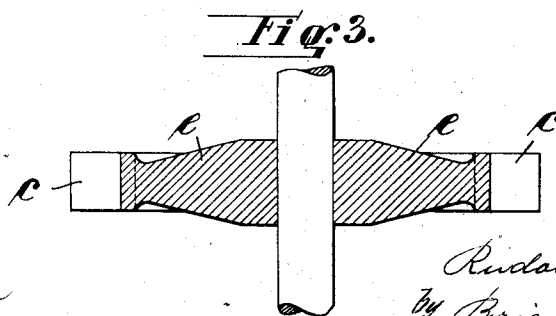
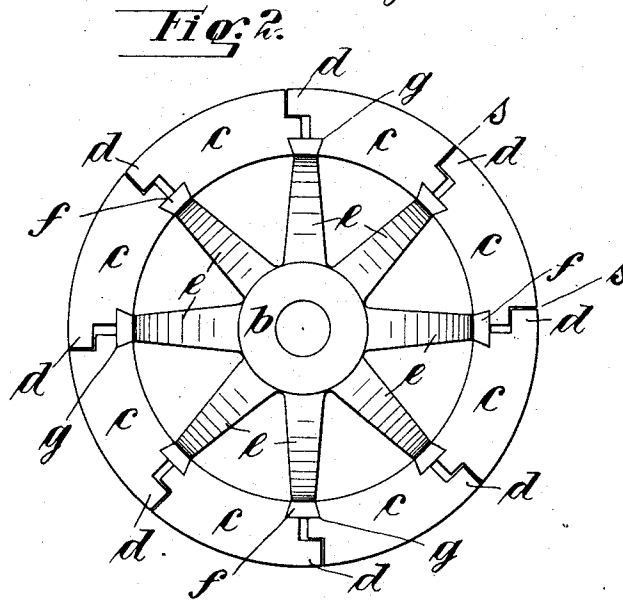
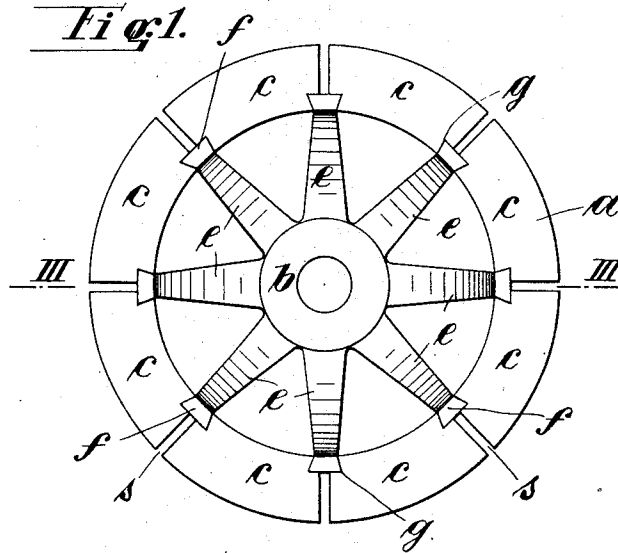


R. GOLDSCHMIDT.
 ROTOR FOR ELECTRIC MACHINES.
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1,043,047.

Patented Oct. 29, 1912.



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UNITED STATES PATENT OFFICE.

RUDOLF GOLDSCHMIDT, OF DARMSTADT, GERMANY.

ROTOR FOR ELECTRIC MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RUDOLF GOLDSCHMIDT, a citizen of Germany, residing at Darmstadt, Germany, have invented a new and
5 Improved Rotor for Electric Machines, of which the following is a specification.

Electric machines of large diameter usually comprise a magnetically operative annular mass that is supported by a radiating
10 central portion, the magnetically operative mass being composed of laminated metal, while its radiating portion may consist of solid steel, bronze or any other suitable material.

15 The annular portion is attached to the radiating central portion by means of screws, dovetail joints or the like; the mode of attachment adopted being designed to prevent the annular portion, which advantageously
20 consists of separate segments, from being torn apart from the central portion by centrifugal force. The coefficient of expansion of the material forming the annular portion is, however, almost invariably different
25 from, and in general, considerably lower than that of the material of which the radiating central portion is composed; and this is especially the case when the annular
30 portion consists of very thin sheets of a hard metallic alloy. It consequently follows that in the construction usually adopted, the strain due to expansion at the circumference of the annular portion is considerably
35 increased by the more rapid expansion of the radially extending arms of the central portion. From this it follows that while the strain on the arms is still inconsiderable, the annular portion may, when its coefficient of expansion is low, under certain
40 conditions, be strained even to the breaking point. The lower therefore the coefficient of expansion of the annular portion or the more defective the connection of the dovetailed joints, the less is that portion of the
45 strain taken up by the radial arms, and the greater is the chance that the radiating portion may fail to afford the protection intended, with the result that the annular portion may burst before the radial arms are
50 subjected to any considerable strain. The danger of this occurring is increased by the fact that the material of which the annular portion is composed is usually chosen only
55 with reference to its magnetic properties and that no regard is paid to the question of its strength.

Now an object of the present invention is to provide an improved construction of rotor wherein strains in its annular or rim
portion due to its comparatively low coefficient of expansion are eliminated or minimized while the strains due to its centrifugal force are practically borne entirely by
the spokes of the central radiating portion of the rotor. This is effected by sub-dividing
60 the annular portion into segments which are separately and independently attached to the ends or otherwise of two arms of the radiating hub portion.

A further object of the invention is to
70 construct the rotor throughout of uniform strength thus avoiding additions to its mass which merely serve to increase centrifugal force and hence to limit the maximum rotary speed attainable.

In the accompanying drawings, Figure 1 illustrates in side diagrammatic elevation one construction of rotor according to this invention; Fig. 2 is a similar illustration of a modified construction, and Fig. 3 is a section
80 on the line III—III of Fig. 1.

In the drawings, *a* indicates the annular and *b* the radiating portion. The annular portion is sub-divided into separate segments *c* by means of slots *s*, which extend
85 throughout the entire width of the segments. These transverse slots or gaps may either be formed in a radial direction (Fig. 1) or they may be stepped by correspondingly
stepping the ends of the segments as shown
90 at *d* (Fig. 2). When such an arrangement is adopted the strains are not borne by the annular portion *a* but each segment *c* thereof transmits its strains to the spokes *e* of
the radiating hub portion *b*. Under these
95 circumstances the material of which the radiating portion *b* is composed may be selected solely with reference to its strength, while it is, moreover, no longer necessary to
100 pay the same attention to the accurate fitting of the dovetailed joints as in constructions wherein strains arising in the spokes are transmitted to the rim. The portion *b* may advantageously be constructed as of
equable or uniform strength throughout, its
105 spokes *e* tapering outwardly toward the rim *a*, as shown in Figs. 1, 2 and 3.

The outer extremities of the spokes *e* may be connected in any suitable manner with the segments *c*; in the constructions illustrated these extremities are enlarged to form
110 dovetailed heads *f*, engaging with corre-

sponding recesses *g* in the ends of the segments, the width of each head being greater than the combined depths of a pair of opposed recesses.

5 What I claim is:—

1. In a ring armature for electric machines, a hub, a plurality of spokes radiating therefrom, a plurality of segments, each of said segments being secured at its
10 ends to the ends of a pair of adjoining spokes and being separated from the adjacent segments by transverse gaps that extend outwardly from the spokes, whereby the strain due to centrifugal action is separately
15 transmitted from each segment to said adjoining spokes.

2. In a ring armature for electric ma-

chines, a hub, a plurality of spokes radiating therefrom and having dovetailed heads, a plurality of segments having undercut recesses at both ends, the opposed recesses of each pair of adjoining segments being engaged by a common spoke-head, while the width of said head exceeds the combined
20 depths of said recesses, so as to form a transverse gap between the segments that extends outwardly from the spoke-head, whereby the strain due to centrifugal action is separately transmitted from each segment to
25 the two adjoining spokes.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."