

PUSH-PUSH INDICATOR SWITCH

FIELD OF THE DISCLOSURE

[0001] The embodiments of the present utility model relate to the field of switch, and more particularly, to a push-push indicator switch.

BACKGROUND

[0002] For a push-push switch in the prior art, when the button is pressed, the button pushes the drive mechanism to enable the normally open contact and the normally close contact to switch on or off to achieve the switching on or off of the switches. Meanwhile, the drive mechanism of the switch will drive an indicating flag mechanism to switch the color of the flag, thus achieving the current state of the indicator switch. As color switch of the flag requires an indicating flag and more components, the structure is complex with a plurality of components to be assembled and the assembly is complicated.

SUMMARY

[0003] In view of the above defects of the prior art, the embodiments of the present utility model present a push-push indicator switch with simple structure which does not require an indicating flag and its driving mechanism, thereby reducing the amount of components, improving productivity and saving cost.

[0004] According to an aspect of the present utility model, there is provided a push-push indicator switch which comprises: a button 2, a driver 3, a reset spring 4 and an swing part 6;

[0005] wherein the driver 3 is provided with a color indicating block;

[0006] The driver 3 is mounted on the button 2 which is configured to drive the driver 3 to drive the swing part 6 to rotate when being pressed so as to change the on/off of the push-push indicator switch;

[0007] One end of the reset spring 4 is mounted on the swing part 6 and the other end supports the driver 3. The spring 4 is configured to enable the driver 3 to reset and rotate through an angle after an outer force is removed so that the color indicating block can switch color to indicate the on/off state of the push-push indicator switch.

[0008] In an embodiment, the reset spring 4 is configured to enable the driver 3 to rotate through the angle after the outer force is removed so as to maintain the angle with respect to the swing part 6 unchanged so that the color indicating block can switch color.

[0009] In another embodiment, the driver 3 and the button 2 are connected through cooperation between a shaft and a hole.

[0010] In another embodiment, the button 2 is provided with an indicating window and the color indicating block is disposed below the indicating window.

[0020] In another embodiment, the indicating window is provided with a light transmitting element 1.

[0021] In another embodiment, the driver 3 is configured with a pedal.

[0022] The pedal is configured to contact the swing part 6 when the button 2 is pressed to drive the swing part 6 to rotate.

[0023] In another embodiment, the push-push indicator switch further comprises a bottom shell upper cover 5 and a bottom shell 11. The bottom shell upper cover 5 and the bottom shell 11 are connected integrally by snapping-fit;

[0024] The button 2 and the swing part 6 are connected with the bottom shell upper cover 5 by cooperation between the shaft and the hole, respectively.

[0025] In still another embodiment, the push-push indicator switch further comprises a silver bridge 8.

[0026] The swing part 6 is configured to toggle the silver bridge 8 to alter the on/off of the push-push indicator switch.

[0027] In still another embodiment, the push-push indicator switch further comprises a load end contact piece assembly 9 and a common end contact piece assembly 10.

[0028] The silver bridge 8 is configured to alter the on/off of the push-push indicator switch by contacting the load end contact piece assembly 9 and the common end contact piece assembly 10.

[0029] In still another embodiment, the push-push indicator switch further comprises a spring 7.

[0030] The spring 7 is mounted inside the swing part 6 and a section of it is stuck on the silver bridge 8.

[0031] For the embodiments of the present utility model, the driver is provided with a color indicating block. The reset spring is configured to enable the driver to reset and rotate through an angle after an outer force is removed so that the color indicating block can switch color to indicate the on/off state of the push-push indicator switch. Thus, the drive function and the indicating function can be integrated on the driver with no need for an separated indicating flag mechanism and its driving mechanism. Therefore, the push-push indicator switch according to the embodiments of the present utility model has a simple structure, thereby improving productivity and saving manufacturing costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Now embodiments of the present utility model are described only by making references to the drawings in conjunction with examples. In the drawings:

[0033] Fig. 1 shows a perspective view of the push-push indicator switch according to the exemplary embodiments of the present utility model;

[0034] Fig. 2 is an exploded view of the push-push indicator switch according to the exemplary embodiments of the present utility model;

[0035] Figs. 3a-3d are action principle views of the push-push indicator switch according to the exemplary embodiments of the present utility model;

[0036] Figs. 4a and 4b are, respectively, top view and bottom view of the button and the driver which are mounted together according to the exemplary embodiments of the present utility model; and

[0037] Figs. 5a-5c are, respectively, top view, rear view and bottom view of the driver provided with a color indicating block according to the exemplary embodiments of the present utility model.

DETAILED DESCRIPTION OF EMBODIMENTS

[0038] References will be made to the exemplary embodiments to describe the principles and spirit of the present utility model. It should be appreciated that description of these embodiments only serves to facilitate those skilled in the art better understanding and thus implementing the present utility model, rather than to limit the scope of the present utility model in any manner.

[0039] Fig. 1 and Fig. 2 are, respectively, perspective view and exploded view of the push-push indicator switch according to the exemplary embodiments of the present utility model.

[0040] The push-push indicator switch according to the exemplary embodiments of the present utility model will be described with reference to Fig. 1 and Fig. 2. The push-push indicator switch comprises a button 2, a driver 3, a reset spring 4 and a swing part 6. The driver 3 is provided with a color indicating block (best seen in Figs. 5a-5c) which may have different color blocks, such as white and red, to indicate the on/off state of the switch by switching the color. Driver 3 is mounted on button 2 (best seen in Fig. 4a and Fig. 4b) and moves downward together with the button when button 2 is pressed; the reset spring 4 is disposed between the driver 3 and the swing part 6 with one end mounted on swing part 6, e.g. fitted on a post of swing part 6 and the other end supporting the driver 3. The reset spring 4 is compressed and distorted during the button 2 is pressed.

[0041] The action principle of the push-push indicator switch according to the present utility model is as follows: the button 2 is configured to drive the driver 3 to drive the swing part 6 to rotate when being pressed so as to alter the on/off of the push-push indicator switch; the reset spring 4 is configured to drive driver 3 to reset and rotate through an angle after an outer force is removed so that the color indicating block can switch color to indicate the on/off state of the push-push indicator switch.

[0042] The specific movement process of the push-push indicator switch of the present embodiments will be described in detail with reference to Figs. 3a-3d.

[0043] In Fig. 3a, the push-push indicator switch is in an off state. Then the color indicating block of the driver 3 is white.

[0044] In Fig. 3b, button 2, when be pressed, will rotate around the rotating shaft A1 (see Fig. 2) downward. Since the driver 3 is mounted on the button 2, the driver 3 would move downward along with the button 2 while compressing the reset spring 4.

[0045] In Fig. 3c, the driver 3, when moving down to a certain position, would drive the swing part 6 to rotate around a shaft C2 (see Fig. 2) through an angle so that the switch is switched to the on state, at the moment, the reset spring 4 is distorted since the swing part 6 rotates through the angle.

[0046] In Fig. 3d, now, the outer force is withdrawn, the compressed spring 4 will act on the driver 3 so that the driver 3 and the button 2 rotate around the rotating

shaft A1 to the initial position. Meanwhile, the reset spring 4, during recovering from the distorted state to the normal state, also causes the driver 3 to rotate around the shaft B2 (see Fig. 2) through an angle. Thus, the color indicating block switches from white to red, i.e. indicating that the switch is in the on state.

[0047] Since one end of the reset spring 4 supports the driver 3 and the other end of it is mounted on the swing part 6, the spring 4, after swing part 6 rotates around the shaft C2 through an angle, causes the driver 3 to rotate around the shaft B2 through an angle to maintain the angle with respect to the swing part 6 unchanged and so that the color indicating block can switch color accordingly.

[0048] Subsequently, reference is made to Fig. 2 again. The button 2 may be provided with a hole B1 and the driver 3 may be provided with a shaft B2. With reference to Fig.4a and Fig.4b, the driver 3 is mounted on the button 2 by cooperation between the shaft B2 and the hole B1 of button 2, thereby simplifying the structure to the utmost so that the switch is smaller, the costs are lower and the assembly is easier.

[0049] To enable the color of the color indicating block to be seen from the outside, in the embodiments shown by Fig. 1 and Fig. 2, an indicating window is provided on the button 2 and the color indicating block of the driver 3 is below the indicating window, through which the color of the color indicating block can be seen, thus knowing the current on/off state of the switch; to prevent dust from entering the switch, a light transmitting element 1 may be provided on the indicating window. Through the light transmitting element 1, the color of the color indicating block can be seen. Alternatives, the transparent glass, resin piece and the like can also be provided on the indicating window for observing color of the color indicating block.

[0050] To better enable the button 2 to drive the driver 3 to rotate downward when being pressed, and to in turn effectively and securely drive the swing part 6 to rotate, a pedal may be provided on the driver 3 (specifically with reference to Fig. 3b). For instance, two pedals may be provided on the front of the driver 3. When the driver 3 moves downward to a certain position since the button 2 is pressed, the pedal contacts the swing part 6, at this time, the driver 3 continues to move downward to drive the swing part 6 to rotate around the shaft C2 through an angle.

[0051] Reference is made to Fig.1 and Fig. 2 again. The embodiments further comprise a bottom shell upper cover 5 and a bottom shell 11, wherein the bottom shell upper cover and the bottom shell are connected integrally by snapping fit. A hole A2 may be provided on bottom shell upper cover 5, and the shaft A1 on the button 2 and the hole A2 of the bottom shell upper cover 5 are connected by cooperation between the shaft and the hole. For instance, the hole A2 and the shaft A1 may be provided on the same side of the bottom shell upper cover 5 and button 2 so that the arm of force is bigger when button 2 is pressed to facilitate user to press the button 2, thus enhancing user experience. A hole C1 may also be provided on bottom shell upper cover 5, and the swing part 6 may be connected via cooperation between the shaft C2 and the hole C1 on the bottom shell upper cover 5, combining the button 2 and the swing part 6 via the bottom shell upper cover 5.

[0052] The embodiments further comprise a silver bridge 8. As shown in Fig.3b, the swing part 6 is configured to toggle the silver bridge 8 to alter the on/off of

the push-push indicator switch. When the button 2 is pressed, the driver 3 will drive the swing part 6 to rotate around the shaft C2 so that the swing part 6 drives the silver bridge 8 to switch from the off state to the on state; when the button 2 is pressed again, the swing part 6 will drive silver bridge 8 to switch again to the off state; silver bridge 8 may be replaced by an on-off piece.

[0053] The embodiments further comprise a load end contact piece assembly 9 and a common end contact piece assembly 10. The silver bridge is configured to alter the on/off of the push-push indicator switch by contacting the load end contact piece assembly 9 and the common end contact piece assembly 10. When the button 2 is pressed, the swing part 6 drives the silver bridge 8 from the off state to toggle to the load end contact piece assembly 9 switched on by another end so that the switch is in the on state; when the button 2 is pressed again, the swing part 6 drives the silver bridge 8 from the on state to toggle away from the load end contact piece assembly 9. Of course, the load end contact piece assembly and the common end contact piece assembly may also be replaced by normally open contacts and normally close contacts.

[0054] The embodiments may further comprise a spring 7, wherein the spring 7 is mounted inside the swing part 6 and a section of it is stuck on the silver bridge 8. Thus, swing part 6 may toggle the silver bridge 8 via spring 7 during rotation. Alternatively, the silver bridge 8, the load end contact piece assembly 9 and the common end contact piece assembly 10 are disposed in the corresponding groove inside the bottom shell 11.

[0055] Thus, it can be known from above that the push-push indicator switch of the embodiments comprises a switch 2, a driver 3 with a color indicating block, a reset spring 4 and a swing part 6; when the button 2 is pressed, the driver 3 drives the swing part 6 to rotate to change the on/off state of the switch; the reset spring 4 drives driver 3 to rotate through an angle after the outer force is removed so that the color indicating block switches color to indicate on/off state of the switch. Therefore, with a simple structure and fewer components, the push-push indicator switch of the embodiments is easy to assemble, requiring no extra indicating flag mechanism, thereby improving productivity; the action of the driver is simple, the driver and the swing part have high stability and reliability, therefore, the driver and the swing part is lower in the requirement for making precision and easy to manufacture.

[0056] The specification of the present utility model has been presented for the purpose of demonstration and description. However, it is not intended to exhaust or limit the utility model that has been disclosed. A plurality of modifications and adaptations may come to mind to those skilled in the art.

WHAT IS CLAIMED IS:

1. A push-push indicator switch, characterized in that, comprising: a button (2), a driver (3), a reset spring (4) and a swing part (6);
wherein the driver (3) is provided with a color indicating block;
the driver (3) is pivotally mounted on the button (2) by cooperation between a shaft (B2) on the driver (3) and a hole (B1) in the button(2), the button (2) being configured to bring the driver (3) to drive the swing part (6) to rotate when being pressed by contacting the swing part (6), in order to change the on/off state of the push-push indicator switch;
one end of the reset spring (4) is mounted on the swing part (6) and the other end supports the driver (3); the reset spring (4) is configured such that when the button (2) is pressed, the reset spring (4) is compressed and distorted, and when an outer force for pressing the button (2) is removed, the driver (3) is rotated through an angle by a return force of the reset spring (4), so that the color indicating block can switch color to indicate the on/off state of the push-push indicator switch.
2. The push-push indicator switch according to Claim 1, characterized in that, the reset spring (4) is configured to drive the driver (3) to rotate through the angle after the outer force is removed, in order to maintain the angle with respect to the swing part (6) unchanged so that the color indicating block can switch color.
3. The push-push indicator switch according to Claim 1, characterized in that, the button (2) is provided with an indicating window below which the color indicating block is disposed.
4. The push-push indicator switch according to Claim 3, characterized in that, the indicating window is provided with a light transmitting element (1).
5. The push-push indicator switch according to Claim 1, characterized in that, the driver (3) is provided with a pedal,
wherein the pedal is configured to contact the swing part (6) to drive the swing part (6) to rotate when the button (2) is pressed.
6. The push-push indicator switch according to any of Claims 1-5, characterized in that, further comprising a bottom shell upper cover (5) and a bottom shell (11), wherein the bottom shell upper cover (5) and the bottom shell (11) are connected integrally by snapping fit;
wherein the button (2) and the swing part (6) are connected with the bottom shell upper cover (5) via the cooperation between the shaft and the hole, respectively.
7. The push-push indicator switch according to any of Claims 1-5, characterized in that, further comprising a silver bridge (8),
the swing part (6) is configured to toggle the silver bridge (8) to alter the on/off of

the push-push indicator switch.

8. The push-push indicator switch according to Claim 7, characterized in that, further comprising a load end contact piece assembly (9) and a common end contact piece assembly (10),

wherein the silver bridge (8) is configured to alter the on/off of the push-push indicator switch by contacting the load end contact piece assembly (9) and the common end contact piece assembly (10).

9. The push-push indicator switch according to Claim 7, characterized in that, further comprising a spring (7),

wherein the spring (7) is mounted inside the swing part (6) and a section of the spring (7) is stuck on the silver bridge (8).