

# The Application of Convenient Egg Packing Box Device in Optimization Design

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## Abstract

eggs are known as nutrition health food, because of its shell thin and fragile, easily broken, therefore in the process of carrying or transporting for cheng fang egg egg packaging plays an important role, we went to buy eggs in life generally directly into plastic bags, and the egg in the bag will have conflict in collision situation, make eggs is easily broken, resulting in waste of eggs,, and plastic bags and plastic litter box will damage the environment, contrary to the idea of environmental protection.

## Keywords

packaging; Optimization; Device; Convenient to carry.

## 1. Technical Background

The utility model relates to a portable egg packaging box, which relates to the technical field of packaging box. Including the outer box and drawer, one side of the outer box is open with a number of first notch; The first groove is provided with a second groove on the opposite side; A surface of a drawer is open with a number of third slots; A surface of the third groove is fixed with a number of first springs; The other end of the first spring is fixed with a first sliding block; Sliding fit of the first slider and the third groove; The other end face of the first slider is fixed with a movable plate; A fourth notch is opened on one surface of the drawer; A fourth notch is provided with a fifth notch on a surface; A connecting rod is fixed on the opposite surface of the fourth groove; A second through hole is opened on the side of the connecting rod; The connecting rod and the clasp are connected by a second spring rotation. By sliding the second slider and the second slot, and rotating the clamping ring and connecting rod, the egg can be prevented from breaking during transportation. Fixing the first handle on one surface of the outer box and the second handle on one surface of the drawer can make the packing box easy to carry.

## 2. Structural Design

The utility model relates to a portable egg packaging box, which comprises an outer box (1) and a drawer (2). One side of the outer box (1) is fixed with a plurality of locks (102); The outer box (1) is open with a plurality of first slots (103) on one opposite side; The first notch (103) is provided with a second notch (104) on the opposite side. One end of the second notch is fixed with a limiting block (105);

The drawer (2) has a surface fixing second handle (201); A lock ring (202) is fixed on the surface of the drawer (2); A surface of the drawer (2) is opened with a plurality of third slots (203); A surface of the third groove (203) is fixed with a plurality of first springs (204); The first spring (204) is fixed with a first sliding block (301) at the other end; The first sliding block (301) and the third slot (203) are sliding mating; The first sliding block (301) is fixed with a movable plate (3) on the other end surface; The surface of the drawer (2) is provided with a fourth slot (205);

The fourth notch (205) is provided with a fifth notch (206) on the surface; A connecting rod (207) is fixed on the opposite surface of the fourth groove (205); A second through hole (208) is opened on the periphery side of the connecting rod (207); The connecting rod (207) and the clasp ring (4) are connected by a second spring (5).

1. According to a portable egg packaging box mentioned in claim 1, the characteristics lie in that the movable plate (3) has a certain number of second sliding blocks (302) fixed on a relative surface; The circumferential side of the second sliding block (302) is fitted with the sliding of the second slot (104).
2. According to a portable egg packing box mentioned in claim 1, its characteristics lie in that the snap ring (4) has a first perforation (401) on the surface; The first consistent perforation (401) inner surface is provided with a sixth notch (402).
3. According to a portable egg packaging box mentioned in claim 1, the characteristics lie in that one end of the second spring (5) is fixed with a first fixing rod (501); The circumferential side of the first fixed rod (501) is matched with the buckle of the second through hole (208); One end of the second spring (5) is fixed with a second fixing rod (502); The peripheral side of the second fixed rod (502) is matched with the buckle of the sixth slot (402); The circumferential side of the second spring (5) is matched by the first consistent perforation (401).
4. According to a portable egg packaging box mentioned in claim 1, its feature lies in that the cross section of the fifth notch (206) is a semi-elliptic structure.
5. According to a portable egg packing box mentioned in claim 1, its feature lies in that the cross section of the second notch (104) is isosceles trapezoid structure.
6. According to a portable egg packing box mentioned in claim 1, the characteristic lies in that the clip ring (5) is made of a material with good flexibility.
7. According to a portable egg packing box mentioned in claim 1, the characteristic is that the locking ring (202) fits with the locking buckle (102).

### 3. Technical Analysis

This design belongs to the technical field of packing box, especially relates to a portable egg packing box. The purpose is to provide a portable egg packaging box, through the second sliding block and the second slot sliding fit, lock buckle and lock ring buckle fit, can prevent the egg in the process of transportation collision caused by breaking; A fifth groove is opened on the surface of the fourth groove. The clamping ring rotates with the connecting rod, and the first sliding block slides with the third groove to further prevent the eggs from being broken during transportation. Fixing the first handle on one surface of the outer box and the second handle on one surface of the drawer can make the packing box easy to carry; Can be used repeatedly, avoid the waste of resources.

The utility model relates to a portable egg packaging box, which comprises an outer box and a drawer. The opposite surface of the outer box is fixedly provided with a plurality of locks; The opposite surface of the outer box is open with a plurality of first notch; The first notch is provided with a second notch on the opposite side; One end of the second notch is fixed with a limiting block;

A surface fixing second handle of the drawer; One surface of the drawer is fixedly provided with a lock ring; A surface of the drawer is opened with a plurality of third slots; The surface of the third groove is fixedly provided with a plurality of first springs; The other end of the first spring is fixed with a first sliding block; The first sliding block is matched with the third groove; The other end face of the first sliding block is fixed with a movable plate; A surface of the drawer is provided with a fourth notch; A fifth notch is arranged on a surface of the fourth notch; A connecting rod is fixed on a relative surface of the fourth groove; A second through hole is

opened on the side of the connecting rod; The connecting rod and the clasp are connected by a second spring rotation.

Further, one of the moving plates is fixed with a second sliding block relative to the other; The peripheral side of the second sliding block is matched with the sliding of the second slot.

Further, the snap ring 1 surface is provided with a first straight perforation; The first perforating inner surface is provided with a sixth notch.

Further, one end of the second spring is fixed with a first fixing rod; The circumferential side of the first fixed rod is matched with the snap buckle of the second through hole; One end of the second spring is fixed with a second fixing rod; The circumferential side of the second fixed rod is matched with the buckle of the sixth slot; The circumferential side of the second spring is matched with a consistent perforating rotation.

Further, the cross section of the fifth notch is a semi-elliptic structure.

Further, the cross section of the second notch is an isosceles trapezoidal structure.

Furthermore, the clasp is made of a material with good flexibility.

Further, the locking ring (202) is matched with the locking buckle (102).

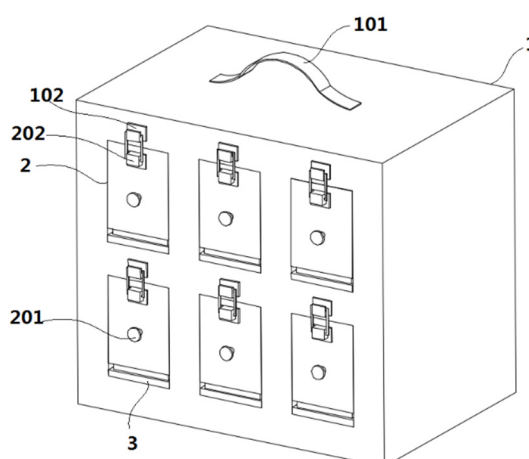
It has the following beneficial effects:

By sliding the second sliding block and the second notch, the lock lock and the lock ring buckle can cooperate, which can prevent the eggs from being broken in the process of transportation; A fifth groove is opened on the surface of the fourth groove. The clamping ring rotates with the connecting rod, and the first sliding block slides with the third groove to further prevent the eggs from being broken during transportation. Fixing the first handle on one surface of the outer box and the second handle on one surface of the drawer can make the packing box easy to carry; Can be used repeatedly, avoid the waste of resources.

Of course, the implementation of any product does not necessarily need to achieve all the benefits described above.

#### 4. Implementation Cases

In order to more clearly shows that the implementation example of technical solution, below the appended drawings of use necessary to implement the case description is introduced simply, clearly, described below the appended drawings just yes, some cases, for the field common technical personnel, on the premise of not giving creative labor, can also according to the appended drawings for other appended drawings.



**Fig 1.** is the structure diagram of a portable egg box

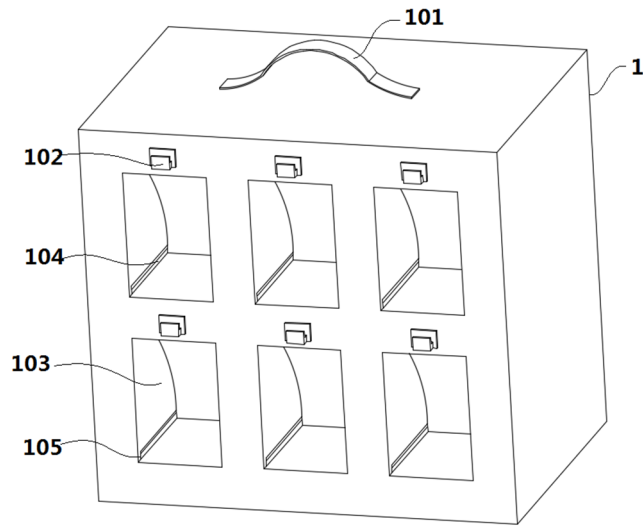


Fig 2. is the schematic diagram of the outer box.

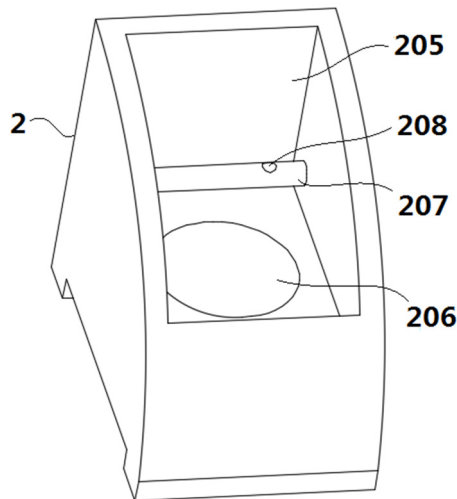


Fig 3. is the structural diagram of the drawer.

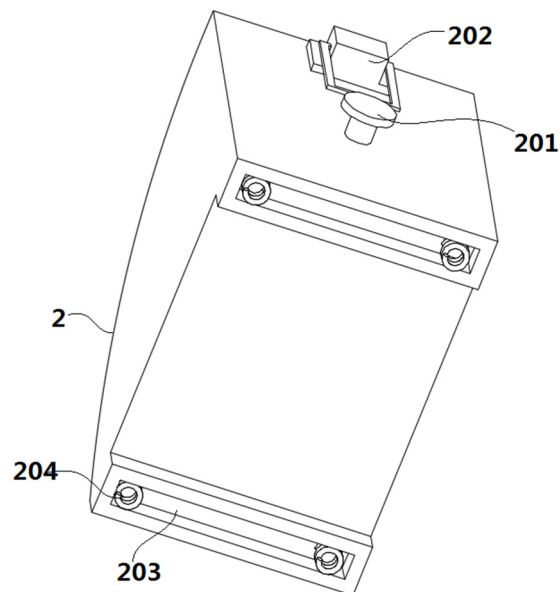


Fig 4. is the structural diagram of the drawer viewing Angle

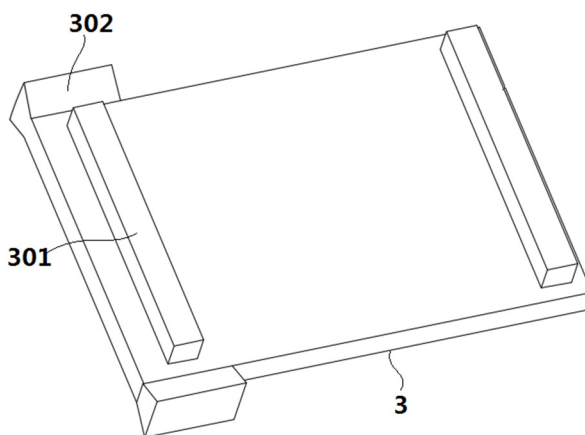


Fig 5. is a schematic diagram of the movable plate.

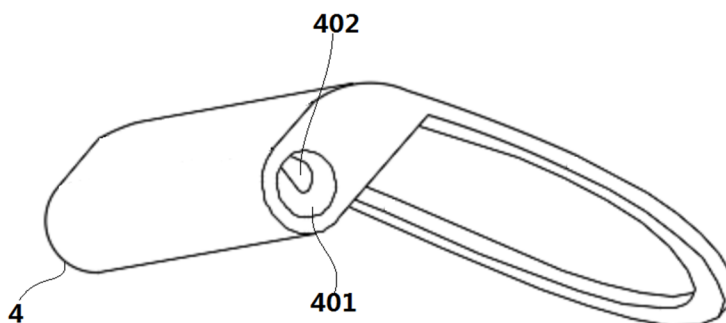


Fig 6. is the schematic diagram of the clasp

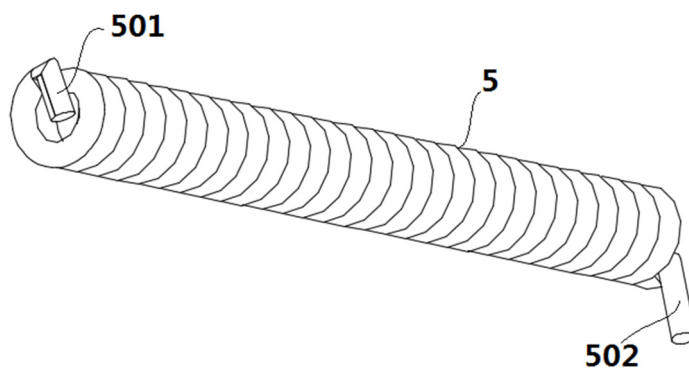


Fig 7. is the structural diagram of the second spring.

In the attached figure, the parts represented by each label are listed as follows:

1 - outside the box, drawer is 2 -, 3 - activity board, 4 - snap ring, the second spring, 5-101 - the first head, 102 - lock, 103 - the first slot, 104 - the second slot, 105 - set blocks, a 201 - second in command, 202 - lock ring, 203 - the third slot, 204 - the first spring, 205 - the fourth slot, 206-5 notches, 207 - link rod, 208 - the second through hole, 301 - the first sliding block, 302 - the second sliding block, 401 - the first punch, slit, 402-6, 501 - the first fixed link, 502 - the second fixed link.

## 5. Specific Implementation Methods

The technical scheme in the embodiments will be clearly and completely described in combination with the attached drawings in the embodiments below. Obviously, the

embodiments described are only part of the embodiments, not all of them. Based on the embodiments in, all other embodiments obtained by ordinary technicians in the field without creative labor are within the scope of protection.

In the description of the need to understand is that the term "opening", "up", "down", "thickness", "top", "in", "length", "inside" and "around" indicates a location or position, only is to facilitate the description and simplified description, rather than instructions or suggest referring to components or elements must have a specific location, in a specific orientation structure and operation, therefore cannot be understood as to limit.

Please refer to figure 1-7, which is a portable egg packaging box, including outer box 1 and drawer 2. Outer box 1 has the first handle 101 fixed on the surface; The outer box 1 is fixed with six locks on the opposite side 102; There are six first slots 103 on the opposite side of the outer box 1. The first groove 103 is provided with a second groove 104 on each side; One end of the second groove is fixed with a limit block 105; Drawer 2 a surface fixed second handle 201; The surface of drawer 2 is fixed with a lock ring 202; Lock ring 202 fits with lock buckle 102; Drawer 2 has two third slots open on the surface. There are two first springs fixed on the surface of the third groove 203. The first spring 204 is fixed with the first slider 301 at the other end; The first slide block 301 slides with the third slot 203; The other end face of the first slider 301 is fixed with a movable plate 3; Drawer 2 has a fourth slot 205 on the surface; A fifth notch 206 is arranged on the surface of the fourth notch 205; A connecting rod 207 is fixed on the opposite side of the fourth groove 205; A second through-hole 208 is opened on the side of the connecting rod 207; The connecting rod 207 is connected with the clasp 4 by the second spring 5.

As shown in FIG. 2 and FIG. 5, there are two second sliding blocks 302 fixed on the opposite side of the movable plate 3; The circumferential side of the second slide block 302 slides with the second slot 104.

As shown in FIG. 6, there is a first punch on the surface of ring 4; The first consistently perforated 401 inner surface is opened with a sixth notch 402.

As shown in FIG. 3, FIG. 6 and FIG. 7, one end of the second spring 5 is fixed with the first fixed bar 501; The 501 circumferential side of the first fixed rod is matched with 208 clasp of the second through hole; The second fixed rod 502 is fixed on one end of the second spring 5; The side of the second fixed rod 502 is matched with the 402 buckle of the sixth slot; The second spring 5 weeks side and the first consistent hole 401 rotation match.

As shown in FIG. 3, the cross-section of the fifth notch 206 is a semi-elliptic structure.

As shown in figure 2, the cross-section of the second notch 104 is an isosceles trapezoidal structure.

As shown in figure 6, clasp 5 is made of a material with better flexibility.

Among them, as shown in FIG. 2 and FIG. 4, lock ring 202 fits with lock buckle 102.

A specific application of this embodiment is: The portable egg box when use, open and lock 102 card buckle lock ring 202, pull the second in 201 to drive the second sliding block 302, the second side slide block 302 weeks and the second slot 104 sliding fit the drawer open 2, upward pull the snap ring 4, the first consistently punch 401 and the second spring running fit on the side of the 5 weeks, the eggs into the sixth notches, loosen the hand, spring may drive the first 50 fixed rod and second fixed rod 502 turn, make up the card and eggs of ring side buckle, promote the second in command, will lock with lock ring 102 202 card buckle to cooperate.

In the description of this specification, a description of the reference terms "an embodiment", "an example", "a concrete example", etc., means at least one embodiment or example contained in combination with the specific features, structures, materials or features described by the embodiment or example. In this specification, a schematic representation of the above terms does not necessarily refer to the same embodiment or example. Furthermore, the specific

features, structures, materials, or features described may be combined in an appropriate manner in any one or more embodiments or examples.

## 6. Conclusion

The above disclosed preferred embodiments are intended only to assist in elaboration. Preferred embodiments do not describe in detail all the details nor do they limit the invention to the specific embodiments described. Obviously, according to the contents of this manual, a lot of modifications and changes can be made. The purpose of selecting and describing these embodiments in this specification is to better explain the principles and practical applications so that the technical personnel in the technical field can well understand and use them. Subject only to the claims and their full scope and equivalents.

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