cover 5 around the second magnet assembly 2, there must be a difference of dimension between the components, that is, the outer diameter of magnets mounted on a metal core and the inner diameter of the cover, compatible with the process used for mounting, for example by heating the cover, and or cooling the magnets assembly and the inner core or by cold insertion. Thus, it is necessary to use components provided by an accurate production or use other means of production, in order to adjust the necessary dimensions for the required mounting, it consequently increases the cost of the solution, as shown in Figures 1.1 and 1.2. The claim that this solution requires a dimensional accuracy refers exclusively to covers solutions that use solid or non-solid rings. Namely, it is applied to claims 1 to 3 of the document US 5,744,887. To reduce the dimensional precision of the components, it is possible to design the components involved, so that there is always a gap between the outer diameter of magnets mounted on the metal core and the inner diameter of the cover, in such a way as to fill the voids with some type of resin. However it significantly increases the air gap of the motor, reducing its energy efficiency, as well as requiring mounting devices to ensure the concentricity between the components, and a cost increase derived of the need of using the resin. Moreover, these covers 2 are typically produced in metallic plates joined together by welding ends, which generates a transverse segment of the mass and differentiated thickness that eventually cause difficulties for the assembly mounting, together with an imbalance in the system during the operation. Another disadvantage of using the metallic cover is that even using non-ferromagnetic materials with high electrical resistivity, there are eddy currents, which leads to a loss of energy efficiency of the electric motor.

The cover disclosed in the document US 5,744,887 aims to solve the problem of the dimensional rigidity required by the use of metallic covers, in proposing the use of an long non-metallic strip disposed over the magnets in the form of overlapping windings, but the overlapping windings incurres in a significantly higher thickness cover that ultimately compromise the proper functioning and the efficiency of the motor. Moreover, this solution also has the disadvantage that, although being minimized, yet provide the eddy current mentioned in the preceding paragraph.

Therefore, it is noted that the current state of art lacks of solutions for mounting the magnets in the metal rotor core without compromising with it, the energy efficiency of the motor, the balancing and the system safety.

~~Aims of the invention~~

~~Therefore, one aim of this invention is~~ Embodiments of the invention seek to provide a device and a process for mounting permanent magnets in electric motor rotors that provides an appropriate mounting of the metal core magnets in the rotor by means of an element of minimal thickness, and also a geometric configuration that may reduces the losses from eddy currents in order to maximize the energy efficiency of the motor, and not requiring an increased dimensional accuracy

between the components involved.

~~Moreover, an other aim~~ Embodiments of the present invention ~~is~~ also seek to provide a device and process for mounting permanent magnets in electric motor rotors ~~with~~ that may provide easier production and installation.

~~Other aim~~ Embodiments of the present invention ~~is~~ also seek to provide a device and a process for mounting permanent magnets in electric motor rotors that can be adequately used without covering the entire surface of the magnets, thus ~~using~~ may use less raw material for its production and ~~thus reducing~~reduce the costs involved.

Summary of the Invention

According to a first aspect of the present invention, there is provided a device for mounting magnets in an electric motor rotor, which said motor comprises a rotor composed of a metal core coated by a magnet assembly, wherein said device comprises at least a helical elastic element arranged around the magnet assembly, and - the diameter of said at least one helical elastic element is smaller than the outer diameter of the magnet assembly positioned on the outer surface of the metal core; - the paces between the windings of at least one helical elastic element are distant from each other so as to maintain visible the portions of the outer surface of the magnet assembly.

~~The above objectives are achieved through~~ There is also disclosed a device for mounting permanent magnet in electric motor rotors, where said motors comprise a rotor composed of a magnet-coated metal core, characterized by the fact that said device comprises at least one helical elastic element disposed around the magnets, where the latter must necessarily be suitable for the resilient mounting in the system and must be a non-magnetic iron material with high electrical resistivity so as not impairing the electrical efficiency of the motor, and the diameter of said helical elastic element must be smaller than the outer diameter of the magnet assembly positioned on the outer surface of the metal core, the windings of at least one helical elastic element must maintain visible the portions of the outer surface of the magnet assembly.

Preferably, at least part of the helical elastic element is mounted in the magnets by means of its elastic force, through the use of adhesive, fixing elements or end forming, so that they cooperate with magnets or with the metal core so as to exert a force toward the attachment of the magnets to the metal core, in opposition to the effect of centrifugal force when the motor is running.

In the case of using adhesive for fixing the helical elastic element to the magnets, it can be preferably applied to the outer surface of the magnets, to be applied to the inner surface of the helical elastic element, or both, and may be applied only to the ends of helical elastic element.

According to a second aspect of the present invention, there is provided a process for mounting magnets in an electric motor rotor, which said motor comprises a rotor composed of a metal core coated by a magnet assembly, wherein said process comprises the

following steps: - construct a helical elastic element with a diameter smaller than the outer diameter of the magnet assembly positioned on the outer surface of the metal core; - elastically expanding the helical elastic element; - engaging the helical elastic element around the magnet assembly to enable that the elastic force of the helical elastic element causes the latter be rigidly molded to the outer diameter of the magnet assembly.~~The present invention also comprises a process for mounting permanent magnets in electric motor rotors, which includes the following steps:~~

~~- Constructing a helical elastic element with a diameter smaller than the outer diameter of the magnet assembly positioned on the outer surface of the metal core;~~

~~- Elastically expanding the helical elastic element;~~

~~- Engaging the helical elastic element around the magnet assembly to enable that the elastic force of the a helical elastic element causes the latter be rigidly molded to the outer diameter of the magnet assembly.~~

Preferably, the said process further comprises the step of mounting the helical

CLAIMS

1. Device for mounting magnets in an electric motor rotor, which said motor comprises a rotor ~~(1)~~ composed of a metal core ~~(2)~~ coated by a magnet assembly ~~(3)~~, ~~CHARACTERIZED by the fact that~~ wherein said device comprises at least a helical elastic element ~~(6)~~ arranged around the magnet assembly ~~(3)~~, and

- the diameter of said at least one helical elastic element ~~(6)~~ is smaller than the outer diameter of the magnet assembly ~~(3)~~ positioned on the outer surface of the metal core ~~(2)~~;

- the paces between the windings of at least one helical elastic element ~~(6)~~ are distant from each other so as to maintain visible the portions of the outer surface of the magnet assembly ~~(3)~~.

2. Device according to claim 1, ~~CHARACTERIZED by the fact that~~wherein at least one helical elastic element ~~(6)~~ is fixed to the magnet assembly ~~(3)~~ through their elastic force.

3. Device according to claim 1, ~~CHARACTERIZED by the fact that~~ wherein at least one helical elastic element ~~(6)~~ is fixed to the magnet assembly ~~(3)~~ through the use of an adhesive material.

4. Device according to claim 3, ~~CHARACTERIZED by the fact that~~ wherein at least the adhesive material for mounting between at least one helical elastic element ~~(6)~~ and the magnet assembly ~~(3)~~ is applied onto the outer surface of the magnet assembly ~~(3)~~.

5. Device according to claim 3, ~~CHARACTERIZED by the fact that~~wherein the adhesive material for mounting between at least one helical elastic element ~~(6)~~ and the magnet assembly ~~(3)~~ is applied onto the inner surface of at least one helical elastic element ~~(6)~~.

6. Device according to claim 3, ~~CHARACTERIZED by the fact that~~ wherein the adhesive material for mounting between at least one helical elastic element ~~(6)~~ and the magnet assembly ~~(3)~~ is applied to the ends ~~(61)~~ of at least one helical elastic element ~~(6)~~.

7. Device according to claim 1, ~~CHARACTERIZED by the fact that~~ wherein at least one helical elastic element ~~(6)~~ is fixed to the magnet assembly ~~(3)~~ by means of fixing elements.

8. Device according to claim 1, ~~CHARACTERIZED by the fact that~~wherein at least one helical elastic element ~~(6)~~ is fixed to the magnet assembly ~~(3)~~ by end forming ~~(61)~~ so that they cooperate with the magnet assembly ~~(3)~~ or the metal core ~~(2)~~.

9. Process for mounting magnets in an electric motor rotor, which said motor comprises a rotor ~~(1)~~ composed of a metal core ~~(2)~~ coated by a magnet assembly ~~(3)~~, ~~CHARACTERIZED by the fact that~~ wherein said process comprises the following steps:

- construct a helical elastic element ~~(6)~~ with a diameter smaller than the outer diameter of the magnet assembly ~~(3)~~ positioned on the outer surface of the metal core ~~(2)~~;

- elastically expanding the helical elastic element ~~(6)~~;

- engaging the helical elastic element ~~(6)~~ around the magnet assembly ~~(3) assembly~~ to enable that the elastic force of the helical elastic element ~~(6)~~ causes the latter be rigidly molded to the outer diameter of the magnet assembly ~~(3)~~.

10. Process according to claim 9, ~~CHARACTERIZED by the fact that~~ wherein it further comprises the step of mounting the helical elastic element ~~(6)~~ in the magnet assembly ~~(3)~~ by adhesive, fixing elements or end forming ~~(61)~~ of the helical elastic element ~~(6)~~.