



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.06.2012 Bulletin 2012/26

(51) Int Cl.:
H01H 23/14 (2006.01) H02G 3/14 (2006.01)

(21) Application number: **10197092.9**

(22) Date of filing: **27.12.2010**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventor: **Sayman, Mehmet**
35620 Izmir (TR)

(74) Representative: **Iskender, Ibrahim**
Destek Patent Inc.
Tophane Ortapazar Cad. No. 7
Zindankapi Sk. No :10
16040 Bursa (TR)

(71) Applicant: **Schneider Elektrik Sanayi Ve Ticaret Anonim Sirketi**
35730 Izmir (TR)

(54) **Electrical switch with compensating feature**

(57) The invention relates to an electrical switch for residential and commercial applications. It is comprised of a switch insert (10) and a frame and rocker (20,30) sub-assembly comprising a frame (20), rocker(s) (30) and a rocker adapter (21). A rocker adapter (21) is snap-fit onto the centre of the frame (20) opening. A rocker (30) or double rockers (30) are assembled with snap-fit means (31) onto the pins (22) on the rocker adapter (21), thereby allowing the rocker (30) to centre itself to the frame (20) opening and rock back and forth on the rocker adapter (21) pin (22) axis. When the frame and rocker (20,30) sub-assembly is assembled on the switch insert (10), the flanges of the frame (23) and the rocker adapter tabs (41) slide over the primary tabs (14) with teeth and the secondary tabs (37) on the insert adapter (15) of the switch insert (10). The frame and rocker (20,30) sub-assembly is capable of movement in 6 axis over the insert (10). The additional 3 axis of movement allows the spacing and orientation between the gang-frame (26) and multi-switch insert (10) installations easy, trouble-free and time-saving; Furthermore, this switch design allows the frame (20) or gang-frame (26) to align itself to uneven wall surfaces (40) thereby eliminating any separation between the frame (20) or gang-frame (26) and the wall (40).

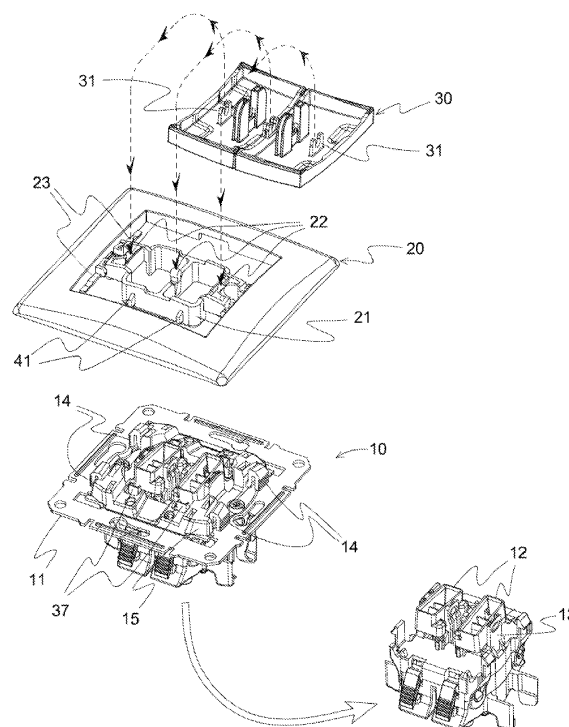


Figure 1

Description

The Related Art

[0001] The invention relates to an electrical switch for residential and commercial applications.

[0002] The invention particularly relates to an electrical switch design which allows the surface components of the electrical switch comprising a rocker, a frame and a rocker adapter, to make compensation to misaligned and off-centre switch inserts in gang-frame applications. Furthermore, the design also allows switches to be installed on uneven wall surfaces.

The Prior Art

[0003] Nowadays, among the electrical light switches used, there isn't an electrical light switch with compensating feature for misaligned and off-centre switch inserts in gang-frame applications.

[0004] Based on the research on existing patents about electrical switches, there are some improvements to make wall installation easy.

[0005] Electrical switches for homes and businesses are commonly installed into flush mounted switch boxes (32) in the wall. During the wall installation of the boxes, first the electrical wires (33) are carried into each switch box (32) from inside the wall. In multi-switch gang-frame applications (Fig. 2c), the boxes (32) are joined together by snapfits (35) on mating members (36). The switch boxes are placed into an opening in the wall slightly larger than the boxes. Then they are made flush with the wall surface and fixed in place with plaster (Fig. 2a). A single or more than one switch can be installed in one location on the wall. In multi-switch installations, switch boxes (32) need to be spaced 71 mm apart (Fig. 2c) and placed in line either horizontally or vertically. In wall installations it is more common see inserts being fixed by using the insert fixing screws (24) rather than the insert fixing claws (25). When the inserts are fixed using insert fixing screws (24), the insert is centred to the box; therefore, 71 mm spacing requirement of the boxes is more critical because the spacing of the inserts are dependant on the centre spacing of the boxes. The gang-frame (26) can have 2 to 6 openings. When the switch boxes (32) in the wall are ready, electrical wires inside the boxes are connected to the insert terminals (Fig.2a). The switch inserts are then placed inside the boxes and held in place on the wall by either Insert fixing screws (24) or insert fixing claws (25). The insert centres have to be 71 mm apart just like the switch boxes (32) to line-up with the gang-frame opening centres. The surface components of the switch comprising the gang-frame (26), rockers (30) and rocker adapters (21) are assembled over the inserts. This final step completes the installation of switches. In gang-frame installations, It was observed that it was difficult and time-consuming the perfectly align the inserts at 71 mm centres. This was due to several factors:

- The plastic boxes were not spaced 71 mm apart or not installed in a straight line due to faulty installation or poor quality switch boxes available in the market.

5 - The wires in the back of the switch were rigid and acted like a spring inside the box by trying to push the insert out. Holding the insert inside the box against this resistance with one hand while trying to screw the insert to the box made the centring and lining of the inserts difficult.

10 - Using the insert fixing claws (25) to centre the inserts to the gang-frame was not reliable and difficult.

15 **[0006]** Due to the above mentioned reasons, the inserts were mostly off centre by 1mm to 2mm or more in the horizontal direction (x-axis), vertical direction (y axis) or in the direction normal to the wall (z-axis). The inserts were sometimes rotated around the z-axis (Fig. 4). At other times the switch box edge protruded above the wall surface. With the boxes installed on the wall this way, If the gang-frame and the rockers were installed over these off-centre inserts, then an interference occurred between the rockers and the gang-frame when switching the rocker on and off. The friction between the two components caused unacceptable squeaking sounds in switches and sometimes caused a malfunction by failing to open and close the electrical circuit; Furthermore, due to wall imperfections or protrusion of the edge of the switch box above the wall surface, there was a gap between the insert fixing plate (11) and the wall. This consequently caused a gap between the gang-frame and the wall in the state-of-the-art switches.

20 **[0007]** One way to correct the above mentioned problems is to have the inserts carefully assembled into these mis-aligned boxes. Since the boxes are not properly aligned, the insert fixing screws (24) can not be used as explained above and the insert fixing claws (25) have to be used to align and fix the insert on the wall. So aligning the inserts, with the fixing plates butted edge-to-edge at 71 mm spacing will be difficult and very time-consuming under such conditions.

25 **[0008]** In multi-switch gang-frame applications, we have seen that installing the switch inserts (10) inside the switch boxes (32) and properly centering them to the gang-frame opening centres were difficult and time-consuming. If the inserts were installed off-centre by a couple of millimetres, this sometimes caused serious problems with the operation of the switch in the state of the art switches. Furthermore, when the switches were installed on uneven walls, it was common to encounter separations between the frame and the wall, if the frame could not be adjusted to make full contact with the uneven wall surface. Visually this separation was not pleasing to the eye.

30 **[0009]** In prior art, it could be seen that there are several methods used to install the surface components comprising the frame, rocker and the adapter to the

switch insert on the wall.

- SNAP-FIT, SINGLE-TOOTH (Fig. 2a, 16): The frame and rocker are held on the wall by an adapter. The adapter has four large single plastic tooth which slide over a rounded edge on the fixing plate or the insert and it snap-fits into place. Sometimes the plastic adapter or the frame may have a clip-like metal spring beneath it instead of a plastic tooth, allowing it to snap into an opening in the insert or the fixing plate. The advantages of this design are that the frame and rockers can adjust to uneven walls to a certain degree and the installation and removal of frame and rockers are very easy. The disadvantages are that the insert allows the frame and rockers to move in 3 axis only. With no movement in x, y axis and rotation about the z axis, this makes wall assembly of multi-switch inserts with gang-frame difficult. Also the effective travel distance in the z-axis is small for uneven wall surface applications and therefore the switch may fail to function if there is considerable wall unevenness.
- SNAP-FIT, MULTIPLE-TEETH (Fig. 2b, 17): Frame and rockers are held against the wall by an adapter with 4 tabs having rows of teeth with small pitch beneath it that grip onto edges on the switch insert or fixing plate. The tabs with rows of teeth can sometimes be on the underside of the frame. The advantage of this design is that the frame and rockers can adjust themselves to uneven walls. The disadvantages are that the movement of the frame and rockers are limited to 3 axis only, making wall assembly of the gang-frame switch difficult..
- TIGHT FIT (Fig. 2c, 18): The frame and rockers are held against the wall by an adapter. The adapter can have two or more round or square bosses that squeeze-fit into openings or edges in the switch insert. The advantage of this design is that the frame and rockers can adjust itself to uneven walls to some degree and also it makes the installation and removal of the frame and rockers easy. The disadvantages are that the movement of the frame and rockers are limited to 3 axis only, making multi-switch gang-frame installations difficult and time-consuming. Furthermore, the tight-fit method is not suitable for uneven surfaces as the bosses may slip out on uneven wall surfaces.
- SLIDE FIT (Fig. 2c, 19): Frame and rockers are held against the wall by flanges on the frame which tightly slide-fit onto 4 flexible tabs on the switch insert adapter. The advantages and disadvantages are the same as the tight-fit method explained above.
- FASTENING : Occasionally fastening screws are used to directly install the frame to the insert or the metal fixing plate. The advantage of this design is

that it is a simple and effective way to install the frame and rockers on the wall. The disadvantages are that the movement of the frame and rockers is limited to 3 axis only, making multi-switch gang-frame installations difficult and time-consuming. The installation of the frame and rockers takes time. It is easy to drop and lose one or both of the screws during assembly; Furthermore, the screws are visible on the surface of the cover plate and this diminishes the surface design of the switch.

[0010] In most of the switches that are used in prior art, the frame and rockers are designed for easy installation, requiring no screws. Almost all of the switches that are used in prior art allow the frame and rockers to move about the insert in z, zx and zy axis, giving it a movement in total of 3 axis. This is useful for single-insert assemblies in uneven wall surface applications; but, as mentioned above, these designs have certain disadvantages in single switch applications. In the application of multi-switch assemblies, the disadvantages become more apparent. In multiple-switch gang-frame applications all of the competitor's products require each switch insert to be spaced and aligned precisely to the gang-frame opening centres. This careful spacing and alignment of the inserts makes the installation difficult and time-consuming for the installer. Furthermore, if the spacing or orientation of one of the insert is off, the gang-frame may not install properly over the multi-switch inserts, an interference may appear between the rocker and the frame, or worse, one or more of the switches may malfunction from failure to open and close the electrical circuit due to improper installation.

[0011] As a result, the presence of the need for an insert design which eliminates the disadvantages of the structures used according to the state of the art and the inadequacy of the existing solutions have made it necessary to provide an improvement in the relevant art.

Purpose of the Invention

[0012] Based on the prior art, the invention aims to solve the existing problems mentioned above.

[0013] The invention relates to an electrical switch design which allows the surface components, comprising a rocker, a frame and a rocker adapter, to make compensation to misaligned and off-centre switch inserts in gang-frame applications. Furthermore, the design also allows switches to be installed on uneven wall surfaces.

[0014] The new switch design solves these problems by making compensation for off-centred and misaligned inserts and by making compensation for uneven wall surfaces. The installer is now more free to install the inserts without paying too much attention to precise positioning and alignment of the inserts. The insert mechanism can tolerate inserts to be installed off-centre by 1.5mm (a total of 3mm offset), and tolerate misalignment or rotation about the z-axis by 2 degrees (a total of 4 degrees of rotation). The frame with rockers can be installed over

these inserts and the switch will function without any problems. Furthermore, the design will tolerate uneven walls, in other words, allow a gradual concave or convex surface on the wall up to 4mm and the switch insert design will eliminate any gaps between the frame and the wall, whether it be a single frame or a gang-frame application.

[0015] The invention uses the slide-fit method shown in Fig. 2c, with frame flanges sliding over flexible tabs on the insert adapter but with some exceptions: A rocker adapter is used to assemble the rocker to the single frame or gang-frame. This way the rocker pivots along the x-axis of the adapter pins and is always centred and symmetric to the frame opening and moves with the frame. Four horizontally acting flexible tabs with teeth on the insert adapter, the primary tabs, act like plastic springs by continuously exerting a pressure on the rocker and frame in the x-axis direction as shown in Figure 3a and 3b and hold the frame or gang-frame against the wall while exerting a pressure on the frame flanges in the x-axis direction to centre the frame.

[0016] The four vertically acting flexible tabs on the insert adapter, the secondary tabs, on the other hand exert a pressure on the rocker adapter in the y-axis direction to centre the frame.

[0017] If one of the inserts is off-centre by 1 mm to 2mm with respect to the frame opening centre, the holding pressure is still there to hold the frame in place. The flexible tabs will allow the frame and rockers to move 3mm in x and y-axis directions and 4 mm in the z direction.

[0018] When the switch is turned "ON" or "OFF", the movement of the rocker is transmitted to the insert switching mechanism by the rocker arm. During switching, the rocker arms push on the switch paddle on the insert, which in turn opens and closes the electrical circuit inside the contact housing. In wall assemblies where the inserts are off-centre with respect to the gang-frame, the rocker pivot centre at the pin snap fit changes in the x, y and z-axis directions.

[0019] The switch paddle design is part of the compensating feature of the switch. Like the rocker, the switch paddle pivots 6 degrees each way on pins that slide inside oval grooves in the contact housing cover. In order for the rocker to transmit motion to the switch paddle and consequently to the switching contacts properly:

[0020] In the x-axis direction the openings in the switch paddle where the rocker arms fit has clearances on either side of the rocker arms. This feature allows the rocker movement in the x-axis direction a total of 3mm.

[0021] In the y-axis direction the switch paddle is free to move by a total of 3 millimetres. This is provided by the oval shaped slotted holes for switch paddle pins.

[0022] In the z-axis direction the rocker is free to move also. The rocker arms slide over the actuating arm of the switch paddle without creating any slack or play between the rocker arms and the switch paddle.

[0023] The above mentioned features which allow the frame and rockers to move in 6 axis, make the switch function flawlessly on uneven walls with off-centre in-

serts. The buttons will not jam because the inserts have these allowances.

[0024] The 3 axis movement of the frame and rockers inherent in the invention is also present in some competitor's switches; however, these applications are not robust and all have various disadvantages in one form or another as mentioned above when compared with our electrical switch.

[0025] In addition to that, switch mechanism has an additional 3 axis movement in the x, y and rotation along the z axis, thereby allowing the frame and rockers to move in a total of 6 axis. This feature provides two advantages at the same time :

1- The rocker adapter allows the rocker and frame to move together and make compensation for uneven wall surfaces without changing the symmetry and spacing between the frame and the rocker. The rocker adapter gives greater degrees of freedom of movement when compared with the switches which are used in prior art and enables the switch to function without any problems, even on very uneven walls. For example, the switch can have a 5mm separation between the frame and the wall and the rockers will turn the switch on and off without any problem whatsoever. With the uneven wall compensating feature, the separation between the frame and the wall is minimized or completely eliminated. This works on single insert and single frame applications and multi-switch gang-frame applications.

2- In multi-switch insert applications, even if the insert spacing and/or orientation with respect to each other during installation are slightly off in the x, y axis and rotation along the z axis, the switch will continue to function properly. This unique feature alone allows more tolerance for installer errors, thereby making the assembly easy and time saving for the installer and trouble-free for the consumer.

[0026] The state-of-the-art has a maximum of 3 axis movement in the z axis, z-x axis and the z-y axis. This switch design has a total of 6 axis of movement in the x, y, z, z-x, z-y axis and rotation on z axis. The additional 3 axis of movement built into the design allows more tolerance for misaligned and off-centre inserts, and also allows the frame and rockers to make compensation for uneven wall surfaces, thereby making gang-frames with multi-switch installations easy, trouble-free and time-saving.

[0027] The combination of the compensating feature for misaligned and off-centre switch inserts in multi-switch, gang-frame applications, coupled with the compensating feature for uneven wall surface applications of single and gang-frames is what is very unique to our invention and it is what sets it apart from the prior art.

[0028] The structural and characteristic features and all the advantages of the invention will be more clearly

understood from the figures provided below and the detailed description written with reference to said figures, hence the evaluation must be made taking into consideration these figures and detailed description.

Brief description of the figures

[0029]

Figure - 1; is the representative exploded view of the electrical switch.

Figure - 2a; is the section view of the single-tooth, snap-fitted electrical switch in prior art.

Figure - 2b; is the section view of the snap-fitted, multiple-teeth electrical switch in prior art.

Figure - 2c; is the section view of a typical gang-switch showing the tight-fitted electrical switch on the left side and the snap-fitted, single-tooth electrical switch on the right side in prior art.

Figure - 3a; is the general view of the electrical switch, that shows directions of force exerted by the flexible tabs.

Figure - 3b; is the general view of the electrical switch, that shows directions of force exerted on the frame and rocker adapter.

Figure - 4; is the front section view of the multiple electrical switch which is installed to the wall.

Figure - 5a; is the side section view of the electrical switch which is installed to the wall.

Figure - 5b; is the general representative view of the electrical switch which is installed to the wall.

[0030] Reference numbers

10. Switch insert

11. Fixing plate

12. Switch paddle

13. Contact housing cover

14. Primary tabs

15. Insert adapter

16. Single-tooth snap-fit

17. Multiple-teeth Snap-fit

18. Press-fit

19. Slide-fit

5 20. Frame

21. Rocker adapter

22. Rocker adapter pins

10 23. Frame flanges

24. Insert fixing screws

15 25. Insert fixing claws

26. Gang-frame

30. Rocker

20 31. Pin Snap-fit

32. Switch box

25 33. Electrical wire

34. Insert fixing claw screws

35. Switch Box snap-fit (male and female)

30 36. Mating member

37. Secondary tabs

35 40. Wall surface

41. Rocker adapter tabs

40 A. Directions of pressure

B. Eccentric or unaligned insert

C. Overlapped insert

45 D. Rotated insert

Detailed description of the invention

[0031] The invention particularly relates to an electrical switch design which allows the frame or gang-frame (20) to make compensation for misaligned and off-centre switch inserts in gang-frame applications. Furthermore, the design also allows the frame or gang-frame (20) to align itself to uneven wall surfaces (40) and thereby eliminate any separation between the frame or gang-frame (20, 26) and uneven wall surface (40).

[0032] The invention is about an electrical switch with an adjustable frame (20) and rocker (30), in other words,

a switch frame (20) and rockers (30) with 6-axis of movement.

[0033] The invention relates to an electrical switch for residential and commercial applications. It is comprised of a switch insert (10) and a frame and rocker (20,30) sub-assembly comprising a frame or gang-frame (20,26) and rocker(s) (30). A rocker adapter (21) is snap-fit onto the centre of the frame (20). Rocker (30) or double rockers (30) are assembled with snap-fit pin (31) onto the rocker adapter pins (22) on the rocker adapter (21), thereby allowing the rocker (30) to centre itself to the frame (20) opening and rock back and forth on the adapter (21) pin (22) axis. When the frame (20) and rocker (30) sub-assembly is assembled on the switch insert (10), the flanges of the frame (23) and the rocker adapter tabs (41) slide over the primary tabs (14) and secondary tabs (37) on the insert adapter (15) of the switch insert (10). The frame (20) and rocker (30) sub-assembly is capable of movement in 6 axis over the switch insert(s) (10). This feature allows the frame (20) and rockers (30) to align itself to uneven wall surfaces (40) and thereby eliminate any separation between the frame (20) and the wall on uneven wall surfaces (40). Furthermore, in multi-switch insert (10) applications, the additional 3 axis of movement allows the spacing and orientation between the inserts (10) to be less perfect, thereby making such installations easy, trouble-free and time-saving.

[0034] The invention is an electrical switch with compensating feature, which is used in gang-frame (26) applications and uneven wall surfaces (40), and it is characterized in that it comprises a switch insert (10) which has a fixing plate (11), a switch paddle (12), an insert cover (13), an insert adapter (15) primary tabs (14) and secondary tabs (37) which are positioned on said insert adapter (15), a frame (20) which has a rocker adapter (21) that is snap-fit onto the centre of said frame (20), pins (22) and flanges (23) of the frame (20) which slide over the flexible primary tabs (14) and secondary tabs (37) on the insert adapter (15), rockers (30) which are assembled with snap-fit means (31) onto the pins (22) on the rocker adapter (21). (Fig. 1)

[0035] The rocker adapter (21) which is snap-fit onto the centre of said frame (20), thereby allowing the rocker (30) to centre itself to the frame (20) opening and rock back and forth on the adapter (21) pin (22) axis. When the frame and rocker (20,30) sub-assembly is assembled on the switch insert (10), the flanges of the frame (23) slide over the primary tabs (14) and secondary tabs (37) on the insert adapter (15) of the switch insert (10). The frame and rocker (20,30) sub-assembly is capable of movement in 6 axis over the switch insert (10). This feature allows the frame and rocker (20,30) sub-assembly to align itself to uneven wall surfaces (40) and thereby eliminate any separation between the frame (20) and the wall on uneven wall surfaces (40). Furthermore, in multi-switch insert (10) applications, the additional 3 axis of movement allows the spacing and orientation between the switch inserts (10) to be less perfect, thereby making

such installations easy, trouble-free and time-saving.

[0036] When the frame and rocker (20,30) sub-assembly is installed on the insert adapter (15), the primary tabs (14) and the secondary tabs (37) on the insert adapter (15) of the switch insert (10) as shown in Figure - 3, push on the rocker adapter (21) and the frame (20) to centre the frame and rocker (20,30) sub-assembly to the switch insert (10). The forces acting on the frame and rocker (20,30) sub-assembly are shown by the arrows (A) in Figure - 3. The secondary tabs (37) continuously exert some pressure on the rocker adapter (21) in the y axis direction and the primary tabs (14) on the insert adapter (15) continuously exert pressure on the frame flanges (23). The frame and rocker (20,30) sub-assembly can move in the z axis when an uneven wall surface (40) is encountered. The electrical switch in our invention, allows for x, y, z, xz, yz and rotation on the z-axis as mentioned above.

[0037] The invention, functions as we had expected on very uneven walls (40) and with misaligned and off centre switch inserts (10). Despite all of the offsets and misalignments, the 4 hole gang-frame (26) for example, and the rockers (30) seated without any problems. There was no asymmetry on the surface (40) and all of the switches functioned.

[0038] In Figure 4, there are three switch inserts (10) installed to the wall (40). The middle one (10) is fixed 2 millimetres above from the others in the y-axis. Any of the switch inserts (10) can be fixed eccentric or unaligned within the limits of 2 millimetres to each other (B). As can be seen in Figure 4, fixing plates (11) can be overlapped over one another (C). This situation does not cause any malfunctioning.

[0039] As seen in Figure 4, the invention can compensate for rotational misalignments. The switch insert (10) can be mounted on the wall rotated up to 2 degrees and the switch(es) will function flawlessly. The invention's other advantage over the state-of-art is the flexibility it has in the z-axis. In figure 5a and 5b, there is 5 millimetres of space between the frame (20) or gang-frame (26) and wall surface (40). The mechanism is not effected by the space between the wall surface (40) and the frame or gang-frame (20, 26).

Claims

1. The invention is an electrical switch with compensating feature, which is used in gang-frame (26) applications and uneven wall surfaces (40), and it is **characterized in that** it comprises;

- a switch insert (10) which has a fixing plate (11), a switch paddle (12), a contact housing cover (13), an insert adapter (15) and primary and secondary tabs (14, 37) which are positioned on said insert adapter (15),
- a frame (20) which has a rocker adapter (21),

- that allows the rocker (30) to rotate along the x-axis and move in y axis which is snap-fit onto the center of said frame (20), rocker adapter tabs (41) and flanges (23) of the frame (20) and rocker adapter (21) which slide over the primary and secondary tabs (14, 37) on the insert adapter (15),
 - rockers (30) which are assembled with snap-fit means (31) onto the pins (22) on the rocker adapter (21).
2. An electrical switch with compensating feature according to Claim 1, **characterized in that** said switch insert (10) is the main sub-assembly of the switch for enclosing the switching contacts, for fixing the switch insert (10) to the wall surface (40), for wiring and fixing the frame (20) and rocker (30) in place.
 3. An electrical switch with compensating feature according to Claim 1 and 2, **characterized in that** fixing plate (11) is used to positioned the insert flat against the wall (40).
 4. An electrical switch with compensating feature according to any above claims, **characterized in that** said switch paddle (12) is used to transfer the movement of the rocker (30) to the switching contacts to open and close the electrical circuit.
 5. An electrical switch with compensating feature according to any above claims, **characterized in that** the contact housing cover (13) is used to cover the contact housing of the switch.
 6. An electrical switch with compensating feature according to any above claims, **characterized in that** the primary tabs (14) comprise teeth which exert a force on the frame (20) directly and on the rocker adapter (21) indirectly in the x-axis direction to centre the frame and rocker (20,30) sub-assembly and these tabs (14) also fix the frame (20) or the gang-frame (26) to the wall surface (40).
 7. An electrical switch with compensating feature according to any above claims, **characterized in that** the insert adapter (15), assembles the frame (20) with rocker adapter (21) and the rocker (30) to the switch insert (10) and it (15) is a compensator for off-centre and misaligned inserts.
 8. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises a rocker adapter (21) which is used to assemble the rocker (30) to the frame (20).
 9. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises at least one rocker adapter pins (22) which are used to assemble the rocker (30) to the rocker adapter (21).
 10. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises at least four frame flanges (23) which is used to fix and to align the frame and rocker (20,30) sub-assembly to the switch insert (10).
 11. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises a switch box snap-fit (male and female) (35) which assembles the switch boxes (32) side by side.
 12. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises a switch box (32) which is embedded inside the wall (40) and made flush with the wall (40) to house the electrical wires, to isolate the switch insert (10) and to provide a surface for the switch insert to grip onto.
 13. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises at least one switch box (32) mating member (36) which features on said switch box (32) that hold the snap-fit features and also help to align one switch box (32) to the other one.
 14. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises at least two secondary tabs (37) which are flexible, and that exert a force on the rocker adapter (21) directly and the frame (20) indirectly in the y-axis direction to centre the frame and rocker (20,30) sub-assembly.
 15. An electrical switch with compensating feature according to any above claims, **characterized in that** it comprises at least two rocker adapter tabs (41) which are protrusions acting as pressure points on which force is applied by the secondary tabs (37) in the y-axis direction.

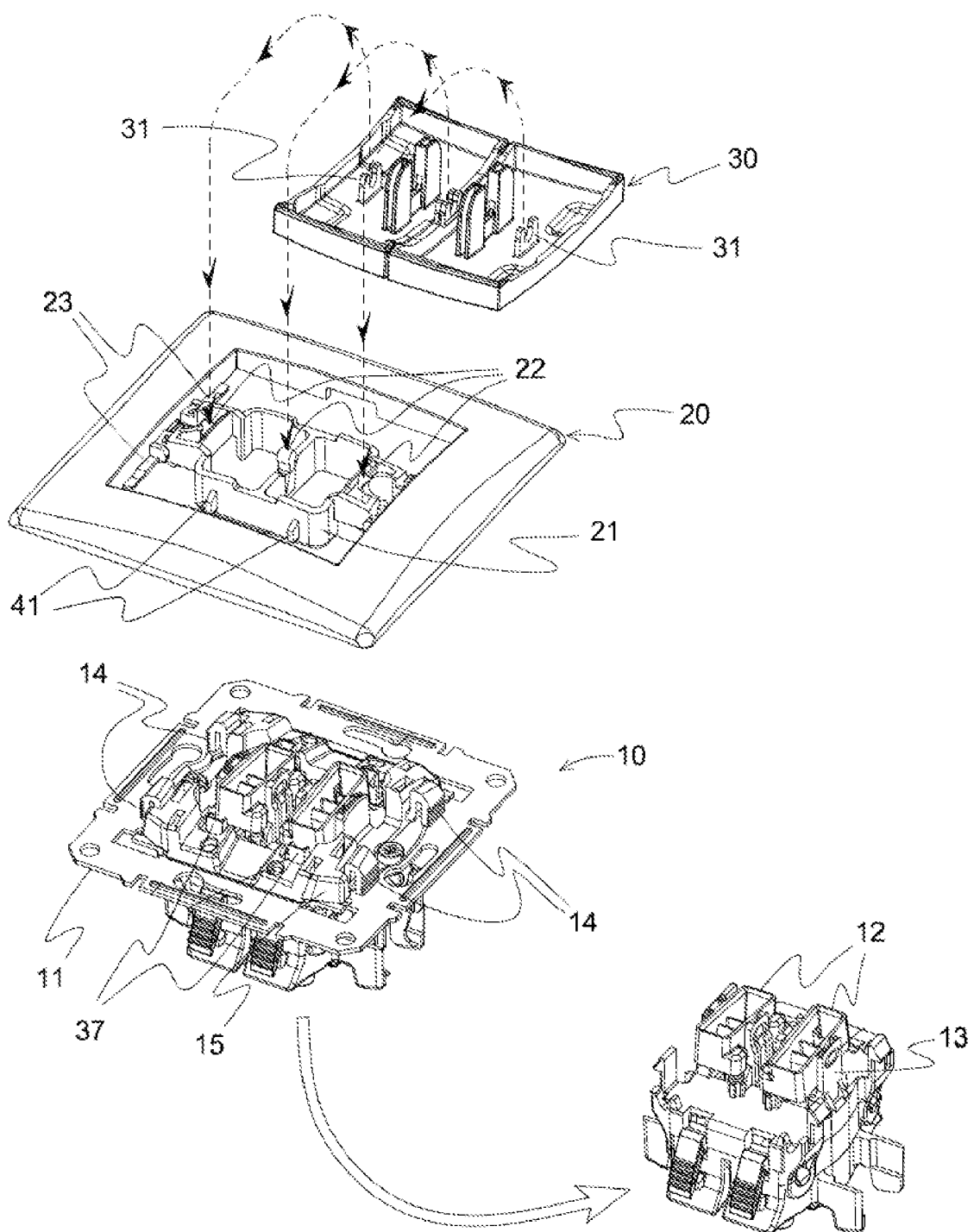


Figure 1

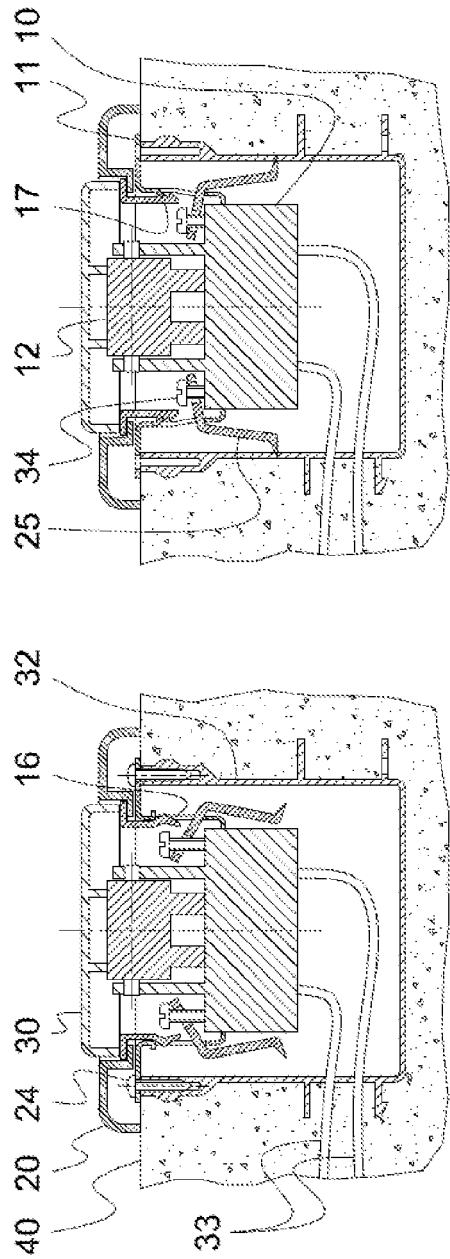


Figure 2a

Figure 2b

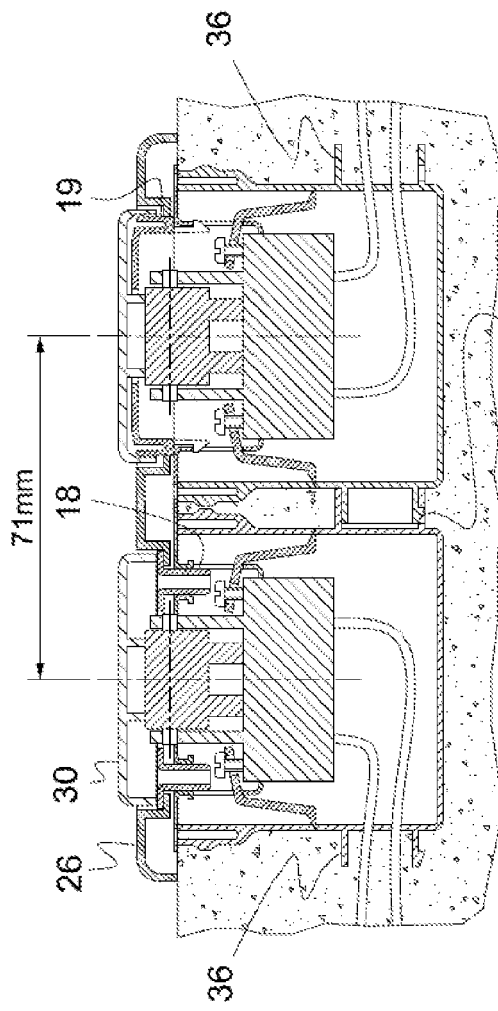


Figure 2c

Figure 2

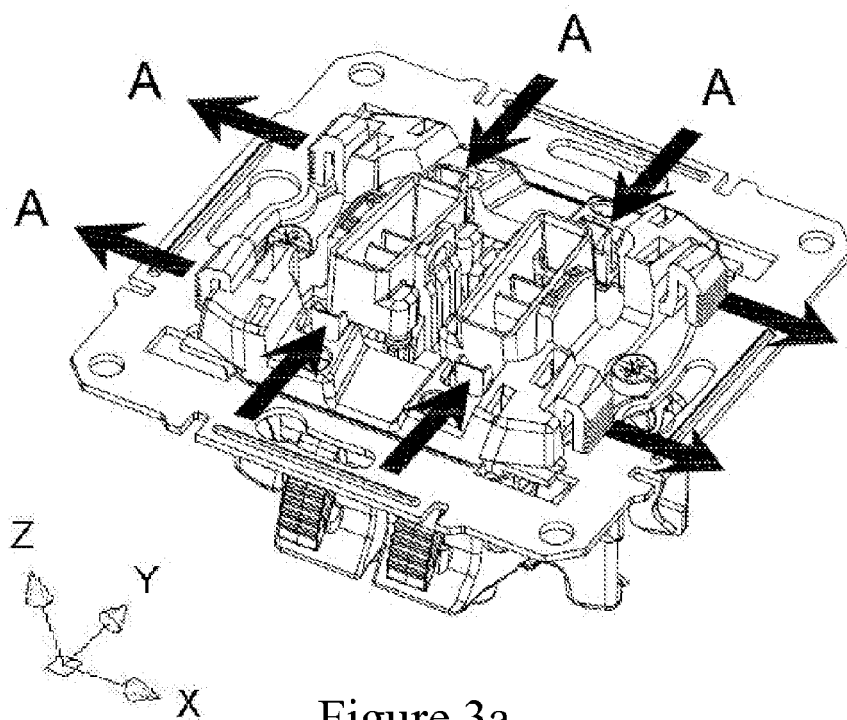


Figure 3a

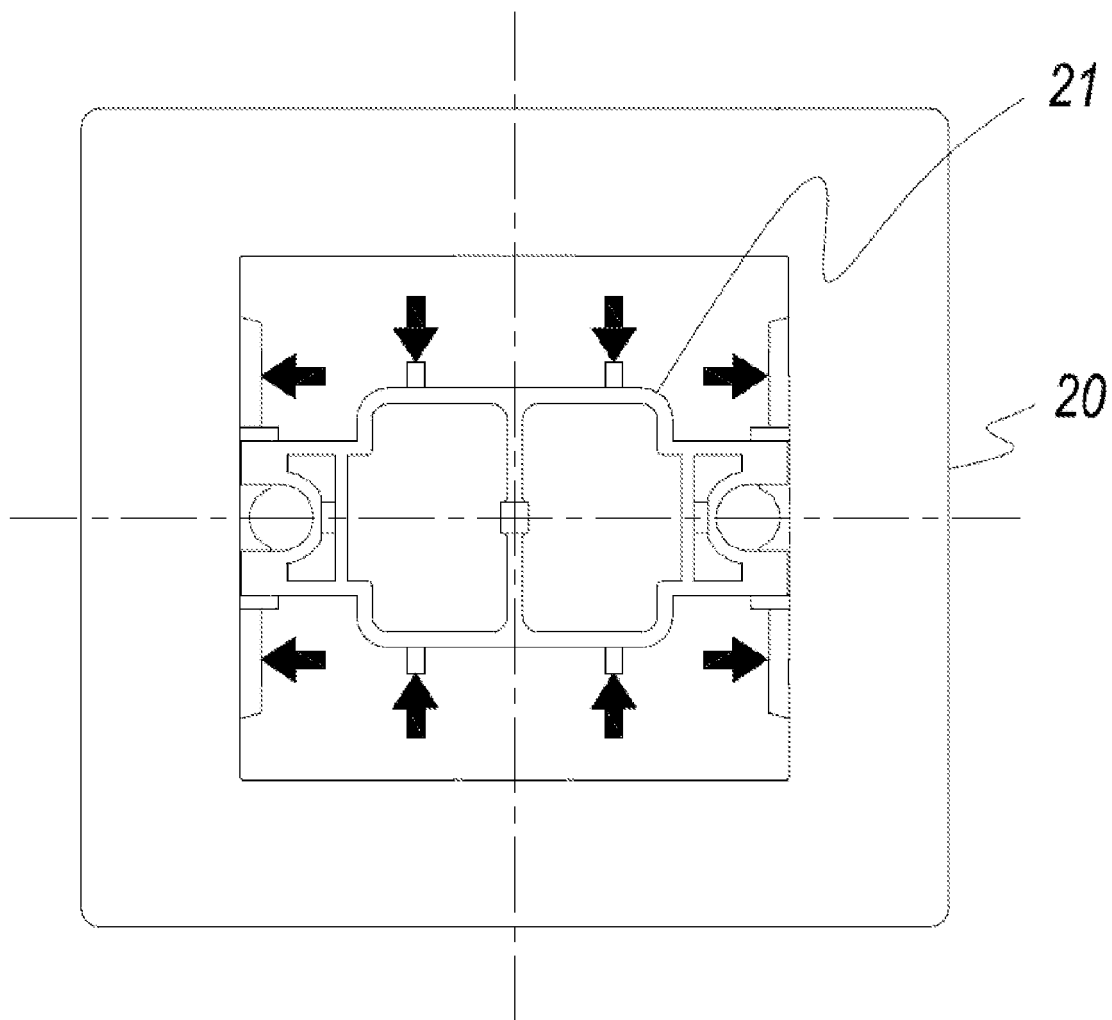


Figure 3b

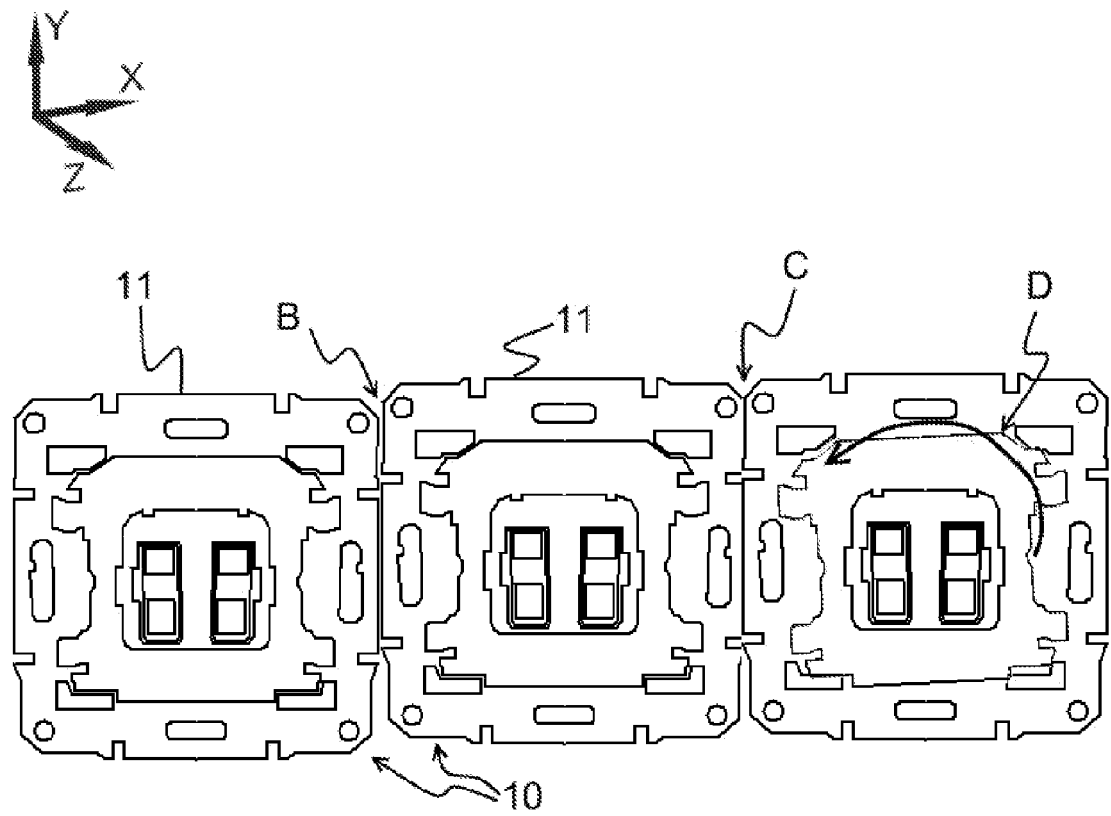


Figure 4

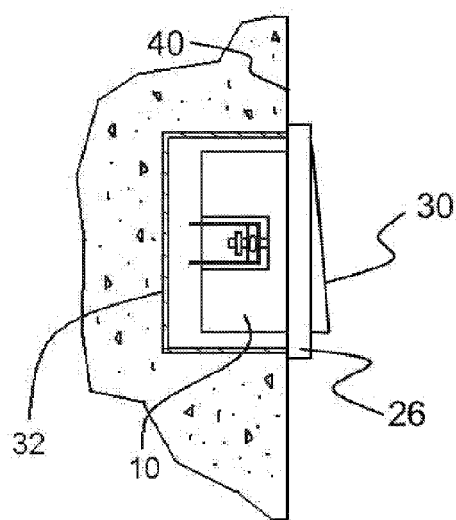


Figure 5a

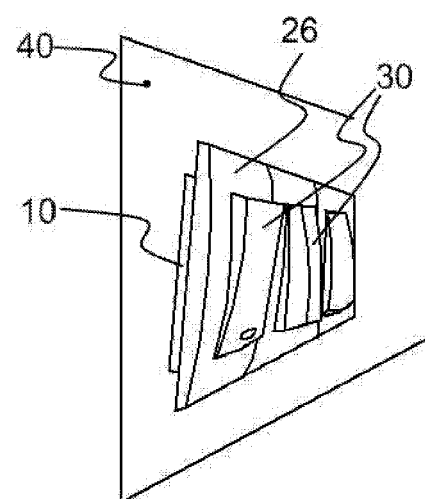
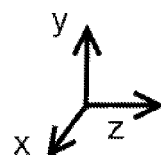


Figure 5b



EUROPEAN SEARCH REPORT

Application Number
EP 10 19 7092

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2004 033462 B3 (BERKER GMBH & CO KG [DE]) 20 October 2005 (2005-10-20) * paragraph [0022] - paragraph [0024]; figures 1-6 *	1-15	INV. H01H23/14 H02G3/14
X	DE 197 45 019 A1 (MERTEN GMBH & CO KG GEB [DE] MERTEN GMBH & CO KG [DE]) 15 April 1999 (1999-04-15) * column 2, line 15 - line 52; figures 1,5 *	1-15	
X	DE 296 18 606 U1 (JUNG GMBH ALBRECHT [DE]) 30 January 1997 (1997-01-30) * figures 1,4 *	1-15	
A	DE 299 01 710 U1 (POPP GMBH & CO KG [DE]) 9 March 2000 (2000-03-09) * figure 1 *	1-15	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			H01H H02G
Place of search		Date of completion of the search	Examiner
Munich		20 April 2011	Dobbs, Harvey
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 19 7092

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-04-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102004033462 B3	20-10-2005	NONE	
DE 19745019 A1	15-04-1999	NONE	
DE 29618606 U1	30-01-1997	NONE	
DE 29901710 U1	09-03-2000	NONE	