Research on the Bracket to Reduce the Fatigue of Using Mouse

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Abstract

In people's daily life, it is very common to use computers to handle official business, and in the process of using computers, the mouse is an indispensable auxiliary tool. When people start to work or play with computers, they always forget the time, so there will be excessive use of the mouse, which will bring some damage to the human body and make the body feel tired. However, there are no related products in the market that can relieve fatigue caused by excessive use of mouse, so a tool that can help relieve fatigue is very important for most people. Therefore, this paper puts forward a bracket that can help computer users relieve fatigue caused by using mouse, hoping to make everyone more comfortable and healthy in office.

Keywords

Overuse; Mouse Fatigue; Bracket; Design Item.

1. Introduction

Because excessive use of mouse will bring some damage to human body, it is very necessary to develop products that can alleviate this kind of fatigue damage. This paper will bring a bracket design project that can relieve fatigue when using the mouse, and this paper also analyzes the design ideas and innovations of this bracket, hoping that it can be successfully developed and accepted by the public.

2. The muscle fatigue caused by long-term use of the mouse

With the development of science and technology, in modern offices, some electronic devices are mainly used to complete the work, such as computers or tablets. Although the tablet is portable, compared with the computer, it still has some shortcomings, which can't complete a job completely, so most people mainly use the computer to handle affairs in their daily office work. And a job can't be finished in a few minutes, and it takes too long. And because the office computer can't touch the screen directly, it needs to use the mouse to assist the operation. In this way, excessive use of the mouse at work will cause soreness, numbness, muscle weakness and other symptoms in hands, wrists, arms, shoulders and neck. This kind of occupational disease is called "mouse hand" in medicine.

At the same time, not only the staff will overuse the mouse, but even some students will have symptoms such as fatigue caused by overuse of the mouse. If the body is in a state of fatigue for a long time, it will not be conducive to people's healthy life. To solve this problem, this paper puts forward a bracket design project which can effectively alleviate fatigue caused by excessive use of mouse, hoping to help people reduce fatigue feeling when using mouse and make everyone's life healthier.

3. The mouse bracket design project basis

With the continuous development of high technology, computers have become an important tool for workers' daily work, and they are also electronic devices that people can't leave in their daily life. If the computer is used for a long time and the mouse is operated by hand, the arm will remain suspended for a long time, which will lead to poor office posture, which will lead to arm pain, muscle numbness and weakness, and so on. In addition, the "mouse hand" symptom may also be caused by incorrect placement of the mouse pad. For this kind of problem, this paper puts forward a related bracket to relieve the fatigue of using the mouse, hoping to play an effective role and assist people to use the computer everyday.

4. The specific design ideas of mouse bracket design

In this project, the design of the fixed shell is as follows: firstly, the bracket is fixed under the desktop of the computer, and a rotating groove with downward and rightward openings is also arranged in the fixed shell, and related turning support devices are also arranged in the rotating groove, which also includes a rotating shell, and the rotating shell and the right end of the upper end wall of the rotating groove are hinged together by hinges; In the rotating shell, a communicating rotating shell is also arranged, the left and right end faces of which are provided with through grooves with downward openings, and the upper end walls of the through grooves are set with high left and low right; The latch device is arranged in the rotating shell, the latch slot in the latch device is opened to the right, and the latch slot also contains a latch fixing plate when in use; A bolt spring is arranged between the bolt fixing plate and the left end wall of the bolt groove, the left end of the bolt fixing plate is fixedly connected with one end face of the bolt pull rope, and the right end of the bolt fixing plate is fixedly connected with the bolt; The right end face of the fixed shell is provided with a locking device which comprises a limiting groove, the opening of the limiting groove is to the right, and the upper and lower end walls of the limiting groove are provided with limiting pin grooves; A power device is also arranged in the fixed shell, and the power device contains a power cavity, the upper end wall of the power cavity is fixedly connected with the motor, and the power device is provided with a reset device.

The upper end wall of the through groove contains an elastic support plate, and the elastic support plate is fixedly connected with the elastic groove through a support plate spring. Two telescopic rod slots with symmetrical openings to the right about the through slots are also arranged in the rotating shell, which are in sliding connection with telescopic rods, and the telescopic rods and the left end walls of the telescopic rod slots are fixedly connected by telescopic rod springs, while the left ends of the telescopic rods are fixedly connected with one end of the telescopic rod pull rope. In this project, the design of the fixed shell is as follows: firstly, the bracket is fixed under the desktop of the computer, and a rotating groove with downward and rightward openings is also arranged in the fixed shell, and related turning support devices are also arranged in the rotating groove, which also includes a rotating shell, and the rotating shell and the right end of the upper end wall of the rotating groove are hinged together by hinges; In the rotating shell, a communicating rotating shell is also arranged, the left and right end faces of which are provided with through grooves with downward openings, and the upper end walls of the through grooves are set with high left and low right; The latch device is arranged in the rotating shell, the latch slot in the latch device is opened to the right, and the latch slot also contains a latch fixing plate when in use; A bolt spring is arranged between the bolt fixing plate and the left end wall of the bolt groove, the left end of the bolt fixing plate is fixedly connected with one end face of the bolt pull rope, and the right end of the bolt fixing plate is fixedly connected with the bolt; The right end face of the fixed shell is provided with a locking device which comprises a limiting groove, the opening of the limiting groove is to the right, and the upper and lower end walls of the limiting groove are provided with limiting pin grooves; A power device is also arranged in the fixed shell, and the power device contains a power cavity, the upper end wall of the power cavity is fixedly connected with the motor, and the power device is provided with a reset device.

The front and rear end walls of the sliding groove are rotationally connected with a first rotating shaft, which is also fixedly connected with a gear, and at the same time, the first rotating shaft is fixedly connected with two first rope winding wheels which are symmetrical about the gear back and forth; The upper side of the gear is meshed with a rack plate which is in sliding connection with the fixed shell, the upper end face of the rack plate is connected by a slide plate with the upper end wall of the upper chute in a fixed connection mode, a slide plate spring is fixedly connected between the slide plate and the right end wall of the upper chute, a bolt pull rope is fixedly connected to the right end face of the slide plate, and the rotating pull rope is frictionally connected with the rotating shell.

The limiting pin slot is slidably connected with a limiting pin extending into the limiting slot, one end of the limiting pin and the limiting pin slot are fixedly connected with a limiting pin spring, one end face of the limiting pin far from the limiting slot is fixedly connected with one end of a pull rope, the

other end of an upper pull rope is fixedly connected with a front first rope winding wheel, and the other end of a lower pull rope is fixedly connected with a rear first rope winding wheel.

The lower side of the motor is connected with a power shaft which is fixedly connected with a second rope winding wheel which is fixedly connected with the other end of a rotating rope; the lower cam of the second rope winding wheel is frictionally connected with the power shaft; the right end wall of the power chamber is provided with a top pressure plate groove; the left end wall of the rotating groove is provided with a wedge-shaped pin groove; the left end face of the rotating shell is provided with a turnover limiting groove; A wedge-shaped pin is slidably connected between the upper and lower end walls of the wedge-shaped pin groove, a fixed rod slidably connected with the fixed housing is fixedly connected between the top pressure plate and the wedge-shaped pin, and a spring is fixedly connected between the wedge-shaped pin and the left end wall of the wedge-shaped pin groove.

The bottom end of the second rotating shaft is fixedly connected with a knob positioned at the lower side of the fixed shell, the top end of the second rotating shaft is fixedly connected with a third rope winding wheel positioned in the rope winding wheel cavity, a torsion spring is fixedly connected between the second rotating shaft and the lower end wall of the rope winding wheel cavity, and the other ends of two pull ropes are fixedly connected with the third rope winding wheel.

5. The innovation of mouse bracket design project

The bracket designed in this project is simple in structure and easy to use. In the process of use, if workers do not need to use the bracket, they can be stored under the table. In addition, the bracket is internally provided with a related supporting and turning device to support 180-degree rotation, so that people's arms can be supported from various angles, and fatigue caused by hanging arms can be reduced. At the same time, a device for tightening the mouse pad is also arranged in the bracket to prevent the mouse pad from shifting and reduce the inducement caused by unscientific use of computer knowledge.

6. Conclusion

In this paper, the specific design ideas of this innovative project are mainly analyzed. In this design bracket, each part of the device has different connection requirements, so that the bracket can play the expected role. Moreover, due to the feasibility of the bracket design concept and the scientific design idea, I believe that when the project is successfully developed, it will be accepted by everyone.

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