

A SLIDER OF METAL LINK MECHANISM FOR
OPENING AND CLOSING WINDOWS

The present utility model relates to a part for opening and closing windows, and more particularly, to a slider of metal link mechanism for opening and closing windows.

Various metal link mechanisms are more and more popularly used in the structure for opening and closing windows. A four-link or five-link mechanism is typical one, in which one link is a slider. A new type of slider described in patent No. GB 2281098B comprises a metal body and a plastic skin overlaying the bottom of the body, which provides limited protection for the metal body. When the four-link or five-link mechanism operates, the friction generated between the metal slider and other pull-push links is the friction generated between metals, whereby the friction force is relatively large, therefore the wear of the metal slider is generated, and inconvenience for opening and closing windows is brought out sometimes. As a result, a slider which can reduce the friction force and the wear is required.

It is an object of the present utility model to provide a slider of the metal link mechanism for opening and closing windows, which can substitute for the slider in prior art described above, reduce the friction force and wear, and make it more easily to open and close

windows after being used in practice, and therefore prolong the service life.

To achieve the above object, the present utility model provides a slider of metal link mechanism for opening and closing windows, comprising a metal body and plastic layer covering the body, the surface of the plastic layer functioning as the friction surface.

Because of this structure, the friction between metal surfaces is changed into the friction between metal surface and the plastic layer made of a material which has a lower coefficient of friction relative to metals, so that the wear is reduced, therefore the service life of slider is prolonged.

The utility model will be described with reference to the accompanying drawings, in which:

FIG. 1 is a schematic view of a link mechanism for opening and closing windows according to the present utility model;

FIG. 2 is a cross section view of a slider of the metal link mechanism for opening and closing windows according another embodiment of the present utility model;

FIG. 3 is a plan view of FIG. 2.

Now, the utility model will be described in detail by taking conjunction with the accompanying drawings.

Referring to FIG. 1, the link mechanism comprises a slider 11, a strut 12, a putt-push link 3, a pull link 4, a push link 5, and a C-

shaped guide groove 6. Said members except the slider 11 are made of stainless steel strip having a thickness of about 2.5mm. The slider 11 is formed by covering a plastic layer onto a stainless steel strip having a thickness of 1.5mm. A B, C, D, E, F in FIG. 1 denote where pivotations take place. The links cooperate with each other and the slider 11 can slide along the C-shaped guide groove 6 so as to open and close windows.

Referring to FIG. 2, it is a schematic cross section view of the present utility model. It is clearly shown that the slider comprises a metal body and a plastic layer covering the body. The body is formed with a convex portion which can on the one hand increase the rigidity of the body 1 to improve the ability of anti-deformation, and on the other hand act as a friction surface. The thickness of metal body 1 is T_1 , the whole thickness comprising the one of the convex portion is T_2 , its width is W_1 . The thickness of the plastic layer covering the body 1 from the bottom to the plane of the first step is H_1 , the whole thickness from the bottom to the top plane of the protrusion is H_2 , the top plane M1, bottom plane M4, side planes M2, M3 constitute friction surfaces, that is, the surface of plastic layer acts as the friction surface. The width of top plane M1 is W_3 , the whole width of the bottom plane M4 after being covered with the plastic layer is W_2 . The through holes are formed at the center of the bottom which are used to connect with the coupling

links and have a diameter $\varnothing 1$. The slider is required to fit with the C-shaped guide groove suitably after being covered with the plastic layer to make it slide smoothly.

The plastic layer must be made of the material which is wear-resistant and has a low friction coefficient when contacting with the metal surface. It is known that the most typical material having such characteristics is nylon which has high strength, wear-resistance and smooth appearance, various type materials of nylon are suitable. Furthermore, other synthetic chemical materials, synthetic engineering plastic, and some kinds of fiber materials also meet the requirement. In the present utility model, the plastic layer 2 can only cover the protrusion portions of the body 1 to the form the friction surface.

Referring to FIG. 3, which is a plan view of FIG. 2 seen from the top of FIG. 2 for further showing the whole configuration of the slider.

As shown in the FIG., the slider is narrow rectangle which can be called a strip or a slice, and has a whole width equaling to W_2 and a whole length L . Three through holes are formed along the slider, the left and right holes shown in FIG. 2 being used for the pivotable connection between the link 2 and the link 5, which connection typically a rivet connection, the central hole being used for a screw to pass therethrough to connect the plastic layer 2 with body 1 and press them together when necessary to prevent the plastic layer from

displacing and falling off. If a displacement between the plastic layer 2 and the body 1 will never take place, the central hole may be omitted.

The metal body 1 can be made of steel which has high strength and low costs, or of stainless steel and the like. One of the function/advantage of embedding the metal plate in the plastic skin is to strengthen the slider and prevent it from breaking into halves, especially when working with heavy and big windows.

When the slider of the present utility model is employed, the friction force will be reduced greatly, and the link mechanism will be operated easily, which brings user more convenience. The link mechanism is suitably used to not only various window, but also all kinds of doors comprising that used in a house and in a room.

**WHAT IS CLAIMED:**

1. A slider of link mechanism for opening and closing windows, characterized in that the slider comprises a metal body(1) and a plastic layer(2) covering the body(1), the surface of the plastic layer functioning as the friction surface.
2. A slider according to claim 1, characterized in that the plastic layer(2) is made of the material which has a lower friction coefficient when contacting with the metal surface than that between metal surface.
3. A slider according to claim 2, characterized in that the plastic layer(2) is made of nylon.
4. A slider according to claim 2, characterized in that the plastic layer(2) is made of synthetic engineering plastic, or various kinds of fiber materials.
5. A slider according to claim 1, characterized in that the metal body(1) is made of steel.
6. A slider according to claim 1, characterized in that the metal body(1) is formed with a convex portion, and the surface of the plastic layer covering the convex portion acts as a friction surface.
7. A slider according to claim 1, characterized in that the slider is dimensioned so that it fits with the C-shaped guide groove suitably to slide along the C-shaped guide groove smoothly.



8. A slider according to claim 1, characterized in that the mechanism can be four link or five link.
9. A slider according to claim 1, characterized in that the slider when being used in the link mechanism is suitably used to not only various windows, but also all kinds of doors.