(No Model.)

E. CAEMMERER.

MOUNTING FOR COMMUTATORS OF DYNAMO ELECTRIC MACHINES.

No. 590,000. Patented Sept. 14, 1897.

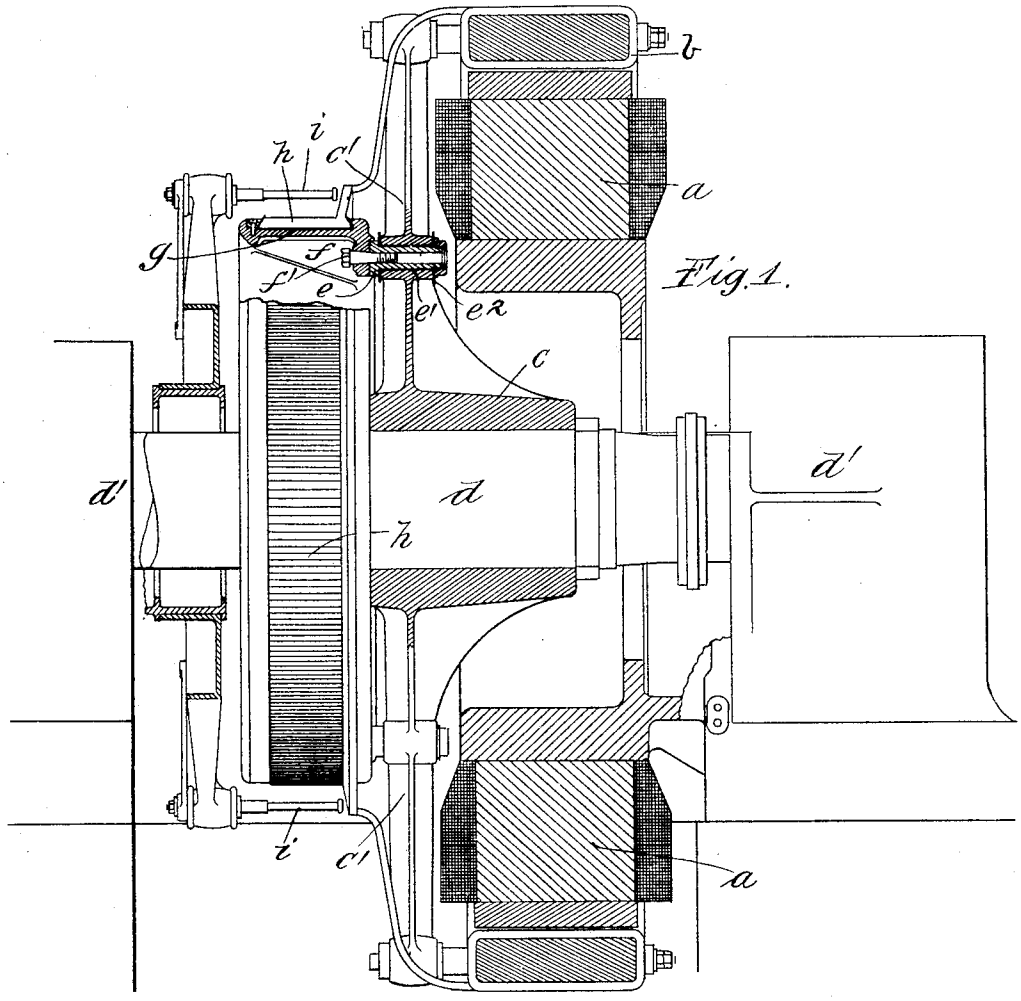


Fig. 1.

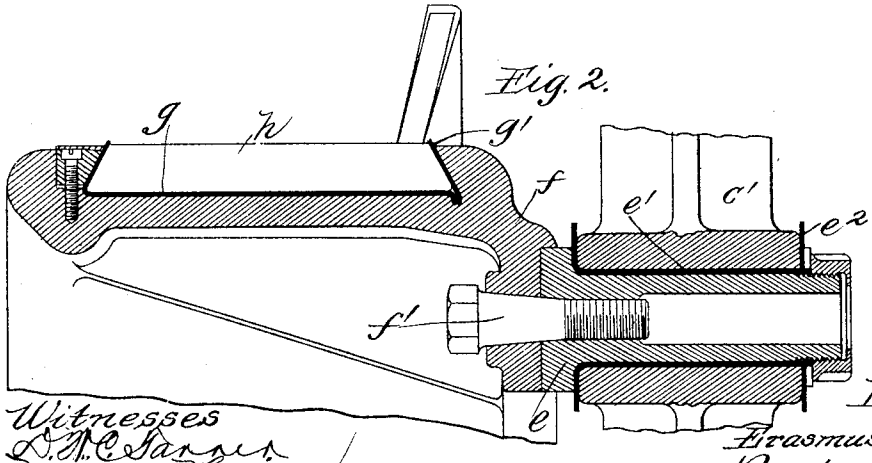


Fig. 2.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ERASMUS CAEMMERER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SIEMENS & HALSKE ELECTRIC COMPANY OF AMERICA, OF SAME PLACE.

MOUNTING FOR COMMUTATORS OF DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 590,000, dated September 14, 1897.

Application filed May 13, 1897. Serial No. 636,348. (No model.)

To all whom it may concern:

Be it known that I, ERASMUS CAEMMERER, a subject of the Emperor of Germany, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Mountings for Commutators of Dynamo-Electric Machines, of which the following is a specification.

My invention relates to an improved mounting for commutators of dynamo-electric machines, and has for its object the protection of the machines from injury due to short-circuiting and static discharges.

A difficulty frequently met with in the operation of dynamos of the usual construction is the short-circuiting of current at the commutator and consequent burning out of the insulation between said commutator and the frame of the machine. This may result either from static discharges or from the flash occurring at the brushes when the circuit-breaking device is actuated to open the circuit, causing the current to arc over the insulation of the commutator to the frames of said commutator and dynamo. Especially is this found true of railway-generators, which ordinarily are designed to furnish heavy currents and are connected to ground. In such machines an accident of this class is liable to be of a serious nature, since a short circuit from the ungrounded pole to the frame of the machine and thence to ground will often burn out the commutator or result in even more serious damage. Moreover, this type of generator, because of the large surface of conductor presented to the grounded commutator-frame, offers a large condenser-surface, which greatly increases the danger of lightning discharges through the insulation.

My invention consists in interposing between the commutator-frame and its supporting parts an insulating-mounting, preferably situated between the insulated parts, to secure a minimum exposure of conducting-surfaces.

I will describe my invention in connection with a dynamo provided with an external ring armature and internal fields by the aid of the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a dynamo in which my invention is utilized, and Fig. 2 is a similar view showing upon an enlarged scale the mounting for the commutator-frame.

Like letters refer to like parts in both views.

The dynamo shown has fields *a a* stationarily mounted within the ring armature *b*. The armature is secured at the ends of a plurality of radial arms *c'* of a spider *c*, which is keyed to the main shaft *d* and rotatably mounted in bearings *d' d'*. Midway upon a portion of the radial arms *c'* are provided openings which are adapted to receive studs or posts *e* of the commutator-frame *f*, an insulating-bushing *e'* and washer e^2 being interposed between the metal surfaces at each point of connection. The studs *e* are secured to the commutator-frame by taper-bolts *f'*. A recessed portion is provided upon said commutator-frame which receives an insulating band and ring *g g'*, wherein are disposed the commutator-bars *h*. The brushes of the machine are carried upon the brush-supports *i*. From the above it will be seen that in addition to the insulation provided between the surfaces of the commutator and its frame the said frame, which, preferably, is connected with the arms of the spider at comparatively few points of support, has supplementary insulation interposed at these points, which effectually prevents the flashing over or short-circuiting of the current at the commutator with its attendant danger to the machine.

The commutator and its supports are not subjected to any considerable strain even in the larger type of machines. Hence the connections with the arms of the spider may safely be lessened in number to secure the reduction of contiguous metallic surfaces.

Having now described my invention, what I claim as new, and desire to secure by these Letters Patent, is—

1. The combination in a dynamo-electric machine, with the commutator, of the commutator frame supporting said commutator but electrically insulated therefrom, and an insulating-mounting interposed between the commutator-frame and the supporting part of the dynamo-electric machine, substantially as described.

2. The combination with the fields and armature of a dynamo-electric machine, of a

commutator-frame mounted to rotate with said armature, commutator-bars provided upon and insulated from said frame, and an insulating-mounting provided between the said commutator-frame and the supporting part of the dynamo, substantially as described.

3. In a dynamo-electric machine, the combination with the fields and armature thereof, of a commutator-frame mounted to rotate with said armature, commutator-bars provided upon and insulated from said frame, and insulating-mountings interposed between the commutator and the supporting part of the dynamo at the points of support, the parts being constructed to reduce the exposure of conducting-surfaces at said points of support, substantially as described.

4. The combination with the fields and armature of a dynamo-electric machine, of a rotatable spider *c* upon which said armature is carried, a commutator-frame *f*, commutator-bars *h* mounted thereon and insulated from the frame, studs *e* secured to said frame and the spider, and insulating-mountings $e' e^2$ interposed between said frame and spider, substantially as described.

5. The combination in a dynamo-electric machine, with fields *a*, of an armature *b*, a rotatable spider *c* upon the arms of which said armature is mounted, a commutator-frame *f*, commutator-bars *h* mounted upon and insulated from said frame, studs *e* and insulating-mountings therefor provided for a portion of said spider-arms, adapted to be bolted to said commutator-frame and secure it in position upon the spider, substantially as described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 2d day of April, 1897.

ERASMUS CAEMMERER.

Witnesses:
J. H. EVANS,
C. F. MARLOW.