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(54) **HOUSEHOLD SWITCH**

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INTERRUPTEUR A USAGE DOMESTIQUE

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Description

[0001] The present invention is related to a household switch having a tilter connected to a key-button and an adjoining element creating circuit way, whereas a projection is placed in the connecting element, the projection being connected to the tilter and changing the position of an actuated element interrupting/closing said circuit way by its axial rotation.

[0002] In the case of most common types of household switches applied in households for turning on the lighting and other switching purposes used key-buttons rigidly connected to a tilter having the function of enabling the closing of contact-elements and establish the circuit way by means of an element actuating by a projection. Such switches are made by the German firm Gira. The switch provided with a key-button with axial rotation around one axis is a simply structured one, being well producible in a very high rate quantity production having low costs. But the fast jamming and disconnecting of contact elements either by means of a spring element or directly by the tilter is an essential requirement, otherwise an electric arc should be formed in the moment of closing/interrupting the circuit way, damaging intensively the metallic parts. The switches having a key-button are anaesthetic, especially having more than a single button to close/interrupt many circuit-ways leading to a chandelier, for instance, since in most cases the key-buttons give a chaotic general aspect.

[0003] In that prior art there are push-button switches elaborated to avoid the aesthetic disadvantages (IMPULS switches of the firm Busch-Jaeger, Schalksmühle, Germany). The push-button type switches dose mechanically the appointed circuit for the first pushing action and interrupt it for the second one. This solution has an advantage, namely that the push-button is in the same position in both the off-position and on-position, but the actual state of the switch is not assignable by a simple glance at it and installation of a relatively complicated reversing mechanism is required to obtain the bidirectional actuating, resulting the increasing of the costs.

[0004] Both types of said switches have also the same disadvantage, namely they could be used with a uniform connecting element only. The metallic elements required to the closing/interrupting of the circuit as well as the projection integrated to the tilter and actuating the metallic elements could be found in the connecting element. This limiting of availability is resulted from the fact, that the outer parts generally made of plastic are secured to the actuating part by means of form-fitting or forced coupling formed by strictly calculated elements with specified tolerance, i.e. the form of the contacting element and the actuating element is determinant as far as the structure of the cover concerned. This fact is non-favourable especially for the small manufacturers, since if they switch over to an other type of contacting element their characteristically own -planned cover could not be

used with an other type of contacting element. This is a disadvantage also in the case of bigger companies, since the changing of the cover is impossible without changing of the own-planned connecting element

[0005] Moreover, a further disadvantage of variants of known key-button switches is that about the fast switching the movement of the filter accelerates in the moment of tilting over the dead-point, since the tilter connected to the key-button moves together with the latter and so the tilter pulls on the key-button, which can be struck at the fixed parts of the cover, bringing an uncomfortable click to pass.

[0006] The object of the present invention is to provide a household switch having no disadvantages mentioned above. We have found this object can be obtained enabling the independent movements of the tilter and the key-button, namely the movement of the tilter follows the movement of the key-button without that it would be the absolute consequence of the movement of the key-button. According to this recognition our task is to provide a noiseless household switch having numerous variants to produce and well fitted to use with any existing variants of connecting elements, furthermore, the switch according to the present invention gives a uniform general aspect in the on- and off-position both alike, but the actual position of the switch should be recognised immediately at any time. The switch should be produced at a low cost and it should have a simple construction.

[0007] In accordance to the object of the invention is provided a household switch having a tilter fitted to a first key-button and a contacting element creating circuit way, and a projection changing the position of an actuated element closing/interrupting circuit way by means of its rotation around an axle, and the projection being connected to the tilter and placed in the contacting element, and said first key-button is supported by the tilter and guided around an axis in a rotatable manner independently of the tilter, and opposite of said first key-button a second key-button is placed, the latter being movable around an axis in a rotatable manner relatively to the first key-button, and the rotation of said tilter around said axle is limited, as occasion requires, by means of said second key-button.

[0008] In a further embodiment of household switch said tilter is supported by means of a spring being on the housing of said contacting element, and said tilter is formed with a flange securing said spring.

[0009] A further preferred embodiment of the household switch contains several first key-buttons and second key-buttons arranged two abreast in parallel lines, and the first key-button and the second key-button are arranged in opposite sides of a guiding bridge.

[0010] In an other preferred embodiment of the present invention a groove is formed in said guiding bridge, the shape of said groove being befitted a guiding member of said first key-button and/or said second key-button, said first key-button and said second key-button are fitted to one or more supporting spring(s).

[0011] These and other features of the present invention will be more particularly understood from the following detailed description and drawing. In the drawing the

- Figure 1.** is a front view of a preferred embodiment of the switch according to the present invention,
- Figure 2.** is a cross-section of the household switch taken along the line II-II in the Figure 1., one of the key-buttons being in depressed (lower) position,
- Figure 3.** is a cross-section of the household switch taken along the line II-II in the Figure 1, both key-buttons being in upper position,
- Figure 4.** is a front view of an other preferred embodiment of the switch according to the present invention,
- Figure 5.** is a cross-section of the household switch taken along the line IV-IV in the Figure 4., one of the key-buttons being in depressed (lower) position, and
- Figure 6.** is a cross-section of the household switch taken along the line IV-IV in the Figure 4., both key-buttons being in upper position.

[0012] The different embodiments of the household switch according to the present invention have similar front views in the Figure 1., 4. Figure 1. shows an 'alternative' household switch, which is able to create either one or two circuit way (closing/interrupting) and it contains a connecting element 8 connected to structural elements clamped by means of a cover 5 placed inside of a frame 4 and guided positively accordingly to the necessity. The structure of connecting element 8 is known in itself and connected to a tilter 7, which can be tilted over into two positions and can be secured at this two different positions under the frame 5 by means of resilient effect of parts of connecting element 8 detailed below. Inside the cover 5 secured by means of frame 4 there is, in one or more pairs, a first key-button 1 and a second key-button 2 each connected to one or more support springs 6 and being movable independently of each other. In a preferred embodiment, the first key-button 1 and the second key-button 2 are divided from each other by means of a guiding bridge 3 having a surface or a groove 18 guiding the adequate surfaces of first key-button 1 and second key-button 2 (Figures 3. and 6.). A guiding element 19 of the first key-button 1 and/or the second key-button 2 is movable in the groove 18 (Figures 2., 3., 5. and 6.).

[0013] According to the present invention, the tilter 7 is rotatable, at a limited range, around an axle 14. The tilter 7 is formed as a rectangle, although other forms also can be selected, such as forms defined by one or more rounded or curved circumscriptions. The axle 14 is out of any geometrical axis of the cross-section of the tilter 7, i.e. not being in the point of intersection of diagonals of the cross-section of rectangle. The key-button

1 is supported at all times by the tilter 7 struck at the key-button 2 in the switched over position only, if this will be required, and in the case of depression the key-button 2 the tilter 7 will be struck at the lower surface of key-button 1, respectively.

[0014] The connecting element 8 is coupled to the cover 5 and to the frame 4 and provided with a housing 9 containing a projection 10 guided therethrough. The projection 10 is a part of the tilter 7 and generally provided with a projecting end moving along a rounded path during the tilting over action of the tilter 7. The projection 10 rotates along the surface of actuated element 11 pushed to the surface of support member 15, enabling to couple a pair of contacts 13 and slugs 12, thus creating a circuit way. The structure of contacting element 8 does not appertain to the object of the present invention, it will be constructed according to a plenty of known solutions.

[0015] The household switch according to the invention can be produced in many variants. Figures 1.-3. show a preferred embodiment of 'alternative' switch, which can be placed into one or more circuit way. Figures 4.-6. show a quick-break switch, as well as a door bell actuating array having a tilter 7 provided with a flange 17 securing a spring 16 bearing on the housing 9. The tilter 7 can be tilted back from the position of closing the circuit way by means of a spring 16, thus the closing/interrupting of the circuit way will only be obtained during the pressing time of key-button 1. The spring 16 can be supported to any surface being independent of the movement of the tilter 7, i.e. for example, to the surface of a member of the cover 5 securing contacting element 8.

[0016] The household switch according to the present invention will be actuated by means of a rotating projection 10, substantially as in the case of known switches of the prior art. But this rotation is enabled by means of a tilter 7 having a position rotatable together either with the key-button 1 or the key-button 2 around the axle 14, instead of use a tilter 7 rigidly connected to a single key-button. The limits of the rotation are determined by the upper surface (according to the drawing) of housing 9 and the lower level of the key-buttons 1,2, having an alternatively formed stop-piece, respectively, but these limits can be determined by calculating of the opening formed in the housing 9 and receiving the projection 10.

[0017] In the case of the household switch according to the present invention, the arrangement of outer parts rendered to close/interrupt the circuit way is not determined by the construction of the contacting element 8, thus during the planning will be enough to consider the height of the contacting element 8 being in home position. The contacting element 8 has no close contact to the key-button 1, consequently does not occur any impact, thus the switching noise will be decreased. All the first key-buttons 1 can be switched back to an upper position by means of springs, and touching the key-button, because of the sloped position of the tilter 7, it is easy

to detect in which position the latter is. Further advantage of the household switch according to the present invention is that it is producible by means of conventional equipment and at a low cost, moreover, it provides esthetical advantages being very important in the marketing.

Claims

1. Household switch having a tilter (7) fitted to a first key-button (1) and a contacting element (8) creating circuit way, and a projection (10) changing the position of an actuated element (11) closing/interrupting circuit way by means of its rotation around an axle (14), and the projection (10) being connected to the tilter (7) and placed in the contacting element (8), **characterised in that**, said first key-button (1) is supported by the tilter (7) and guided around an axis in a rotatable manner independently of the tilter (7), and opposite of said first key-button (1) a second key-button (2) is placed, the latter being movable around an axis in a rotatable manner relatively to the first key-button (1), and the rotation of said tilter (7) around said axle (14) is limited, as occasion requires, by means of said second key-button (2).
2. Household switch according to the 1. claim, **characterised in that**, said tilter (7) is supported by means of a spring (16) being on the housing (9) of said contacting element (8).
3. Household switch according to the 2. claim, **characterised in that**, said tilter (7) is formed with a flange (17) securing said spring (16).
4. Household switch according to any preceding claims, **characterised in that**, it contains several first key-buttons (1) and second key-buttons (2) arranged two abreast in parallel lines.
5. Household switch according to the 1.-4. claims, **characterised in that**, it contains a first key-button (1) and a second key-button (2) arranged in opposite sides of a guiding bridge (3).
6. Household switch according to the 5. claim, **characterised in that**, a groove (18) is formed in said guiding bridge (3), the shape of said groove (18) being befitted a guiding member of said first key-button (1) and/or said second key-button (2).
7. Household switch according to any preceding claims, **characterised in that**, said first key-button (1) and said second key-button (2) are fitted to one or more supporting spring(s) (6).

Patentansprüche

1. Haushaltsschalter, aufweisend ein Kippteil (7), das an einem ersten Tastenknopf (1) angebracht ist, und ein Kontaktier-Teil (8), das einen Strompfad erzeugt, und einen Vorsprung (10), der die Stellung eines betätigten Teils (11) verändert, das durch seine Rotation um eine Achse (14) den Strompfad schließt/unterbricht, wobei der Vorsprung (10) an das Kippteil (7) gekuppelt und in dem Kontaktier-Teil (8) angeordnet ist, **dadurch gekennzeichnet, dass** der erste Tastenknopf (1) vom Kippteil (7) getragen wird und um eine Achse schwenkbar von dem Kippteil (7) unabhängig geführt ist, und dem ersten Tastenknopf (1) gegenüberliegend ein zweiter Tastenknopf (2) angeordnet ist, wobei der letztere relativ zum ersten Tastenknopf (1) um eine Achse schwenkbar bewegbar ist, und wobei die Rotation des Kippteils (7) um die Achse (14) den Umstände gemäß vom zweiten Tastenknopf (2) begrenzt ist.
2. Haushaltsschalter gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Kippteil (7) von einer Feder (16) abgestützt ist, die an dem Gehäuse (9) des Kontaktier-Teils (8) ist.
3. Haushaltsschalter gemäß Anspruch 2, **dadurch gekennzeichnet, dass** das Kippteil (7) mit einem Anschlussstück (17) ausgebildet ist, an dem die Feder (16) befestigt ist.
4. Haushaltsschalter gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er mehrere erste Tastenknöpfe (1) und zweite Tastenknöpfe (2) enthält, die beide nebeneinander in parallelen Linien angeordnet sind.
5. Haushaltsschalter gemäß einem der Ansprüche 1-4, **dadurch gekennzeichnet, dass** er einen ersten Tastenknopf (1) und einen zweiten Tastenknopf (2) enthält, die an gegenüberliegenden Seiten einer Führungsbrücke (3) angeordnet sind.
6. Haushaltsschalter gemäß Anspruch 5, **dadurch gekennzeichnet, dass** eine Nut (18) in der Führungsbrücke (3) ausgebildet ist, wobei die Gestalt der Nut (18) einem Führungsteil des ersten Tastenknopfs (1) und/oder des zweiten Tastenknopfs (2) angepasst ist.
7. Haushaltsschalter gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste Tastenknopf (1) und der zweite Tastenknopf (2) an einer oder mehreren Tragfeder(n) (6) angebracht sind.

Revendications

1. Interrupteur à usage domestique ayant un culbuteur (7) ajusté à une première touche (1) et un élément de contact (8) créant un chemin de circuit, et une saillie (10) changeant la position d'un élément actionné (11) fermant/interrompant le chemin de circuit au moyen de sa rotation autour d'un axe (14), et la saillie (10) étant connectée au culbuteur (7) et placée dans l'élément de contact (8), **caractérisé en ce que**, ladite première touche (1) est supportée par le culbuteur (7) et guidée autour d'un axe de façon rotative indépendamment du culbuteur (7), et opposée à ladite première touche (1) une deuxième touche (2) est placée, cette dernière étant mobile autour d'un axe de façon rotative par rapport à la première touche (1), et la rotation dudit culbuteur (7) autour dudit axe (14) est limitée, si nécessaire, au moyen de ladite deuxième touche (2).

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2. Interrupteur à usage domestique selon la revendication 1, **caractérisé en ce que**, ledit culbuteur (7) est supporté au moyen d'un ressort (16) étant sur le logement (9) dudit élément de contact (8).

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3. Interrupteur à usage domestique selon la revendication 2, **caractérisé en ce que**, ledit culbuteur (7) est formé avec un épaulement (17) fixant ledit ressort (16).

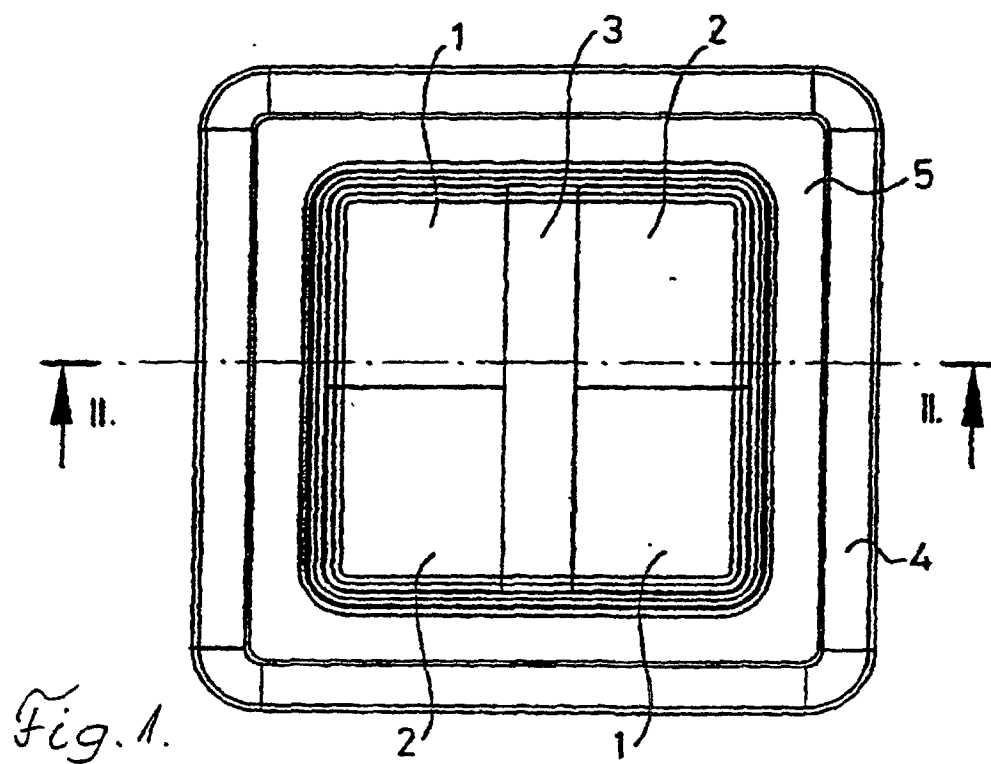
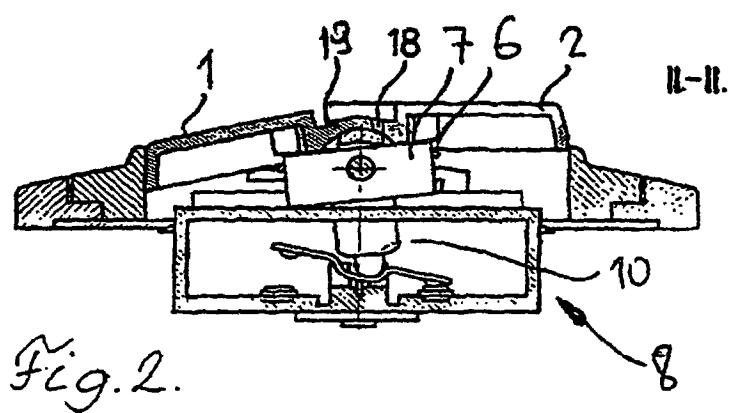
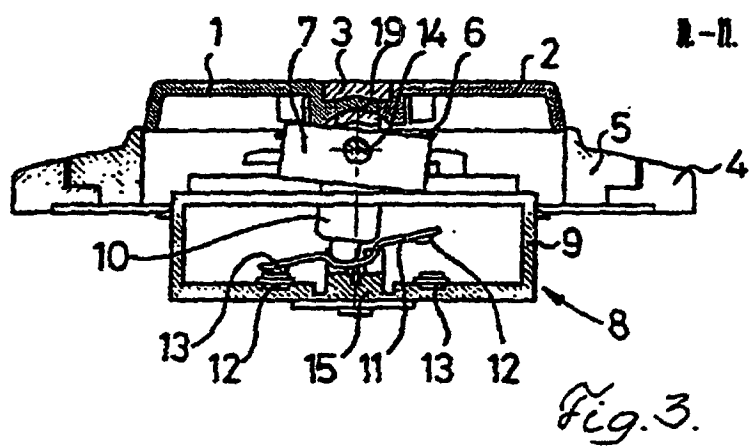
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4. Interrupteur à usage domestique selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, il contient plusieurs premières touches (1) et deuxièmes touches (2) disposées côte à côte en lignes parallèles.

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5. Interrupteur à usage domestique selon les revendications 1 à 4, **caractérisé en ce que**, il contient une première touche (1) et une deuxième touche (2) disposées de part et d'autre d'un pont de guidage (3).

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6. Interrupteur à usage domestique selon la revendication 5, **caractérisé en ce que**, une rainure (18) est formée dans ledit pont de guidage (3), la forme de ladite rainure (18) étant adaptée en tant qu'élément de guidage de ladite première touche (1) et/ou ladite deuxième touche (2).

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7. Interrupteur à usage domestique selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, ladite première touche (1) et ladite deuxième touche (2) sont ajustées à un ou plusieurs ressort(s) de soutien (6).

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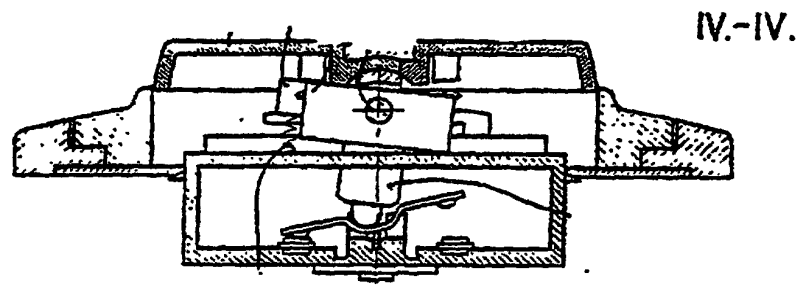


Fig. 6.

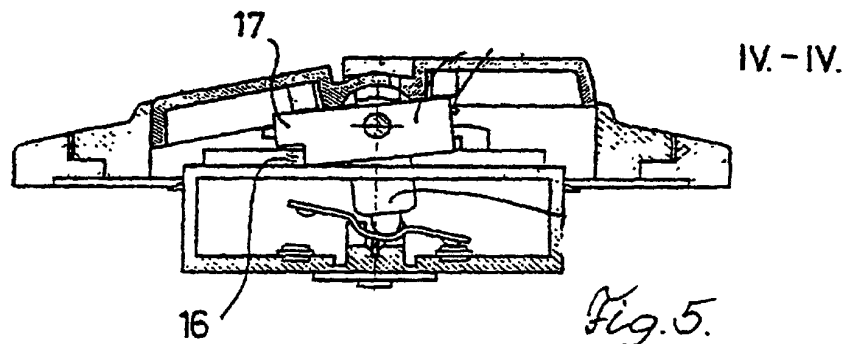


Fig. 5.

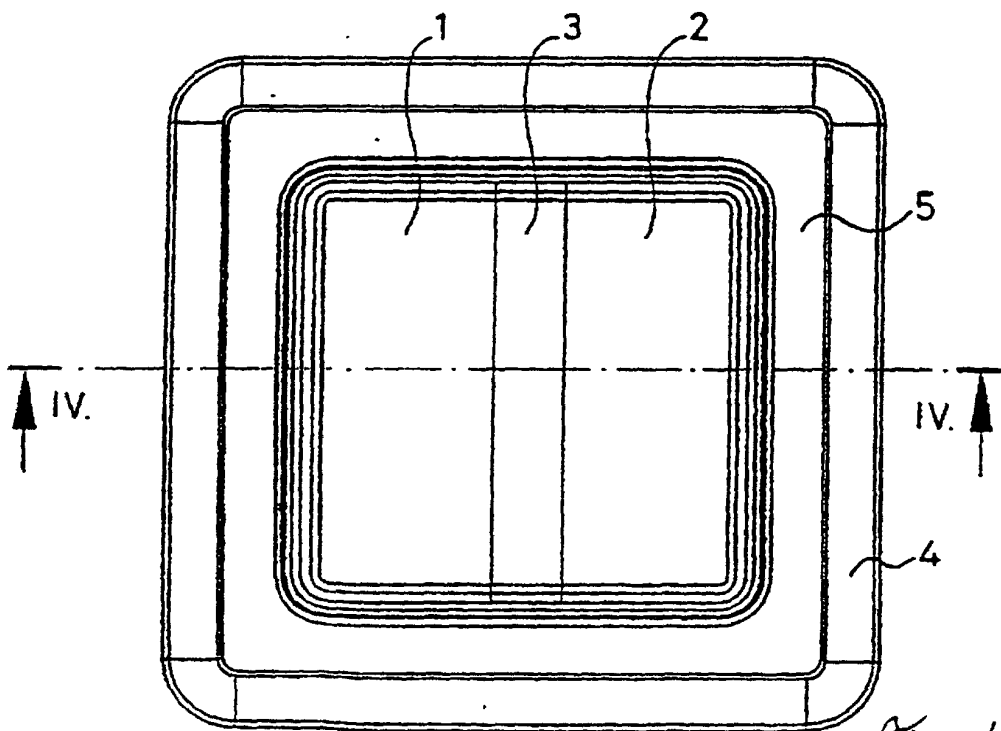


Fig. 4.