

(No Model.)

T. A. EDISON.
DYNAMO ELECTRIC MACHINE.

No. 263,140.

Patented Aug. 22, 1882.

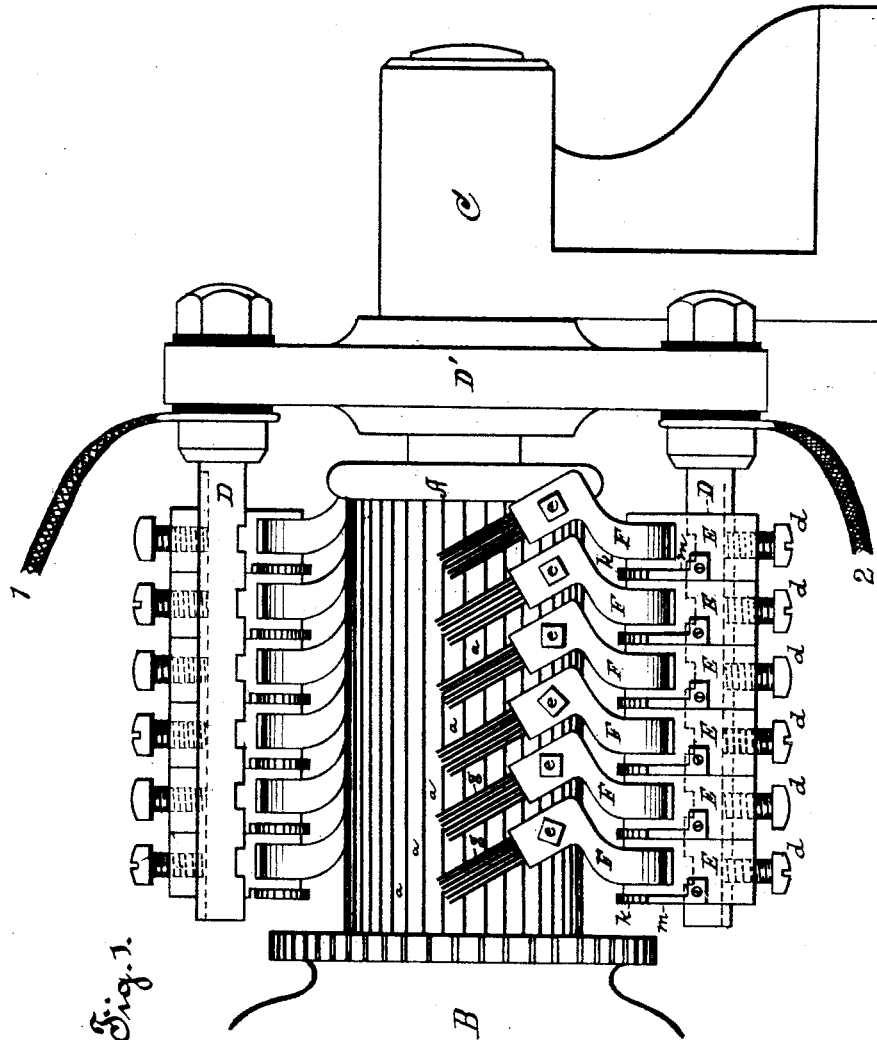


Fig. 1.

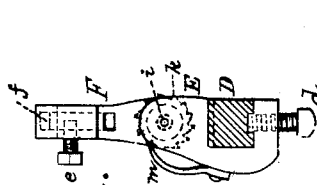


Fig. 2.

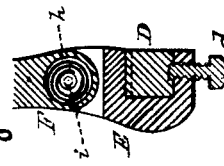


Fig. 3.

Attest:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE
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DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,140, dated August 22, 1882.

Application filed August 9, 1880. (No model.) Patented in England September 30, 1880, No. 3,964; in Germany February 3, 1881, No. 16,670; in Italy March 29, 1881; in Belgium March 31, 1881, No. 54,152; in Canada March 31, 1881, No. 12,567; in India May 3, 1881, No. 336; in Victoria May 4, 1881, No. 3,005; in France May 27, 1881, No. 141,800; in Spain June 27, 1881; in Queensland June 30, 1881; in New South Wales July 4, 1881; in Austria July 21, 1881; in New Zealand September 15, 1881, No. 551, and in Portugal November 22, 1881.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and
5 useful Improvement in Magneto or Dynamo Electric Machines, (Case No. 224;) and I do hereby declare that the following is a full and exact description of the same, reference being
10 had to the accompanying drawings, and to the letters of reference marked thereon.

The invention relates to that part of the machine known as the "commutator-brush holder."

As is well known, the commutator-brush
15 generally used consists of a bundle of wires or layers of sheet metal fastened in a frame or brush-holder in such position as to bear upon and make contact with the commutator.

As hitherto constructed the brush-holders
20 have usually been rigidly attached to the frame of the machine with some device for adjusting them to different positions with relation to the commutator, and also so attached that if a commutator-brush became so damaged as to
25 need repairs or replacement a stoppage of the machine was necessitated.

It is important that the pressure of the brushes upon the periphery of the commutator should be constant and capable of adjustment
30 to the desired degree, as when the pressure is too great the parts are too rapidly abraded and worn away, and when too slight an arc may form between the opposed surfaces or portions thereof, causing them to be burned or
35 oxidized.

It is also important that provision should be made permitting the removal for repair or replacement of a brush without stoppage of the machine or interference with its capacity or
40 the current transmitted.

The accomplishment of these results is the object of this invention; and to that end it consists in the features more particularly herein-
after set forth and claimed.

45 In the drawings, Figure 1 is a view of a commutator and series of commutator-brushes

embodying the invention; and Fig. 2 is a side view of one brush-holder, and Fig. 3 a longitudinal section of part of one brush-holder.

A is the commutator of a dynamo or magneto electric machine, placed, as usual, at the end of the rotating armature B, and supported at its outer end in bearings C, *a a* being the strips thereof connected to the coils of the armature, but insulated from each other.

At a suitable distance from the commutator square bars D D are supported in (but insulated from) supports D' D'', one of which only is shown.

The brush-holders are made in two pieces, 60 E F, the part E being formed with a U-shaped recess or jaw at its upper end, in which takes and in which is pivoted the part F. A pin or pivot, *i*, passes through the two parts and holds them together. In the lower portion of 65 the part F a chamber is formed, in which is placed the spring *h*, whose inner end is attached to *i*, the outer end being fast to the wall of the chamber. Upon the end of *i*, outside of the chamber, is a ratchet-wheel, *k*, a 70 part, *m*, being arranged upon E to take into the teeth of *k* and hold it in a fixed position. In the upper or free end of F is a chamber or recess, *f*, for receiving and holding a brush, which is secured therein by a set-screw, *e*. 75 Upon the inner side of E is cut a groove the size of the bar D, in the under side of which is cut a slot, as shown in Figs. 2 and 3. A series of commutator-brush holders thus constructed are placed side by side upon the bars D D by 80 simply slipping each onto the bar from the front, each being secured thereon by the set-screw *d* taking into the groove on D. The use of a series, as shown, involves several advantages. Each series of brushes is in metallic 85 contact at the same time with the same strip or strips of the commutator; hence sparks between the commutator and brushes are greatly lessened, if not entirely obviated, and a large current can be conveniently taken from the 90 machine with very little, if any, resistance thereto in the commutator. From these re-

sults I have applied the name "large-current multiple brushes" to this arrangement of brushes.

If repairs upon or replacement of one or more brushes be necessary, the set-screws *d* of the defective brushes are loosened and the holder of such defective brushes removed from the bar D without disturbance of the remaining brushes, which afford ample contact-surface.

As before stated, the ratchet *k* is upon the pivot *i*, to which is attached the spring *h*. Hence by turning the ratchet *k* any desired degree of resilience may be given the spring, which force is expended in holding the brush upon the commutator with a steady and uniform pressure, which may be varied or regulated by means of the ratchet.

What I claim is—

1. In a dynamo or magneto electric machine, the combination, with the commutator, of two series of brushes, (one upon each side,) each brush of a series being mounted independently upon a supporting shaft or bar common to all of its series, and provided with means within itself for adjustment of pressure independently of all the others of the series, substantially as set forth.

2. The combination, with a commutator, of a series of brushes and holders, each mounted independently upon a bar or shaft and arranged so that each brush takes obliquely upon the commutator, substantially as set forth.

3. A brush-holder formed of two parts, the one for fixed seating upon a proper support, the other connected thereto by an adjustable spring union, substantially as set forth.

4. In a dynamo or magneto electric machine, the combination of a bar for supporting the brushes, grooved upon one of its faces, and the brush-holder provided with a screw adapted to take in said groove, substantially as set forth.

5. A brush-holder having its end receiving the brush formed at an angle to its body, so that the brush may take obliquely upon the commutator, substantially as set forth.

This specification signed and witnessed this 30th day of July, 1880.

THOS. A. EDISON.

Witnesses:

WM. CARMAN,
S. L. GRIFFIN.