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(54) **Magnetic module and modular bobbin thereof**

Magnetisches Modul und modulare Spule daraus

Module magnétique et sa bobine modulaire associée

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**US-A- 3 843 946 US-A- 4 103 268
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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a bobbin of a magnetic module, and more particularly to a modular bobbin that can be detachably and pivotally connected.

BACKGROUND OF THE DISCLOSURE

[0002] In general, the structure of a multiple winding transformer includes a plurality of bobbins connected with each other, and the bobbins are connected by male and female buckles, and thus the assembling process takes more time, and the male and female buckles may be broken easily when removing the buckles. In addition, the bobbins of the conventional multiple winding transformer are fixed after they are assembled, so that a wire cannot be wound from one bobbin to the other, or a core cannot be installed between the bobbins. As a result, most conventional multiple winding transformers require a plurality of conductive wires wound around the bobbins respectively, and then the core is installed between the bobbins, and the conductive wires are soldered and electrically conducted with one another.

[0003] Examples of such bobbins are shown in US 2011/0025304, US 3 843 946 and US 4 103 268.

[0004] In view of the aforementioned drawbacks of the conventional multiple winding transformer, the inventor of the present disclosure based on years of experience in the related industry, and finally developed a magnetic module and a bobbin of the magnetic module in accordance with the present disclosure to overcome the drawbacks of the prior art.

SUMMARY OF THE DISCLOSURE

[0005] Therefore, it is a primary objective of the present disclosure to provide a magnetic module and a modular bobbin applied in the process of winding a plurality of bobbins by a single wire.

[0006] To achieve the aforementioned objective, the present disclosure provides a magnetic module comprising a modular bobbin, a core module and a conductive wire. The modular bobbin comprises a first bobbin and a second bobbin, and the first bobbin includes a first shaft, and a first pivoting portion and a first snapping portion disposed at an end of the first shaft and arranged on two opposite sides of the end of the first shaft respectively, and the second bobbin includes a second shaft coaxially installed with the first shaft, and a second pivoting portion and a second snapping portion disposed at an end of the second shaft and arranged at two opposite sides of the end of the second shaft respectively, and the second pivoting portion is pivotally coupled to the first pivoting portion, and/or the second snapping portion is detachably latched to the first snapping portion, so that the first bobbin and the second bobbin may be pivoted and rotated

by the first pivoting portion and the second pivoting portion to separate the second snapping portion from the first snapping portion, and/or the first bobbin and the second bobbin may be pivoted and rotated by the first snapping portion and the second snapping portion to separate the second pivoting portion from the first pivoting portion. The core module includes an inner core, and the inner core is situated between the first bobbin and the second bobbin when the second snapping portion is separated from the first snapping portion. The conductive wire is wound around the first shaft and the second shaft.

[0007] Preferably, the first shaft has a first flapper, and the first pivoting portion is disposed at the first flapper, and the second shaft has a second flapper, and the second pivoting portion is disposed at the second flapper, and the inner core is installed between the first flapper and the second flapper. Preferably, a first wire crossing slot is formed at an end of the first flapper, and a second wire crossing slot is formed at an edge of the second flapper.

[0008] Preferably, the conductive wire includes a wire crossing section, and a first winding section and a second winding section are extended from both ends of the wire crossing section and wound around the first shaft and the second shaft respectively, and the wire crossing section is disposed between the first flapper and the second flapper, and both ends of the wire crossing section are contained into the first wire crossing slot and the second wire crossing slot respectively. Preferably, the first wire crossing slot and the first pivoting portion are disposed adjacent to each other, and the first wire crossing slot is formed at a position responsive to the position of the second wire crossing slot, and the second wire crossing slot and the second pivoting portion are arranged adjacent to each other.

[0009] Preferably, the first bobbin is connected to a second bobbin in different ways. For example, the first pivoting portion is a hook and the second pivoting portion is a cam pivotally coupled to the hook, or the first pivoting portion is a cam and the second pivoting portion is a hook pivotally latched to the cam. In other examples, the first pivoting portion and the second pivoting portion are a pair of hooks latched with each other, or the first snapping portion and the second snapping portion are a pair of hooks latched with each other. In other examples, the first snapping portion is a hook and the second snapping portion is a cam latched to the hook, or the first snapping portion is a cam and the second snapping portion is a hook latched to the cam.

[0010] In the present disclosure, the first pivoting portion is pivotally coupled to the second pivoting portion, so that the first bobbin and the second bobbin can be pivoted with respect to each other, and a single conductive wire may be wound around the first shaft and the second shaft and then the first bobbin and the second bobbin are pivotally rotated and separated from each other to facilitate manufacturers to install the inner core between the first bobbin and the second bobbin. Compared

with the prior art, the present disclosure is able to complete the process of winding two connected bobbins by a single conductive wire, and the modular bobbin of the present disclosure can be applied in the process of winding two or more bobbins.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 is a perspective view of a magnetic module of a first preferred embodiment of the present disclosure;

FIG. 2 is an exploded view of a magnetic module of the first preferred embodiment of the present disclosure;

FIG. 3 is a perspective view of a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 4 is another perspective view of a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 5 is a sectional view of a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 6 is a schematic view of winding a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 7 is another schematic view of winding a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 8 is another schematic view of winding a modular bobbin of the first preferred embodiment of the present disclosure;

FIG. 9 is an exploded view of a magnetic module of the first preferred embodiment of the present disclosure;

FIG. 10 is a sectional view of a magnetic module of the first preferred embodiment of the present disclosure;

FIG. 11 is a schematic view of a modular bobbin of a second preferred embodiment of the present disclosure;

FIG. 12 is a schematic view of a modular bobbin of a third preferred embodiment of the present disclosure;

FIG. 13 is a schematic view of a modular bobbin of a fourth preferred embodiment of the present disclosure; and

FIG. 14 is a schematic view of winding a modular bobbin of a fifth preferred embodiment of the present disclosure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] The technical contents of the present disclosure will become apparent with the detailed description of preferred embodiments accompanied with the illustration of related drawings as follows. It is noteworthy that same

numerals are used for representing same respective elements in the drawings.

[0013] With reference to FIG. 1 for a magnetic module of the first preferred embodiment of the present disclosure, the magnetic module comprises a modular bobbin 10, a conductive wire 300, and a core module 400.

[0014] In FIGS. 2 to 5, the modular bobbin 10 includes a first bobbin 100 and a second bobbin 200. In this preferred embodiment, the first bobbin 100 includes a first shaft 110 and a first flapper 120. The first shaft 110 is a hollow plastic column, and the first flapper 120 is radially extended from an end 111 of the first shaft 110. The first flapper 120 has a first pivoting portion 130 and a first snapping portion 140 disposed on two opposite sides of the end 111 of the first shaft 110 respectively. In this preferred embodiment, the first pivoting portion 130 is a hook, and the first snapping portion 140 is a cam, but the present disclosure is not limited to such arrangements only. A first wire crossing slot 121 is formed at an edge of the first flapper 120 and disposed adjacent to the first pivoting portion 130.

[0015] In this preferred embodiment, the second bobbin 200 includes a second shaft 210 and a second flapper 220. The second shaft 210 is a plastic hollow column, and the second shaft 210 and the first shaft 110 are coaxially installed, and the second flapper 220 is radially extended from an end 211 of the second shaft 210. A second pivoting portion 230 and a second snapping portion 240 are disposed at the second flapper 220 and arranged on two opposite sides of the end 211 of the second shaft 210 respectively. In this preferred embodiment, the second pivoting portion 230 is a cam pivotally coupled to the first pivoting portion 130, and the second snapping portion 240 is a hook latched to the first snapping portion 140, but the present disclosure is not limited to such arrangements only. An edge of the second flapper 220 has a second wire crossing slot 221 disposed adjacent to the second pivoting portion 230, and the first wire crossing slot 121 is formed at a position corresponding to the position of the second wire crossing slot 221.

[0016] In FIGS. 6 to 8, the conductive wire 300 includes at least one wire crossing section 301, a first winding section 310 and a second winding section 320 extended from both ends of the wire crossing section 301 respectively and wound around the first shaft 110 and the second shaft 210 respectively, and the wire crossing section 301 is disposed between the first flapper 120 and the second flapper 220, and both ends of the wire crossing section 301 are contained in the first wire crossing slot 121 and the second wire crossing slot 221 respectively, and the wire crossing section 301 is disposed adjacent to the first pivoting portion 130 and the second pivoting portion 230. This preferred embodiment comprises a plurality of wire crossing sections 301, a first winding section 310 and a second winding section 320, and the first winding section 310 and the second winding section 320 are arranged alternately with each other and each wire crossing section 301 is coupled between the adjacent first

winding section 310 and second winding section 320, so that the conductive wire 300 can be wound around the first winding section 310 and the second winding section 320 in a multi-layer manner.

[0017] In FIGS. 9 and 10, the core module 400 includes an inner core 401 and two outer cores 410/420. The inner core 401 is an iron member clamped between the first bobbin 100 and the second bobbin 200 and preferably clamped between the first flapper 120 and the second flapper 220. In this preferred embodiment, the inner core 401 preferably includes a protruding core rod 402, and the core rod 402 is passed into the first shaft 110 (In other preferred embodiments, the core rod 402 is passed into the second shaft 210).

[0018] Each outer core 410/420 is an iron member, and two outer cores 410/420 are installed at the other end of the first shaft 110 and the other end of the second shaft 210 respectively. Each outer core 410/420 includes a protruding core rod 411/421, and the two core rods 411/421 are passed into the first shaft 110 and the second shaft 210 respectively.

[0019] In the present disclosure, the first pivoting portion 130 is pivotally coupled to the second pivoting portion 230, so that the first bobbin 100 and the second bobbin 200 can be pivoted with respect to each other, and a single conductive wire 300 can be wound around the first shaft 110 and the second shaft 210, and then the first bobbin 100 and the second bobbin 200 can be rotated and separated to facilitate manufacturers to install the inner core 401 between the first bobbin 100 and the second bobbin 200. More specifically, the second pivoting portion 230 is detachably and pivotally coupled to the first pivoting portion 130, and/or the second snapping portion 240 is detachably latched to the first snapping portion 140, so that the first bobbin 100 and the second bobbin 200 can be pivoted and rotated by the first pivoting portion 130 and the second pivoting portion 230 to separate the second snapping portion 240 from the first snapping portion 140, and/or the first bobbin 100 and the second bobbin 200 can be pivoted and rotated by the first snapping portion 140 and the second snapping portion 240 to separate the second pivoting portion 230 from the first pivoting portion 130. Compared with the prior art, the present disclosure can complete the process of winding two connected bobbins by a single conductive wire 300, and the modular bobbin 10 of the present disclosure may be applied in a single-wire winding process of two or more connected bobbins.

[0020] With reference to FIG. 11 for a modular bobbin of the second preferred embodiment of the present disclosure, the modular bobbin 10 is applied in the magnetic module of the first preferred embodiment and its structure is substantially the same as that of the first preferred embodiment. The difference between the modular bobbin 10 of this preferred embodiment and the modular bobbin 10 of the first preferred embodiment resides on that the first snapping portion 140 is a hook, and the second snapping portion 240 is a cam snapped to the first snapping

portion 140. In addition, the first pivoting portion 130 is a shaft hole, and the second pivoting portion 230 is a cam pivotally coupled to the first pivoting portion 130.

[0021] With reference to FIG. 12 for a modular bobbin of the third preferred embodiment of the present disclosure, the modular bobbin 10 is applied in the magnetic module of the first preferred embodiment and its structure is substantially the same as that of the first preferred embodiment. The difference between the modular bobbin 10 of this preferred embodiment and the modular bobbin 10 of the first preferred embodiment resides on that the first pivoting portion 130 is a cam, and the second pivoting portion 230 is a hook pivotally coupled to the first pivoting portion 130, and the first snapping portion 140 is a hook, and the second snapping portion 240 is a cam snapped to the first snapping portion 140.

[0022] With reference to FIG. 13 for a modular bobbin of the fourth preferred embodiment of the present disclosure, the modular bobbin 10 is applied in the magnetic module of the first preferred embodiment and its structure is substantially the same as that of the first preferred embodiment. The difference between the modular bobbin 10 of this preferred embodiment and the modular bobbin 10 of the first preferred embodiment resides on that the first snapping portion 140 is a hook, and the second snapping portion 240 is a cam snapped to the first snapping portion 140.

[0023] With reference to FIG. 14 for a modular bobbin of the fifth preferred embodiment of the present disclosure, the modular bobbin 10 is applied in the magnetic module of the first preferred embodiment and its structure is substantially the same as that of the first preferred embodiment. The difference between the modular bobbin 10 of this preferred embodiment and the modular bobbin 10 of the first preferred embodiment resides on that the first snapping portion 140 and the second snapping portion 240 are a pair of hooks latched to one another.

Claims

1. A modular bobbin (10), comprising:

a first bobbin (100), including a first shaft (110), and a first pivoting portion (130) and a first snapping portion (140) disposed at an end (111) of the first shaft (110), and the first pivoting portion (130) and the first snapping portion (140) being arranged on opposite sides of the end (111) of the first shaft (110) respectively; and
a second bobbin (200), including a second shaft (210) coaxially installed with the first shaft (110), and a second pivoting portion (230) and a second snapping portion (240) disposed at an ends (211) of the second shaft (210) and arranged at two opposite sides of the end (211) of the second shaft (210) respectively, and the second pivoting portion (230) being pivotally coupled to the first

- pivoting portion (130), and the second snapping portion (240) being detachably latched to the first snapping portion (140), so that the first bobbin (100) and the second bobbin (200) may be pivoted and rotated by the first pivoting portion (130) and the second pivoting portion (230) to separate the second snapping portion (240) from the first snapping portion (140).
2. The modular bobbin (10) of claim 1, wherein the second pivoting portion (230) is detachably and pivotally coupled to the first pivoting portion (130), such that the first bobbin (100) and the second bobbin (200) may be rotated by using the first snapping portion (140) and the second snapping portion (240) as a pivot to separate the second pivoting portion (230) from the first pivoting portion (130).
 3. The modular bobbin (10), of claim 1, wherein the end (111) of the first shaft (110) has a first flapper (120) and the first pivoting portion (130) is disposed at the first flapper (120), and the end (211) of the second shaft (210) has a second flapper (220), and the second pivoting portion (230) is disposed at the second flapper (220), and the first flapper (120) has a first wire crossing slot (121) formed at an edge of the first flapper (120), and the second flapper (220) has a second wire crossing slot (221) formed at an edge of the second flapper (220).
 4. The modular bobbin (10) of claim 3, wherein the first wire crossing slot (121) is formed at a position responsive to the position of the second wire crossing slot (221), and the first wire crossing slot (121) and the first pivoting portion (130) are disposed adjacent to each other, and the second wire crossing slot (221) and the second pivoting portion (230) are disposed adjacent to each other.
 5. The modular bobbin (10) of claim 1 or 2, wherein the first pivoting portion (130) is a hook, and the second pivoting portion (230) is a cam pivotally coupled to the hook.
 6. The modular bobbin (10) of claim 1 or 2, wherein the first pivoting portion (130) is a cam, and the second pivoting portion (230) is a hook pivotally coupled to the cam.
 7. The modular bobbin (10) of claim 1 or 2, wherein the first pivoting portion (130) and the second pivoting portion (230) are a pair of hooks latched to each other.
 8. The modular bobbin (10) claim 1 or 2, wherein the first snapping portion (140) and the second snapping portion (240) are a pair of hooks latched to each other.
 9. The modular bobbin (10) of claim 1 or 2, wherein the first snapping portion (140) is a hook, and the second snapping portion (240) is a cam latched to the hook.
 10. The modular bobbin (10) of claim 1 or 2, wherein the first snapping portion (140) is a cam, and the second snapping portion (240) is a hook latched to the cam.
 11. A magnetic module, comprising:
 - a modular bobbin (10), including a first bobbin (100) and a second bobbin (200), and the first bobbin (100) including a first shaft (110), and an end (111) of the first shaft (110) having a first pivoting portion (130) and a first snapping portion (140), and the first pivoting portion (130) and the first snapping portion (140) being disposed on two opposite sides of the end (111) of the first shaft (110), and the second bobbin (200) including a second Shaft (210) coaxially installed with the first shaft (110) and an end (211) of the second shaft (210) having a second pivoting portion (230) and a second snapping portion (240) disposed on two opposite sides of the end (211) of the second shaft (210) respectively, and the second pivoting portion (230) being pivotally coupled to the first pivoting portion (130), and the second snapping portion (240) being separately latched to the first snapping portion (140), so that the first bobbin (100) and the second bobbin (200) may be pivoted and rotated by the first pivoting portion (130) and the second pivoting portion (230) to separate the second snapping portion (240) from the first snapping portion (140);
 - a core module (400), including an inner core (401), and the inner core (401) being situated between the first bobbin (100) and the second bobbin (200) when the second snapping portion (240) is separated from the first snapping portion (140); and
 - a conductive wire (300), wound around the first shaft (110) and the second shaft (210)
 12. The magnetic module of claim 11, wherein the second pivoting portion (230) is detachably and pivotally coupled to the first pivoting portion (130) so that the first bobbin (110) and the second bobbin (200) may be pivoted and rotated by the first snapping portion (140) and the second snapping portion (240) to separate the second pivoting portion (230) from the first pivoting portion (130).
 13. The magnetic module of claim 11 or 12, wherein the end (111) of the first shaft (110) has a first flapper (120) and the first pivoting portion (130) is disposed at the first flapper (120), and the end (211) of the second shaft (210) has a second flapper (220),

and the second pivoting portion (230) is disposed at the second flapper (220) and the inner core (401) is installed between the first flapper (120) and the second flapper (220), wherein the first flapper (120) has a first wire crossing slot (121) formed at an edge of the first flapper (120), and the second flapper (220) has a second wire crossing slot (221) formed at an edge of the second flapper (220).

14. The magnetic module of claim 11, wherein the conductive wire (300) includes a wire crossing section (301), and a first winding section (310) and a second winding section (320) are extended from both ends of the wire crossing section (301) respectively, the first winding section (310) and the second winding section (320) are wound around the first shaft (110) and the second shaft (210) respectively, and the wire crossing section (301) is disposed between the first flapper (120) and the second flapper (220), and both ends of the wire crossing section (301) are contained in the first wire crossing slot (121) and the second wire crossing slot (221) respectively.
15. The magnetic module of claim 11, wherein the first wire crossing slot (121) is formed at a position corresponding to the position of the second wire crossing slot (221), and the first wire crossing slot (121) and the first pivoting portion (130) are disposed adjacent to each other, and the second wire crossing slot (221) and the second pivoting portion (230) are disposed adjacent to each other.

Patentansprüche

1. Modulare Spule (10) mit:

einer ersten Spule (100) mit einem ersten Schaft (110), und einem ersten Schwenkabschnitt (130) und einem ersten Schnappabschnitt (140), die an einem Ende (111) des ersten Schafts (110) vorgesehen sind, und wobei der erste Schwenkabschnitt (130) und der erste Schnappabschnitt (140) jeweils an gegenüberliegenden Seiten des Endes (111) des ersten Schafts (110) angeordnet sind; und einer zweiten Spule (200) mit einem zweiten Schaft (210), der koxial mit dem ersten Schaft (110) installiert ist, und einem zweiten Schwenkabschnitt (230) und einem zweiten Schnappabschnitt (240), die an einem Ende (211) des zweiten Schafts (210) vorgesehen sind und jeweils an zwei gegenüberliegenden Seiten des Endes (211) des zweiten Schafts (210) angeordnet sind, und wobei der zweite Schwenkabschnitt (230) schwenkbar mit dem ersten Schwenkabschnitt (130) verbunden ist, und der zweite Schnappabschnitt (240) ab-

nehmbar an dem ersten Schnappabschnitt (140) verriegelt ist, derart, dass die erste Spule (100) und die zweite Spule (200) mittels des ersten Schwenkabschnitts (130) und des zweiten Schwenkabschnitts (230) geschwenkt und gedreht werden können, um den zweiten Schnappabschnitt (240) von dem ersten Schnappabschnitt (140) zu trennen.

2. Modulare Spule (10) nach Anspruch 1, bei der der zweite Schwenkabschnitt (230) derart abnehmbar und schwenkbar mit dem ersten Schwenkabschnitt (130) verbunden ist, dass die erste Spule (100) und die zweite Spule (200) unter Verwendung des ersten Schnappabschnitts (140) und des zweiten Schnappabschnitts (240) als Drehpunkt gedreht werden können, um den zweiten Schwenkabschnitt (230) von dem ersten Schwenkabschnitt (130) zu trennen.
3. Modulare Spule (10) nach Anspruch 1, bei der das Ende (111) des ersten Schafts (110) eine erste Anlageplatte (120) aufweist und der erste Schwenkabschnitt (130) an der ersten Anlageplatte (120) angeordnet ist, und das Ende (211) des zweiten Schafts (210) eine zweite Anlageplatte (220) aufweist, und der zweite Schwenkabschnitt (230) an der zweiten Anlageplatte (220) angeordnet ist, und die erste Anlageplatte (120) einen ersten Drahtdurchgangsschlitz (121) aufweist, der an einem Rand der ersten Anlageplatte (120) ausgebildet ist, und die zweite Anlageplatte (220) einen zweiten Drahtdurchgangsschlitz (221) aufweist, der an einem Rand der zweiten Anlageplatte (220) ausgebildet ist.
4. Modulare Spule (10) nach Anspruch 3, bei der der erste Drahtdurchgangsschlitz (121) an einer Position ausgebildet ist, die auf die Position des zweiten Drahtdurchgangsschlitzes (221) reagiert, und der erste Drahtdurchgangsschlitz (121) und der erste Schwenkabschnitt (130) aneinander angrenzend angeordnet sind, und der zweite Drahtdurchgangsschlitz (221) und der zweite Schwenkabschnitt (230) aneinander angrenzend angeordnet sind.
5. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schwenkabschnitt (130) ein Haken ist und der zweite Schwenkabschnitt (230) ein Nocken ist, der schwenkbar mit dem Haken verbunden ist.
6. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schwenkabschnitt (130) ein Nocken ist und der zweite Schwenkabschnitt (230) ein Haken ist, der schwenkbar mit dem Nocken verbunden ist.
7. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schwenkabschnitt (130) und der zweite Schwenkabschnitt (230) ein Paar von Haken sind,

die miteinander verriegelt sind.

8. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schnappabschnitt (140) und der zweite Schnappabschnitt (240) ein Paar von Haken sind, die miteinander verriegelt sind. 5
9. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schnappabschnitt (140) ein Haken ist, und der zweite Schnappabschnitt (240) ein Nocken ist, der mit dem Haken verriegelt ist. 10
10. Modulare Spule (10) nach Anspruch 1 oder 2, bei der der erste Schnappabschnitt (140) ein Nocken ist, und der zweite Schnappabschnitt (240) ein Haken ist, der mit dem Nocken verriegelt ist. 15
11. Magnetisches Modul mit:

einer modularen Spule (10), die eine erste Spule (100) und eine zweite Spule (200) aufweist, und wobei die erste Spule (100) einen ersten Schaft (110) aufweist, und ein Ende (111) des ersten Schafts (110) einen ersten Schwenkabschnitt (130) und einen ersten Schnappabschnitt (140) aufweist, und der erste Schwenkabschnitt (130) und der erste Schnappabschnitt (140) an zwei gegenüberliegenden Seiten des Endes (111) des ersten Schafts (110) angeordnet sind, und wobei die zweite Spule (200) einen zweiten Schaft (210) aufweist, der koxial mit dem ersten Schaft (110) installiert ist, und ein Ende (211) des zweiten Schafts (210) einen zweiten Schwenkabschnitt (230) und einen zweiten Schnappabschnitt (240) aufweist, die jeweils an zwei gegenüberliegenden Seiten des Endes (211) des zweiten Schafts (210) angeordnet sind, und der zweite Schwenkabschnitt (230) schwenkbar mit dem ersten Schwenkabschnitt (130) verbunden ist, und der zweite Schnappabschnitt (240) trennbar mit dem ersten Schnappabschnitt (140) verriegelt ist, derart, dass die erste Spule (100) und die zweite Spule (200) mittels des ersten Schwenkabschnitts (130) und des zweiten Schwenkabschnitts (230) geschwenkt und gedreht werden können, um den zweiten Schnappabschnitt (240) von dem ersten Schnappabschnitt (140) zu trennen; einem Kern-Modul (400) mit einem inneren Kern (401), und wobei der innere Kern (401) zwischen der ersten Spule (100) und der zweiten Spule (200) angeordnet ist, wenn der zweite Schnappabschnitt (240) von dem ersten Schnappabschnitt (140) getrennt ist; und einem Leiterdraht (300), der um den ersten Schaft (110) und den zweiten Schaft (210) gewickelt ist. 20
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12. Magnetisches Modul nach Anspruch 11, bei dem der zweite Schwenkabschnitt (230) derart abnehmbar und schwenkbar mit dem ersten Schwenkabschnitt (130) verbunden ist, dass die erste Spule (100) und die zweite Spule (200) mittels des ersten Schnappabschnitts (140) und des zweiten Schnappabschnitts (240) gedreht werden können, um den zweiten Schwenkabschnitt (230) von dem ersten Schwenkabschnitt (130) zu trennen.

13. Magnetisches Modul nach Anspruch 11 oder 12, bei dem das Ende (111) des ersten Schafts (110) eine erste Anlageplatte (120) aufweist und der erste Schwenkabschnitt (130) an der ersten Anlageplatte (120) angeordnet ist, und das Ende (211) des zweiten Schafts (210) eine zweite Anlageplatte (220) aufweist und der zweite Schwenkabschnitt (230) an der zweiten Anlageplatte (220) angeordnet ist, und der innere Kern (401) zwischen der ersten Anlageplatte (120) und der zweiten Anlageplatte (220) angeordnet ist, wobei die erste Anlageplatte (120) einen ersten Drahtdurchgangsschlitz (121) aufweist, der an einem Rand der ersten Anlageplatte (120) ausgebildet ist, und die zweite Anlageplatte (220) einen zweiten Drahtdurchgangsschlitz (221) aufweist, der an einem Rand der zweiten Anlageplatte (220) ausgebildet ist.

14. Magnetisches Modul nach Anspruch 11, bei dem der Leiterdraht (300) einen Drahtdurchgangsabschnitt (301) aufweist, und sich ein erster Wicklungsabschnitt (310) und ein zweiter Wicklungsabschnitt (320) von einem jeweiligen der beiden Enden des Drahtdurchgangsabschnitts (301) aus erstrecken, wobei der erste Wicklungsabschnitt (310) und der zweite Wicklungsabschnitt (320) um den ersten Schaft (110) bzw. den zweiten Schaft (210) gewickelt sind, und der Drahtdurchgangsabschnitt (301) zwischen der ersten Anlageplatte (120) und der zweiten Anlageplatte (220) angeordnet ist und beide Enden des Drahtdurchgangsabschnitts (301) in dem ersten Drahtdurchgangsschlitz (121) bzw. dem zweiten Drahtdurchgangsschlitz (221) aufgenommen sind.

15. Magnetisches Modul nach Anspruch 11, bei dem der erste Drahtdurchgangsschlitz (121) an einer Position ausgebildet ist, die auf die Position des zweiten Drahtdurchgangsschlitzes (221) reagiert, und der erste Drahtdurchgangsschlitz (121) und der erste Schwenkabschnitt (130) aneinander angrenzend angeordnet sind, und der zweite Drahtdurchgangsschlitz (221) und der zweite Schwenkabschnitt (230) aneinander angrenzend angeordnet sind.

Revendications

1. Bobine modulaire (10), comprenant :

- une première bobine (100), comportant un premier arbre (110), et une première partie de pivotement (130) et une première partie d'encliquetage (140) disposées au niveau d'une extrémité (111) du premier arbre (110), et la première partie de pivotement (130) et la première partie d'encliquetage (140) étant agencées sur des côtés opposés de l'extrémité (111) du premier arbre (110) respectivement ; et
- une deuxième bobine (200), comportant un deuxième arbre (210) installé de façon coaxiale avec le premier arbre (110), et une deuxième partie de pivotement (230) et une deuxième partie d'encliquetage (240) disposées au niveau d'une extrémité (211) du deuxième arbre (210) et agencées au niveau de deux côtés opposés de l'extrémité (211) du deuxième arbre (210) respectivement, et la deuxième partie de pivotement (230) étant accouplée de façon pivotante à la première partie de pivotement (130), et la deuxième partie d'encliquetage (240) étant verrouillée de façon amovible à la première partie d'encliquetage (140), de sorte que la première bobine (100) et la deuxième bobine (200) puissent être pivotées et tournées par la première partie de pivotement (130) et la deuxième partie de pivotement (230) pour séparer la deuxième partie d'encliquetage (240) de la première partie d'encliquetage (140).
2. Bobine modulaire (10) selon la revendication 1, dans laquelle la deuxième partie de pivotement (230) est accouplée de façon amovible et pivotante à la première partie de pivotement (130), de sorte que la première bobine (100) et la deuxième bobine (200) puissent être tournées en utilisant la première partie d'encliquetage (140) et la deuxième partie d'encliquetage (240) comme pivot pour séparer la deuxième partie de pivotement (230) de la première partie de pivotement (130).
 3. Bobine modulaire (10) selon la revendication 1, dans laquelle l'extrémité (111) du premier arbre (110) a un premier battant (120) et la première partie de pivotement (130) est disposée au niveau du premier battant (120), et l'extrémité (211) du deuxième arbre (210) a un deuxième battant (220), et la deuxième partie de pivotement (230) est disposée au niveau du deuxième battant (220), et le premier battant (120) a une première fente de croisement de fils (121) formée au niveau d'un bord du premier battant (120), et le deuxième battant (220) a une deuxième fente de croisement de fils (221) formée au niveau d'un bord du deuxième battant (220).
 4. Bobine modulaire (10) selon la revendication 3, dans laquelle la première fente de croisement de fils (121) est formée à une position correspondant à la position
- de la deuxième fente de croisement de fils (221), et la première fente de croisement de fils (121) et la première partie de pivotement (130) sont disposées adjacentes l'une à l'autre, et la deuxième fente de croisement de fils (221) et la deuxième partie de pivotement (230) sont disposées adjacentes l'une à l'autre.
5. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie de pivotement (130) est un crochet, et la deuxième partie de pivotement (230) est une came accouplée de façon pivotante au crochet.
 6. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie de pivotement (130) est une came, et la deuxième partie de pivotement (230) est un crochet accouplé de façon pivotante à la came.
 7. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie de pivotement (130) et la deuxième partie de pivotement (230) sont une paire de crochets verrouillés l'un à l'autre.
 8. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie d'encliquetage (140) et la deuxième partie d'encliquetage (240) sont une paire de crochets verrouillés l'un à l'autre.
 9. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie d'encliquetage (140) est un crochet, et la deuxième partie d'encliquetage (240) est une came verrouillée au crochet.
 10. Bobine modulaire (10) selon la revendication 1 ou 2, dans laquelle la première partie d'encliquetage (140) est une came, et la deuxième partie d'encliquetage (240) est un crochet verrouillé à la came.
 11. Module magnétique, comprenant :

une bobine modulaire (10), comportant une première bobine (100) et une deuxième bobine (200), et la première bobine (100) comportant un premier arbre (110), et une extrémité (111) du premier arbre (110) ayant une première partie de pivotement (130) et une première partie d'encliquetage (140), et la première partie de pivotement (130) et la première partie d'encliquetage (140) étant disposées sur deux côtés opposés de l'extrémité (111) du premier arbre (110), et la deuxième bobine (200) comportant un deuxième arbre (210) installé de façon coaxiale avec le premier arbre (110), et une extrémité (211) du deuxième arbre (210) ayant une deuxième partie de pivotement (230) et une deuxième partie d'encliquetage (240) dispo-

- sées sur deux côtés opposés de l'extrémité (211) du deuxième arbre (210) respectivement, et la deuxième partie de pivotement (230) étant accouplée de façon pivotante à la première partie de pivotement (130), et la deuxième partie d'encliquetage (240) étant verrouillée de façon séparée à la première partie d'encliquetage (140), de sorte que la première bobine (100) et la deuxième bobine (200) puissent être pivotées et tournées par la première partie de pivotement (130) et la deuxième partie de pivotement (230) pour séparer la deuxième partie d'encliquetage (240) de la première partie d'encliquetage (140) ;
- un module de noyau (400), comportant un noyau intérieur (401), et le noyau intérieur (401) étant situé entre la première bobine (100) et la deuxième bobine (200) lorsque la deuxième partie d'encliquetage (240) est séparée de la première partie d'encliquetage (140) ; et
- un fil conducteur (300), enroulé autour du premier arbre (110) et du deuxième arbre (210).
- 12.** Module magnétique selon la revendication 11, dans lequel la deuxième partie de pivotement (230) est accouplée de façon amovible et pivotante à la première partie de pivotement (130), de sorte que la première bobine (100) et la deuxième bobine (200) puissent être pivotées et tournées par la première partie d'encliquetage (140) et la deuxième partie d'encliquetage (240) pour séparer la deuxième partie de pivotement (230) de la première partie de pivotement (130).
- 13.** Module magnétique selon la revendication 11 ou 12, dans lequel l'extrémité (111) du premier arbre (110) a un premier battant (120) et la première partie de pivotement (130) est disposée au niveau du premier battant (120), et l'extrémité (211) du deuxième arbre (210) a un deuxième battant (220), et la deuxième partie de pivotement (230) est disposée au niveau du deuxième battant (220), et le noyau intérieur (401) est installé entre le premier battant (120) et le deuxième battant (220), dans lequel le premier battant (120) a une première fente de croisement de fils (121) formée au niveau d'un bord du premier battant (120), et le deuxième battant (220) a une deuxième fente de croisement de fils (221) formée au niveau d'un bord du deuxième battant (220).
- 14.** Module magnétique selon la revendication 11, dans lequel le fil conducteur (300) comporte une section de croisement de fils (301), et une première section d'enroulement (310) et une deuxième section d'enroulement (320) sont étendues à partir des deux extrémités de la section de croisement de fils (301) respectivement, la première section d'enroulement (310) et la deuxième section d'enroulement (320)

sont enroulées autour du premier arbre (110) et du deuxième arbre (210) respectivement, et la section de croisement de fils (301) est disposée entre le premier battant (120) et le deuxième battant (220), et les deux extrémités de la section de croisement de fils (301) sont contenues dans la première fente de croisement de fils (121) et la deuxième fente de croisement de fils (221) respectivement.

- 15.** Module magnétique selon la revendication 11, dans lequel la première fente de croisement de fils (121) est formée à une position correspondant à la position de la deuxième fente de croisement de fils (221), et la première fente de croisement de fils (121) et la première partie de pivotement (130) sont disposées adjacentes l'une à l'autre, et la deuxième fente de croisement de fils (221) et la deuxième partie de pivotement (230) sont disposées adjacentes l'une à l'autre.

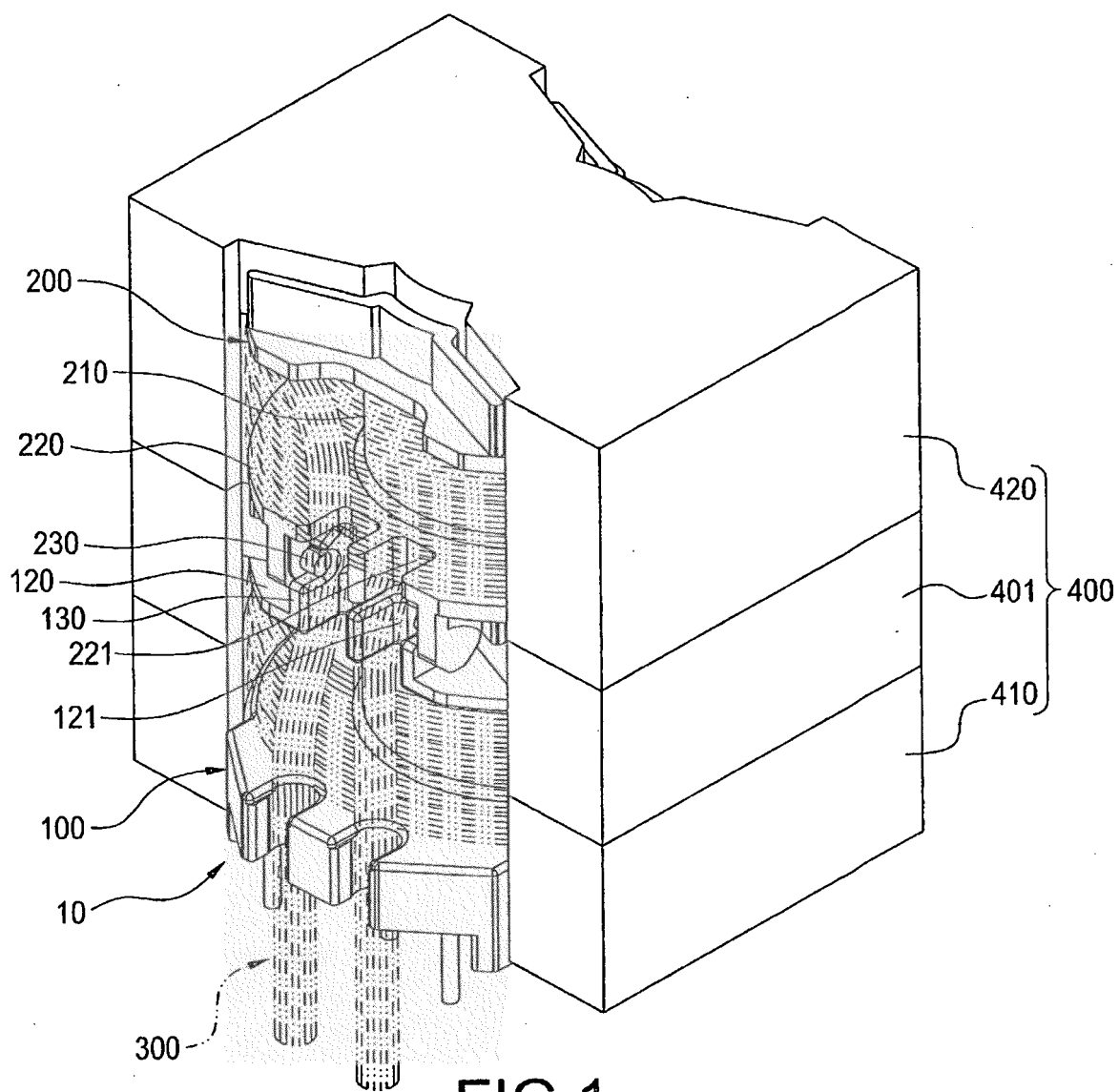


FIG.1

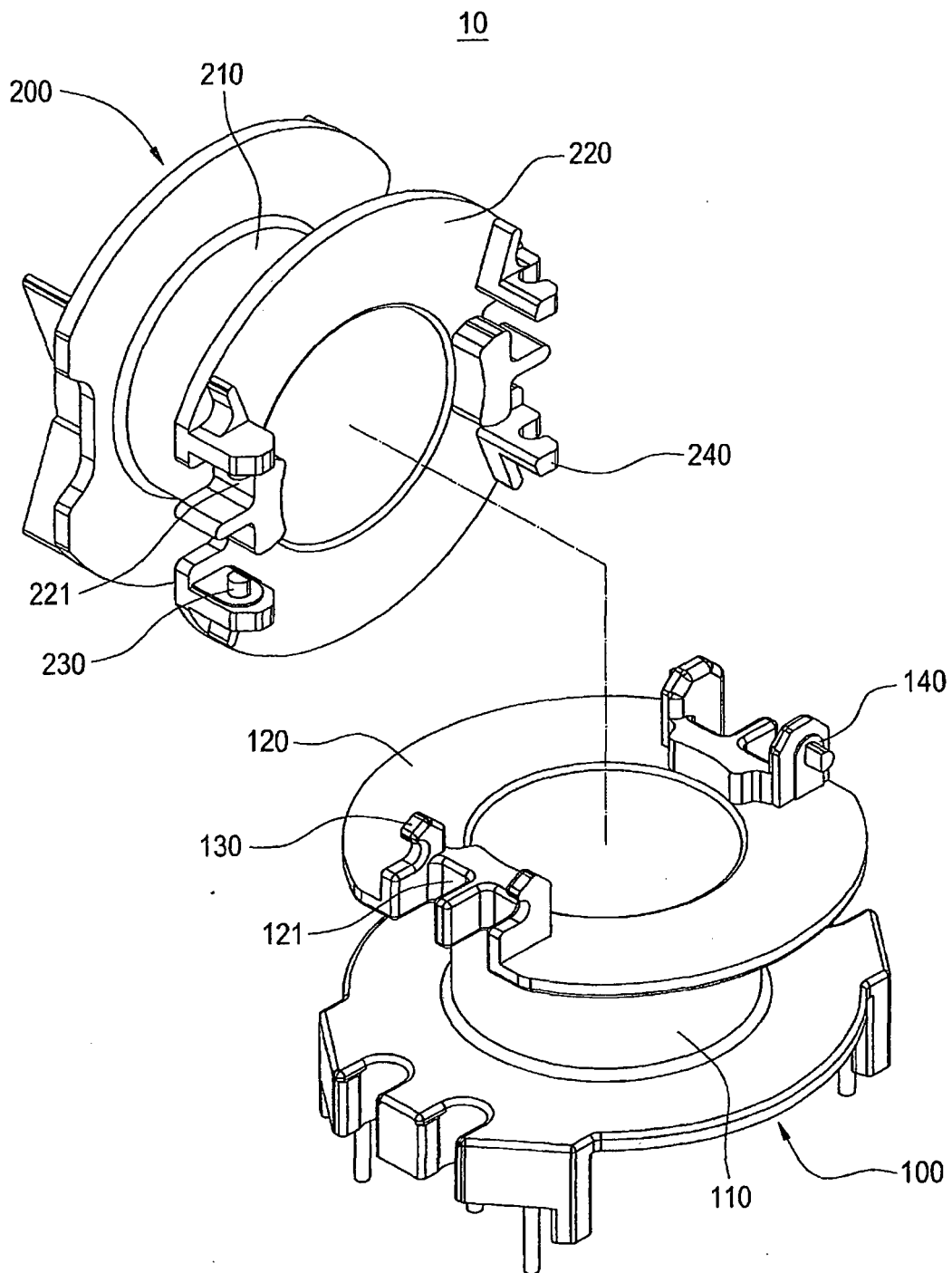


FIG.2

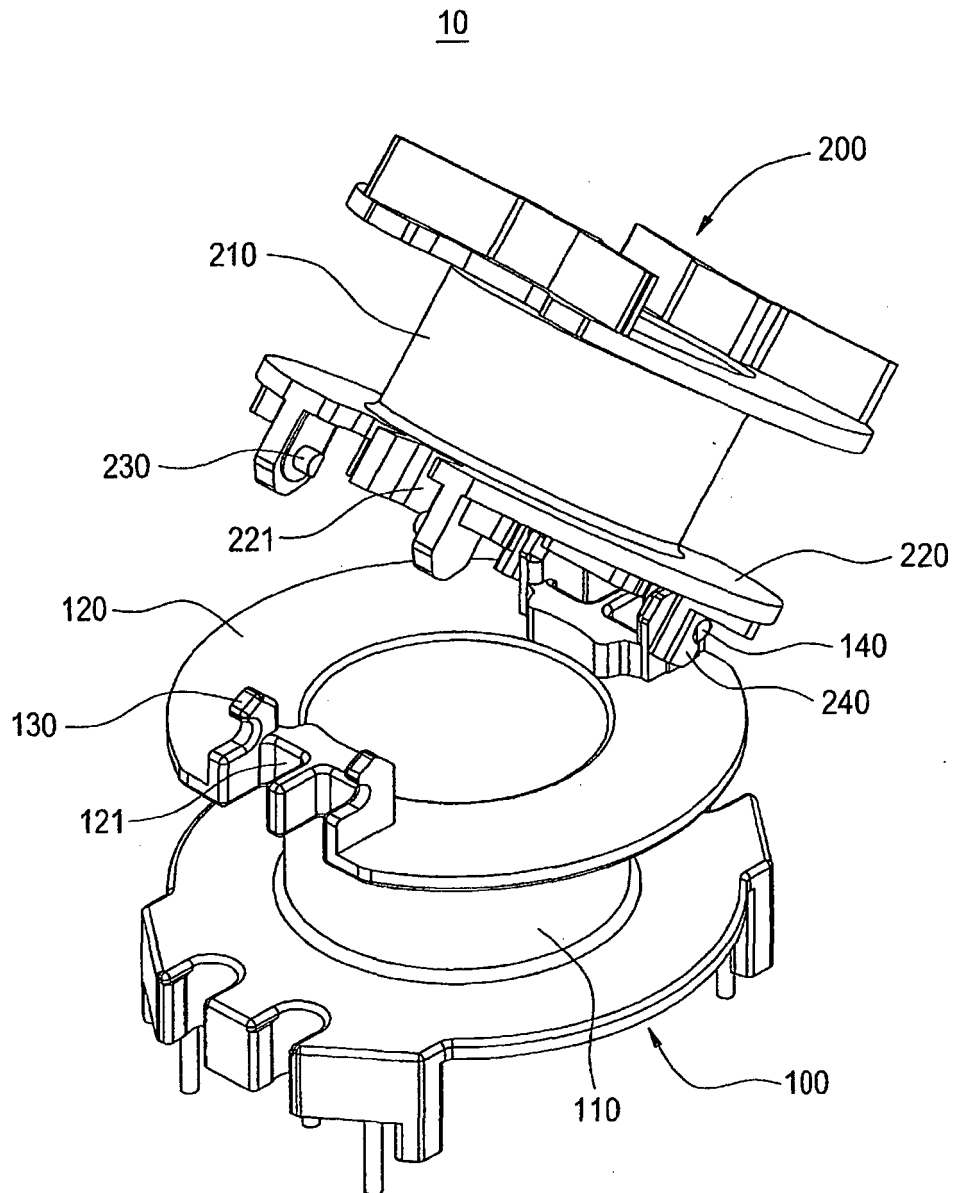


FIG.3

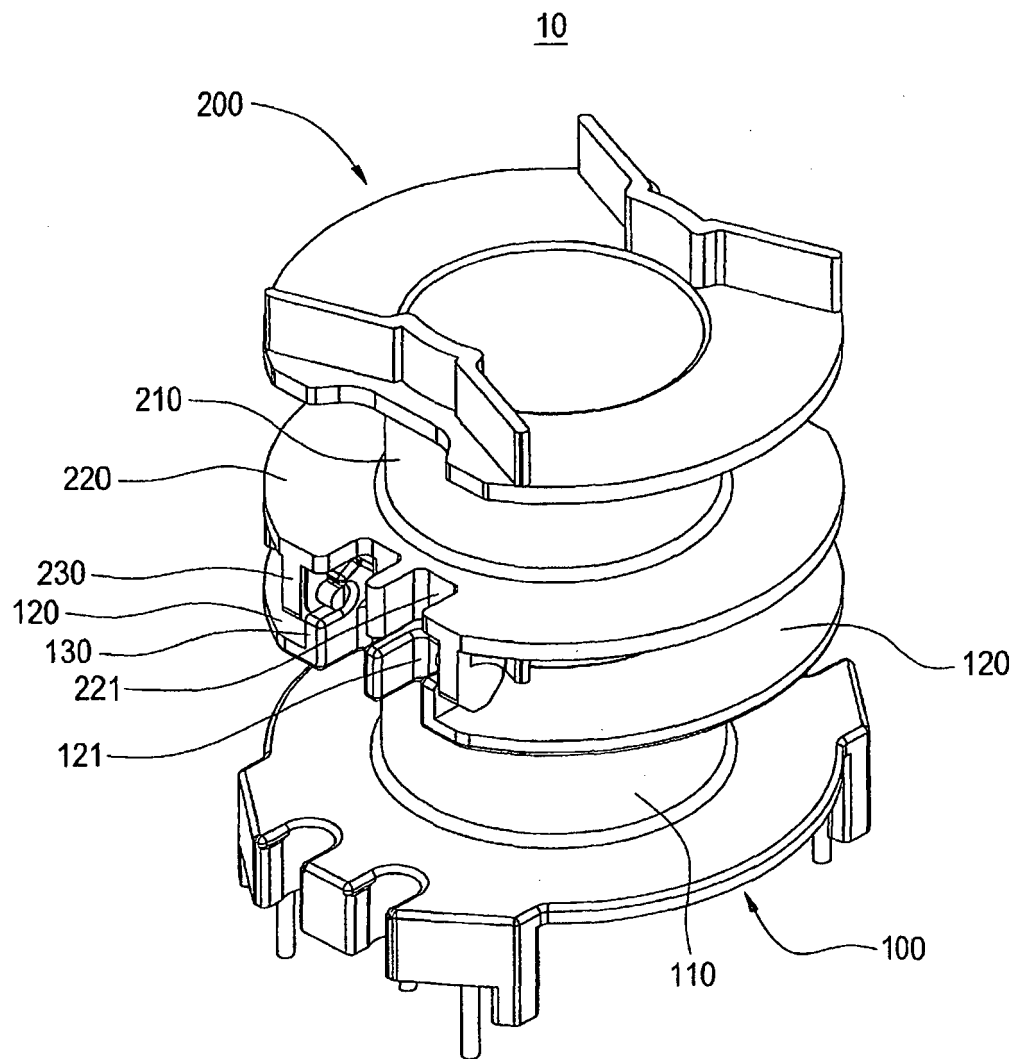


FIG.4

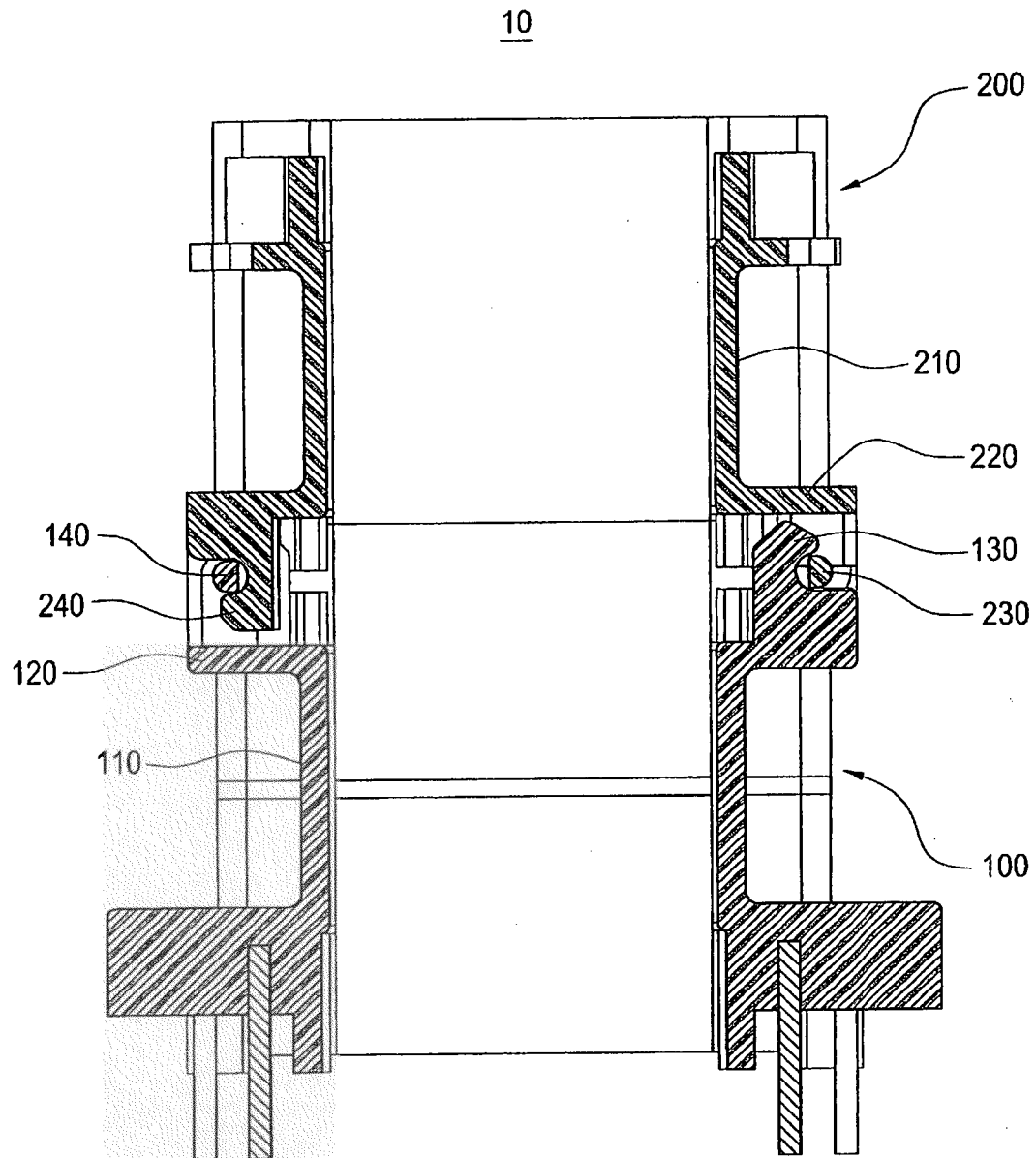


FIG.5

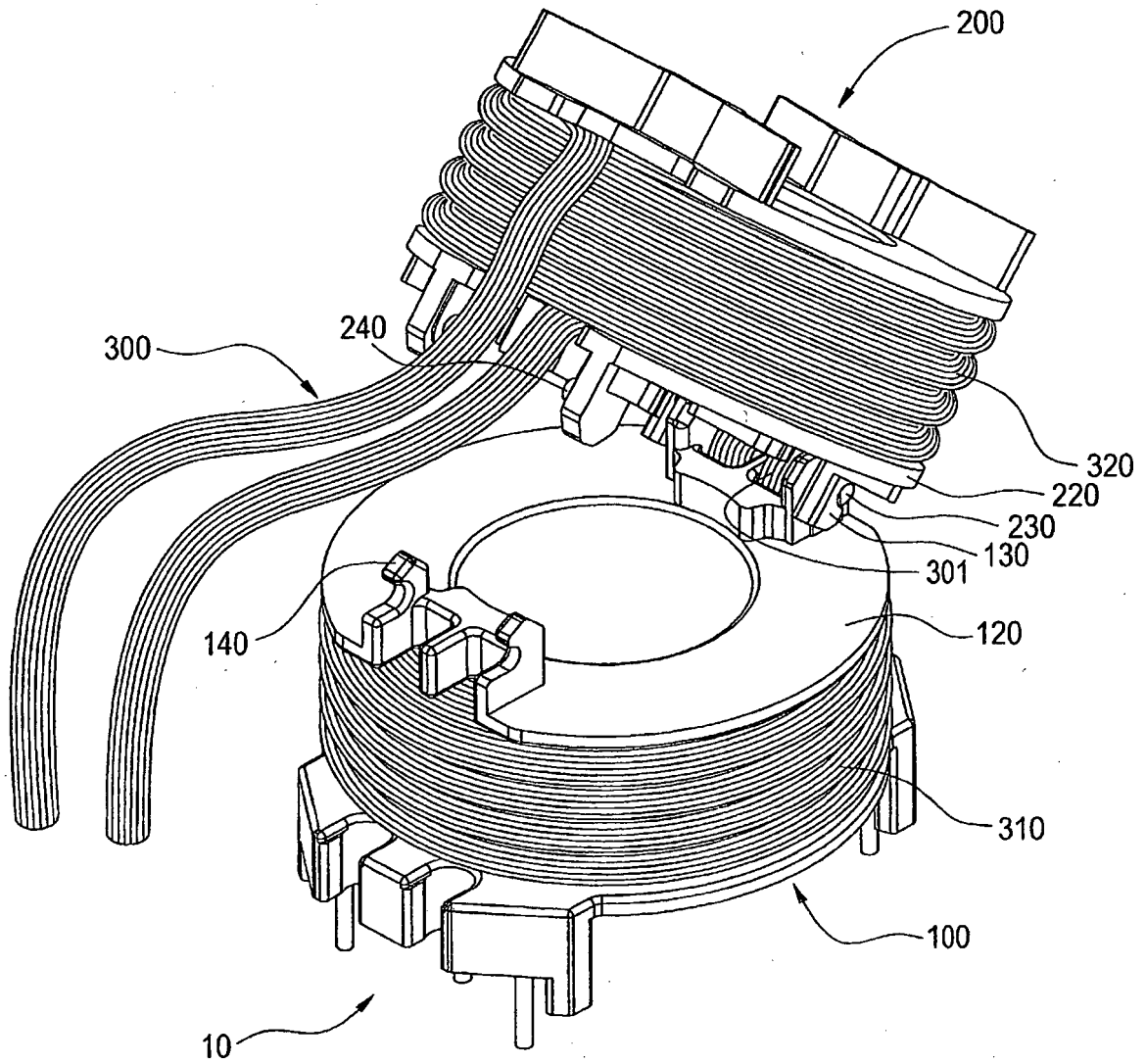


FIG.6

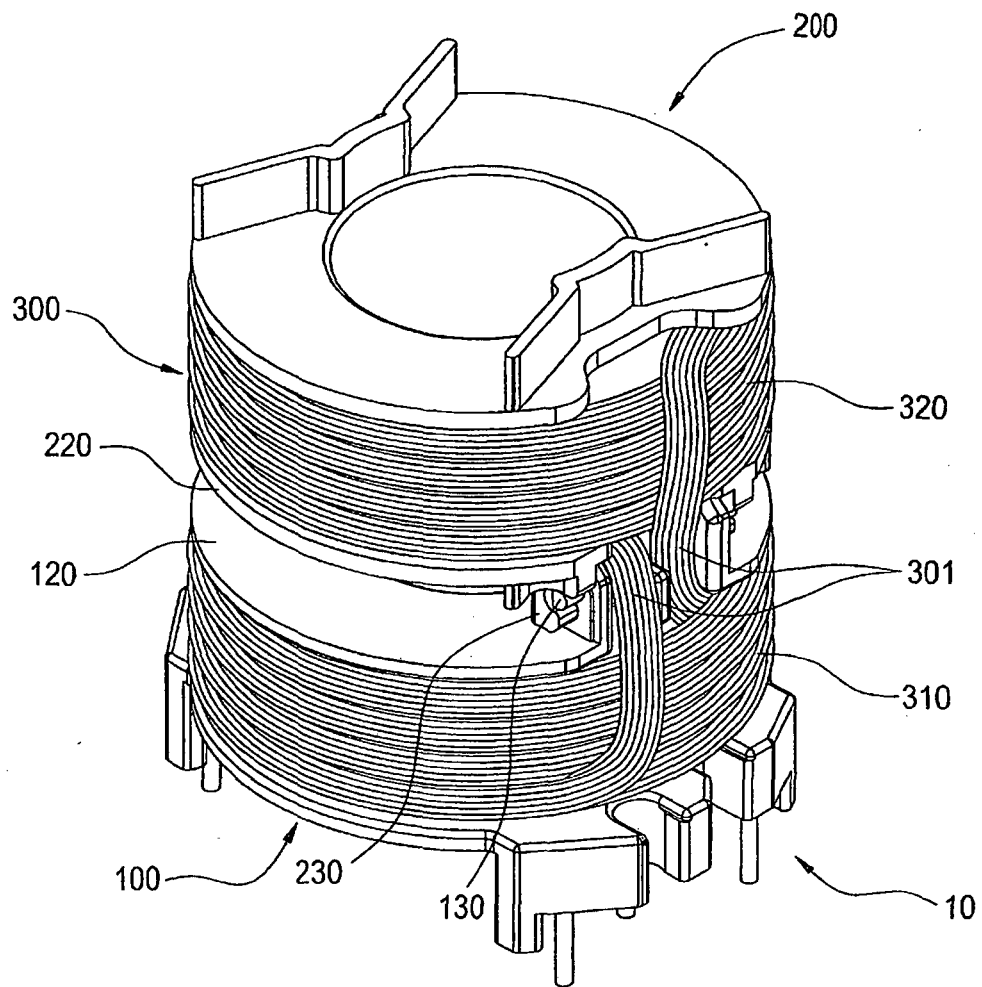


FIG.7

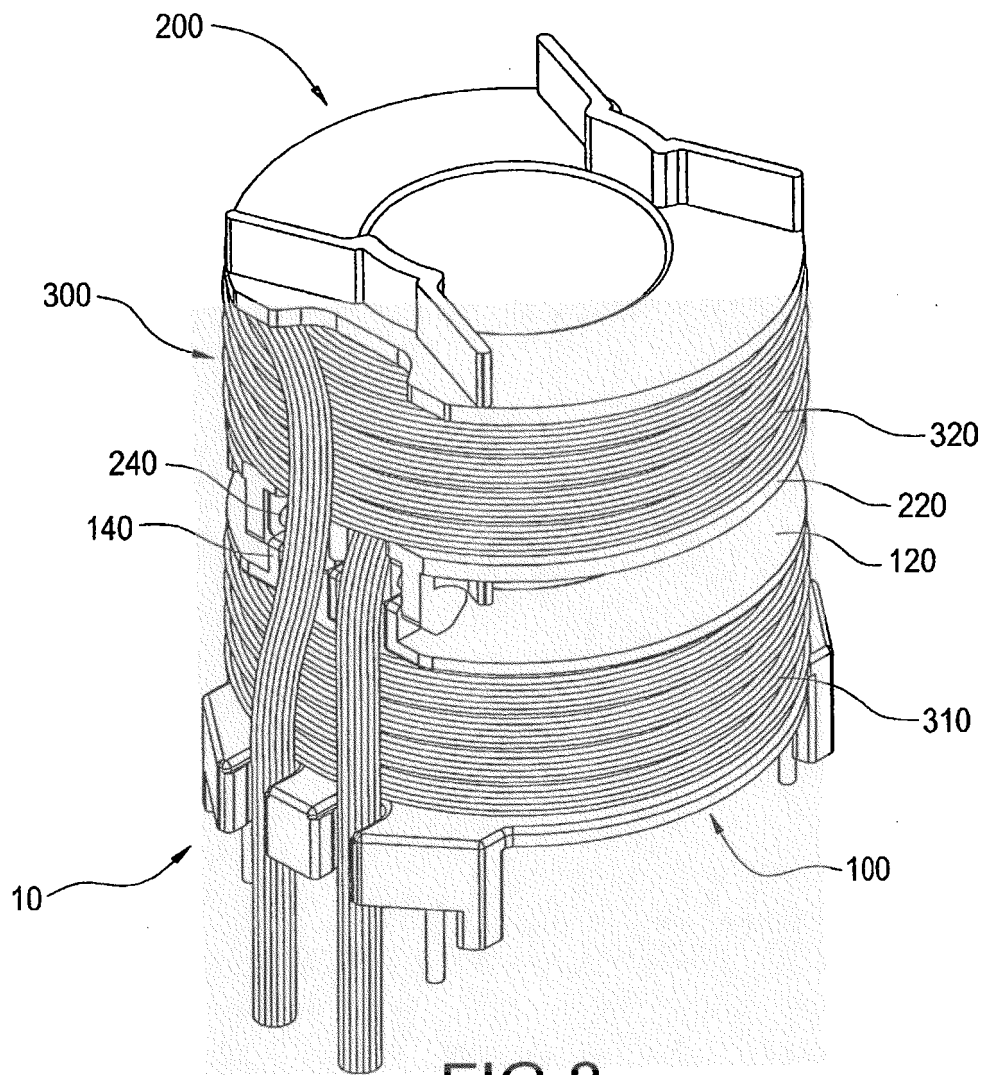


FIG.8

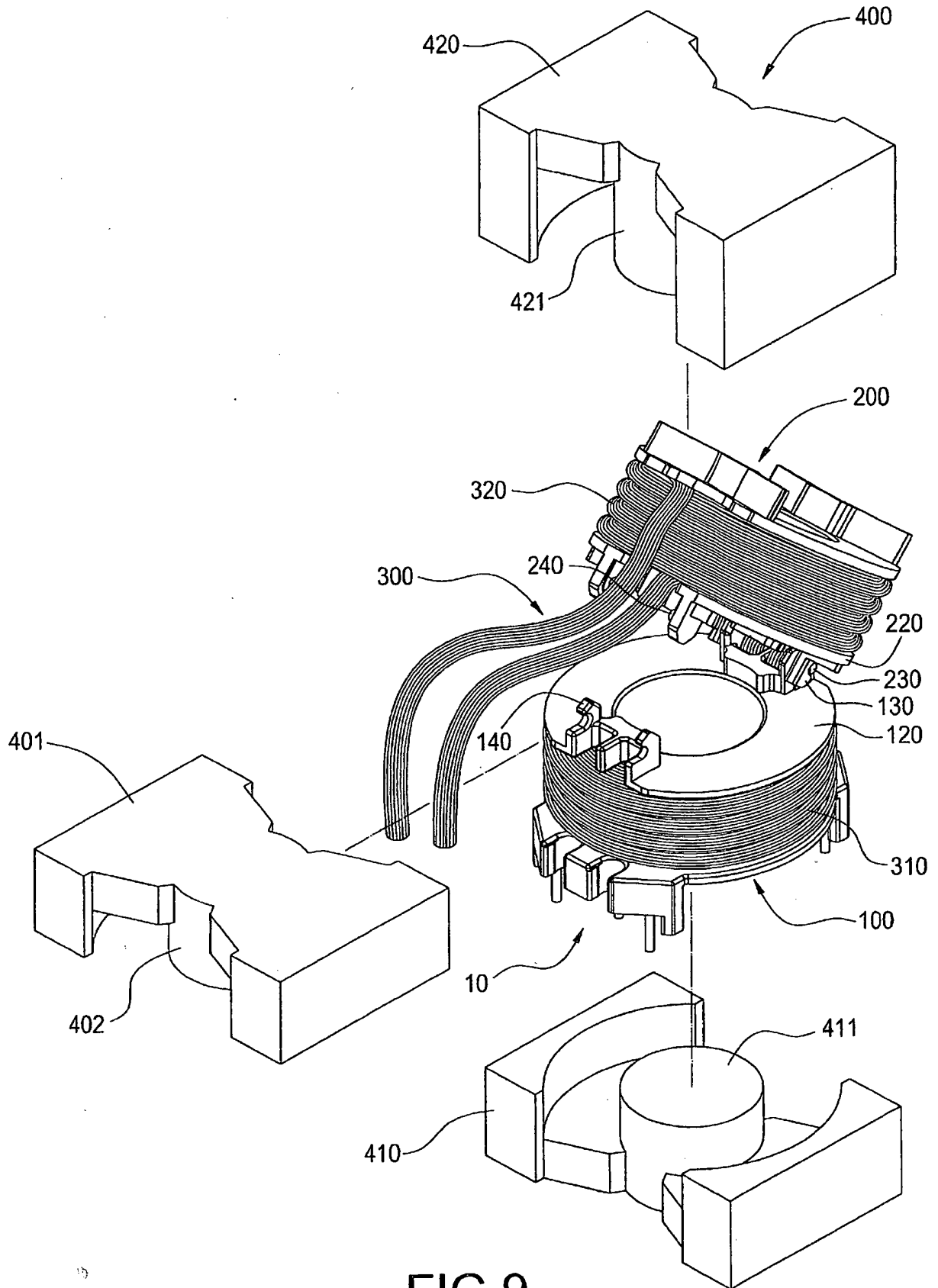


FIG.9

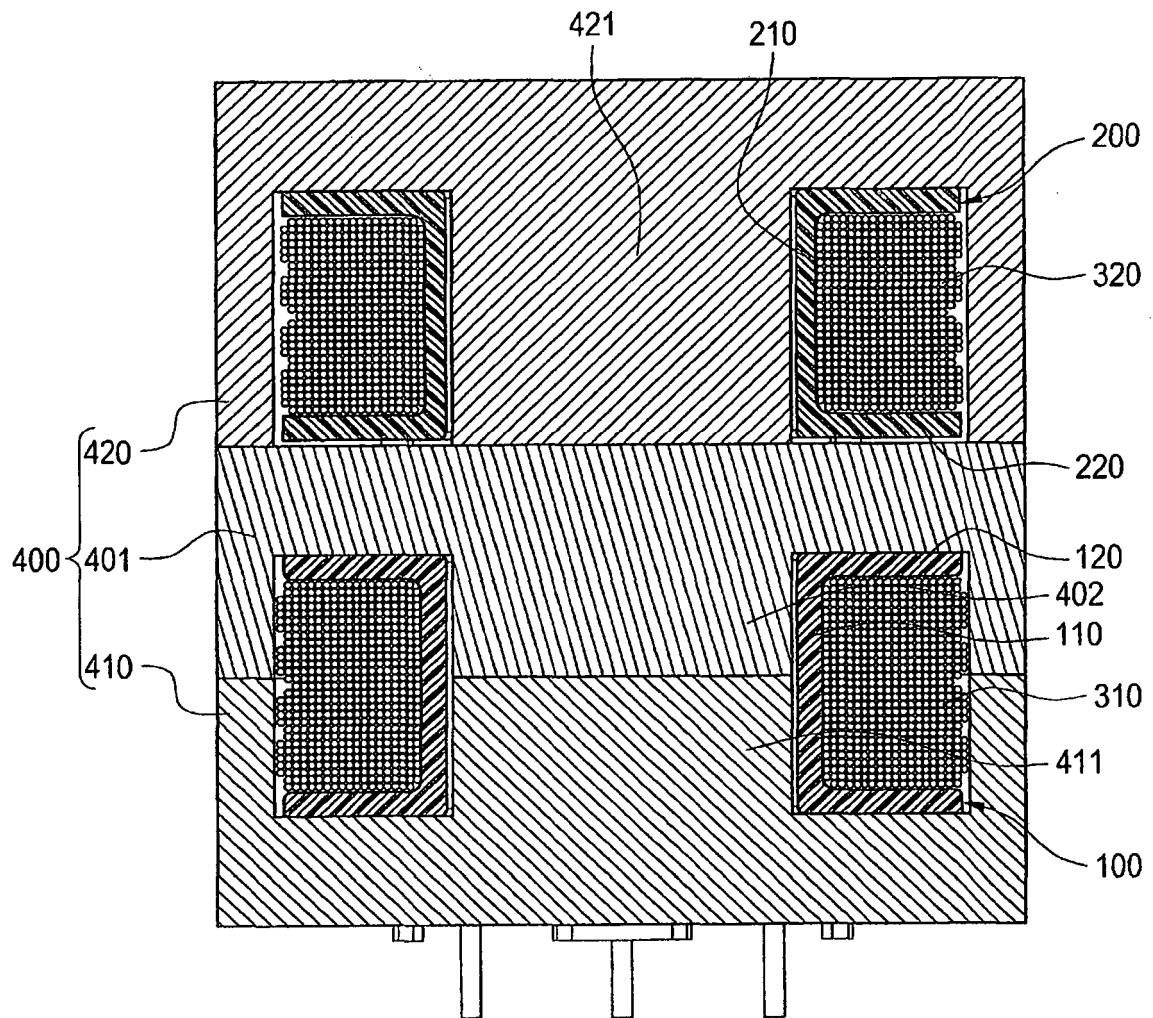


FIG.10

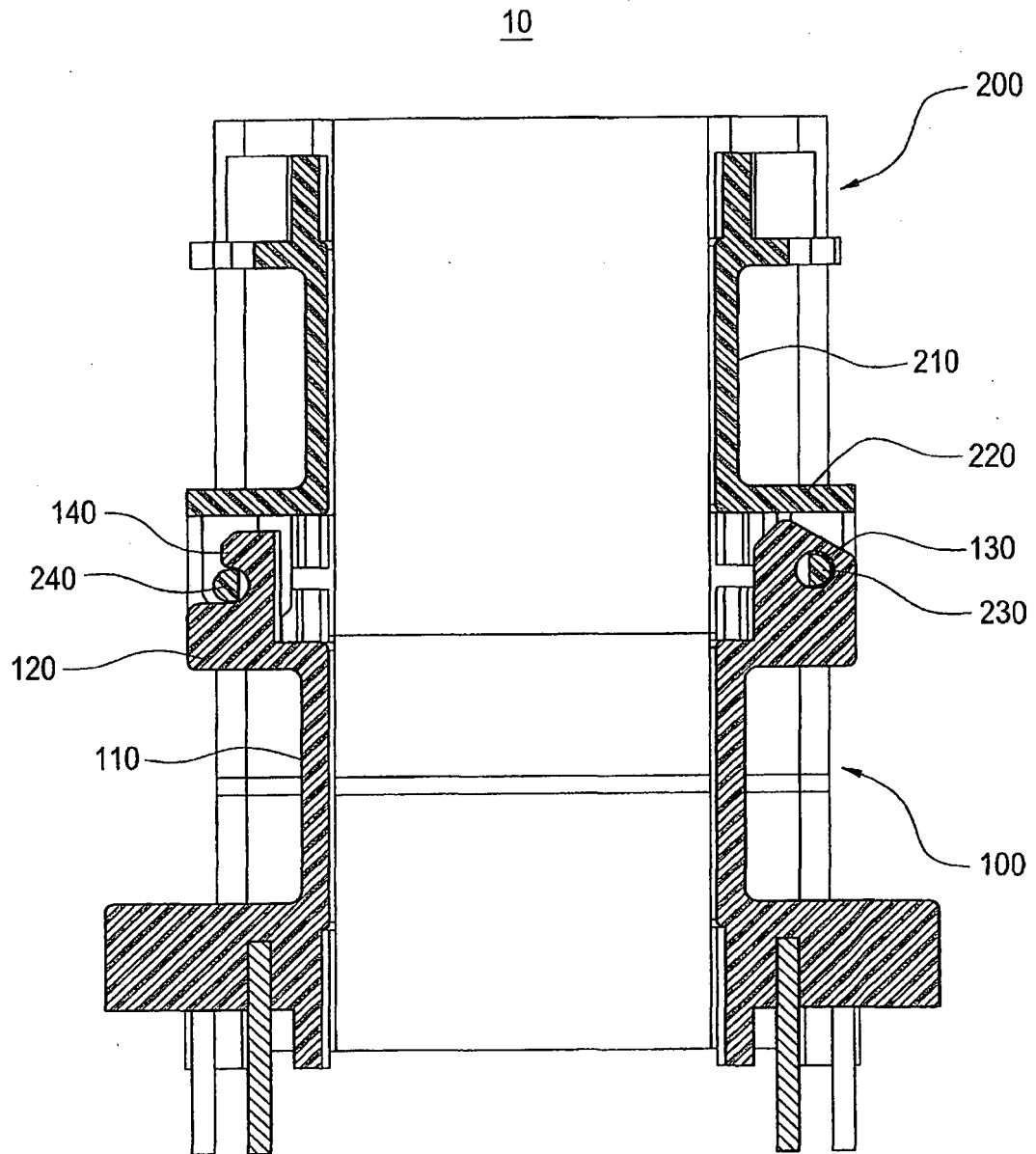


FIG.11

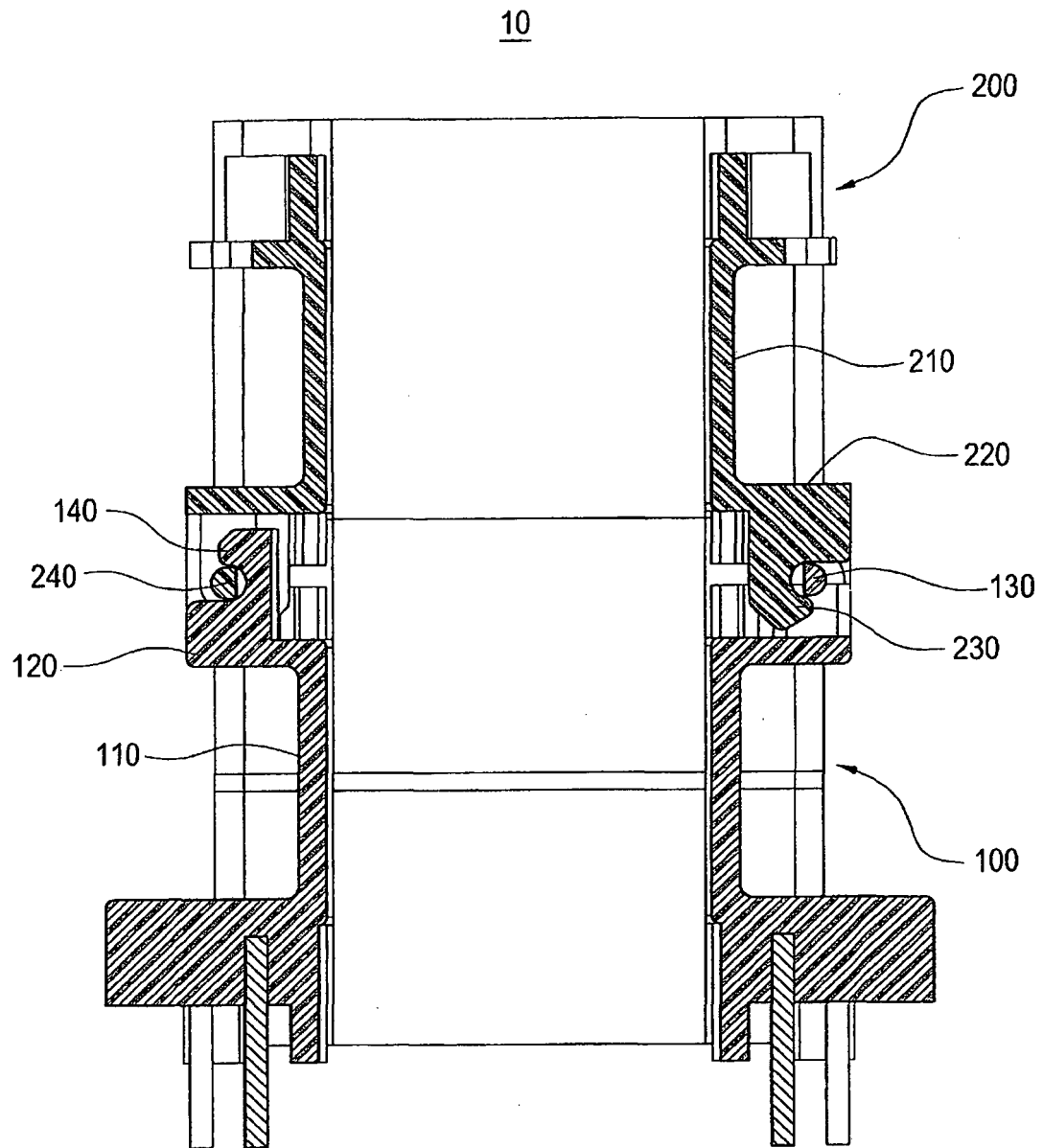


FIG.12

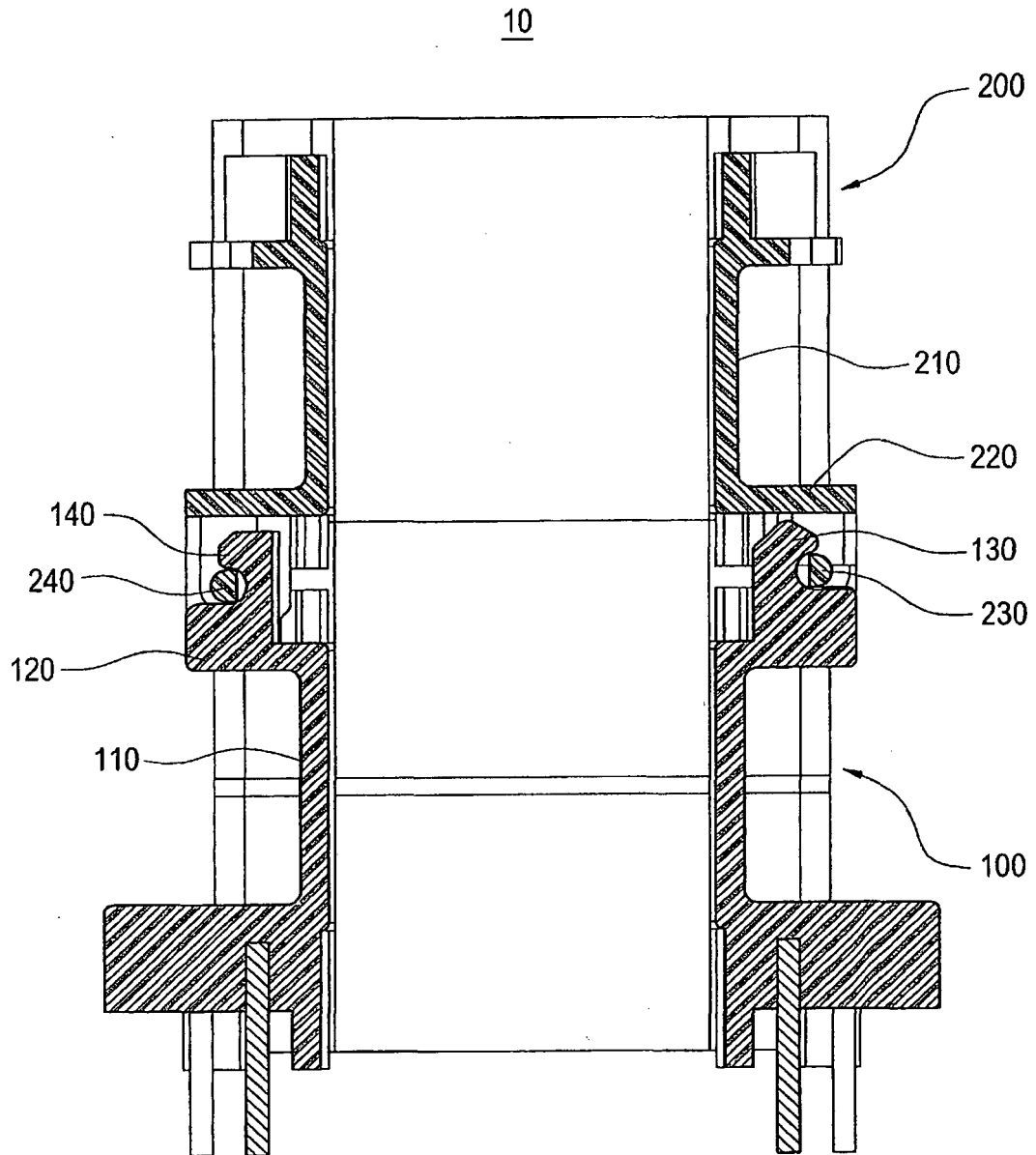


FIG.13

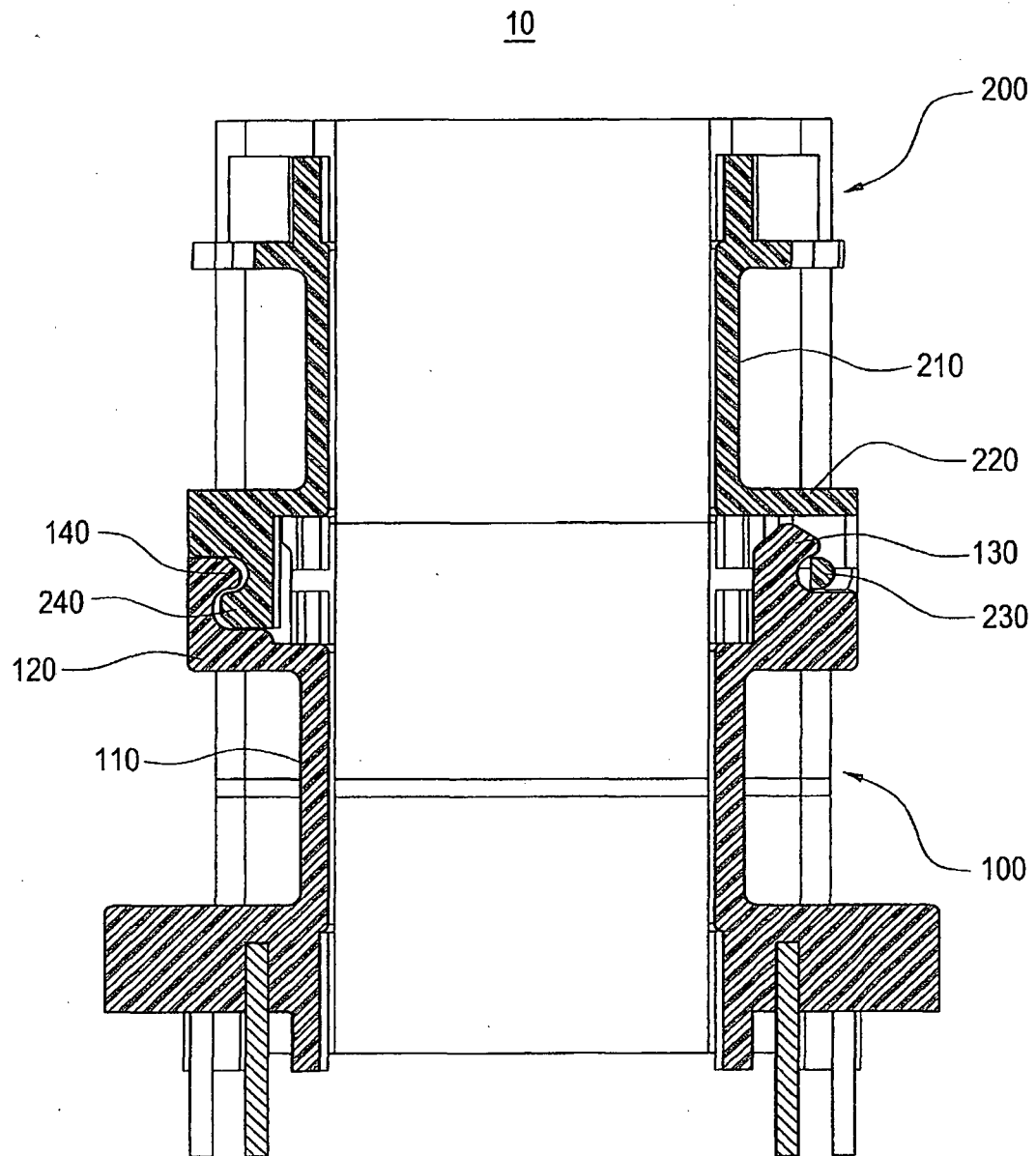


FIG.14

REFERENCES CITED IN THE DESCRIPTION

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