

# Study on dynamic characteristics of shockproof packing box

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## Abstract

Used in shockproof shock absorption used in packaging boxes, involving the field of packaging. Contains: the first box, the second box, and four objects for buffering. The first box contains the main box and the cover plate for the main box in the lecture; The second box inside goes inside the main box; The four objects used for buffering are connected to the bottom two topmost corners of the second box and the bottom two topmost corners of the first box. The two topmost corners of the bottom two sides of the second box show a diagonal setting method. The other two objects used in the buffer are respectively connected with the top two top angles of the second box and the top two top angles of the first box to achieve the effect of shock buffering.

## Keywords

Packaging and transportation; Dynamic characteristics; Structure; Shockproof and shockproof.

## 1. Research background analysis

Shockproof packaging box, its advantage is contained in: the first box, contains a main box and set in the description of the main box cover; The second box, the second box is set inside the main box; Four objects used for buffering, among which two objects used for buffering are respectively connected with the bottom two topmost corners of the second box and the bottom two topmost corners of the first box. The bottom two topmost corners of the second box show a diagonal setting. The other two objects used for buffering are connected with the top two corners of the second box and the top two corners of the first box respectively. The top two corners of the second box are set diagonally. The diagonals of the top two topmost sides of the second box and the corners of the bottom two topmost sides of the second box are intersecting with each other in terms of the diagonals.

## 2. Research technical solutions

In the superior practical example of the invention of the packing box, the through-hole in question traverses the uppermost corner where the first face is joined by a second face, a third face, and a fourth face.

In this excellent practical example of the packaging box invention, the connecting rod mentioned above consists of a first rod-shaped object, a second rod-shaped object and a raised table, the first rod-shaped object and a second rod-shaped object are connected, the raised table is arranged at the place where the first rod-shaped object and the second rod-shaped object are connected, and the two sides of the spring are attached to the raised table and the first surface.

In the more excellent practical example of the invention of the packaging box, the cover plate setup mentioned above includes a connecting shaft, the main box is provided with two shaft seats, and the two sides of the connecting shaft are respectively connected with the shaft seat.

The shock-proof packaging box in the case of the invention is implemented. Four cushioned objects are used to fix the second box inside the first box, and the spring of each cushioned object is used to cushion the second box inside the first box, preventing the objects inside the

second box from causing vibration effects. It has the advantages of convenient use, simple modeling and structure.

In order to clarify the scheme of the embodiments of the packaging invention, the additional diagram used in the embodiments of the packaging invention is briefly explained. The following additional diagrams only show some examples of the implementation of the product invention, which cannot be regarded as the definition of the scope. For ordinary technical personnel in this field, other related diagrams can be obtained according to these additional diagrams without spending creative labor.

3. Design specification process

Shockproof and shockproof boxes used in packaging relate to the field of packaging. Contains: the first box, the second box, and four objects for buffering. The four objects used to buffer the second box inside the first box, and the objects used to buffer the second box inside the first box. Its advantage is that the cover plate is placed on the connected shaft body, the box is placed on the shaft seat, the two sides of the connected shaft body and the shaft seat are connected with each other. The shock-proof packaging box in the case of the invention is implemented. Four cushioned objects are used to fix the second box inside the first box, and the spring of each cushioned object is used to cushion the second box inside the first box, preventing the objects inside the second box from causing vibration effects. The through-hole traverses the topmost corner where the first face, the second face, the third face, and the fourth face join. The cover plate is placed on the connected shaft body, the box is placed on the shaft seat, the two sides of the connected shaft body and the shaft seat are connected with each other. In summary, as described above, the implementation example of the packaging invention is used for shock-proof packaging of the box, four cushioning objects are used to secure the second box inside the first box, and the spring of each cushioning object is used to achieve the cushioning effect of the second box inside the first box, preventing the effects of the contents of the second box. The product has the advantages of convenient use and simple structure. The design process is shown in Table 1.

Table 1 Design process table

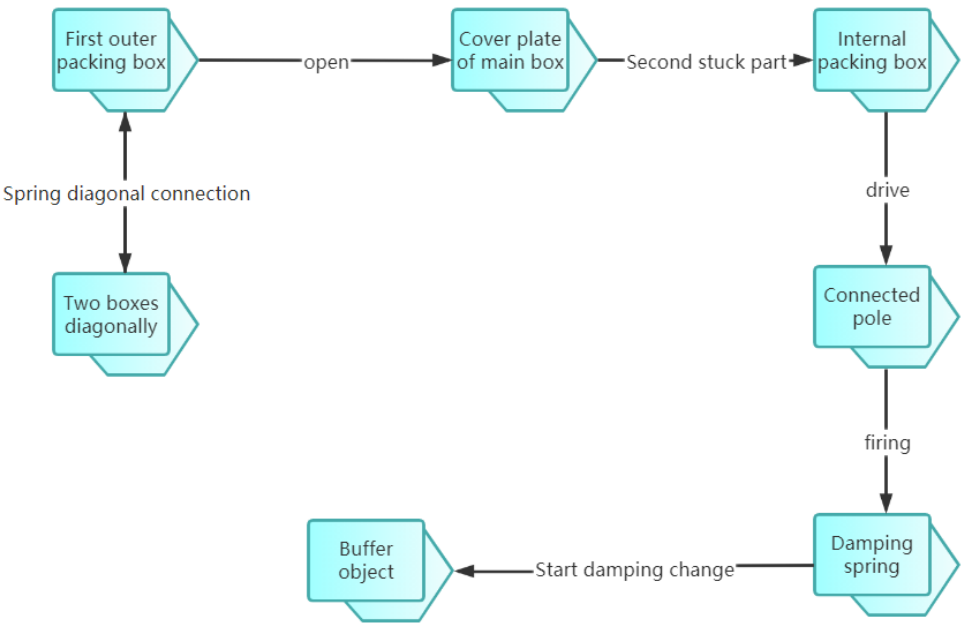


Figure 1 is a partial magnification of where the structure is wrapped in Figure 2.

Figure 1 is a schematic diagram of the structure of an object used in buffering provided in an embodiment of the packaging invention.

#### 4. Be aware of problems

Note: Similar labels and letters refer to similar items in the following drawings, so once a type is defined in one of the drawings, there is no need to define or explain it further in the subsequent drawings.

Referring to Figures 1 and 2 above, the product implementation example proposes a shock-proof packing box consisting of a first box, a second box, and four objects for buffering. Two of the buffering objects are connected to the bottom two topmost corners of the second box and the bottom two topmost corners of the first box. The bottom two topmost corners of the second box are set diagonally. The other two buffer objects are connected to the top two corners of the second box and the top two corners of the first box. The top two corners of the second box are set diagonally. Moreover, the diagonal lines of the top two topmost corners of the second box intersect the diagonal plane projections of the bottom two topmost corners of the second box. Specifically, the first box contains the main box and the lid. The main boxes inside include the first box plate, the second box plate, the third box plate, the fourth box plate and the first bottom plate. The first box plate and the third box plate are arranged relative to each other. The two sides of the first box plate are respectively connected with the second box plate and the fourth box plate. The two sides of the third box plate are respectively connected with the end of the second box plate away from the first box plate and the end of the fourth box plate away from the first box plate. The four sides of the first bottom plate are connected with the first box plate, the second box plate, the third box plate and the fourth box plate respectively, thus enclosing the first box cavity of the first box.

Please refer to Figure 1, Figure 2 and Table 1 mentioned above. The second box plate and cover plate of the main box are connected to each other. The cover plate is arranged with a connecting shaft, and the second box plate of the main box is arranged with two shaft seats. The two sides of the connected shaft body are respectively connected with the shaft seat. Therefore, the cover plate can be placed in the main box, so as to open or close the main box.

Referring to Figure 2 above, the second box contains a fifth box, a sixth box, a seventh box, an eighth box, and a second plate. The fifth box plate and the seventh box plate are arranged relative to each other. The two sides of the fifth box plate are respectively connected with the sixth box plate and the eighth box plate. The side of the seventh box plate is respectively connected with the end of the sixth box plate away from the fifth box plate and the top of the eighth box plate away from the seventh box plate. The four sides of the second bottom plate are connected with the fifth, sixth, seventh and eighth box plates to form a second box cavity.

Shockproof box local connection, showing the connection of the local spring and the box body, compared with other shockproof box structure on the market is more simple, more convenient to use, the first connection parts block and the second connection parts block, connecting parts block between the relative setting. The second box uses one side of the box plate and protrudes in the direction of the opening of the first box body designed at the first connecting part block, and so on. The first connecting shaft is far from the end point of the first bearing and is connected with the first connecting part block. The connection of the shockproof packing box is shown in Figure 1.

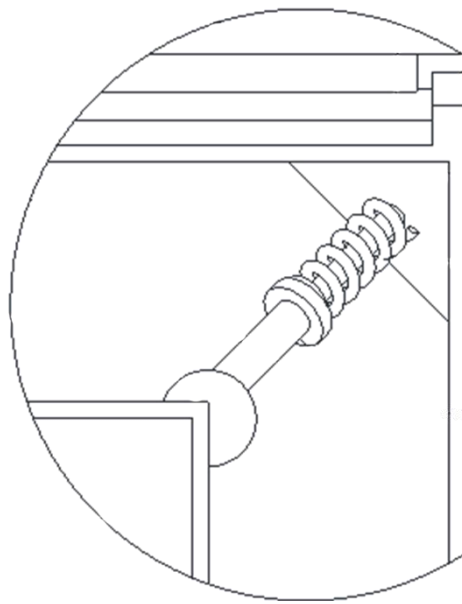


Figure 1. Connection of shockproof packaging box

Shockproof packaging box clearly shows how to connect the structure, the structure is simple and convenient to use, shockproof packaging box at the separation of a single shaft arm is not subject to other local restrictions, even if one of the failures, other structures can also play the same function to protect the object, in addition, the distance between the shaft arms always maintain the same, to ensure that the buffer force of each position is equal, better protect the object in the box, The split display diagram of the joint is shown in Figure 2.

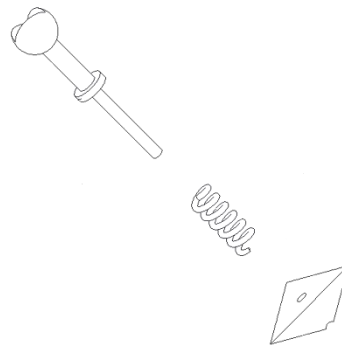


Figure. 2 Split display of connection of shockproof packaging box

Specifically, the parts of the first stuck object of the first cushioned object are stuck at the top corner of the first, and the parts of the second stuck object are stuck at the top corner of the corresponding top corner of the first top corner of the first box; The part of the first stuck object of the second cushioning object is stuck at the top corner of the third, and the part of the second stuck object is leaning against the top corner of the corresponding corner of the third top corner of the first box; The part of the first stuck object of the third cushioned object is stuck at the top corner of the sixth, and the part of the second stuck object is leaning against the top corner of the first box corresponding to the top corner of the sixth; The part of the first stuck object of the fourth cushioned object is propped against the top corner of the eighth, and the part of the second stuck object is propped against the top corner of the corresponding top corner of the eighth most of the first box. Thus, the second box is secured inside the first box with four objects

used as buffers, and a spring is used to cushion the second box inside the first box to prevent the impact of the second box items.

## 5. Conclusion

In summary, as described above, the implementation example of the packaging invention is used for shock-proof packaging of the box, four cushioning objects are used to secure the second box inside the first box, and the spring of each cushioning object is used to achieve the cushioning effect of the second box inside the first box, preventing the effects of the contents of the second box. The product has the advantages of convenient use, simple structure and so on. All of the above is just an excellent example of the implementation of the packaging box invention, there is no limit to the next product invention, technical workers in this field, the packaging box invention has a variety of changes and changes. All the modifications, replacements and improvements made in the spirit and principle of this product invention are included in the protection scope of the invention of this packaging box.

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