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Jullien-Davin

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[54] **ARRESTER DEVICE FOR SMALL SELF-STARTING SYNCHRONOUS MOTORS**

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Related U.S. Application Data

[63] Continuation of Ser. No. 200,774, Nov. 22, 1971, abandoned.

[52] **U.S. Cl.** **310/41**

[51] **Int. Cl.** **H02k 7/10**

[58] **Field of Search** ..... 310/40, 40 MM, 41, 48, 310/162, 163, 164; 188/82.7

[56] **References Cited**

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[57] **ABSTRACT**

An arrester device, in particular for small self-starting single phase synchronous motors, of the type in which a cam can pivot on a fixed axis parallel to the motor axis, integral with a stop finger which can co-operate with stop teeth provided for the rotor and which can be in friction contact, through an edge of an elongated part therein with a part of the rotor hub so that it can occupy, as the rotor rotates in the desired direction, a stable position corresponding to the withdrawal of the finger with respect to the teeth and so that it can occupy, as the rotor has a tendency to rotate in the other direction, a position for which the stop finger arrives onto the path of the stop teeth and blocks the rotor, in which device said cam is rigid and is movable with respect to the fixed axis, and elastic means being provided to draw it back into friction engagement of said edge of its elongated part on said part of the rotor hub.

3 Claims, 2 Drawing Figures

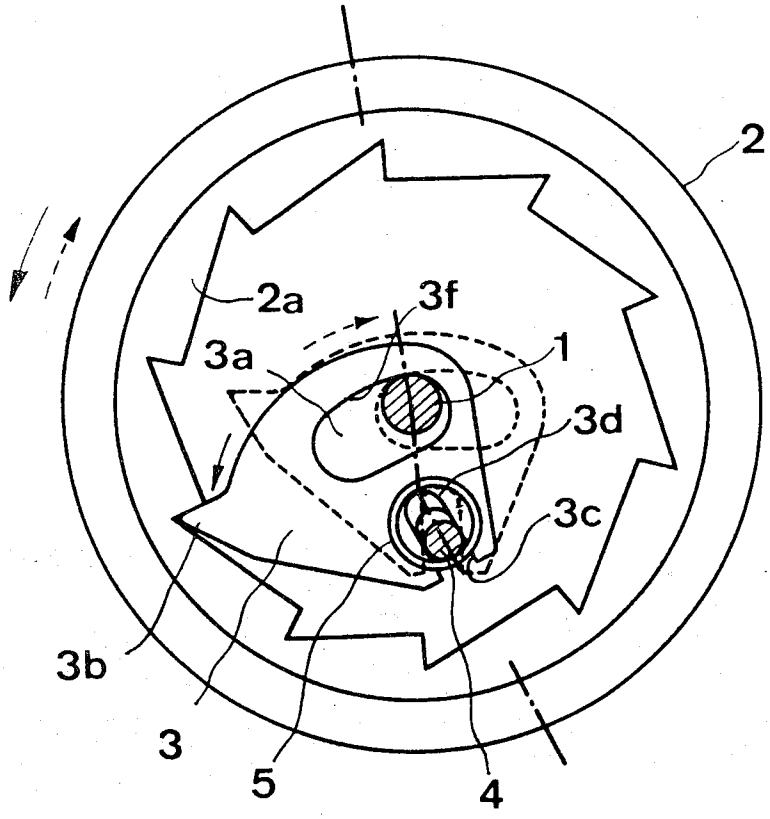


FIG.1

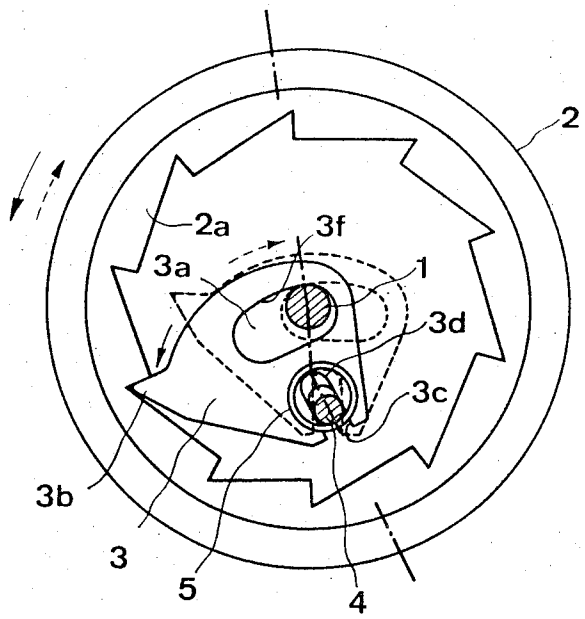
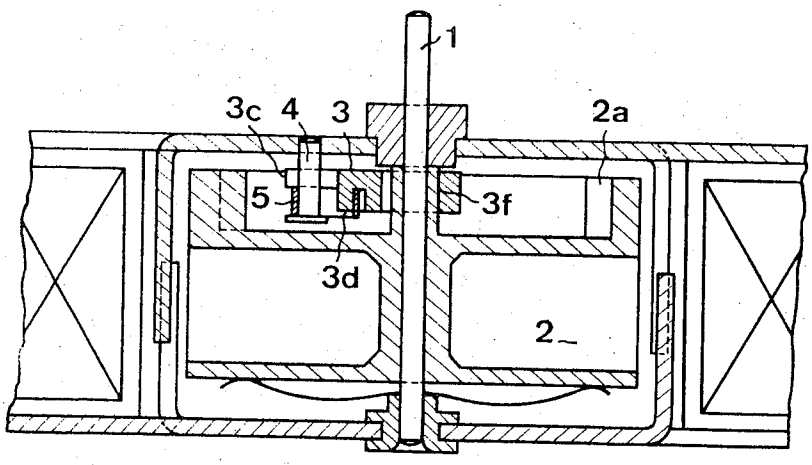


FIG.2



ARRESTER DEVICE FOR SMALL SELF-STARTING SYNCHRONOUS MOTORS

This is a continuation, of application Ser. No. 200,774, filed Nov. 22, 1971 now abandoned.

BACKGROUND OF THE INVENTION

The invention relates to an arrester device for small self-starting synchronous motors.

It is known that small single phase self-starting synchronous motors are generally provided with an arrester device so as to give rise to a specified direction of rotation.

PRIOR ART

Although the solutions adopted up to now are satisfactory, they still have some drawbacks. Thus, those of the "free wheel" type are relatively complex and delicate to assemble. Those which are in the "catch system" class and are simpler, generate noise and the constituent parts are subject to wear.

Other devices are also known, but all of them still comprise either several components, or a certain complexity of construction (gears, toothed quadrants).

An arrester device has also been suggested in French Pat. No. 1 543 447, comprising a recessed cam which can pivot on a fixed axis parallel to the axis of the motor, having an integral stop finger which can co-operate with stop teeth with which the rotor is provided and which, due to its elasticity, can be in friction contact with a part of the hub of the rotor so that it may occupy, as the rotor rotates in the desired direction, a stable position corresponding to the withdrawal of the finger with respect to the teeth and, so that it may occupy, as the rotor has a tendency to rotate in the other direction, a position for which the stop finger arrives onto the path of the stop teeth and blocks the rotor. The elasticity of this cam is hardly compatible with the friction of the internal profile on the axis of the rotor, so that a stable friction effect on the rotor axis is obtained with difficulty.

This invention relates to an arrester device which does not have the preceding drawbacks, the operation of which being nevertheless reliable and durable.

SUMMARY OF THE INVENTION

To this effect, the invention relates to an arrester device, in particular, for small self-starting single phase synchronous motors of the type comprising a recessed cam which can pivot on a fixed axis parallel to the motor axis, integral with a stop finger which can co-operate with stop teeth with which the rotor is provided and which can be in friction contact, through an edge of its recess, with a part of the rotor hub so that it can occupy, as the rotor rotates in the desired direction, a stable position corresponding to the withdrawal of the finger with respect to the teeth and so that it may occupy, as the rotor has a tendency to rotate in the other direction, a position for which the stop finger arrives onto the path of the stop teeth and blocks the rotor, which device is characterized by the fact that the cam is rigid and is movable with respect to the fixed axis, elastic means being provided to draw it back into friction contact of said edge of its recess on said part of the rotor hub.

In a preferred embodiment, the cam comprises a groove into which said fixed axis can slide as it is being guided in it.

In this case, the elastic means preferably comprise an elastic metallic ring which bears onto said fixed axis and onto a pin present on the cam.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be more fully understood as a result of the following description of one example of an embodiment shown in the appended drawing in which

FIG. **1** is a diagrammatic plan view of the arrester device according to the invention, and

FIG. **2** is a cross-sectional view of the device.

DETAILED DESCRIPTION OF THE INVENTION

The synchronous motor comprises an axis such as shaft **1** integral with a rotor **2.** A cam **3,** which is advantageously made of a molded synthetic material, is provided with an elongated port or slot **3***a* surrounding the axis **1.**

The cam **3** has a beak or stop finger **3***b* provided so as to co-operate with teeth **2***a* of the rotor **2** and a groove **3***c* which is substantially perpendicular to the port **3***a* and which acts as a guide on a fixed axis **4** parallel to the axis **1** and integral with the motor stator. The cam **3,** also, has a pin **3***d* between the end of the groove **3***c* and port **3***a* and an elastic steel ring **5** is slipped onto the axis **4** and onto the pin **3***d* and tends to bring them close to each other. This bringing together is limited by the abutment of axis **1** of the rotor against the longitudinal face **3***f* of the port **3***a* farthest from the pin **3***d.*

The assembly is provided so as to allow free rotation of rotor **2** only in the direction of the arrow shown as a dotted line. Indeed, if the motor starts in this direction, the friction of axis **1** on face **3***f* of the port **3***a,* under the elastic action of ring **5,** tends to cause the rotation of cam **3** in the same direction. Whatever the position of the cam **3** may be as the motor starts, it will occupy the position shown in a dotted line in which the axis **1** is in abutment against the left end (on the drawing) of port **3***a.* On the other hand, if the motor starts in the direction of the arrow shown as a solid line, the cam **3** occupies the position shown as a solid line. In the position shown as a dotted line, the beak **3***b* of the cam **3** is not in meshing engagement with the teeth **2***a* of the rotor **2** and the latter can continue to rotate. On the other hand in the position shown as a solid line, the beak **3***b* abuts against a tooth of the teeth **2***a,* and the rotor is thus blocked.

What I claim is:

1. An arrester device, particularly for small, self-starting single phase synchronous motors of the type provided with a stator and a rotor having an axis integral therewith, the device including a rigid cam, a fixed axis integral with the stator, said fixed axis being parallel to the axis of the rotor, stop teeth on the rotor, said cam being pivoted to the fixed axis and having a stop finger which, according to the position of the cam, is positioned in the path of the stop teeth for blocking rotation of the rotor or in a position out of the path of movement of the stop teeth, said cam being provided with a closed elongated aperture, and elastic means urging the cam in frictional contact with the rotor axis along the edge of the closed aperture.

2. The arrester device as claimed in claim **1,** in which the cam is further provided with a groove substantially perpendicular to the closed elongated aperture for receiving the fixed axis.

3. The arrester device as claimed in claim **1,** in which the cam is provided with a pin and the elastic means includes an elastic metallic ring engaging the fixed axis and the pin.

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