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(54) **A PLATE AND AN ELECTROMAGNETIC CONTACTOR COMPRISING THE PLATE FOR REINFORCING A MOVABLE CONTACT OF THE ELECTROMAGNETIC CONTACTOR DURING SWITCHING OPERATION.**

PLATTE UND ELEKTROMAGNETISCHER SCHALTER MIT DER PLATTE ZUR VERSTÄRKUNG EINES BEWEGLICHEN KONTAKTS DES ELEKTROMAGNETISCHEN SCHALTERS WÄHREND EINES SCHALTVORGANGS

PLAQUE ET CONTACTEUR ÉLECTROMAGNÉTIQUE COMPRENANT LA PLAQUE POUR RENFORCER UN CONTACT MOBILE DU CONTACTEUR ÉLECTROMAGNÉTIQUE PENDANT L'OPÉRATION DE COMMUTATION

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EP 2 606 500 B1

Description

[0001] The invention relates to a plate and an electromagnetic contactor comprising the plate for reinforcing a movable contact of the electromagnetic contactor during switching operation.

[0002] An electromagnetic contactor of an electromagnetic switching device has a movable contact which is typically used for controlling flow of electrical current in an electrical circuit. The electromagnetic switching device is controllable for switching between on and off states for closing and breaking a power supply circuit. To control the electromagnetic switching device electrically, magnets may be employed to actuate the electromagnetic contactor for breaking and closing the power supply circuit.

[0003] Typically, movable contact of the electromagnetic contactor is moved to engagement with fixed contacts for closing the power supply circuit. The fixed contact is electrically connected to the power supply. Thus, the power supply circuit is closed when movable contact is in engagement with the fixed contact under contact pressure. And when movable contact is disengaged from the fixed contact, the power supply circuit is opened. But while disengaging the movable contact from the fixed contact, an electric arc is generated. Due to the electric arc, immense heat is generated which further heats the movable contact. Also, the movable contact also heats up due to carrying of current for long times when the device is in closed condition. Heating up of the movable contact in either way de-shapes the movable contact which is under high contact pressure & switching impacts due to electromagnetic force during switching operation.

[0004] One possible way to protect the movable contact from de-shaping is by providing reinforcing mechanism over the movable contact, so that the movable contact can withstand heat without de-shaping. But, due to the electric arc another problem arises which wears off ends of the movable contact. Electric arc impact on the ends of the movable contacts can be reduced by providing an arc runner adjacent to the ends of the movable contact which help to disengage the movable contact from the fixed contact quickly to lessen the wearing off of the ends of the movable contacts.

[0005] While establishing engagement between the movable contact and the fixed contact, inertia develops because of an inductive effect between the contacts. So a damping spring is provided on top of the movable contact to absorb a shock due to inertia. This spring along with the movable contacts have probability of dislocation.

[0006] To protect the movable contact from de-shaping, wearing off and dislocation of contact along with damping spring, additional elements & features, i.e., reinforcing element, arc runner and feature for locating damping spring are provided, which in turn increases cost and step of manufacturing the electromagnetic contactor.

[0007] One technique for providing a movable contact is known from US 3,818,170. In the aforementioned patent, a contact bridge is disclosed which includes a tray-like structure having a bottom wall and a composite rim at the perimeter of the bottom wall. The structure is made from a bendable flat member consisting of a central portion and at least two margin strips integral with the central portion. The margin strips are bent along lines coincident with respective portions of the perimeter and configured to conjointly form the composite rim. Contact overlays are mounted on respective portions of the outer side of the bottom wall of the tray-like structure. The contact bridge is simple to manufacture and has a relatively high strength.

[0008] Another technique for providing a movable contact is known from DE 11,75,776. The patent discloses contact bridges for electrical switching devices, characterized in that the bridge of a carrier of a material of high mechanical strength is formed at a set, joining the contact points of a metal of high electrical conductivity.

[0009] Still another technique for providing a movable contact is known from US 4,222,167. The patent discloses a method of manufacturing a contact bridge for an electric switching apparatus which contact bridge includes an electrically highly conductive overlay and a concave-shaped support layer. The method comprises the steps of pressing a powder blank comprising two layers of metallic material, one of which comprises iron for the support layer and the other of which comprises copper for the overlay; sintering the blank in a protective gas; sizing the blank; further sintering the blank in a protective gas; further pressing the blank by reverse-flow cup extrusion; and applying an electrical contact to the overlay.

[0010] Yet another technique for providing a movable contact is known from DE 26,47,888. The patent discloses that the contact pads are soldered to an electrically well-conducting intermediate part and the intermediate part is connected to the tub to achieve a movable contact suitable for carrying large currents.

[0011] An object of the invention is to provide the electromagnetic contactor which can be manufactured easily and cost-effectively.

[0012] According to the invention, a plate is used for reinforcing a movable contact of an electromagnetic contactor during switching operation, wherein the plate includes a flat portion having a location on which a damping spring is placed, a location support adapted to be coupled to the damping spring for preventing the damping spring from dislodging from the location, and an arc runner for directing a switching arc produced during switching operation away from the movable contact, such that, the flat portion, location support and arc runner are coupled together to form the plate. Such plate helps to reduce number of elements for protecting the movable contact from de-shaping, wearing off and dislocation, thus, providing the electromagnetic contactor which can be manufactured cost-effectively and in less number of steps.

[0013] The plate includes a first side to circumferentially wrap a part of the movable contact, and a second side for locating the damping spring on the location over

the flat portion and preventing the damping spring from dislodging from the location through location support. This provides an easy design of the plate to provide with reinforcement function, as well as the location support at two sides of the plate.

[0014] According to yet another embodiment, the flat portion, the location support and the arc runner are detachably coupled. This helps to provide the plate where the elements, i.e., the flat portion, the location support and the arc runner can be replaced easily when any of the elements is destroyed.

[0015] According to an exemplary embodiment, the flat portion is coupled to the location support and the location support is coupled to the arc runner. This provides a structural arrangement of the flat portion, the location support and the arc runner, so that each of the flat portion, the location support and the arc runner can function effectively to protect the plate.

[0016] According to one embodiment, the movable contact is made of copper, as copper provides a better trade off between cost and electrical conductivity of the conductor.

[0017] According to another embodiment, the movable contact comprises a silver button, so that whenever the movable contact establishes an electrical connection with a fixed contactor, the connection is made through silver button. Silver is better conductor of the electricity, thus, such a movable contact helps to provide a better engagement between the movable and fixed contact.

[0018] According to yet another embodiment, the arc runner is adapted for directing the switching arc away from the silver button. This helps to protect silver button from wearing off due to the switching arc, thus saving cost of replacement of silver buttons which are costly due to high cost of silver metal.

[0019] According to an exemplary embodiment, the location support comprises elevation at opposite ends of the flat portion to form a groove to place the damping spring inside the grove on a location over the flat portion. This provides a simple way to provide the location support for holding the damping spring.

[0020] According to one embodiment, the plate is provided as a part of the electromagnetic contactor. This helps to reduce over all steps for manufacturing the electromagnetic contactor and makes the electromagnetic conductor manufacturing cost-effective.

FIG 1 shows a front end view of a plate used for reinforcing a contact of an electromagnetic contactor during switching operation.

FIG 2 shows a front end view of the electromagnetic contactor with the plate.

[0021] Various embodiments are described with reference to the drawing, wherein like reference numerals are used to refer to single elements throughout. In the following description, for purpose of explanation, numerous specific details are set forth in order to provide a thorough understanding of one or more embodiments. It may be evident that such embodiments may be practiced without these specific details.

[0022] Referring to FIG 1, a plate 1 for reinforcing a movable contact of an electromagnetic contactor during switching operation, the plate 1 includes a flat portion 3 having a location 7 on which a damping spring 6 is adapted to be placed, a location support 4 adapted to be coupled to a damping spring for preventing the damping spring from dislodging from the location 7, an arc runner 5 for directing a switching arc produced during switching operation away from the movable contact, in a way that the flat portion 3, the location support 4, the arc runner 5 are coupled together to form the plate 1.

[0023] The coupling between the flat portion 3, the location support 4 and the arc runner 5 is such that, the flat portion 3 is coupled to the location support 4 by placing the flat portion 3 adjacent to the location support 4 and the location support 4 is coupled to the arc runner 5 by placing the location support 4 adjacent to the arc runner 5. Alternatively, the flat portion 3 can be coupled to the arc runner 5 and the arc runner 5 is coupled to the location support 4.

[0024] The flat portion 3, the location support 4, the arc runner 5 are coupled together by permanent fixture with the help of wielding, or permanent adhesives. Alternatively the structural coupling is provided by drawing out the plate 1 from a single metal sheet by molding the sheet to form the flat portion 3, the location support 4, and the arc runner 5. Yet alternatively, the flat portion 3, the location support 4, the arc runner 5 are detachably coupled by providing temporary fixture through nut-bolts, threaded fasteners, clamps, clips, velcros, friction locks and the likes or the combination of any of these.

[0025] The plate 1 also includes a first side 8 to circumferentially wrap a part of the movable contact, and a second side 9 for locating the damping spring on the location 7 over the flat portion 3 and preventing the damping spring from dislodging from the location 7 through location support 4.

[0026] The flat portion 3 provides the location 7 for placing the damping spring along a contact of the damping spring. The flat portion 3 is having an even geometry with smooth finish, so that the damping spring can remain structurally coupled to be located on the location 7 for damping of vibrations or shocks during witching operation. Alternatively, the flat surface 3 can have geometry complimenting a structure of the contact of the damping spring, so as to provide a strong structural coupling for keeping the damping spring away from possibility of dislocation during switching operations.

[0027] Along the plate 1, when the flat portion 3 ends, the location support starts, thus providing structural coupling between the flat portion 3 and the location support 4. The location support 4 includes elevation 11 at opposite ends 12 of the flat portion 3 to form a groove to place the damping spring inside the grove on the location 7

over the flat portion 3. Alternatively, location support 4 can have any other geometry like grooves, velcros, etc, so that the damping spring remain intact with the plate while switching operation to withstand vibrations and shocks. Yet alternatively, the location 7 and the location support 4 can be combined together to provide the surface to engage with the plate 1 and also to provide a support, so that the damping string remains engaged with strong structural coupling for keeping the damping spring away from possibility of dislocation during switching operations.

[0028] The arc runner 5 is structurally coupled to the location support 4, in a way, so that when the location support 4 ends along the plate 1, the arc runner 5 begins and extends further to be coupled to the movable contact for protecting the movable contact from electric arc generated during the switching operation. During switching operation, the arc runner couples functionally to an arc extinguishing chamber for quenching the electric arc generated during switching operation when the movable contact is moved away from the fixed contact.

[0029] Referring to FIG 2, a front end view of the electromagnetic contactor 13 with a plate 1 is illustrated, wherein the plate 1, the damping spring 6 and the movable contact 2 are coupled together to form the electromagnetic contactor 13.

[0030] The structural coupling between the movable contact 2 and the plate 1 is provided by placing the plate 1 over the movable contact 2 at the first side 2 of the plate 1, so as to circumferentially wrap a part of the movable contact 2. While the structural coupling between the plate 1 and the damping spring 6 is provided by placing the damping spring 6 along a second side of the plate 1 on a location 7 over a flat portion 3, and by engaging the damping spring 6 to a location support 4 along the second side for preventing the damping spring 6 from dislodging from the location 7 through location support 4. The damping spring 6 is engaged to the location support 4 of the plate 1 through grooves formed by elevations 11 at opposite ends 12 of the flat portion 3by placing the damping spring 6 inside the grove on the location 7 over the flat portion 3.

[0031] The movable contact 2 is made of copper metal and having a silver button 10 to enhance electrical conductivity of the movable contact 2, so that whenever the movable contact 2 establishes an electrical connection with a fixed contact, the connection is made through the silver button 10. The movable contact 2 need not include silver button 10, rather the movable contact 2 can make electrical connection with the fixed contact by establishing a physical contact with the fixed contact.

[0032] During the switching operation, the silver button de-shapes and wears off due to high temperature of electric arc formation when the movable contact 2 moves away from the fixed contact. So, to protect the silver button 10 from de-shaping and wearing off, the arc runner 5 of the plate 1 extends up to the silver button 2.

[0033] The silver button 10 is affixed to the movable contact 2 through a permanent fixture by wielding or gluing permanently. Alternatively, the silver button 10 can also be affixed temporarily through threading, velcros or any such temporary fixture arrangement, which can bear the stress and heat during the switching operation.

[0034] Still, the electrical conductivity of the movable contact 2 can be increased by replacing the silver button 10 by any other metal which is having high electrical conductivity such as gold, etc. Alternatively, the electrical conductivity of the movable contact 2 can also be increased by combining high electrical conductivity metal to form the movable contact 2 by way of fusingly mixing the metals, or superimposing higher conductivity metal layer on the movable contact 2, etc.

List of Reference Signs

[0035]

1	Plate
2	movable contact
3	flat portion
4	location support
5	arc runner
6	damping spring
7	location
8	first side
9	second side
10	silver button
11	elevations of the location support
12	ends of the flat portion
13	electromagnetic contactor

Claims

1. A plate (1) for reinforcing a movable contact (2) of an electromagnetic contactor (13) during switching operation, the plate (1) comprising:

   - a flat portion (3) having a location (7) on which a damping spring (6) is adapted to be placed,
   - a location support (4) adapted to be coupled to the damping spring (6) for preventing the damping spring (6) from dislodging from the location (7), and
   - an arc runner (5) for directing a switching arc produced during switching operation away from the movable contact (2), wherein the flat portion (3), location support (4) and arc runner (5) are coupled together to form the plate (1),

   characterised in that

   the plate (1) is adapted to provide

   - a first side (8) to circumferentially wrap a part of the movable contact (2), and
   - a second side (9) for locating the damping spring (6) on the location (7) over the flat portion (3) and preventing the damping spring (6) from

dislodging from the location (7) through location support (4).

2. The plate (1) according claim 1, wherein the flat portion (3), the location support (4) and the arc runner (5) are detachably coupled.

3. The plate according to any of the claims 1 or 2, wherein the flat portion is coupled to the location support (4) and the location support (4) is coupled to the arc runner (5).

4. The plate (1) according to any of the claims from 1 to 3, wherein the movable contact (2) is made of copper.

5. The plate (1) according to any of the claims 1 to 4, wherein the movable contact (2) comprises a silver button (10), so that whenever the movable contact (2) establishes an electrical connection with a fixed contact, the connection is made through the silver button (10).

6. The plate (1) according to any of the claims 1 to 5, wherein the arc runner (5) is adapted for directing the switching arc away from the silver button (10).

7. The plate (1) according to any of the claims 1 to 6, wherein the location support (4) comprises elevation (11) at opposite ends (12) of the flat portion (3) to form a groove to place the damping spring (6) inside the grove on the location (7) over the flat portion (3).

8. An electromagnetic contactor comprising the plate (1) according to any of the claims from 1 to 7.

9. A method to manufacture a plate (1) for reinforcing a movable contact (2) of an electromagnetic contactor during switching operation comprising:

- providing a flat portion (3) on the plate (1), the flat portion (3) having a location (7) on which a damping spring (6) is placed,
- providing a location support (4) on the plate (1), so that the location support (4) is adapted to be coupled to the damping spring (6) for preventing the damping spring (6) from dislodging from the location (7),
- providing an arc runner (5) on the plate (1) for directing a switching arc produced during switching operation away from the movable contact (2), and
- coupling the flat portion (3), location support (4) and arc runner (5) together to form the plate (1), , and wherein the method is adapted for
- providing a first side (8) to the plate (1) for circumferentially wrapping a part of the movable contact (2), and
- providing a second side (9) to the plate (1) for locating the damping spring (6) on the location (7) over the flat portion (3) and preventing the damping spring (6) from dislodging from the location (7) through location support (4).

10. The method according to claim 9 comprising:

- detachably coupling the flat portion (3), location support (4) and arc runner (5) together to form the plate (1).

11. The method according to any of the claims 9 or 10 comprising:

- coupling the flat portion (3) to the location support (4) and the location support (4) to the arc runner (5) to form the plate (1).

12. The method according to any of the claims from 9 to 11 comprising:

- placing the location support (4) adjacent to the arc runner (5).

13. The method according to any of the claims from 9 to 12 comprising:

- providing the location support (4) by making elevation (11) at opposite ends (12) of the flat portion (3) to form a groove to place the damping spring (6) inside the grove on the location (7) over the flat portion (3).

Patentansprüche

1. Platte (1) zum Verstärken eines beweglichen Kontakts (2) eines elektromagnetischen Schaltschütz (13) während eines Schaltvorgangs, wobei die Platte (1) Folgendes umfasst:

- einen flachen Abschnitt (3) mit einer Stelle (7), an der eine Dämpfungsfeder (6) anzuordnen ist,
- eine Positionsstütze (4), die angepasst ist, um mit der Dämpfungsfeder (6) gekoppelt zu werden, um zu verhindern, dass sich die Dämpfungsfeder (6) von der Stelle (7) fort bewegt, und
- eine bogenförmige Schiene (5) zum Richten eines während eines Schaltvorgangs erzeugten Schaltlichtbogens von dem beweglichen Kontakt (2) fort,
- wobei der flache Abschnitt (3), die Positionsstütze (4) und die bogenförmige Schiene (5) miteinander gekoppelt sind, um die Platte (1) zu bilden,

dadurch gekennzeichnet, dass die Platte (1) angepasst ist, um Folgendes bereitzustellen:

- eine erste Seite (8) zum umfänglichen Umhüllen eines Teils des beweglichen Kontakts (2) und
- eine zweite Seite (9) zum Positionieren der Dämpfungsfeder (6) an der Stelle (7) über dem flachen Abschnitt (3) und zum Verhindern, dass sich die Dämpfungsfeder (6) von der Stelle (7) fort bewegt, durch die Positionsstütze (4).

2. Platte (1) nach Anspruch 1, wobei der flache Abschnitt (3), die Positionsstütze (4) und die bogenförmige Schiene (5) lösbar gekoppelt sind.

3. Platte nach einem der Ansprüche 1 oder 2, wobei der flache Abschnitt mit der Positionsstütze (4) gekoppelt ist und die Positionsstütze (4) mit der bogenförmigen Schiene (5) gekoppelt ist.

4. Platte (1) nach einem der Ansprüche 1 bis 3, wobei der bewegliche Kontakt (2) aus Kupfer besteht.

5. Platte (1) nach einem der Ansprüche 1 bis 4, wobei der bewegliche Kontakt (2) eine silberne Taste (10) umfasst, so dass immer, wenn der bewegliche Kontakt (2) eine elektrische Verbindung mit einem festen Kontakt herstellt, die Verbindung durch die silberne Taste (10) hergestellt wird.

6. Platte (1) nach einem der Ansprüche 1 bis 5, wobei die bogenförmige Schiene (5) angepasst ist, um den Schaltlichtbogen von der silbernen Taste (10) fort zu bewegen.

7. Platte (1) nach einem der Ansprüche 1 bis 6, wobei die Positionsstütze (4) eine Erhöhung (11) an gegenüberliegenden Enden (12) des flachen Abschnitts (3) umfasst, um eine Nut zu bilden, um die Dämpfungsfeder (6) innerhalb der Nut an der Stelle (7) über dem flachen Abschnitt (3) anzuordnen.

8. Elektromagnetischer Schaltschütz, der die Platte (1) nach einem der Ansprüche 1 bis 7 umfasst.

9. Verfahren zum Herstellen einer Platte (1) zum Verstärken eines beweglichen Kontakts (2) eines elektromagnetischen Schaltschützes während eines Schaltvorgangs, das Folgendes umfasst:

- Bereitstellen eines flachen Abschnitts (3) auf der Platte (1), wobei der flache Abschnitt (3) eine Stelle (7) aufweist, auf der eine Dämpfungsfeder (6) angeordnet wird,
- Bereitstellen einer Positionsstütze (4) auf der Platte (1), so dass die Positionsstütze (4) angepasst ist, um mit der Dämpfungsfeder (6) gekoppelt zu werden, um zu verhindern, dass sich die Dämpfungsfeder (6) von der Stelle (7) fort bewegt,
- Bereitstellen einer bogenförmigen Schiene (5) auf der Platte (1) zum Richten eines während eines Schaltvorgangs erzeugten Schaltlichtbogens von dem beweglichen Kontakt (2) fort, und
- Koppeln des flachen Abschnitts (3), der Positionsstütze (4) und der bogenförmigen Schiene (5) miteinander, um die Platte (1) zu bilden,

und wobei das Verfahren für Folgendes angepasst ist:

- Bereitstellen einer ersten Seite (8) für die Platte (1) zum umfänglichen Umhüllen eines Teils des beweglichen Kontakts (2), und
- Bereitstellen einer zweiten Seite (9) für die Platte (1) zum Positionieren der Dämpfungsfeder (6) an der Stelle (7) über dem flachen Abschnitt (3) und zum Verhindern, dass sich die Dämpfungsfeder (6) von der Stelle (7) fort bewegt, durch die Positionsstütze (4).

10. Verfahren nach Anspruch 9, das Folgendes umfasst:

- lösbares Koppeln des flachen Abschnitts (3), der Positionsstütze (4) und der bogenförmigen Schiene (5) miteinander, um die Platte (1) zu bilden.

11. Verfahren nach einem der Ansprüche 9 oder 10, das Folgendes umfasst:

- Koppeln des flachen Abschnitts (3) mit der Positionsstütze (4) und der bogenförmigen Schiene (5), um die Platte (1) zu bilden.

12. Verfahren nach einem der Ansprüche 9 bis 11, das Folgendes umfasst:

- Anordnen der Positionsstütze (4) neben der bogenförmigen Schiene (5).

13. Verfahren nach einem der Ansprüche 9 bis 12, das Folgendes umfasst:

- Bereitstellen der Positionsstütze (4) durch Ausbilden einer Erhöhung (11) an gegenüberliegenden Enden (12) des flachen Abschnitts (3), um eine Nut zu bilden, um die Dämpfungsfeder (6) innerhalb der Nut an der Stelle (7) über dem flachen Abschnitt (3) anzuordnen.

Revendications

1. Plaque (1) destinée à renforcer un contact mobile

(2) de contacteur électromagnétique (13) pendant une opération de commutation, la plaque (1) comprenant :

- une partie plate (3) comportant une position destinée à recevoir un ressort d'amortissement (6),
- un support de positionnement (4) adapté pour être couplé avec le ressort d'amortissement (6) afin d'empêcher le ressort d'amortissement (6) de quitter la position (7), et
- une tôle de conduction d'arc (5) destinée à écarter du contact mobile (2) un arc de commutation produit pendant l'opération de commutation,

dans laquelle la partie plate (3), le support de positionnement (4) et la tôle de conduction d'arc (5) sont couplés les uns avec les autres pour former la plaque (1),
caractérisée en ce que la plaque (1) est adaptée pour prévoir :

- un premier côté (8) pour envelopper circonférentiellement une partie du contact mobile (2), et
- un second côté (9) destiné à positionner le ressort d'amortissement (6) à la position (7) sur la partie plate (3) et à empêcher le ressort d'amortissement (6) de quitter la position (7), au moyen du support de positionnement (4).

2. Plaque (1) selon la revendication 1, dans laquelle la partie plate (3), le support de positionnement (4) et la tôle de conduction d'arc (5) sont couplés de façon amovible.

3. Plaque selon l'une quelconque des revendications 1 et 2, dans laquelle la partie plate est couplée avec le support de positionnement (4) et le support de positionnement (4) est couplé avec la tôle de conduction d'arc (5).

4. Plaque (1) selon l'une quelconque des revendications 1 à 3, dans laquelle le contact mobile (2) est constitué de cuivre.

5. Plaque (1) selon l'une quelconque des revendications 1 à 4, dans laquelle le contact mobile (2) comprend un bouton en argent (10), de sorte qu'à chaque fois que le contact mobile (2) établit une connexion électrique avec un contact fixe, la connexion s'effectue au moyen du bouton en argent (10).

6. Plaque (1) selon l'une quelconque des revendications 1 à 5, dans laquelle la tôle de conduction d'arc (5) est adaptée pour écarter du bouton en argent (10) l'arc de commutation.

7. Plaque (1) selon l'une quelconque des revendications 1 à 6, dans laquelle le support de positionnement (4) comprend une protubérance (11) à des extrémités opposées (12) de la partie plate (3) pour former une rainure afin de placer à l'intérieur de la rainure le ressort d'amortissement (6) à la position (7) sur la partie plate (3).

8. Contacteur électromagnétique comprenant la plaque (1) selon l'une quelconque des revendications 1 à 7.

9. Procédé de fabrication d'une plaque (1) destinée à renforcer un contact mobile (2) de contacteur électromagnétique pendant une opération de commutation, comprenant les étapes consistant à :

- prévoir une partie plate (3) sur la plaque (1), la partie plate (3) comportant une position (7) à laquelle est placé un ressort d'amortissement (6),
- prévoir un support de positionnement (4) sur la plaque (1), de manière que le support de positionnement (4) soit adapté pour être couplé avec le ressort d'amortissement (6) afin d'empêcher le ressort d'amortissement (6) de quitter la position (7),
- prévoir une tôle de conduction d'arc (5) sur la plaque (1) pour écarter du contact mobile (2) un arc de commutation produit pendant l'opération de commutation, et
- coupler la partie plate (3), le support de positionnement (4) et la tôle de conduction d'arc (5) les uns avec les autres pour former la plaque (1),

le procédé étant adapté pour :

- prévoir un premier côté (8) de la plaque (1) pour envelopper circonférentiellement une partie du contact mobile (2), et
- prévoir un second côté (9) de la plaque (1) pour positionner le ressort d'amortissement (6) à la position (7) sur la partie plate (3) et empêcher le ressort d'amortissement (6) de quitter la position (7), au moyen du support de positionnement (4).

10. Procédé selon la revendication 9 comprenant l'étape consistant à :

- coupler de façon amovible la partie plate (3), le support de positionnement (4) et la tôle de conduction d'arc (5) les uns avec les autres pour former la plaque (1).

11. Procédé selon l'une quelconque des revendications 9 et 10, comprenant l'étape consistant à :

- coupler la partie plate (3) avec le support de positionnement (4) et le support de positionnement (4) avec la tôle de conduction d'arc (5) pour former la plaque (1).

12. Procédé selon l'une quelconque des revendications 9 à 11, comprenant l'étape consistant à :

- placer le support de positionnement (4) au voisinage de la tôle de conduction d'arc (5).

13. Procédé selon l'une quelconque des revendications 9 à 12, comprenant l'étape consistant à :

- prévoir le support de positionnement (4) en faisant en sorte que la protubérance (11) aux extrémités opposées (12) de la partie plate (3) forme une rainure afin de placer à l'intérieur de la rainure le ressort d'amortissement (6) à la position (7) sur la partie plate (3).

FIG 1

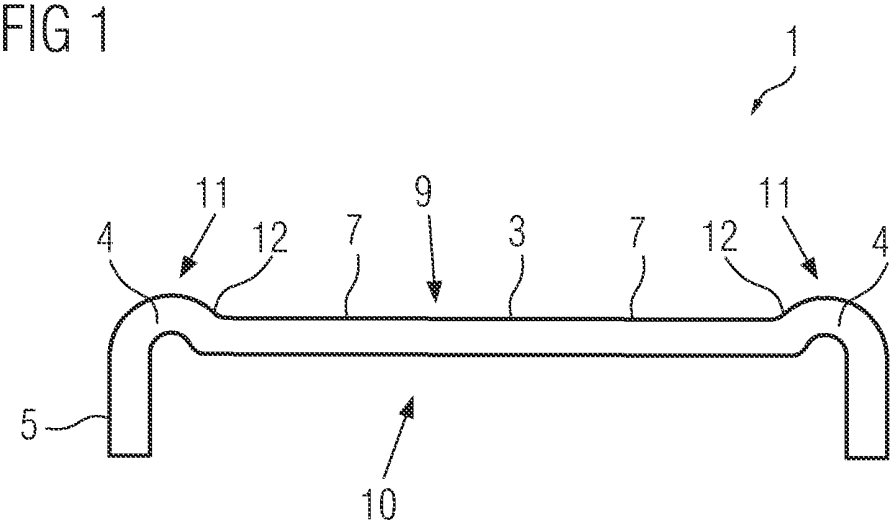
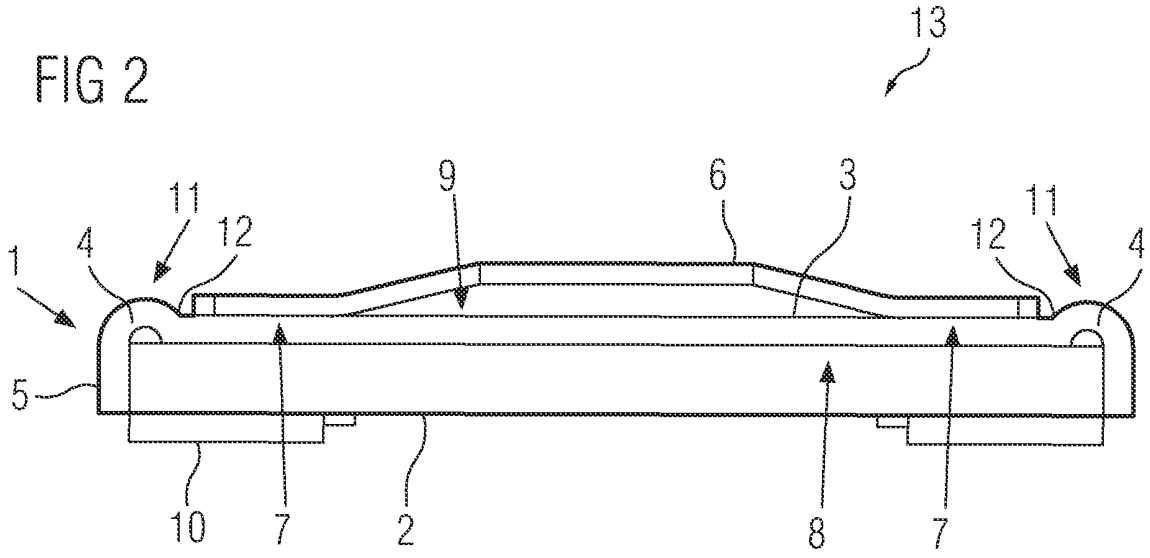


FIG 2



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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