

J. B. WIARD.
CENTRIFUGAL SWITCH.
APPLICATION FILED AUG. 6, 1908.

945,997.

Patented Jan. 11, 1910.

Fig. 1

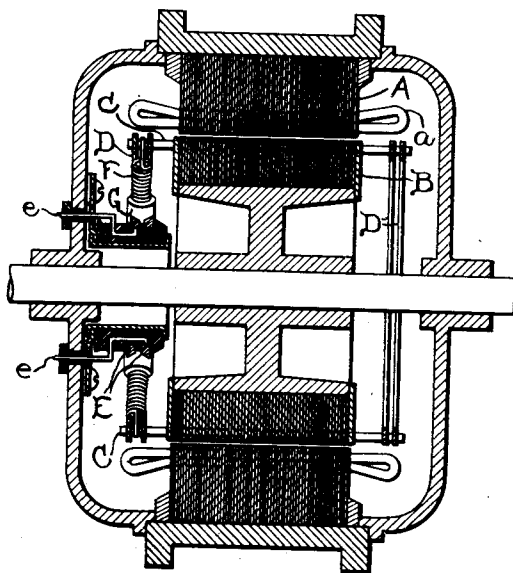


Fig. 2

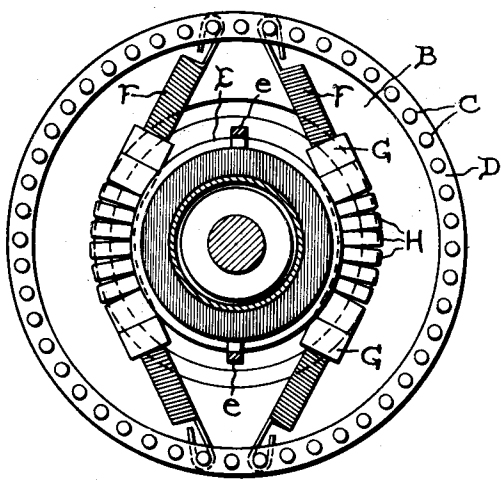


Fig. 4

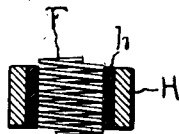
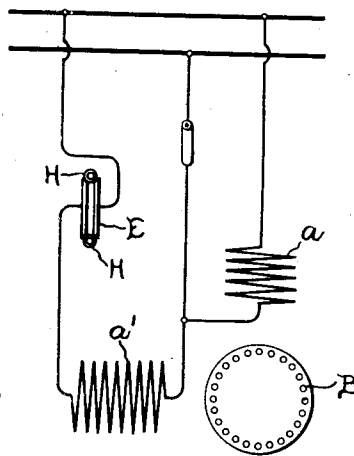


Fig. 3

Witnesses:

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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL SWITCH.

945,997.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed August 6, 1908. Serial No. 447,204.

To all whom it may concern:

Be it known that I, JOHN B. WIARD, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Centrifugal Switches, of which the following is a specification.

My invention relates to centrifugally operated switches for alternating current motors, and is particularly applicable to small single-phase induction motors of the type having a starting winding which is open-circuited when the motor is up to speed. Such motors have been provided heretofore with stationary collector rings concentric with the shaft, and contacts carried by the rotor which bridge the collector rings at starting, but when the motor is up to speed are thrown away from the collector rings by centrifugal force.

My invention consists in a novel and simple form of centrifugally actuated contact adapted for use in such a structure.

It comprises a flexible tension member having its ends connected to points on the rotor on opposite sides of the shaft and contacts carried on the central portion of said member and pressed thereby against the collector rings at starting, but adapted to be thrown away from the collector rings by centrifugal force when the motor is up to speed. The tension member may consist of a single tension spring having its ends connected to pins on the rotor on opposite sides of the shaft, and the contacts may be in the form of rings strung on the middle portion of the spring. Insulating bushings may be placed inside the contact rings to insulate them from the spring.

My invention will best be understood by reference to the accompanying drawing, in which—

Figure 1 shows a sectional view of an alternating current motor provided with a centrifugal switch arranged in accordance with my invention; Fig. 2 is an enlarged end view of the rotor and centrifugal switch; Fig. 3 shows an enlarged cross-sectional detail view of a contact ring; and Fig. 4 is a diagram of connections.

In the drawings A represents the stator of an alternating-current motor provided with a primary winding *a* arranged in the usual manner.

B represents the rotor, which I have

shown provided with a squirrel-cage winding of well known construction, comprising conductors C and end rings D.

E represents a pair of stationary collector rings supported on the frame of the motor concentrically with the shaft. These rings may be connected through suitable leads *e* to the starting winding of the motor.

F F represent a pair of tension springs, which have their ends attached to the ends of conductors on the squirrel-cage winding on opposite sides of the shaft.

G G represent collars on the springs between which collars are conducting rings H, which are pressed against the collector rings E by the springs, and form contacts bridging the rings at starting. These rings H may be provided with insulating bushings *h* to insulate them from the springs.

The circuit connections are shown in Fig. 4 in which *a* represents the main primary winding and *a'* the starting winding in series with which are the collector rings E. At starting these collector rings E are bridged by the contacts H, so as to close the circuit of the starting winding *a'*. When the motor is up to speed, the contacts H are thrown away from the collector rings by centrifugal force, so as to open the circuit of the starting winding.

I do not desire to limit myself to the particular construction and arrangement of parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. In an alternating current motor, stationary collector rings concentric with the motor shaft, a flexible tension member having its ends connected to points on the rotor of the motor on opposite sides of the shaft, and contacts carried by the central portion of said member pressed thereby against said collector rings and adapted to be thrown away from said rings by centrifugal force when the motor is up to speed.

2. In an alternating current motor, stationary collector rings concentric with the motor shaft, a tension spring having its ends connected to points on the rotor of the motor on opposite sides of the shaft, and contact rings surrounding said spring near its middle and pressed thereby against said collector

rings and adapted to be thrown away from said rings by centrifugal force when the motor is up to speed.

3. In an alternating current motor, stationary collector rings concentric with the motor shaft, a tension spring having its ends connected to points on the rotor of the motor on opposite sides of the shaft, contact rings surrounding said spring near its middle and pressed thereby against said collector rings and adapted to be thrown away from said rings by centrifugal force when the motor is up to speed, and insulating bushings within said rings insulating them from the spring.

4. In an alternating current motor of the squirrel cage type, stationary collector rings

concentric with the motor shaft, a tension spring having its ends attached to the ends of conductors of the rotor on opposite sides of the shaft, contact rings surrounding the middle of the spring and pressed thereby against said collector rings and adapted to be thrown away from said rings by centrifugal force when the motor is up to speed, and insulating bushings within said rings insulating them from the spring.

In witness whereof, I have hereunto set my hand this fourth day of August, 1908.

JOHN B. WIARD.

Witnesses:

JOHN A. McMANUS, Jr.,
CHARLES A. BARNARD.