C. ROULLAND.

CONTACT RING SYSTEM.

APPLICATION FILED JULY 7, 1917.

1,273,409.

Patented July 23, 1918.

Fig. 1

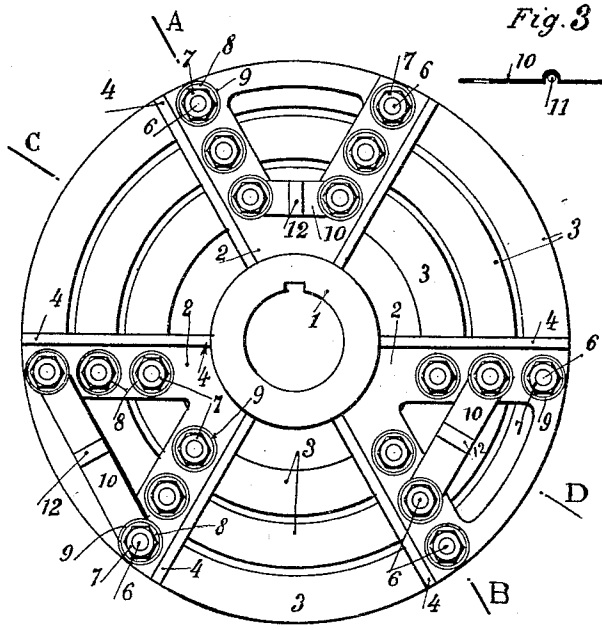


Fig. 3

Fig. 2

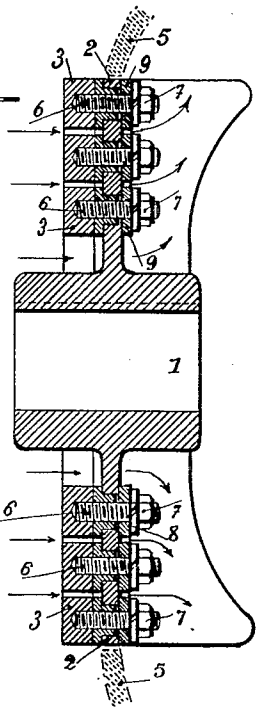


Fig. 4.

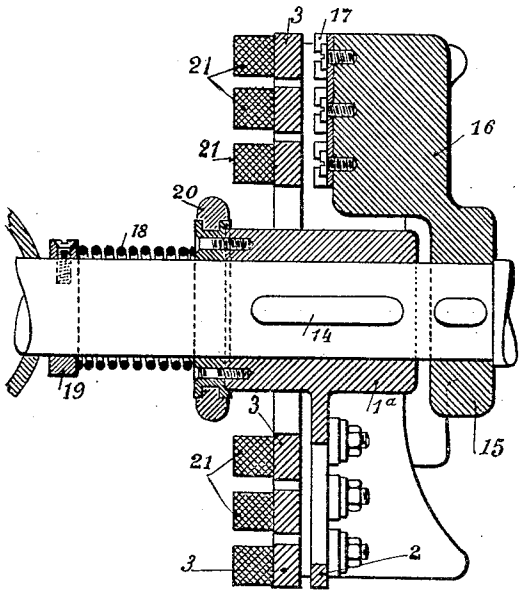


Fig. 5.

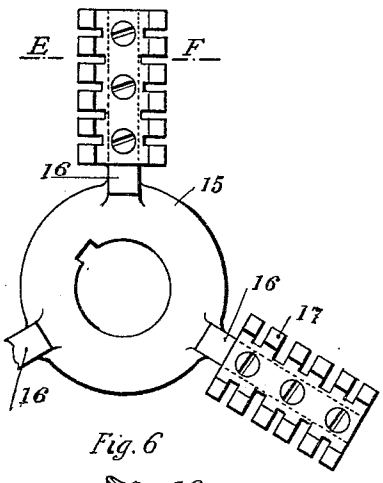
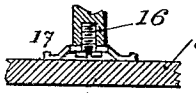


Fig. 6



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UNITED STATES PATENT OFFICE.

CHARLES ROULLAND, OF PARIS, FRANCE.

CONTACT-RING SYSTEM.

1,273,409. Specification of Letters Patent. **Patented July 23, 1918.**

Application filed July 7, 1917. Serial No. 179,163.

To all whom it may concern:

Be it known that I, CHARLES ROULLAND, residing at Paris, France, have invented a new and useful Contact-Ring System, of which the following is a specification.

This invention relates to a system of support and contact rings, which is very simple, very strong, of cheap manufacture owing to the shaping being done almost entirely in the lathe making it possible to replace very easily and very quickly an element worn out by the brushes and giving an energetic ventilation strongly cooling the collection rings, the brush-holders and forcing the cooling air propelled by centrifugal force, to pass through a part of the field magnet or stator winding and to pass at the periphery of the machine between the plates and the frame, in order to escape through the openings of the side or cheek at the side of the pulley.

Other advantages will be shown in the description.

In order to make the invention clearly understood, the present specification is accompanied, merely for demonstration, by a drawing relating to rotor rings of an asynchronous motor.

In the said drawing:

Figure 1 is a front elevation of the rings and of the ring-holder;

Fig. 2 a cross-section on line A—B of Fig. 1;

Fig. 3 a longitudinal section of a constructional detail;

Fig. 4 a cross-section on line C—D of Fig. 1, showing the system when it is provided with the short-circuiting device;

Fig. 5 is a front elevation of the short-circuiting device, and

Fig. 6 a partial section on line E—F of Fig. 5.

In the said drawing, 1 is a hub intended to be keyed on the shaft of the motor and having cast with it sectors 2, preferably recessed in the central part.

These sectors are provided with holes by means of which can be fixed, with suitable sleeves and insulating rings, collection rings 3 arranged concentrically and provided toward the exterior of the machine with a flat surface on which can be arranged contact devices of any suitable kind known in the industry.

Each interval between two consecutive sectors 2, is completely free, and each sector is provided with ribs 4 intended not only to give rigidity to the system in the transverse direction, but chiefly to make possible an energetic ventilation of the said system and of certain parts of the electric machine.

The air, under the action of centrifugal force, is strongly drawn from the outside inward through the annular space comprised either between a ring 3 and the hub 1, or between two adjoining rings 3; the arrows in Fig. 2 show quite clearly the path of the air.

The cheek 5 of the motor surrounds the ring-holder support 1—2 opposite the sectors 2, and forces the air driven toward the inner periphery of the machine, to traverse the latter in the longitudinal direction in order to escape at its other side carrying the pulley.

In the example shown, the rings 3 are provided with studs 6 on which are screwed nuts 7 with interposition of washers 8 applied to insulating rings 9.

The winding is connected to the rings 3 by means of bars or strips 10 (Figs. 1–3), the ends of which engage under the nuts 7 fixing the corresponding rings 3, and the wires 11 of the winding are soldered in the eyelets or loops 12 formed by the said bars (Fig. 3).

It must be pointed out that the support of the rings could be cast ready to be fitted, if a suitable metal is used, such as aluminium, cast in a metal mold.

The short-circuiting of the rings 3 in the case of a rotor could be easily effected at the side of the fixing nuts, the driving being effected through the interior of the shaft, or from the outside by means of a stirrup-shaped bracket.

To that end (Figs. 4–6) the ring-holder 1^a is longitudinally adjustable on the shaft which drives it in its movement of rotation by means of the key 14.

Between the ring-holder 1^a and the rotor winding, is keyed the short-circuiting part; this part comprises a hub 15 provided with ribs 16 cast on it, to which are secured the short-circuiting parts 17.

The spring 18 compressed between the stop-ring 19 and the adjustable support 1^a, has the tendency always to keep the rear part of the rings 3 in a thorough contact with the short-circuiting parts 17.

A stirrup-shaped bracket 20 controlled by a lever and engaging with a ring with an annular groove, secured to the hub 1^a of the

ring-holder, can bring about longitudinal movement of the latter, and its disengagement from the short-circuiting parts 17.

The position shown in the drawing corresponds, for an asynchronous motor, to starting position. At this moment, the contacts 21 press on the rings with their maximum pressure. When the motor is started, the lever which controls the bracket 20, is released, the said lever having been locked in that position by any hooking device; the spring 18 will act at once and short-circuit the rings 3 by moving the support 1^a.

It must be pointed out that this movement does away nearly completely with the pressure of the contacts 21. This method is better than that consisting in raising the brushes, which results in an inopportune increase of tension of the regulator spring of the brush-holder. So that after a few operations, the brush holder gets out of order, and the carbon is no longer in contact with the rings at the moment of starting.

On the contrary, in the present invention, the spring 18 of the brush-holder expands immediately the motor has been started, and it has its full tension only during the starting, that is to say for a very short time. The result is that the wear of the brushes 21 is almost *nil*, and their tension practically does not get out of order.

It must be pointed out that the ribs 16 of the short-circuiting part which are arranged between the sectors 2 of the support, form ventilating ribs which adding their action to that of the said sectors 2, increase circulation of air in the various parts of the motor, and that those contacts 17 which may have tendency to become heated, as well as others, are energetically ventilated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A hub keyed to the shaft of the machine, being provided with radial sectors cast with it, to which sectors are secured, with suitable insulation, in the same plane, concentric rings suitably connected to the windings and intended to receive brushes or contacts on their surface facing the exterior of the said machine; the sectors being moreover provided with ribs which strengthen them and act as blades of a centrifugal fan for cooling the main parts of the dynamo or motor.

2. The combination with a shaft, of a ring holder comprising a hub provided with sectors, keyed to said shaft and longitudinally adjustable thereon, short circuiting devices, a ring having an annular groove secured to the hub of the ring-holder, a stirrup-shaped bracket engaging said ring and a lever for controlling said bracket with its metal parts to engage with or disengage from said short circuiting devices, and star-shaped branches between the sectors of said ring-holder adapted to contribute to the ventilation of the machine, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES ROULLAND.

Witnesses:
CHAS. P. PRESSLY,
GULES LEBREUX.

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