

Design and Research of Red Wine Packaging Box with Multi - Point Design

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Abstract

Involves a bottle more balance of solid red wine box, the purpose is to solve the existing in the existing technology of the existing wine only play the role of the packing box, wine bottle in the course of carriage, will produce the shaking, so as to make the wine bottle is easy damaged, economic losses caused by the faults, and puts forward a kind of bottle multiple equilibrium solid red wine packaging.

Keywords

Wine Packaging Box; Design; Design; Clip Solid.

1. Introduction

Packaging box, as its name implies, is a box used to pack products, which can be classified by material, for example: Paper box, tin box, wooden box, cloth box, leather box, acrylic box, corrugated boxes, PVC boxes, packaging is to ensure that products in the transportation safety, improve the grade of the product, such as red wine is a kind of wine, does not necessarily mean red wine, red wine ingredient is fairly simple, is the natural fermentation brewing wine, contains most of the grape juice, Wine has many classification methods, in terms of finished product color, can be divided into red wine, white wine and pink wine three categories, the existing red wine packaging box can only play the role of packaging, wine bottles in the process of transportation, will produce shaking, which makes wine bottles easy to damage, resulting in economic losses.

2. Design Content

In order to achieve the above purposes, the design adopts the following technical solutions:

A bottle more balance of solid red wine box, including the box body, described in the upper has lifted the lid of the box body, described the underside of the lid through two symmetrical set of opening and closing mechanism and the box body wall connection, described at the bottom of the box body in fixed connection with shelf, shelf described in opened wine bottle at the bottom of the tank, described shelf with lateral holding mechanism, Described in the shelf at the bottom of the arcuate plate is fixed connection, described arc plate with bottleneck holding mechanism, described the lid underside fixed connection with the installation of two symmetrical set cover, install enclosure described by mobile mechanism connected with mobile, described throughout the lower end of the moving block installed at the bottom of the cover and the fixed connection with mounting bracket, described mounts inside connection has roof by buffering mechanism, The fixed cover is provided with a transmission mechanism corresponding to the moving mechanism, and the two sides of the box body are provided with a vent, and the vent is rotatedly connected with a ventilation plate, and the lower side of the ventilation plate is provided with a ventilation mechanism.

The opening and closing mechanism comprise a limit slot arranged on the lower side of the box cover, the limit slot is fixedly connected with a limited rod, the limit rod sliding sleeve is provided with a sliding sleeve, the lower side of the sliding sleeve is fixedly connected with a connecting plate, the lower side of the connecting plate is fixedly connected with the L-shaped plate on the side wall of the box body.

L the outer edge of the plate is equipped with the first model T pull rod, as described in the first model T pull rod through the end of L plate wall and push plate is fixed connection, push board described by two symmetrical set the first spring and l-shaped plate connection, push the plate away from the first described T lever on one side of the fixed link has three isometric array thrust rod, described in the box body wall runs and corresponding slot plug pole, One end of the insert rod away from the push plate penetrates the connecting plate and extends to the slot.

Lateral holding mechanism including located on either side of the shelf fourth T pull rod, described the fourth T tie rod end throughout the shelf wall and side plate is fixed connection, side panel described by two symmetrical set of telescopic rod connected with the inner wall of the shelf, described position has 5 spring telescopic rod and described the fifth springs at both ends and the inner wall of the shelf and lateral plate connection.

The bottleneck clamping mechanism comprises two symmetrical setting of the adjusting bolt, the arc plate is provided with a movable mouth corresponding to the adjusting bolt, the end of the adjusting bolt through the movable mouth side wall and threaded connection with the sliding seat, the sliding seat away from the adjusting bolt through the movable mouth side wall and fixedly connected with the splint.

The moving mechanism comprises a rotating screw connected to the top of the mounting cover, the moving seat is provided with a screw groove corresponding to the screw, the two sides of the moving seat are fixedly connected with two third slider, the inner wall of the mounting cover is provided with a third sliding groove corresponding to the third slider.

The buffer mechanism comprises a rotary connection on the top side of the roof of the two symmetrical setting of the oblique rod, the oblique rod away from the roof of the rotary connection with the first slider, the top of the mounting frame is provided with the first slider corresponding to the first chute, the two first slider through the third spring connection.

Transmission mechanism including rotational connection within the fixed cover at the bottom of the main transmission shaft, referred to the top of the main shaft through the fixed cover top and fixed connection with rotary table, described the main transmission shaft on a fixed set of there is main sprocket, described the main chain of vice sprocket, both sides have described vice splice countershaft, sprocket internal fixation described countershaft top and fixed enclosure at the top of the rotating connection, The lower end of the auxiliary drive shaft in turn through the bottom of the fixing cover, the top of the box cover and the installation cover and the upper end of the screw rod is fixedly connected, the main sprocket and the auxiliary sprocket through a chain connection.

Fixed on the main shaft sleeve with outer ring gear, described in the outer side of the ring gear is equipped with a fixed connection in the fixed cover at the top of the support plate, support plate away from the side of the outer ring gear described with the second T pull rod, as described in the second T pull rod through the end of support plate and fixed finite plate connected, described by two second spring limit board and support plate connection, The limit plate is fixedly connected with a limit tooth corresponding to the outer gear ring on one side far from the second T type pull rod.

Ventilation mechanism includes fixed links the rung on the box body wall, described the underside of the rung by two fourth spring connected with the third T pull rod, described the third T stick top of rotational connection second slider, described ventilation board runs and second slider corresponds to the second chute, described the third T the under side of the tie

4. Existing Technical Solutions

In order to more clearly explains the design example existing technology or the technical proposal, the following described for example or existing technology in the appended drawings of the need to use introduce simply, clearly, described below the appended drawings is just this design, some of the cases, for the field common technical personnel, on the premise of not giving creative labor, You can also obtain additional drawings based on these drawings, as shown in Figure 2-7.

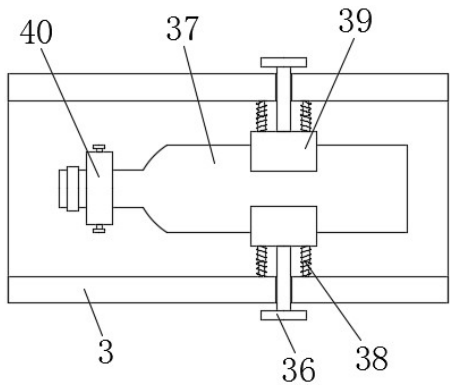


Figure 2. Schematic diagram of overhead structure of the shelf

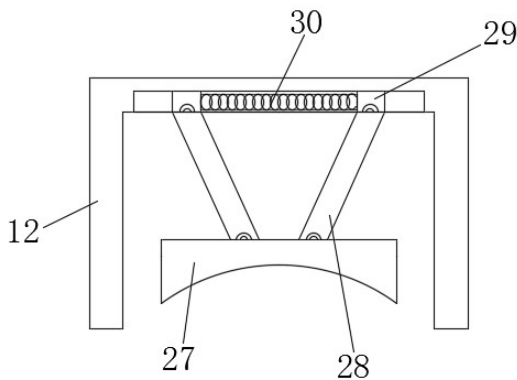


Figure 3. is the side-view structure diagram of the installation frame designed in this paper.

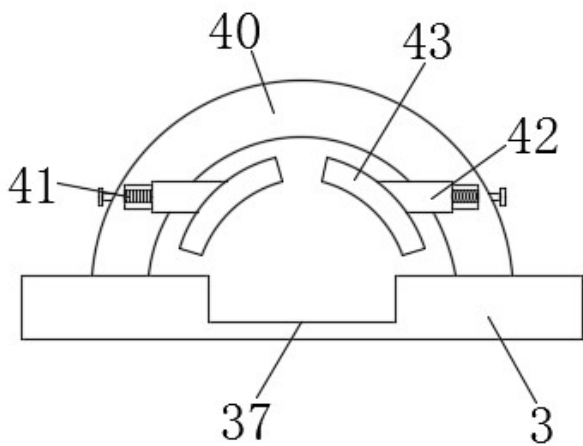


Figure 4. is the side-view structure diagram of the curved plate designed in this paper

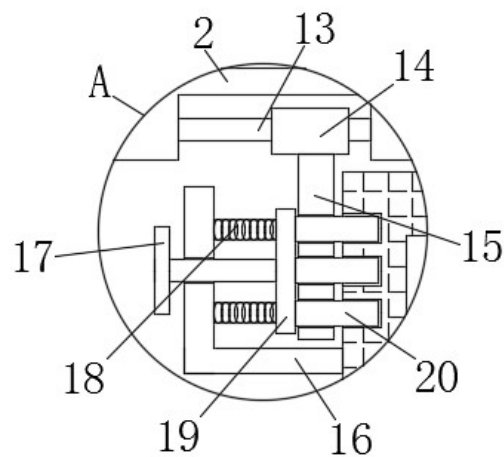


Figure 5. is an enlarged schematic diagram of the structure at A in Figure 1 of this design.

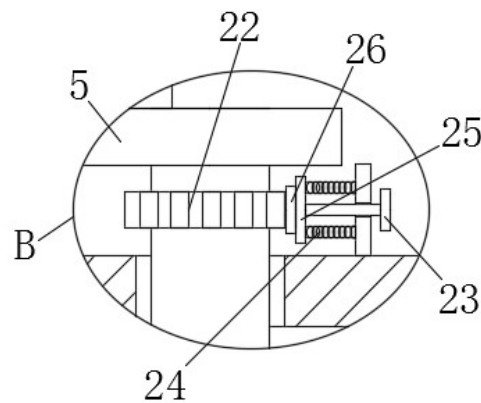


Figure 6. is an enlarged schematic diagram of the structure at B in Figure 1 of this design.

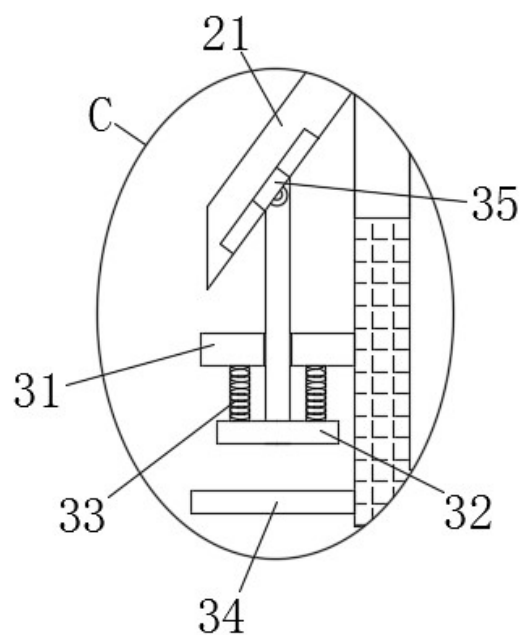


Figure 7. is an enlarged schematic diagram of the structure at C in Figure 1 of this design

In the picture: 1. Box body; 2. Box cover; 3. Storage rack; 4, fixed cover; 5, rotary table; 6. Main sprocket; 7, sprocket; 8. Chain; 9. Install cover; 10. Screw rod; 11. Mobile seat; 12. Mounting frame; 13, limit rod; 14. Sliding sleeve; 15. Connecting plate; 16, L plate; 17, the first T type pull rod; 18, the first spring; 19, push plate; 20. Insert rod; 21, ventilation plate; 22. Outer gear ring; 23, the second T type pull rod; 24, the second spring; 25, limit plate; 26, limit tooth; 27. Roof; Oblique rod; 29. First slider; 30, the third spring; 31, horizontal plate; The third T type pull rod; 33, the fourth spring; Magnet; 35, the second slider; The fourth T type pull rod; Wine bottle trough; 38, telescopic rod; 39. Side plate; 40, arc plate; 41, adjusting bolt; Slide seat; 43. Splint.

5. Specific Implementation Methods

The following is a clear and complete description of the technical scheme in this design embodiment combined with the attached drawings of this design embodiment. Obviously, the described embodiment is only a part of the design embodiment, not all of the embodiment. Based on the embodiments in this design, all other embodiments obtained by ordinary technical personnel in this field without creative labor are protected by this design.

Please refer to Figure 1-7. This design provides a technical solution: A bottle more balance of solid red wine box, including 1 box body, 1 upper has lifted the lid of the box body 2, lifted the lid underside of 2 through setting the opening and closing mechanism of two symmetrical 1 wall connection, and the box body opening and closing mechanism include opening under the lid 2 side limit slot, fixed connection finite limit slot 13, 13 sliding limit lever set equipped with sliding sleeve 14, The lower side of the sliding sleeve 14 is fixedly connected with a connecting plate 15, the lower side of the connecting plate 15 is fixedly connected with an L-shaped plate 16 on the side wall of the box body 1, the outer side of the L-shaped plate 16 is provided with a first T-shaped pull rod 17, the end of the first T-shaped pull rod 17 runs through the side wall of the L-shaped plate 16 and is fixedly connected with a push plate 19, The push plate 19 is connected with the L-shaped plate 16 through two symmetrically arranged first spring 18. The side of the push plate 19 away from the first T-type tie rod 17 is fixedly connected with three equidistant inserted rod 20. The side wall of box body 1 is provided with a slot corresponding to the inserted rod 20, the end of the inserted rod 20 away from the push plate 19 runs through the connecting plate 15 and extends to the slot. By pulling the first T-rod 17, the first T-rod 17 moves to move the push plate 19, and the push plate 19 moves to pull the insert rod 20 out of the slot. At this time, the connecting plate 15 on both sides can be pulled, so as to open the lid 2 and take the wine easily.

The inner bottom of box body 1 is fixedly connected with object rack 3, the inner bottom of object rack 3 is provided with a wine bottle groove 37, object rack 3 is provided with a side clamping mechanism, the side clamping mechanism comprises a fourth T-rod 36 on both sides of object rack 3, the end of the fourth T-rod 36 runs through the side wall of object rack 3 and is fixedly connected with a side plate 39, The side plate 39 is connected with the inner wall of the shelf 3 by two symmetrically arranged telescopic rod 38. The telescopic rod 38 is provided with a fifth spring, and both ends of the fifth spring are respectively connected with the inner wall of the shelf 3 and the side plate 39.

The bottom of shelf 3 is fixedly connected with an arc plate 40, the arc plate 40 is provided with a bottleneck clamping mechanism, the bottleneck clamping mechanism comprises two symmetrically arranged adjusting bolt 41, the arc plate 40 is provided with a movable mouth corresponding to the adjusting bolt 41, the end of the adjusting bolt 41 runs through the side wall of the movable mouth and is threaded with a sliding seat 42, One end of the sliding seat 42 away from the adjusting bolt 41 runs through the side wall of the movable mouth and is fixated with splint 43. The fourth T-rod 36 can make the side plate 39 clamped and fixed to the side of

the wine bottle because of the recovery force of the telescopic rod 38 and the fifth spring set on it.

Lifted the lid 2 side under fixed connection with the installation of two symmetrical set cover 9, install cover 9 through mobile mechanism in connection with mobile 11, mobile mechanism including rotational connection in installation cover at the top of the screw within the 9 10, mobile within 11 runs and 10 corresponding screw thread slot, mobile 11 are fixed on both sides of the connection has two third slider, The inner wall of installation cover 9 is provided with the third chute corresponding to the third slider. The screw 10 rotates to move the moving seat 11, the moving seat 11 moves to move the mounting frame 12, and the mounting frame 12 moves to move the roof 27 to fix the bottle in the vertical direction.

The lower end of the moving seat 11 runs through the bottom of the installation cover 9 and is fixedly connected with the installation frame 12, the installation frame 12 is connected with the roof 27 through the buffer mechanism, the buffer mechanism includes two symmetric oblique rod 28 connected to the upper side of the roof 27, the oblique rod 28 is far from the roof 27 at the end of the rotation is connected with the first slider 29, Mounting bracket in the top 12 runs with the first slide block and the corresponding first chute, two by the third spring 30 connection between the first slider 29, red wine bottle shaking will drive the 27 roof movement, the roof 27 mobile turns diagonal 28, 28 rotation drive the first slide block diagonal 29 mobile, the first slider 29 mobile drive the third spring 30 stretch, The vibration of the wine bottle will be offset by the recovery force of the third spring, 30.

Fixed and mobile mechanism cover 4 with the corresponding transmission mechanism, transmission mechanism including rotational connection within the fixed cover 4 at the bottom of the main shaft, with the top of the main shaft through the fixed cover 4 top and fixed connection with rotary table 5, there is main sprocket on a fixed set of 6 on the main shaft, both sides of the main chain wheel 6 vice sprocket has 7, deputy sprocket within 7 fixed plug have a drive shaft, Associate with the top of the shaft with fixed cover 4 at the top of the rotating joint, the lower end of the countershaft, in turn, through the fixed cover 4, lifted the lid and 2 installed at the bottom of the cover 9 top and connected to the screw top 10 fixed, the sprocket vice sprocket 6 and 7 through the chain between 8 connections, rotary table 5 turning drive main shaft, the main shaft rotate drive sprocket 6, The rotation of main sprocket 6 drives the rotation of secondary sprocket 7 through chain 8, which drives the rotation of secondary sprocket 7, and the rotation of secondary drive shaft drives the rotation of screw rod 10.

Fixed on the main shaft sleeve with outer ring gear 22, 22 on one side of the outer ring gear has a fixed link at the top of a fixed cover 4 support plate, support plate away from the outer ring gear side is equipped with a second T bar 22, 23, 23 runs through the end of the second T pull rod support plate and the fixed connection finite plate 25, limit board 24 and 25 by two second spring support plate connection, The limit plate 25 is fixedly connected with the limit tooth 26 corresponding to the outer ring 22 on one side away from the second T-rod 23. By pulling the second T-rod 23 and moving the second T-rod 23, the limit tooth 26 on the limit plate 25 is separated from the outer ring 22. At this time, the turntable 5 can be rotated.

On both sides of the box body are open air vents, vents within rotational connection with ventilation board 21, ventilation plate under 21 side is equipped with ventilation, ventilation mechanism including fixed connection in the box body the rung 31 on 1 side, rung the underside of 31 through two fourth spring connected with the third T pull rod 32 33, a third of the 32 T bars rotational connection with a second upper slider 35, Ventilation plate 21 is provided with a second chute corresponding to the second slider 35, and the lower side of the third T-rod 32 is provided with a magnet 34 fixedly connected to the side wall of box body 1. The third T-rod 32 is made of iron, and the third T-rod 32 is separated from the magnet 34 by pulling the third T-rod 32 upward. The third T-rod 32 moves up the recovery force of the fourth spring 33, thus driving the rotation of the ventilation plate 21, so as to open the vent, so as to facilitate the

ventilation of the box body 1, so as to prevent the wine bottle from being damp and breeding bacteria.

Working principle: By pulling the second T pull rod 23, the second T 23 moving rod drive limit board outside the limit of teeth on the 25 and 26 gear ring and separation, the rotating turntable 5, rotary table 5 turning drive main shaft, the main shaft rotate drive sprocket 6, main sprocket 6 rotate through the chain 8 deputy sprocket drive 7, 7 turning drive countershaft vice sprocket, Vice shaft turn drive screw rotation 10, screw rotation driven mobile 11 mobile 10, 11 movement to drive 12 mobile rack installation, adjustment, loosen the second T pull rod, 23, 24 restoring force of the drive to limit due to the second spring board outside the limit of teeth on the 25 and 26 22 meshing gear ring, which can prevent the rotary table 5 reversal, The installation frame 12 moves to drive the roof 27 to fix the bottle in the vertical direction. At the same time, when the wine bottle shakes, the roof 27 moves, the roof 27 moves to drive the inclined rod 28, the inclined rod 28 moves to drive the first slider 29, the first slider 29 moves to drive the third spring 30 to stretch, Due to the third spring 30 restoring force to offset the wine bottle by vibration, which can be carried out on the wine bottle buffer shock absorption, prevent body fracture, 4 T pull rod 36 due to the telescopic rod 38 and its position of the fifth restoring force of spring, which can make the side panel and fixed on the side of the wine bottle clamping, so as to make the wine bottle fixed effect is better, By turning adjusting bolt 41, adjust the bolt 41 rotation drives the sliding seat 42 mobile, slide 42 mobile drive splint on wine bottle neck of 43 fixed clamping, reduce the bottlenecks of the swaying amplitude, by pulling the first 17, T pull rod first 17 mobile T pull rod drive the push board the 19th move, push board 19 20 from the slot mobile driving inserted link, On both sides of the movable connection plate 15, which is easy to open the lid 2, thereby facilitating take take red wine, by pulling up the third T pull rod 32, to separate the 3 T pull rod 32 from the magnet 34, third T pull rod 32 shift due to the fourth spring restoring force of 33 meeting, thus turns 21 ventilation plate, which can open the air vents, So as to facilitate the ventilation of the box body 1, so as to prevent the wine bottle from being damp and breeding bacteria, the above is all the working principle of this design.

6. Conclusion

For the technical personnel in the field, it is obvious that the design is not limited to the details of the above demonstrative embodiment, but can be realized in other concrete forms without deviating from the spirit or basic characteristics of the design. Therefore, embodiments should in all respects be considered exemplary and non-restrictive, and the scope of the design is limited by the attached claims and not by the above description, so that all variations falling within the meaning and scope of the equivalent elements of the claims are intended to be included in the design. No drawings attached to the claim shall be deemed to limit the claims involved.

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