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COLLECTOR FOR ELECTRIC ENGINES WITH ROTATING
BRUSHES AND STATIONARY COPPER SEGMENTS
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Fig. 2

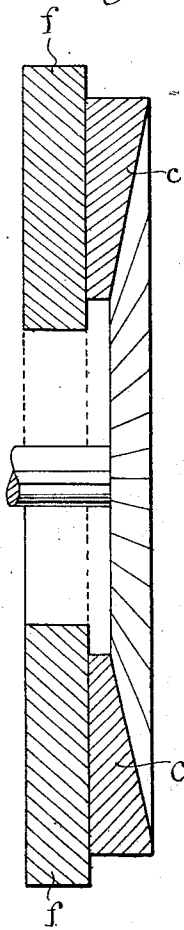


Fig. 1

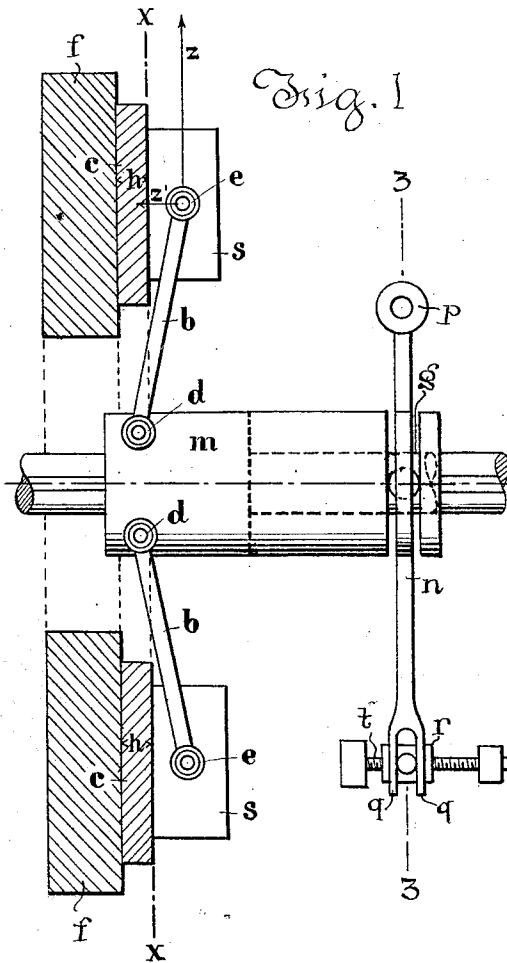
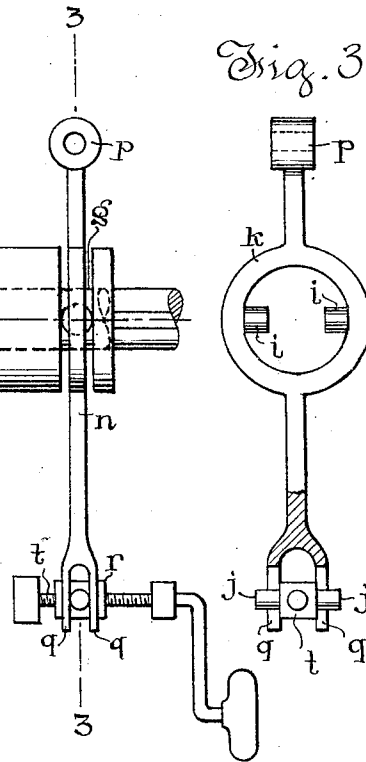


Fig. 3



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COLLECTOR FOR ELECTRIC ENGINES WITH ROTATING BRUSHES AND STATIONARY COPPER SEGMENTS.

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In some types of electric engines, and particularly in those used for the transformation of alternating currents into direct currents, or vice versa, collectors are employed in which the system of copper segments is stationary, whilst the brush system is rotatable against the said segments.

In order to maintain the brushes in contact with the segments, springs are made use of in said collectors; but, as the springs have to rotate together with the brushes, many inconveniences occur which, according to the present invention, are eliminated inasmuch as, in order to ensure the adherence of the brushes against the segments, the centrifugal force, produced through the rotary motion of the brush system, is utilized. Moreover things are arranged in such a way as to be able to regulate at will the pressure of the brushes against the segments of the collector.

An embodiment of the collector according to the present invention is schematically represented in the annexed drawing, in which Fig. 1 is a side-view showing the collector of the machine in diametrical section, Fig. 2 a section through a modified collector, Fig. 3 a section along line 3—3 in Fig. 1.

As will be seen from the drawing, the copper segments *c* are grouped together in the same manner as in the well-known collectors. Their height however, is so much reduced that, instead of forming a cylinder on the outer surface of which the brushes slide, they actually form a flat ring or annular zone, carried by the supporting plate *f*, and the contact surface of which is the plain front surface *a*—*a*.

Upon such a surface bear the rotating brushes *s* carried by arms *b* hinged at one end to a pivot *e* of the brushes and at the other end to a pivot *d* of a sleeve *m* capable of sliding upon the rotary shaft *a* while rotatable with the latter.

The arms *b* are inclined with respect to the shaft *a* and the component *z'* of the centrifugal force *z*, perpendicular to the surface XX of the collector, main-

tains the brushes applied against the collector the firmer the greater the inclination of the arms *b* is.

This circumstance permits the pressure exerted by the brushes upon the collector to be regulated at will, it being sufficient to that end to cause the sleeve to slide towards the collector or, vice versa, the collector towards the sleeve, and in general the distance existing between the plane XX of the surface of contact of the collector and the plane, normal to the shaft *a*, which passes through the pivots *d*, is caused to vary more or less, thereby changing the inclination of the arms *b*.

Any convenient means may be adopted for axially shifting the sleeve *m*. The drawing shows by way of example, that the sleeve *m* is provided with a groove *g* wherein engage two pins *i* projecting internally from a ring *k* formed in a forked lever *n* pivoted at *p*. Between the prongs *q* of the lever engage two pins *j* projecting from a screw nut *r*, the position of which along its screw *t* can be changed at will by means of the crank *u*. By rotating said crank in one or the other direction, the sleeve *m* can be caused to slide towards the left or the right while rotating together with the shaft *a*.

Although in the Figure 1 of the drawing the brushes are shown as sliding upon one of the plane front surfaces of the collector, it will nevertheless be understood that the said surfaces could have a slightly conical shape as shown by way of example in Fig. 2.

Claims:

1. In electric engines, the combination with a rotary shaft, of a collector provided with contact plates on its frontal surface, arms hinged to said rotary shaft so as to be held inclined to the direction of the centrifugal force, and brushes pivotally carried by said arms, the arrangement being such that the resultant of the centrifugal force acting on said brushes and of the action exerted on them by said arms maintains said brushes applied against the contact surface of said collector.

2. The combination as specified in claim 1, including means for changing the dis-

tance between the supports of said arms and of the collector, thereby changing the inclination of said arms and the action of the brushes on the contact surface.

- 5 3. The combination as specified in claim 1, including a sleeve adapted to slide longitudinally upon said shaft while rotatable

therewith, said arms being hinged to said sleeve, and means for producing a longitudinal displacement of said sleeve upon said 10 shaft.

In testimony whereof I have affixed my signature this 14th day of August, 1926.

MARIO URBINATI.