown, in which are notches *e*. When the point *d* on the spring D passes these notches the contact between said spring and the head is broken and the electric current is forced to pass in the usual course through the helix. Small pieces of insulating material may of course be used instead of the notches *e*; but I regard the latter as the more desirable.

As is well known to electricians, the electric current passes off from a rotary armature just at the time when said armature leaves the pole-pieces, or, in other words, when it changes polarity. For this reason the notches *e* are in line with the center of the pole-pieces, and the spring D is set at right angles with the faces of the armature, or in equivalent relative positions, so that the point *d* of the spring passes through the open space formed by said notch at exactly the time when the electricity is given off by the armature, and thus said electricity

is forced to go by the regular ordinary route, notwithstanding the usual "short-circuited" condition of the helix.

By the arrangement above described the shunt is also rendered automatic. The magnetic attraction holds the faces of the armature adjacent to the pole-pieces, except when other force, as the turning of the crank, is employed to move said armature. As, when the armature is in this position, the point of the spring or bar D is in contact with the cylinder-head, thereby cutting out the helix, it will be readily seen that this device is strictly automatic, being cut out at all times when at rest by reason of being magnetically held, so that there is a contact between the spring D and the cylinder-head.

The arrangement described keeps the helix effectually cut out at all times, except when the generator is in actual use, and thus accomplishes by simple and strictly automatic means that which has heretofore either required a distinct operation on the part of the user of the machine or a considerable addition to the mechanical construction of the machine itself.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the rotary armature of a magneto-electric machine, of a contact-piece, D, connected to the insulated pin in said armature and adapted to rest against

the cylinder-head, said cylinder-head being provided with notches or insulating-points over which said contact-piece shall pass, whereby the shunt or short circuit normally maintained by the action of said contact-piece is broken and the circuit through the armature temporarily established, substantially as set forth.

2. The combination of the armature C, contact-piece D, and cylinder-heads E, the latter having notches or pieces of insulating material therein, substantially as described, and for the purposes specified.

3. A shunt for magneto-electric generators, the essential features whereof are a contact-piece, D, for bridging the insulating material which surrounds the pin over which the current from the helix leaves the generator, and means of breaking the contact periodically during the rotation of the armature, said contact-piece being arranged, substantially as described, to be held in position to form the shunt by the magnetic force of the generator, except when forcibly moved to a different position.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 6th day of October, A. D. 1882.

EZRA T. GILLILAND. [L. S.]

In presence of—

C. BRADFORD,

E. W. BRADFORD.