Journal of Computing and Electronic Information Management
ISSN: 2413-1660 | Vol. 10, No. 1, 2023

A broken window escape device based on Internet of Things technology

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Abstract: The window breaker used for escape consists of a tray used to secure the lower layer of the fragile surface of the glass, a supporting part used to knock the broken object to make it deformed and support the lifting of the object, and a part used to knock the broken object is set on the bottom tray. The outer packaging shell includes the outer packaging shell that protects the bottom tray from the contact of objects. The outer packaging shell is assembled with the bottom tray. The outer packaging shell has the parts that support the lifting and the parts that are used to knock the broken objects to separate the pressing part. When the pressing part is deformed, the parts that support the lifting and the parts that are used to knock the broken objects are compressed and separated from the parts that are used to knock the broken objects, and the elastic restoring force formed by the broken objects to break the glass, It is used to separate the parts supporting the lifting of objects from the parts used to knock broken objects. This product can be fixed with the broken window and the point where the glass is knocked in an emergency. It will not harm the human body and achieve the purpose of escape. This tool is simple in structure, strong in safety and practical.

Keywords: Broken window; Fixing; Glass.

1. Technical field

A tool used to assist escape, especially a broken window for escapee, As shown in Figure 1.

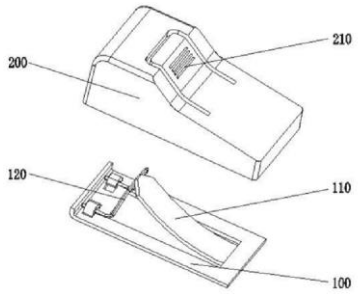


Figure 1. A tool for assisting escape

2. Background technology

The window breaker is installed in an airtight cabin such as a car, which can be easily obtained. It is generally in the airtight cabin. It is convenient to take out and break the glass, and escape in case of fire or falling into water in the enclosed space of the car;

The previous broken window tools are divided into two forms. One is to take it down when necessary, which may harm passengers. The safety hammer is hung above the window. This window breaker has no obvious effect. The other kind of structure is small, because the structure is relatively small in emergency and cannot be hung on the window, which is inconvenient and has flaws.

For the previous products, if we want to solve the defects of the tool, we must develop a new type of escape window breaking tool.

3. Research technical means

The current technology is not good. It provides a tool to fix the glass hitting point on the broken escape window.

In order to achieve the goal, the technical method adopted is: the tool for escaping the broken window, which is adsorbed on the glass that is easy to crack, and is used to knock the elasticity of broken objects to make them conflict with each other.

It includes the fixed assembly of the outer packaging shell and the bottom tray, which protect the bottom tray from the contact of external objects. The outer packaging shell has a pressing part to separate the parts supporting the lifting of the object. When the pressing part is deformed elastically when it is stressed, it and the glass used to knock the broken object will break due to the recovery of elasticity.

The extruded parts have contact parts. The pusher block has a contact surface. The contact surface of the pusher block is in contact with the parts supporting the lifting of the object support. When the pressing part presses the parts supporting the lifting of the object support, the parts supporting the lifting of the object support slide relatively.

It is used to knock the broken objects and the bottom tray as an integral structure, and support the fixed assembly of the lifted parts of the objects and the bottom tray.

The parts supporting the lifting of objects and the bottom tray are integrated, which are used to knock the broken objects and assemble them with the bottom tray.

The parts supporting the lifting of objects and the bottom tray are integrated.

The parts supporting the lifting of articles are fixed and assembled with the bottom tray.

Sharp metal strikes glass.

The outer packaging shell is fixed between the bottom trays.

A tool used to escape from life and break windows. This tool attaches the window breaking tool to the place where the glass is knocked. It can also win the chance to escape from life in an emergency. The structure is also relatively simple, and the safety is very strong. The tool will not cause harm to human body. It is still very useful.

4. Analysis of bottom tray structure

Schematic diagram of Figure 1;

Figure 2 is a decomposed picture 1;

Figure 3 exploded schematic diagram II;

Figure 4 is a schematic diagram of the bottom tray structure. The matcombinationofmetal and plastic, and the color matching is a combination of metallic silver and gradient color.

Schematic diagram of internal structure, with metal shrapnel inside, with better toughness

There is a baffle on the front. In order to protect the structure from contact with the outside, the baffle can play its role normally in an emergency The bending material is metal line, which greatly increases its elasticity and can better play its role The bottom is rectangular to better fit the glass and prevent it from falling off The appearance is round and curved, which is timely adsorbed on the glass and more beautiful The structure of the escape device is mainly concentrated behind it, and the large elastic potential energy can better act on the glass

The escape device mainly depends on the elastic potential energy of its parts to achieve the escape effectThe side of the escape device is looser than the front structure

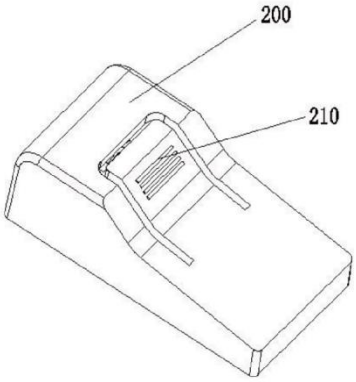


Figure 2. Appearance display of escape tools

The window breaker is made of metal and plastic, Color matching is the combination of metallic silver and gradient color, sticking to the window will not affect the appearance, As shown in Figure 2.

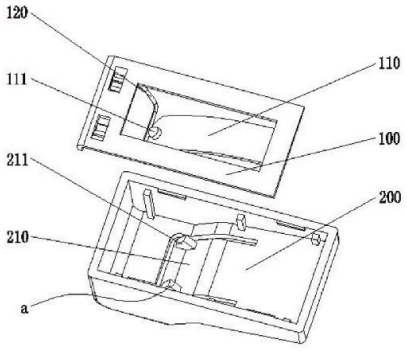


Figure 3. Bottom and internal structure of escape device

There is a baffle on the front of the fuselage, In order to protect the internal structure from contact with the outside, Do not touch its switch by mistake in daily life, As shown in Figure 3.

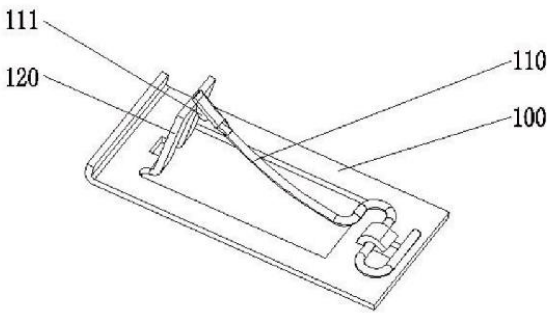


Figure 4. How to form the strength of escape tools

The bending material is metal line, touching with the metal sheet at the front end It greatly increases its elasticity, play a better role in emergencies, As shown in Figure 4.

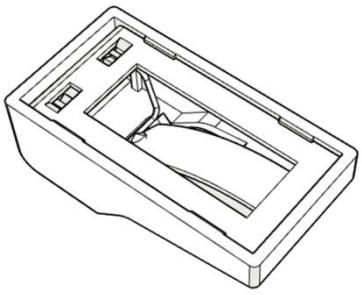


Figure 5. Bottom structure of escape device

The bottom of the fuselage is rectangular, It can better fit the glass and prevent it from falling off, It can also be firmly fixed in emergency, Not affected by unexpected circumstances, As shown in Figure 5.

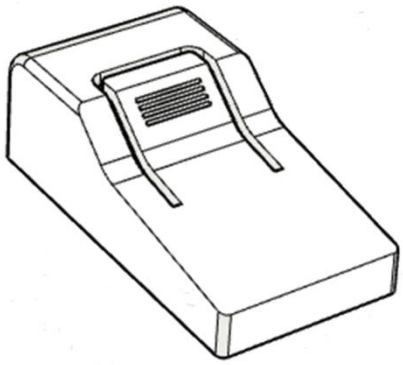


Figure 6. The appearance of the main body is round

The appearance of this product is round and curved, It can be more perfectly adsorbed on the glass and more beautiful, It will not fall off even in daily usee, As shown in Figure 6.

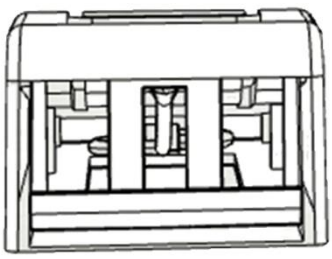


Figure 7. Rear structure of escape tools

The internal structure of the escape device is complex, It is mainly concentrated behind it, But the space is large, and the elastic potential energy can be better. Act on glass to achieve

faster escapee, As shown in Figure 7.

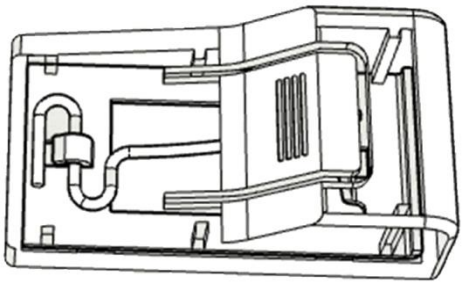


Figure 8. Top structure of escape tools

Escape device mainly depends on its parts. The elastic potential energy formed by mutual extrusion, to achieve the effect of hitting the glass to escape in an emergencye, As shown in Figure 8.

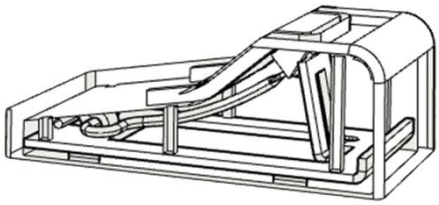


Figure 9. Side structure of escape tools

The side of the escape device is looser than the front structure, The internal structure is also relatively simple, Really achieve the perfect quality and appearance of the whole fuselage, As shown in Figure9.

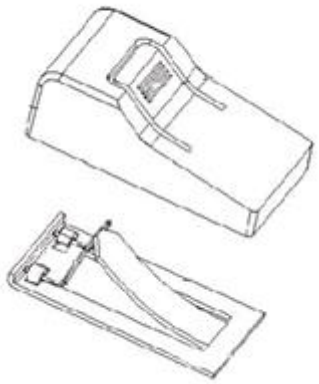


Figure 10. Working principle of escape tools

This is the internal structure diagram, It is equipped with metal shrapnel to make it more elastic, Small fuselage, but with greater flexibility to knock glasse, As shown in Figure 10.

5. Specific implementation mode

As shown in the figure, the tool for escaping from life, including the bottom tray fixed on the surface of the fragile point of glass, is used to knock the broken object, and the supporting part used to knock the broken object to make its elastic deformation is used to knock the broken object, and the supporting part used to support the lifted part used to knock the broken object elastically contacts, and the supporting part used to support the lifted part used to knock the broken object to produce elasticity, When the part supporting the lifting of the object is used to knock the broken object apart, its elasticity and the part supporting the lifting of the object are converted from the elastic state to the release state to knock the broken object, so as to achieve the purpose of breaking the window, so that the impact of the release force is separated from the impact point.

Protect the packaging shell outside the base from external contact. The outer packaging shell is fixedly assembled with the bottom tray. The outer packaging shell has parts that support the lifting of the object to knock the broken object to separate the pressing part. When you press the force, the deformation will occur, forcing the parts that support the lifting of the object and the broken object to leave, which is used to knock the broken object to break the glass due to the elastic elasticity, The outer packaging shell plays the role of pressing the parts that support the lifting of the objects to knock the broken objects apart, protecting the bottom tray, and knocking the parts that support the lifting of the broken objects.

The pressing place has the parts used to absorb and support the lifting of the object, so that the pushing block of the object has the contact surface. When the pressing place is pressed by the force to support the lifting of the object, the contact surface A of the pushing block contacts with the parts supporting the lifting of the object, and the parts supporting the lifting of the object slide, through the contact with the parts supporting the lifting of the object, when pressing, The pushing block contacts with the parts supporting the lifting of the object support and presses the parts supporting the lifting of the object support, and elastic deformation occurs until the parts supporting the lifting of the object support are used to knock the broken object and separate.

And the bottom tray is the same structure, and the parts supporting the lifting of the object support are assembled with the bottom tray. In the embodiment, the parts used to knock the broken object and the bottom tray are integrated structure buckle structure, and the parts supporting the lifting of the object support are assembled with the bottom tray.

The object used to break the glass is the top of the sharp metal used to break the glass. If the sharp metal hits the glass, the smaller the contact area, the more concentrated the stress on the glass, and the higher the probability of success of breaking the window.

The outer packaging shell and the bottom tray are fixed and assembled in the middle. The outer packaging shell and the assembly structure of the bottom tray are clamped and assembled. The structure is relatively simple and convenient for production, processing and installation.

There is a double-layer adhesive layer at the bottom of the tray and the place where the glass contacts. The bottom tray is glued to the glass through the double-sided adhesive layer, and the bottom tray is glued to the glass through the double-sided adhesive layer. It is simple, convenient, stable and effective. The double-sided adhesive layer is only easy to implement in the implementation example, and other schemes can also be used to fix the bottom tray on the glass.

As shown in Figure 4, the difference between this embodiment and the first is that the brace and the bottom tray It is an integrated structure, used to knock the broken objects and assemble the bottom tray. It adopts the design of bending the parts supporting the lifting of the object support. The parts supporting the lifting of the object support can be supported

to knock the broken objects. The broken objects used to knock the broken objects and the bottom tray are assembled with a buckle structure.

The difference is that the parts supporting the lifting of objects and the parts used to knock and break objects are integrated with the bottom tray.

The difference between this practical example and the practical example 1 is that the parts supporting the lifting of the object and the parts used to knock the broken object are fixed and assembled with the bottom tray respectively.

It provides a broken tool for escaping life. This is the place where broken window tools are used together with broken glass. In a very tense time, it can accurately and quickly destroy the structure of the glass. In a tense time, it can give people time to escape. The structure of this tool is still more simple, compact and safe, and it will not cause any harm to the human body. It is also very practical.

The simple principle and some advantages described above. Technicians in this industry should understand that they will not be limited by the above description. The above case and the description in the manual are only simple explanations of the principle, and will not be divorced from the spirit and the scope of tools. In this field, simple changes and simple replacement of ordinary technicians are within the scope of protection.

6. Conclusion

This product is designed to be an intelligent system for safety control and escape. It mainly uses the broken window tool as the prototype, including the principle of potential energy broken window, and also cooperates with the software of the Internet of Things and application layer. In many cases, the automatic broken window is realized through the control of the internal circuit of the system. The emergency window escape efficiency has been greatly improved, and the emergency response ability of equipment application in different situations has also been strengthened. After adding the wireless network module, the local security system of the whole vehicle is established through the wireless network, and is connected with the broken window tool to other security protection detection equipment of the vehicle. The mobile terminal realizes the integration of the vehicle's security protection system, the mutual transmission of data, the joint judgment of vehicle conditions, and the handling of dangerous situations and other functions. Vehicle travel safety will be greatly enhanced. It also pioneered the safety ecology of intelligent travel, with the Internet of Things as the bottom foundation, promoting the transformation of automobile travel safety from the performance safety of a single car itself, to the effective protection of the personal safety of passengers, to the safety of a comprehensive intelligent travel ecosystem.

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