Description

The present invention relates to an electromagnetic coupling device and a method for assembling one. The electromagnetic coupling device may for example, be used for feeding a set of papers in a copying machine.

Heretofore,there has been proposed,for example, an electromagnetic coupling device as disclosed in Japanese Utility Model Examined Publication No.Sho 63(1988)-29949 having a construction as shown in Fig.1 of the accompanying drawings with an intention to improve the devices as shown by Fig.2 of this application, the same as Fig.4 of the above-mentioned Utility Model Examined Publication No.Sho 63 (1988)-29949, which corresponding to U.S.P.4,664,238 shown as one of the prior arts aimed to be improved on. The electromagnetic device as shown by the above-mentioned Fig.2 is constructed in a manner as explained below.

Referring now to Fig.2,numeral 1 denotes a stator as a yoke which receives therein a coil 2 and is fixedly engaged with a stationary member(not shown).

Numeral 3 is a rotor as one of a coupling member being fixedly attached with a lining 4 and is forcibly fitted around the outer periphery of a hollow rotary shaft 5 fabricated of an iron series magnetic material.

Numeral 6 designates a hub generally formed as a cylindrical member by plastic molding or by sintering alloy powders and the outer periphery of which is provided with a gear and is directly fitted aroud the outer periphery of said rotary shaft 5 so as to be permitted for relative slidable rotation.

Numeral 8 is a return leaf spring attached to the hub 6 and the portion which faces the said lining 4 is attached with an armature 9, as the other coupling member by means of a rivet 10.

A predetermined extent of gap g is maintained between the armature 9 and the rotor 3. Numeral 11 is a metal of an iron series alloy inserted between the stator 1 and the rotary shaft 5,12 a spacer,13 and 14 are retaining rings fitted around the rotary shaft 5 for positioning the stator 1,rotor 3 and the hub 6 in axial direction.

Numeral 15 in the drawing denotes a set screw for fixing the electromagnetic clutch to a driven shaft 16, which is normally inserted,at the operation site of the user,into the central opening of the hollow rotary shaft of the coupling device assembled and shipped from the manufacturer without placing such a driven shaft.

The electromagnetic coupling device or clutch of modified construction shown in Fig.1 is constructed in a manner as explained below.

In Fig.1,the same reference numerals are used for the parts or components which are substantially the same as or similar to those shown in Fig.2 and the detailed explanation thereof are omitted.

In Fig.1,numeral 17 denotes a rotor which differs from the rotor 3 shown in Fig.2 with respect to its feature that its magnetic pole 18 is formed such that a magnetic flux Φ directly flows through an air gap g_1.

Numeral 19 denotes a rotary shaft fabricated of a nonmagnetic oil impregnated plastics by molding technique,to which above-mentioned stator 1 and hub 6 are slidably attached.

The outer peripheral surface of the rotary shaft 19 is integrally formed with stepped portions 20 and a groove 21,respectively,as a fixing portion or portions and a straight ridge portion 22 as a fixing portion for positioning the rotor 17 in a circumferential direction.

In addition,the inner surface of the rotary shaft 19 is integrally formed with a fitting face 19a to be fitted onto the so-called D-cut face 23 of the driven shaft 16 so that the rotary shaft 19 will never rotate relative to the driven shaft 16.

Numeral 24 is a retaining ring to be fitted into the above-mentioned groove 21 for positioning the hub 6 in an axial direction.

The modified conventional electromagnetic clutch shown in Fig.1 and explained above,however,still has several drawbacks as mentioned below.

(1) The rotor 17 can be secured,by virtue of the straight ridge portion 22,with respect to the rotary shaft 19 in the direction of rotation,so that these two members always rotate integrally,However,since they are fixed through the aforesaid straight ridge in axial direction,when the rotor 17 shifts toward the other coupling members 6 and 9,it is liable to be accompanied by an undesired rotation of the rotary shaft 19 following the rotation of the rotor 17.

(2) If the length of the magnetic pole 18 of the rotor 17 is reduced,the rotor 17 would become unstable, since the rotor 17 is liable to incline.

In addition,due to the fact that it necessitates magnetic pole 18,the cost for making the rotor 17 become inevitably expensive.

(3) Two retaining rings 24 and 24' shown in Fig.1 bring about lengthy man hours in setting work and high production cost.

In other words,both the retaining ring 24 for preventing the hub 6 from escaping from the rotary shaft and the other retaining ring 24' for preventing the rotary shaft 19 from its slipping out from the driven shaft 16,are indispensable,and these two members are liable to increase the production cost as explained above,and

(4) Since the rotary shaft 19 and the rotor 17 are mechanically joined together,there is no such serious problems as in the above items (1)and (2),but the rotary shaft 19 made of magnetic soft iron results in high production cost.

The present invention aims to ameliorate any of the above or other drawbacks associated with the pri-

or art devices.

According to the present invention there is provided an electromagnetic coupling device comprising: a rotary shaft, a rotor attached to said rotary shaft in such a manner that there arises no relative rotation with each other, a hub attached to said rotary shaft so as to be slidably rotatable relative to said rotary shaft, an armature attached to said hub via a resilient member and is able to be electromagnetically placed in engagement or disengagement with said rotor, a stator attached to the axial inner end of said rotary shaft, and an exciting coil received in said stator for effecting said engagement or disengagement;
wherein said electromagnetic coupling device further comprises:

a rotor retainer tightly fitted around the outer periphery of said rotary shaft so as to be positioned radially between said rotary shaft and said stator for urging said rotor axially against said hub;

and said rotary shaft has;

a plurality of legs formed by axially splitting said hollow rotary shaft from the axial end portion at said rotor retainer side upto its intermediate portion so as to axially extend in such a manner that it can be flexibly depressed to reduce its outside diamter for ready fitting of said rotor retainer around the outer surface of said rotary shaft at the time of assembly, and at least one of said legs has an inwardly directed claw at the axial end at the rotor retainer side corresponding to said leg for preventing said rotary shaft from slipping out from a driven shaft to which the electromagnetic coupling device has been coupled;

a first fixing portion at the outer peripheral face of said rotary shaft at said hub side for poistioning said hub;

a second fixing portion provided at the intermediate portion for positioning said rotor;

a third fixing portion at the outer surface of said rotary shaft at said rotor retainer side for positioning said rotor retainer;

a fitting face on the inner face of said rotary shaft so that said driven shaft is fitted that the rotary shaft and the driven shaft are unable to rotate relative to each other. Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings in which:

Fig 1 is a cross sectional view of a conventional electromagnetic coupling device as proposed by Japanese Utility Model Examined Publication No: Sho 63-29949;

Fig 2 is a cross sectional view of a conventional electromagnietc coupling device as explained as one of the prior art device aimed to be modified by aforesaid Jpanese Utility Model Publication No: Sho 63-29949;

Fig 3 is a cross sectional side elevational view of a preferred embodiment of the elecromagnetic coupling device according to the present invention taken along line III-III of Fig 4;

Fig.4 is a left front view of the electromagnetic coupling device shown in Fig.3; and

Fig.5 is an exploded perspective view of a rotor retainer and a rotary shaft according to the present invention.

An embodiment of the present invention will be described with reference to the accompanying drawings.

In Figs.3,4 and 5,the parts or components the same as or equvalent to those shown in Figs.1 and 2 of the conventional device are designated by the same reference numerals,so the detailed description of these parts or components designated by the same numerals will not be repeated.

In the above drawings,numeral la denotes a stator, 2 is a coil,similarly 6a a hub formed with a gear 7,16 is a driven shaft,and 27 designates a rotary shaft.

Numeral 25 designates a rotor being attached to the rotary shaft 27 so that these two parts are not allowed to relatively rotate, in a manner the same as the rotor 3 shown in Fig.2.

Numeral 26 denotes a rotor retainer attached around the rotary shaft 27 so as to urge the rotor 25 toward the hub 6a. The rotary shaft 27 is fabricated of a nonmagnetic material having low frictional resistance and having a body formed with a plurality of circumferentially spaced, axially extending flexible legs 28. Three legs are formed in this embodiment,having a length about one half of the rotary shaft and stemming out from the intermediate portion and ending in the left axial end,and these legs 28 being inserted in the hollow rotor retainer 26 and tightly fitted on the inner surface of the rotor retainer 26.

These legs are formed by axially splitting the hollow cylindrical body of the half made rotary shaft 27 from its one (left)axial end as shown in Fig.5,toward the axially intermediate portion of the rotary shaft 27, so that these legs can parallely extend along the axis of rotation of the driven shaft 16.

The outer face of the rotary shaft 27 is formed with several functioning portions,namely,a stepped portion 29 formed as a fitting portion at its right axial end adjacent to the hub 6a for positioning the hub,a groove 30 as a fixing portion at its axially middle part for positioning the rotor 25,while the other(left)axial end at the side contacting the rotor retainer 26 is formed with a fixing portion 31 for positioning the rotor retainer 26.

In addition,the inner face of the hollow cylindrical rotary shaft 27 is D-cut to have a fitting face 32 so that the driven shaft 16 can be fitted with the rotary shaft 27 without causing any relative rotation between these two mating members.

Among the plurality of legs 28,at least one leg, though two legs in this embodiment,are provided at each of their distal ends with an inwardly directing

claw 28a as shown in Figs.3,4 and 5,for preventing the driven shaft 16 from axially slipping out outside the rotary shaft and also for assisting ready assembly of the coupling device of this invention.

Although in this embodiment,the rotary shaft 27 is explained as having been made of nonmagnetic material having low frictional resistance such as oil-impregnated plastics,it is not necessary to be restricted to such a nonmagnetic material,but even magnetic materials also can be used,so long as the split legs have sufficient extent of flexibility under depression for assembly.

In Figs.3 and 4, reference characters "L" and "M" designate,respectively,lead wires and a support.

When assembling the hub 6,rotor 25 and rotor retaining 26 onto the rotary shaft 27,firstly the legs 28 disposed at the lower part of the free end of the two split legs 28 are depressed radially and inwardly to reduce the outside diameter defined by these legs 28, then the hub 6a is passed over the free end having the thus reduced diameter until the front end of the hub 6a arrives at its set point at the other end opposite to the free end.

Next,the rotor 25 is attached onto the rear end face of the hub 6a,then the rotor retainer 26 is attached to the rear end face of the central part of the rotor 25 and then the depressed legs 28 are released to return to their undepressed state. Thereafter,the thus assembled electromagnetic coupling device is ready for fitting its rotary shaft 27 around a driven shaft 16 of a rotary machine,normally at the user's operation site as already explained.

In operation,when the exciting coil 2 is energised magnetic flux Φ is generated to form a magnetic circuit so as to attract the armature 9a toward the rotor 25 against the sprng force given by the leaf spring 8.As a result,the torque of the driving side is transmitted to the driven shaft 16,via the hub 6a,armature 9a,rotor 25 and the rotary shaft 27.

When supply of an electric current is stopped,the magnetic flux Φ disappears and the armature 9a will retract from the contact with the rotor 25 and the driven shaft 16 will be stopped .

According to the present invention,construction of the electromagnetic coupling device is rendered possible to simplify as compared with the rotor of the prior art ones together with the improved configuration of the rotary shaft,thereby the entire assembly of the hub, rotor and the rotor retainer to the rotary shaft,has been made possible in more simplified and steady manner.

Claims

1. An electromagnetic coupling device comprising:
   a rotary shaft (5), a rotor (25) attached to said rotary shaft (27) in such a manner that there arises no relative rotation with each other, a hub (6a) attached to said rotary shaft (27) so as to be slidably rotatable relative to said rotary shaft (27), an armature (9) attached to said hub (6a) via a resilient member (8) and is able to be electromagnetically placed in engagement or disengagement with said rotor (25), a stator (1a) attached to the axial inner end of said rotary shaft (27), and an exciting coil (2) received in said stator (1a) for effecting said engagement or disengagement; wherein said electromagnetic coupling device is characterised in that it further comprises:
   a rotor retainer (26) tightly fitted around the outer periphery of said rotary shaft (27) so as to be positioned radially between said rotary shaft (27) and said stator (la) for urging said rotor (25) axially against said hub (6a);
   and said rotary shaft (27) has:
   a plurality of legs (28) formed by axially splitting said hollow rotary shaft (27) from the axial end portion at said rotor retainer side up to its intermediate portion so as to axially extend in such a manner that it can be flexibly depressed to reduce its outside diameter for ready fitting of said rotor retainer (28) around the outer surface of said rotary shaft (27) at the time of assembly, and at least one of said legs (28) has an inwardly directed claw (28a) at the axial end at the rotor retainer side corresponding to said leg (28) for preventing said rotary shaft (27) from slipping out from a driven shaft (16) to which the electromagnetic coupling device has been coupled;
   a first portion (29) at the outer peripheral face of said rotary shaft (27) at said hub side for positioning said hub (6a);
   a second fixing portion (30) provided at the intermediate portion for positioning said rotor (25);
   a third fixing portion (31) at the outer surface of said rotary shaft (27) at said rotor retainer side for positioning said rotor retainer (26);
   a fitting face (32) on the inner face of said rotary shaft (27) so that said driven shaft (16) is fitted that the rotary shaft (27) and the driven shaft (16) are unable to rotate relative to each other.

2. An electromagnetic coupling device according to claim 1 wherein said resilient member (8) is a leaf spring.

3. An electromagnetic coupling device according to claim 1 or claim 2, wherein said rotary shaft (27) is of plastics material.

4. An electromagnetic coupling device according to any one of claim 1 to 3, wherein said rotary shaft (27) is of oil impregnated plastics material.

claw 28a as shown in Figs.3,4 and 5,for preventing the driven shaft 16 from axially slipping out outside the rotary shaft and also for assisting ready assembly of the coupling device of this invention.

Although in this embodiment,the rotary shaft 27 is explained as having been made of nonmagnetic material having low frictional resistance such as oil-impregnated plastics,it is not necessary to be restricted to such a nonmagnetic material,but even magnetic materials also can be used,so long as the split legs have sufficient extent of flexibility under depression for assembly.

In Figs.3 and 4, reference characters "L" and "M" designate,respectively,lead wires and a support.

When assembling the hub 6,rotor 25 and rotor retaining 26 onto the rotary shaft 27,firstly the legs 28 disposed at the lower part of the free end of the two split legs 28 are depressed radially and inwardly to reduce the outside diameter defined by these legs 28, then the hub 6a is passed over the free end having the thus reduced diameter until the front end of the hub 6a arrives at its set point at the other end opposite to the free end.

Next,the rotor 25 is attached onto the rear end face of the hub 6a,then the rotor retainer 26 is attached to the rear end face of the central part of the rotor 25 and then the depressed legs 28 are released to return to their undepressed state. Thereafter,the thus assembled electromagnetic coupling device is ready for fitting its rotary shaft 27 around a driven shaft 16 of a rotary machine,normally at the user's operation site as already explained.

In operation,when the exciting coil 2 is energised magnetic flux Φ is generated to form a magnetic circuit so as to attract the armature 9a toward the rotor 25 against the sprng force given by the leaf spring 8.As a result,the torque of the driving side is transmitted to the driven shaft 16,via the hub 6a,armature 9a,rotor 25 and the rotary shaft 27.

When supply of an electric current is stopped,the magnetic flux Φ disappears and the armature 9a will retract from the contact with the rotor 25 and the driven shaft 16 will be stopped .

According to the present invention,construction of the electromagnetic coupling device is rendered possible to simplify as compared with the rotor of the prior art ones together with the improved configuration of the rotary shaft,thereby the entire assembly of the hub, rotor and the rotor retainer to the rotary shaft,has been made possible in more simplified and steady manner.

Claims

1. An electromagnetic coupling device comprising:
a rotary shaft (5), a rotor (25) attached to said rotary shaft (27) in such a manner that there arises no relative rotation with each other, a hub (6a) attached to said rotary shaft (27) so as to be slidably rotatable relative to said rotary shaft (27), an armature (9) attached to said hub (6a) via a resilient member (8) and is able to be electromagnetically placed in engagement or disengagement with said rotor (25), a stator (1a) attached to the axial inner end of said rotary shaft (27), and an exciting coil (2) received in said stator (1a) for effecting said engagement or disengagement; wherein said electromagnetic coupling device is characterised in that it further comprises:
a rotor retainer (26) tightly fitted around the outer periphery of said rotary shaft (27) so as to be positioned radially between said rotary shaft (27) and said stator (la) for urging said rotor (25) axially against said hub (6a);
and said rotary shaft (27) has:
a plurality of legs (28) formed by axially splitting said hollow rotary shaft (27) from the axial end portion at said rotor retainer side up to its intermediate portion so as to axially extend in such a manner that it can be flexibly depressed to reduce its outside diameter for ready fitting of said rotor retainer (28) around the outer surface of said rotary shaft (27) at the time of assembly, and at least one of said legs (28) has an inwardly directed claw (28a) at the axial end at the rotor retainer side corresponding to said leg (28) for preventing said rotary shaft (27) from slipping out from a driven shaft (16) to which the electromagnetic coupling device has been coupled;
a first portion (29) at the outer peripheral face of said rotary shaft (27) at said hub side for positioning said hub (6a);
a second fixing portion (30) provided at the intermediate portion for positioning said rotor (25);
a third fixing portion (31) at the outer surface of said rotary shaft (27) at said rotor retainer side for positioning said rotor retainer (26);
a fitting face (32) on the inner face of said rotary shaft (27) so that said driven shaft (16) is fitted that the rotary shaft (27) and the driven shaft (16) are unable to rotate relative to each other.

2. An electromagnetic coupling device according to claim 1 wherein said resilient member (8) is a leaf spring.

3. An electromagnetic coupling device according to claim 1 or claim 2, wherein said rotary shaft (27) is of plastics material.

4. An electromagnetic coupling device according to any one of claim 1 to 3, wherein said rotary shaft (27) is of oil impregnated plastics material.

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5. A method of assembling an electromagnetic coupling device according to any one of claims 1 to 4 which comprises the steps of:

firstly depressing a plurality of said legs (28) of said rotary shaft (27) at said rotor retainer side radially and inwardly to reduce the diameter defined by said legs (28), secondly, fitting said hub (6a) around said rotary shaft (27), then, attaching said rotor (25) to said hub (6a), thereafter attaching said rotor retainer (26) to the end face of said rotor (25), finally inserting a driven shaft (16) into the central opening of said rotary shaft (27) after said legs (28) have been released from their depressed state.

Patentansprüche

1. Elektromagnetische Kupplungsvorrichtung, umfassend:
eine Rotationswelle (27), einen auf solche Art an der genannten Rotationswelle (27) befestigten Rotor (25), daß es zu keiner Drehung relativ zueinander kommt, eine Nabe (6a), die so an der genannten Rotationswelle (27) befestigt ist, daß sie gleitend relativ zur genannten Rotationswelle (27) drehbar ist, einen Anker (9a), der über ein elastisches Element (8) an der genannten Nabe (6a) befestigt ist und elektromagnetisch mit dem genannten Rotor (25) in Eingriff gebracht oder außer Eingriff gebracht werden kann, einen Stator (1a), der am axialen inneren Ende der genannten Rotationswelle (27) befestigt ist, und eine Feldspule (2), die im genannten Rotor (1a) aufgenommen ist, um das genannte In-Eingriff-bringen oder Außer-Eingriff-bringen zu bewirken; worin die genannte elektromagnetische Kupplungsvorrichtung dadurch gekennzeichnet ist, daß sie weiters umfaßt:
ein Rotorhalteteil (26), das fest bzw. dicht um die äußere Peripherie der genannten Rotationswelle (27) angebracht bzw. angepaßt ist, sodaß er radial zwischen der genannten Rotationswelle (27) und dem genannten Stator (1a) angeordnet ist, um den genannten Rotor (25) axial gegen die genannte Nabe (6a) zu drängen bzw. pressen;
und die genannte Rotationswelle (27) aufweist:
eine Vielzahl von Fortsätzen (28), die durch axiales Teilen bzw. Spalten der genannten hohlen Rotationswelle (27) vom axialen Endabschnitt an der genannten Rotorhalteteilseite bis zu ihrem mittleren Abschnitt gebildet sind, sodaß sie sich auf solche Weise axial erstrecken, daß sie flexibel zusammengedrückt werden kann, um ihren Außendurchmesser zum einfachen Anbringen des genannten Rotorhalteteils (26) um die äußere Oberfläche der genannten Rotationswelle (27) zur Zeit des Zusammenbauens zu verringern, und zumindest einer der genannten Fortsätze (28) eine nach innen gerichtete Klaue (28a) am axialen Ende an der Rotorhalteteilseite aufweist, die dem genannten Fortsatz (28) entspricht, um zu verhindern, daß die genannte Rotationswelle (27) aus einer angetriebenen Welle (16) rutscht bzw. gleitet, an welche die elektromagnetische Kupplungsvorrichtung gekoppelt worden ist;
einen ersten Abschnitt (29) an der äußeren peripheren Fläche der genannten Rotationswelle (27) an der genannten Nabenseite zum Anordnen der genannten Nabe (6a) in Position;
einen zweiten Feststellabschnitt (30), der am mittleren Abschnitt vorgesehen ist, um den genannten Rotor (25) in Position anzuordnen;
einen dritten Feststellabschnitt (31) an der äußeren Oberfläche der genannten Rotationswelle (27) an der genannten Rotorhalteteilseite, um den genannten Rotorhalteteil (26) in Position anzuordnen;
eine Paßfläche (32) an der inneren Fläche der gennnten Rotationswelle (27), sodaß die genannte angetriebene Welle (16) angepaßt ist, sodaß die genannte Rotationswelle (27) und die angetriebene Welle (16) sich nicht relativ zueinander drehen können.

2. Elektromagnetische Kupplungsvorrichtung nach Anspruch 1, worin das genannte elastische Element (8) eine Blattfeder ist.

3. Elektromagnetische Kupplungsvorrichtung nach Anspruch 1 oder 2, worin die genannte Rotationswelle (27) aus Kunststoffmaterial besteht.

4. Elektromagnetische Kupplungsvorrichtung nach einem der Ansprüche 1 bis 3, worin die genannte Rotationswelle (27) aus einem mit Öl imprägnierten Kunststoffmaterial besteht.

5. Verfahren zum Zusammenbauen einer elektromagnetischen Kupplungsvorrichtung nach einem der Ansprüche 1 bis 4, das folgende Schritte umfaßt:
zuerst das Zusammendrücken einer Vielzahl bzw. Mehrzahl der genannten Fortsätze (28) der genannten Rotationswelle (27) an der Rotorhalteteilseite radial und nach innen, um den durch die genannten Fortsätze (28) definierten Durchmesser zu verringern, zweitens das Anbringen der genannten Nabe (6a) um die genannte Rotationswelle (27), dann das Befestigen des genannten Rotors (25) an der genannten Nabe (6a), daraufhin das Befestigen des genannten Rotorhalteteils (26) an der Endfläche des genannten Rotors (25), schließlich das Einsetzen einer angetriebenen Welle (16) in die zentrale Öffnung der genannten Rotationswelle (27),

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nachdem die genannten Fortsätze (28) aus ihrem zusammengedrückten Zustand freigegeben worden sind.

Revendications

1. Dispositif d'accouplement électromagnétique comprenant :

un arbre rotatif (5), un rotor (25) relié audit arbre rotatif (27) de telle manière qu'il ne se produit aucune rotation relative entre ceux-ci, un moyeu (6a) relié audit arbre rotatif (27) de manière à être entraînable en rotation de façon coulissante par rapport audit arbre rotatif (27), un induit (9) relié audit moyeu (6a) via un membre élastique (8) et capable d'être électromagnétiquement placé en engagement ou bien hors d'engagement avec ledit rotor (25), un stator (1a) relié à l'extrémité interne axiale dudit arbre rotatif (27), et une bobine d'excitation (2) reçue dans ledit stator (1a) pour effectuer ledit engagement ou bien désengagement; dans lequel ledit dispositif d'accouplement électromagnétique est caractérisé en ce qu'il comprend en outre :

un logement de rotor (26) ajusté serré autour de la périphérie externe dudit arbre rotatif (27) de façon à être positionné radialement entre ledit arbre rotatif (27) et ledit stator (1a) pour pousser ledit rotor (25) axialement contre ledit moyeu (6a) ;

et ledit arbre rotatif (27) présente :

une pluralité de pattes (28) formées en fendant axialement ledit arbre rotatif creux (27) à partir de la partie d'extrémité axiale audit côté de logement de rotor jusqu'à sa partie intermédiaire de façon à s'étendre axialement de telle manière qu'il puisse être comprimé flexiblement pour réduire son diamètre extérieur pour un ajustement aisé dudit logement de rotor (28) autour de la surface externe dudit arbre rotatif (27) au moment de l'assemblage, et au moins l'une desdites pattes (28) a une griffe dirigée vers l'intérieur (28a) à l'extrémité axiale au côté de logement de rotor correspondant à ladite patte (28) pour empêcher ledit arbre rotatif (27) de glisser en dehors d'un arbre mené (16) auquel le dispositif d'accouplement électromagnétique a été accouplé ;

une première partie (29) sur la face périphérique externe dudit arbre rotatif (27) audit côté de moyeu pour positionner ledit moyeu (6a) ;

une seconde partie de fixation (30) prévue sur la partie intermédiaire pour positionner ledit rotor (25) ;

une troisième partie de fixation (31) à la surface externe dudit arbre rotatif (27) audit côté de logement de rotor pour positionner ledit logement de rotor (26) ;

une face d'ajustement (32) sur la face interne dudit arbre rotatif (27) de sorte que ledit arbre mené (16) est ajusté de façon que l'arbre rotatif (27) et l'arbre mené (16) soient incapables de tourner l'un par rapport à l'autre.

2. Dispositif d'accouplement électromagnétique selon la revendication 1, dans lequel ledit membre élastique (8) est un ressort à lame.

3. Dispositif d'accouplement électromagnétique selon la revendication 1 ou 2, dans lequel ledit arbre rotatif (27) est réalisé en un matériau plastique.

4. Dispositif d'accouplement électromagnétique selon l'une quelconque des revendications 1 à 3, dans lequel ledit arbre rotatif (27) est réalisé en un matériau plastique imprégné d'huile.

5. Procédé d'assemblage d'un dispositif d'accouplement électromagnétique selon l'une quelconque des revendications 1 à 4 qui comprend les étapes consistant à:

d'abord comprimer une pluralité desdites pattes (28) dudit arbre rotatif (27) audit côté de logement de rotor radialement et vers l'intérieur pour réduire le diamètre défini par lesdites pattes (28), deuxièmement, ajuster ledit moyeu (6a) autour dudit arbre rotatif (27), ensuite, relier ledit rotor (25) audit moyeu (6a), puis relier ledit logement de rotor (26) à la face d'extrémité dudit rotor (25), finalement insérer un arbre mené (16) dans l'ouverture centrale dudit arbre rotatif (27) après que lesdites pattes (28) aient été libérées de leur état comprimé.

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