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(54) **A LATCH STRUCTURE**  
VERRIEGELUNGSSTRUKTUR  
STRUCTURE DE VERROUILLAGE

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## Description

**[0001]** The present disclosure relates to a latch structure for connecting a first object with a second object. More specifically, the present disclosure relates to a latch structure that can be used to separably connect and/or lock two objects together.

**[0002]** US 2020/298392 A1 relates to a latch mechanism configured to secure two bodies together by simply placing one body on top of the other and applying moderate downward pressure to the top body. The latch mechanism includes a housing and a latch partially disposed within the housing. The latch includes a main body, and a primary hook and an opposing secondary hook both extending from the main body. The latch is configured to be rotatable between a first position and a second position. In the first position, the primary hook is not obscured by the housing. In the second position, the primary hook is substantially obscured by the housing. The latch mechanism also includes a bias configured to bias the latch toward its first position.

**[0003]** US 9 725 209 B1 relates to a tool box assembly including first and second tool boxes. The second tool box is arranged to removably sit on top of the first tool box. For each of the tool boxes, at least one of the side walls includes a lip near the top portion. The lip has an edge that faces outwards from the at least one of the side walls. A latch is arranged to slide along the at least one of the side walls towards and away from the lip. The latch includes a catch that includes a catch edge. The catch is pivoted about a pivot so that the catch edge is movable towards and away from the at least one of the side walls. The latch is biased by a first biasing device configured to provide an urging force to urge the latch towards the top portion. The catch is biased by a second biasing device configured to provide an urging force to urge the catch edge towards the at least one of the side walls.

**[0004]** When objects such as boxes, crates, or pallets that are stacked one above another, adjacent stacked objects can be joined together by a latch to improve the stability of the stacked-up objects. However, when separating the stacked items, the latch structures known in the prior art are inconvenient to unlatch. Usually, the uppermost item must be unlatched from the adjacent item immediately below it by two hands, before it can be released and removed from the stack. This is often inconvenient.

**[0005]** Accordingly, in view of the above-mentioned defects of prior art latches, the purpose of the present disclosure is to provide an improved latch structure.

**[0006]** This object is solved with a latch structure according to Claim 1. Particular advantageous embodiments are specified in the dependent claims.

**[0007]** The present disclosure discloses a latch structure that can be used on a carrier such as a box or crate. The left and right sides of the cover of the carrier are each provided with an elastic pull latch that can be pulled out. The elastic pull latch has one sidewall that extends

over the upper surface of the latch to form a straight edge above the upper surface. The top portion of the straight edge may be referred to as a latch bar and is configured with a latch groove with an inward opening. An elastic boss capable of moving vertically is mounted inside the elastic pull latch. When assembled, the upper end of the elastic boss extends out of the upper surface of the latch. The left and right sides at the bottom of the carrier are each configured with a catch groove, and a catch is provided on the lower edge of the catch groove.

**[0008]** When multiple carriers of the same or similar structures are stacked one above another, a catch at the bottom of the upper carrier of two adjacent carriers is snapped into the latch groove of an elastic pull latch located on the cover of the lower carrier. The bottom side of the catch of the upper carrier touches and depresses the elastic boss of the elastic pull latch of the lower carrier. After the elastic pull latch of the lower carrier is pulled out, the elastic boss rises above and extends out of the upper surface of the latch so it becomes blocked by the catch. As such, the elastic pull latch is held on the outer side of the catch. The elastic pull latch remains in a pulled-out position and is prevented from moving inwards.

**[0009]** In some embodiments, the left and right sides of the cover of a carrier are each provided with a chute with an outward opening. The elastic pull latch is arranged inside the chute with the side wall of the elastic pull latch being exposed outside the carrier. The end of the elastic pull latch that is exposed outside the carrier is also referred to as the outer end of the elastic pull latch.

**[0010]** In some embodiments, the top portion of the straight edge of the side wall is provided with a latch bar, and the latch groove is located on an inner side of the latch bar.

**[0011]** In some embodiments, an upper end of the latch bar has a slope on its inner side.

**[0012]** In some embodiments, when two carriers of the same structure are stacked one above another, on each side of the stacked-up carriers the latch bar of the lower carrier is snapped into the catch groove of the upper carrier and the catch of the upper carrier is snapped into the latch groove of the lower carrier.

**[0013]** In some embodiments, a first spring extending horizontally is fitted inside the elastic pull latch. A stop piece is connected to the first spring and is mounted on the elastic pull latch. The first spring is retained by the stop piece and a side wall of the elastic pull latch. The bottom surface of the elastic pull latch has an elongated through-hole extending horizontally. The stop piece is in sliding-fit with the elongated through-hole and can slide along the elongated through-hole. The lower end of the stop piece extends outside the elongated through-hole. The chute on the upper cover of the carrier has a snap-in hole shaped to match the lower end of the stop piece so that the lower end of the stop piece can be snapped into the snap-in hole. In some embodiments, the elastic pull latch may be configured with multiple first springs, for example two first springs as shown in Fig. 3, and mul-

tiple corresponding through-holes.

**[0014]** In some embodiments, a second spring extending vertically is mounted inside the elastic pull latch, for example, on the lower inner surface of the elastic pull latch, and is connected to the elastic boss. The elastic boss may be situated on top of the second spring. The upper surface of the elastic pull latch has an opening allowing the top of the elastic boss to pass through.

**[0015]** In some embodiments, the elastic pull latch is internally provided with an accommodating slot for housing the elastic boss. The lower end of the elastic boss may include a spring recess with a downward opening for housing the second spring.

**[0016]** In some embodiments, the bottom side of the catch of the upper carrier of two adjacent carriers is in contact with and presses onto the top of the elastic boss of the elastic pull latch of the lower carrier. When the elastic pull latch of the lower carrier is pulled outwards, the elastic boss of the elastic pull latch moves outwards. After the elastic boss moves away from the catch and moves upwards from underneath the bottom of the catch, the catch blocks the elastic boss so that the elastic boss is held on the outer side of the catch and the latch is prevented from retracting inwards.

**[0017]** In some embodiments, the carrier may be a box, a trunk, a crate, or a pallet.

**[0018]** One of the advantages of the latch structure disclosed in the present disclosure is that, when stacked carriers need to be separated, each elastic pull latch can be pulled out using one hand and will remain in a pulled-out state without retracting so that other elastic pull latches can be released one by one. In this way, stacked up carriers can be released and unlatched "single-handedly," literally speaking, making the latch more convenient to use.

**[0019]** The present disclosure discloses a specific latch structure, comprising a carrier, wherein left and right sides of an upper end of the carrier are each provided with an elastic pull latch that can be pulled out; an upper end of the elastic pull latch has a catch groove with an inward opening; an elastic boss capable of moving vertically is mounted in the elastic pull latch; an upper end of the elastic boss extends out of the upper end of the carrier; left and right sides of a lower end of the carrier are each provided with a latch groove, and a catch is provided in a lower end of the latch groove; when at least two carriers of the same structure are stacked one above another, the catch at the lower end of one of two adjacent carriers is snapped into the catch groove of the elastic pull latch at the upper end of the other carrier, and a bottom portion of the catch depresses the elastic boss; and after the elastic pull latch of the lower carrier of the two adjacent carriers is pulled out, the elastic boss is retained on an outer side of the catch.

**[0020]** In an embodiment of said specific latch structure, left and right sides of the upper cover are each provided with a chute with an outward opening; the elastic pull latch is arranged in the chute; and an outer end of

the elastic pull latch is exposed outside the carrier.

**[0021]** In an embodiment of said specific latch structure of paragraph [0017], wherein a top portion of the outer end of the elastic pull latch is provided with a latch bar, and the catch groove is located on an inner side of the latch bar.

**[0022]** In an embodiment of said specific latch structure of paragraph [0018], wherein an upper end of the latch bar has a slope on an inner side.

**[0023]** In an embodiment of said specific latch structure of paragraph [0018], when at least two carriers of the same structure are stacked one above another, the latch bar of one of adjacent carriers is snapped into the latch groove of the other carrier.

**[0024]** In an embodiment of said specific latch structure of paragraph [0017], a first spring extending horizontally is mounted in the elastic pull latch; a stop piece is further mounted in the elastic pull latch; the first spring is retained between the stop piece and an inner wall of the elastic pull latch; the bottom portion of the elastic pull latch has an elongated through-hole extending horizontally; the stop piece is in sliding fit with the elongated through-hole; a lower end of the stop piece penetrates through the elongated through-hole; the chute has a snap-in hole correspondingly shaped to the lower end of the stop piece; and the lower end of the stop piece is snapped into the snap-in hole.

**[0025]** In an embodiment of said specific latch structure of paragraph [0016], wherein a second spring extending vertically is mounted in the elastic pull latch; the elastic boss is disposed over the second spring; and the upper end of the elastic pull latch has a penetrating hole allowing the upper end of the elastic boss to penetrate through.

**[0026]** In an embodiment of said specific latch structure of paragraph [0022], the elastic pull latch is internally provided with an accommodating slot; the elastic boss is arranged in the accommodating slot; the lower end of the elastic boss has a spring recess with a downward opening; and the second spring is arranged in the spring recess.

**[0027]** In an embodiment of said specific latch structure of paragraph [0016], wherein a bottom portion of the catch of one of two adjacent carriers is in contact with a top portion of the elastic boss of the other carrier; when the elastic pull latch is pulled outwards, the elastic boss moves outwards; and after the top portion of the elastic boss is separated from the bottom portion of the catch, the elastic boss moves upwards, so that the elastic boss is retained on the outer side of the catch.

**[0028]** In an embodiment of said specific latch structure of any one of paragraphs [0016] - [0024], the carrier is a box.

**[0029]** These and other features of the present disclosure will become readily apparent upon further review of the following specification and drawings. In the drawings, like reference numerals designate corresponding parts throughout the views. Moreover, components in the drawings are not necessarily drawn to scale, the empha-

sis instead being placed upon clearly illustrating the principles of the present disclosure.

Fig. 1 is a schematic diagram of a carrier configured with a latch of the present disclosure;

Fig. 2 is a schematic diagram showing the bottom of a carrier provided with a latch of the present disclosure;

Fig. 3 is a schematic diagram of an overall structure of an elastic pull latch of the present disclosure;

Fig. 4 is a schematic diagram of an internal structure of a pull latch of the present disclosure;

Fig. 5 is a schematic diagram of a carrier cover configured with a pull latch of the present disclosure;

Fig. 6 is a schematic diagram showing two boxes joined together by two latches of the present disclosure;

Fig. 7 is an enlarged view of region A in Fig. 6;

Fig. 8 is a schematic diagram showing two boxes unlatched from each other when the latches are released; and

Fig. 9 is an enlarged view of region B in Fig. 8.

**[0030]** Embodiments of the disclosure are described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the disclosure are shown. The various embodiments of the disclosure may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the disclosure to those skilled in the art.

**[0031]** In referring to Fig. 1 - Fig. 9, the present disclosure discloses a latch structure that can be used on a carrier such as a trunk or a box. These terms may be used interchangeable herein and are not intended to limit the manner of how the disclosed device is used or the scope of the disclosure. The left and right sides of the cover 2 of the carrier are each provided with an elastic pull latch 3 that can extend outwards when pulled. The top of the elastic pull latch 3 is a latch bar 321, which has a latch groove 3211 with an inward opening. An elastic boss 33 capable of moving vertically is mounted in the elastic pull latch 3. The top of the elastic boss 33 extends out of the upper surface of the carrier. The left and right sides of the bottom of the carrier are each provided with a catch groove 11. A catch 12 resembling a rectangular block or a ridge is provided on the lower edge of the catch groove 11.

**[0032]** When at least two carriers of the same or similar structure are stacked one above another, the catch 12 at the bottom of an upper carrier is snapped into the latch groove 3211 of the elastic pull latch 3 on the upper cover 2 of the lower carrier, and the bottom surface of the catch 12 on the upper carrier touches and depresses the elastic boss 33 of the pull latch 3 on the lower carrier. After the elastic pull latch 3 of the lower carrier is pulled out, the elastic boss 33 moves upwards and is then blocked by the catch 12. The pull latch 3 is being prevented from retracting inwards and is held on the outer side of the catch 12. See Fig. 8 and Fig. 9 for reference.

**[0033]** When one carrier is stacked above another carrier, the catch 12 on the bottom of the upper carrier is snapped into the latch groove 3211 of the elastic pull latch 3 located on the cover 2 of the lower carrier. The bottom side of the catch 12 depresses the elastic boss 33. See Fig. 6 and Fig. 7. After the elastic pull latch 3 of the lower carrier is pulled out, the elastic boss 33 is held on the outer side of the catch 12 because the catch 12 blocks the elastic boss 33 preventing the pull latch 3 from moving inwards.

**[0034]** As shown in Fig. 1 and Fig. 5, the left and right sides of the upper cover 2 of a carrier are each provided with a chute 21 with an outward opening. The elastic pull latch 3 is arranged inside the chute 21 on the cover 2. The outer end of the elastic pull latch 3 remains outside the chute 21.

**[0035]** As shown in Fig. 3, a top portion of the outer end of the elastic pull latch 3 includes a latch bar 321 that sticks outside the pull latch cover 32. The latch groove 3211 is located on the inner side of the latch bar 321. The upper end of the latch bar 321 has a slope 3212 on the inner side, the side that faces the interior of the pull latch cover 32. In some embodiments, the slope 3212 matches the slope of the catch groove 11 as shown in Fig. 7. When one box is stacked above another box, the latch bar 321 of the lower box is snapped into the catch groove 11 of the upper box, as shown in Fig. 7. Because the upper end of the latch bar 321 is shaped into a slope 3212, when the catch 12 of the upper box is in contact with the slope 3212 of the latch bar 321 of the lower box, the elastic pull latch 3 is pushed outwards to snap the catch 12 into the latch groove 3211 of the pull latch and snap the latch bar 312 into the catch groove 11.

**[0036]** As shown in Figs. 3-5, two first springs 34 extending horizontally are mounted in the elastic pull latch 3. Two stop pieces 35 are mounted in the elastic pull latch 3. Each of the first springs 34 is retained between a stop piece 35 and an inner wall of the elastic pull latch 3. The bottom portion of the elastic pull latch 3 has two elongated through-holes 311 extending horizontally. The stop pieces 35 are in sliding-fit with the elongated through-holes 311 and can slide through the through-holes 311. The lower end of each stop piece 35 passes through and comes out of the elongated through-holes 311. The chute 21 on the upper cover 2 of the box is internally provided with a snap-in hole 211 shaped to

match the lower end of the stop piece 35. The lower end of the stop piece 35 can be snapped into the snap-in hole 211. When the elastic pull latch 3 is pulled outwards, the stop piece 35 stays inside the snap-in hole 211 and the first spring 34 becomes compressed.

**[0037]** As shown in Fig. 4, a second spring 36 extending vertically is mounted in the elastic pull latch 3 and the elastic boss 33 is situated on the second spring 36. The upper surface of the elastic pull latch 3 has an opening 322, allowing the top of the elastic boss 33 to pass through. In the embodiments shown in Figs. 7 and 9, the elastic pull latch 3 is internally provided with an accommodating slot 323. The elastic boss 33 is arranged in the accommodating slot 323. The lower end of the elastic boss 33 includes a spring recess 331 with a downward opening. The second spring 36 is housed in the spring recess 331.

**[0038]** In Fig. 6 and Fig. 7, two boxes are stacked one on top of the other. The boxes are securely latched together using two elastic pull latches 3. When in a locked position, the bottom of the catch 12 of the upper box is in contact with the top of the elastic boss 33 of the lower box, and the second spring 36 underneath the elastic boss 33 is compressed. When the latch is released as shown in Fig. 8 and Fig. 9, the elastic pull latch 3 is pulled outwards and the elastic boss 33 moves outwards. After the elastic boss 33 moves away from the catch 12, the elastic boss 33 is pushed upward by the compressed second spring 36. See Fig. 9. When in a released position, the elastic boss 33 is held on the outer side of the catch 12 and the elastic pull latch 3 remains in a pulled-out state.

**[0039]** As shown in Figs. 3 and 4, the elastic pull latch 3 includes a base 31 and a pull latch cover 32 on top of the base 31. The accommodating slot 323 (see Fig. 7), the opening 322, and the latch bar 321 are arranged in or on the pull latch cover 32. The elongated through-hole or through-holes 311 are formed in the base 31.

**[0040]** In some embodiments, when a plurality of boxes are stacked one above another, the catch 12 of an upper box can directly snap into the latch groove 3211 of a lower box, as shown in Fig. 7 and Fig. 8. When the stacked boxes need to be separated, the elastic pull latches 3 can be released one by one, instead of being released one pair at a time by both hands. In this way, the stacked boxes can be separated and removed more conveniently. After the upper box is removed, the elastic boss 33 in the elastic pull latches 3 of the lower box is no longer held by the catch 12. The elastic pull latch 3 of the lower box is automatically reset by the compressed first springs 34.

**[0041]** In sum, a latch structure comprising an elastic pull latch is disclosed. The top of the elastic pull latch includes a latch bar configured with a latch groove. The elastic pull latch also includes an elastic boss that moves in and out of the latch cover of the pull latch. On both sides of a box, an elastic pull latch is provided at the top and a catch groove having a catch affixed to the lower

edge is provided at the bottom. When two boxes are stacked together, the catch in the catch groove of the upper box is snapped into the latch groove of the elastic pull latch of the lower box to securely connect the two boxes. When the latch is released, the catch of the upper box blocks the elastic boss of the latch of the lower box to prevent the latch from retracting inwards.

## 10 Claims

1. A latch structure for connecting a first object with a second object; comprising

an elastic pull latch (3), wherein the elastic pull latch (3) includes a latch cover (32), a base (31), **characterized in that** the elastic pull latch (3) further includes an elastic boss (33) mounted on the base (31) and capable of moving vertically when mounted in the elastic pull latch (3), and a latch bar (321) that extends above the latch cover (32) and is configured with a latch groove (3211); and

a catch (12) that is affixed inside a catch groove (11);

wherein the elastic pull latch (3) is installed on the first object and the catch groove (11) is provided on the second object with the catch (12) affixed to the lower edge of the catch groove (11);

wherein the latch cover (32) is configured with an opening to accommodate the top of the elastic boss (33), and the top of the elastic boss (33) is configured to move through the opening of the latch cover (32);

wherein when the catch (12) is snapped into the latch groove (11) of the elastic pull latch (3) and the top of the elastic boss (33) is pressed into the opening by the catch (12), the latch (3) is fastened to securely connect the first object and the second object; and

wherein when the latch (3) is released, the elastic boss (33) moves out of the opening and is blocked by the catch (12) to prevent the elastic pull latch from retracting inwards.

2. A latch structure as defined in claim 1, wherein when the latch (3) is fastened, the latch bar (321) is snapped into the catch groove (11).

3. A latch structure as defined in claim 2, wherein the elastic pull latch (3) is arranged inside a chute (21) on the first object; and an outer end of the elastic pull latch (3) is exposed outside the chute (21) on the first object.

4. A latch structure as defined in claim 3, wherein the latch bar (321) is located on a top portion of the outer

end of the elastic pull latch (3), and the latch groove (3211) is located on an inner side of the latch bar (321).

5. A latch structure as defined in claim 4, wherein an upper end of the latch bar (321) has a slope (3212) shape on an inner side.

6. A latch structure as defined in claim 3, wherein one or more first springs (34) extending horizontally are mounted in the elastic pull latch (3), a stop piece (35) is attached to each of the one or more first springs (34) and is further mounted in the elastic pull latch (3), each of the first springs (34) is retained between the stop piece (35) and an inner wall of the elastic pull latch (3);

wherein the base (31) of the elastic pull latch (3) is configured with one or more elongated through-holes (311) extending horizontally, each stop piece (35) is in sliding fit with each elongated through-hole (311) with a lower end of each stop piece (35) passing through the elongated through-hole (311); and

wherein the chute (21) has one or more snap-in holes (211), each shaped to match the lower end of the stop piece (35) to allow the lower end of the stop piece (35) to be snapped into the snap-in hole (211).

7. A latch structure as defined in claim 1, wherein a second spring (36) extending vertically is mounted in the elastic pull latch (3); wherein the elastic boss (33) is situated on the second spring (36); and wherein the opening on the latch cover (32) of the elastic pull latch (3) allows the top of the elastic boss (33) to pass through.

8. A latch structure as defined in claim 7, wherein the elastic pull latch (3) is internally provided with an accommodating slot (323) for housing the elastic boss (33); wherein the lower end of the elastic boss (33) has a spring recess (331) with a downward opening (322); and wherein the second spring (36) is arranged in the spring recess (331).

9. A latch structure as defined in claim 1, wherein when the latch (3) is fastened, a bottom portion of the catch (12) is in contact with a top portion of the elastic boss (33); wherein when the elastic pull latch (3) is pulled outwards, the elastic boss (33) moves outwards; and wherein after the elastic boss (33) moves away from the bottom portion of the catch (12), the elastic boss (33) moves upwards and the elastic boss (33) is held by the catch on the outer side of the catch (12).

10. A latch structure as defined in any one of the preceding claims, wherein the first object and the sec-

ond object are boxes (1) stacked on top of each other.

## 5 Patentansprüche

1. Verriegelungsstruktur zum Verbinden eines ersten Gegenstandes mit einem zweiten Gegenstand; mit

einem elastischen Zugriegel (3), wobei der elastische Zugriegel (3) einen Riegeldeckel (32), ein Unterteil (31) einschließt, **dadurch gekennzeichnet, dass** der elastische Zugriegel (3) weiterhin einen elastischen Vorsprung (33), der auf dem Unterteil (31) angebracht ist und sich vertikal bewegen kann, wenn er in dem elastischen Zugriegel (3) angebracht ist, und eine Riegelstange (321), die sich über dem Riegeldeckel (32) erstreckt und mit einer Riegelnut (3211) ausgebildet ist; und

einen Haken (12), der im Innern einer Hakenrinne (11) befestigt ist, enthält; wobei der elastische Zugriegel (3) an dem ersten Gegenstand eingebaut ist und die Hakenrinne (11) an dem zweiten Gegenstand vorgesehen ist, wobei der Haken (12) an der unteren Kante der Hakenrinne (11) befestigt ist;

wobei der Riegeldeckel (32) mit einer Öffnung ausgebildet ist, um das obere Ende des elastischen Vorsprungs (33) aufzunehmen, und das obere Ende des elastischen Vorsprungs (33) gestaltet ist, um sich durch die Öffnung des Riegeldeckels (32) zu bewegen;

wobei, wenn der Haken (12) in die Riegelnut (11) des elastischen Zugriegels (3) eingerastet ist und das obere Ende des elastischen Vorsprungs (33) in die Öffnung von dem Haken (12) gedrückt wird, der Riegel (3) befestigt ist, um den ersten Gegenstand und den zweiten Gegenstand fest miteinander zu verbinden;

wobei, wenn der Riegel (3) gelöst wird, der elastische Vorsprung (33) sich aus der Öffnung herausbewegt und von dem Haken (12) blockiert wird, um den elastischen Zugriegel daran zu hindern, sich wieder einwärts zu bewegen.

2. Verriegelungsstruktur nach Anspruch 1, bei der, wenn der Riegel (3) befestigt ist, die Riegelstange (321) in die Hakenrinne (11) eingerastet ist.

3. Verriegelungsstruktur nach Anspruch 2, bei der der elastische Zugriegel (3) innerhalb eines Schachtes (21) an dem ersten Gegenstand angeordnet ist; und ein äußeres Ende des elastischen Zugriegels (3) außerhalb des Schachtes (21) an dem ersten Gegenstand freiliegend ist.

4. Verriegelungsstruktur nach Anspruch 3, bei der die

Riegelstange (321) an einem oberen Abschnitt des äußeren Endes des elastischen Zugriegels (3) angeordnet ist, und die Riegelnut (3211) auf einer Innenseite der Riegelstange (321) angeordnet ist.

5. Verriegelungsstruktur nach Anspruch 4, bei der ein oberes Ende der Riegelstange (321) die Form einer Schräge (3212) an einer Innenseite hat.

6. Verriegelungsstruktur nach Anspruch 3, bei der eine oder mehrere erste Federn (34), die sich horizontal erstrecken, in dem elastischen Zugriegel (3) angebracht sind, ein Anschlagstück (35) an jeder der einen oder mehreren ersten Federn (34) befestigt und ferner in dem elastischen Zugriegel (3) angebracht ist, jede der ersten Federn (34) zwischen dem Anschlagstück (35) und einer Innenwand des elastischen Zugriegels (3) zurückgehalten ist;

wobei das Unterteil (31) des elastischen Zugriegels (3) mit einem oder mehreren länglichen Durchgangslöchern (311) ausgebildet ist, die sich horizontal erstrecken, sich jedes Anschlagstück (35) in einem Gleitsitz mit jedem länglichen Durchgangsloch (311) befindet, wobei ein unteres Ende (35) eines jeden Anschlagstücks (35) durch das längliche Durchgangsloch (311) hindurchgeht; und

wobei der Schacht (21) ein oder mehrere Einrastlöcher (211) hat, von denen jedes so geformt ist, dass es mit dem unteren Ende des Anschlagstücks (35) zusammenpasst, damit das untere Ende des Anschlagstücks (35) in das Einrastloch (211) einrasten kann.

7. Verriegelungsstruktur nach Anspruch 1, bei der eine zweite Feder (36), die sich vertikal erstreckt, in dem elastischen Zugriegel (3) angebracht ist; bei der der elastische Vorsprung (33) auf der zweiten Feder (36) platziert ist; und bei der die Öffnung an dem Riegeldeckel (32) des elastischen Zugriegels (3) dem oberen Ende des elastischen Vorsprungs (33) gestattet, durch sie hindurchzugehen.

8. Verriegelungsstruktur nach Anspruch 7, bei der der elastische Zugriegel (3) im Innern mit einem Aufnahmeschlitz (323) für die Unterbringung des elastischen Vorsprungs (33) versehen ist; bei der das untere Ende des elastischen Vorsprungs (33) eine Federmulde (331) mit einer nach unten gerichteten Öffnung (322) hat; und bei der die zweite Feder (36) in der Federmulde (331) angeordnet ist.

9. Verriegelungsstruktur nach Anspruch 1, bei der, wenn der Riegel (3) befestigt ist, ein unterer Abschnitt des Hakens (12) in Kontakt mit einem oberen Abschnitt des elastischen Vorsprungs (33) ist; bei der, wenn der elastische Zugriegel (3) nach außen

gezogen wird, der elastische Vorsprung (33) sich nach außen bewegt; und bei der, nachdem sich der elastische Vorsprung (33) von dem unteren Abschnitt des Hakens (12) wegbewegt, der elastische Vorsprung (33) sich nach oben bewegt, und der elastische Vorsprung (33) von dem Haken auf der Außenseite des Hakens (12) gehalten wird.

10. Verriegelungsstruktur nach irgendeinem der vorhergehenden Ansprüche, bei der der erste Gegenstand und der zweite Gegenstand Kisten (1) sind, die aufeinander gestapelt sind.

## 15 Revendications

1. Structure de verrouillage pour relier un premier objet à un deuxième objet ; comprenant

un verrou à traction élastique (3), le verrou à traction élastique (3) comportant un couvercle de verrou (32), une base (31), **caractérisée en ce que** le verrou à traction élastique (3) comporte en outre un bossage élastique (33) monté sur la base (31) et capable de se déplacer verticalement lorsqu'il est monté dans le verrou à traction élastique (3), et une barre de verrou (321) qui s'étend au-dessus du couvercle de verrou (32) et est conçue avec une rainure de verrou (3211) ; et

un organe de blocage (12) qui est fixé à l'intérieur d'une rainure d'organe de blocage (11) ; le verrou à traction élastique (3) étant installé sur le premier objet et la rainure d'organe de blocage (11) étant prévue sur le deuxième objet avec l'organe de blocage (12) fixé sur le bord inférieur de la rainure d'organe de blocage (11) ; le couvercle de verrou (32) étant conçu avec une ouverture pour recevoir le dessus du bossage élastique (33), et le dessus du bossage élastique (33) étant conçu pour se déplacer à travers l'ouverture du couvercle de verrou (32) ; lorsque l'organe de blocage (12) est encliqueté dans la rainure de verrou (11) du verrou à traction élastique (3) et que le dessus du bossage élastique (33) est enfoncé dans l'ouverture par l'organe de blocage (12), le verrou (3) étant fixé pour relier solidement le premier objet et le deuxième objet ; et

lorsque le verrou (3) est relâché, le bossage élastique (33) sortant de l'ouverture et étant bloqué par l'organe de blocage (12) afin d'empêcher le verrou à traction élastique de se rétracter vers l'intérieur.

2. Structure de verrouillage telle que définie dans la revendication 1, lorsque le verrou (3) est fixé, la barre de verrou (321) étant encliquetée dans la rainure

d'organe de blocage (11).

3. Structure de verrouillage telle que définie dans la revendication 2, le verrou à traction élastique (3) étant disposé à l'intérieur d'une goulotte (21) sur le premier objet ; et une extrémité extérieure du verrou à traction élastique (3) étant exposée à l'extérieur de la goulotte (21) sur le premier objet. 5
4. Structure de verrouillage telle que définie dans la revendication 3, la barre de verrou (321) étant située sur une partie supérieure de l'extrémité extérieure du verrou à traction élastique (3), et la rainure de verrou (3211) étant située sur un côté intérieur de la barre de verrou (321). 10 15
5. Structure de verrouillage telle que définie dans la revendication 4, une extrémité supérieure de la barre de verrou (321) ayant une forme de pente (3212) sur un côté intérieur. 20
6. Structure de verrouillage telle que définie dans la revendication 3, un ou plusieurs premiers ressorts (34) s'étendant horizontalement étant montés dans le verrou à traction élastique (3), un élément de butée (35) étant fixé au premier ressort ou à chacun des premiers ressorts (34) et étant en outre monté dans le verrou à traction élastique (3), chacun des premiers ressorts (34) étant retenu entre l'élément de butée (35) et une paroi intérieure du verrou à traction élastique (3) ; 25 30
 

la base (31) du verrou à traction élastique (3) étant conçue avec un ou plusieurs trous traversants allongés (311) s'étendant horizontalement, chaque élément de butée (35) étant en ajustement coulissant avec chaque trou traversant allongé (311), une extrémité inférieure de chaque élément de butée (35) passant à travers le trou traversant allongé (311) ; et 35 40

la goulotte (21) ayant un ou plusieurs trous d'encliquetage (211), chacun étant formé pour correspondre à l'extrémité inférieure de l'élément de butée (35) pour permettre à l'extrémité inférieure de l'élément de butée (35) de s'encliquer dans le trou d'encliquetage (211). 45
7. Structure de verrouillage telle que définie dans la revendication 1, un deuxième ressort (36) s'étendant verticalement étant monté dans le verrou à traction élastique (3) ; le bossage élastique (33) étant situé sur le deuxième ressort (36) ; et l'ouverture sur le couvercle de verrou (32) du verrou à traction élastique (3) permettant au dessus du bossage élastique (33) de passer à travers. 50 55
8. Structure de verrouillage telle que définie dans la revendication 7, le verrou à traction élastique (3)

étant pourvu à l'intérieur d'une fente de réception (323) pour loger le bossage élastique (33) ; l'extrémité inférieure du bossage élastique (33) ayant un renforcement pour ressort (331) doté d'une ouverture vers le bas (322) ; et le deuxième ressort (36) étant disposé dans le renforcement pour ressort (331).

9. Structure de verrouillage telle que définie dans la revendication 1, lorsque le verrou (3) est fixé, une partie inférieure de l'organe de blocage (12) étant en contact avec une partie supérieure du bossage élastique (33) ; lorsque le verrou à traction élastique (3) est tiré vers l'extérieur, le bossage élastique (33) se déplaçant vers l'extérieur ; et après que le bossage élastique (33) s'est éloigné de la partie inférieure de l'organe de blocage (12), le bossage élastique (33) se déplaçant vers le haut et le bossage élastique (33) étant maintenu par l'organe de blocage sur le côté extérieur de l'organe de blocage (12).
10. Structure de verrouillage telle que définie dans l'une quelconque des revendications précédentes, le premier objet et le deuxième objet étant des boîtes (1) empilées l'une sur l'autre.

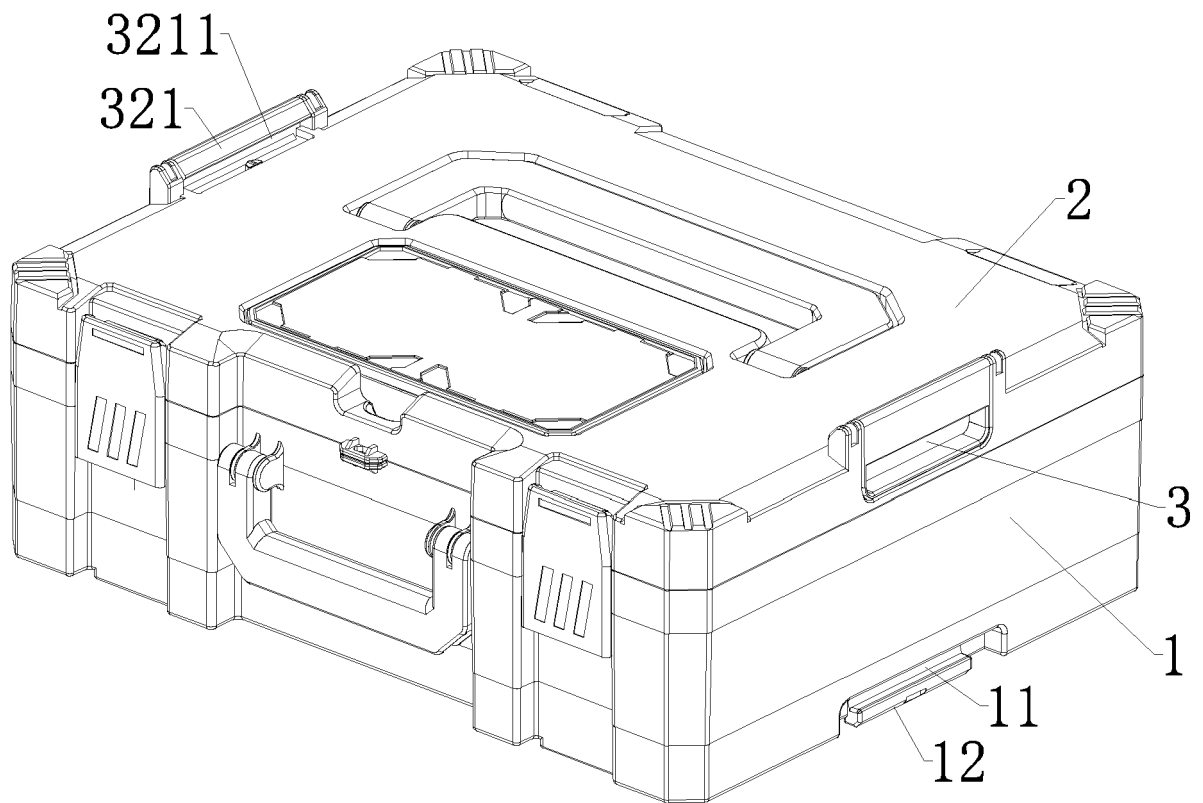


FIG. 1

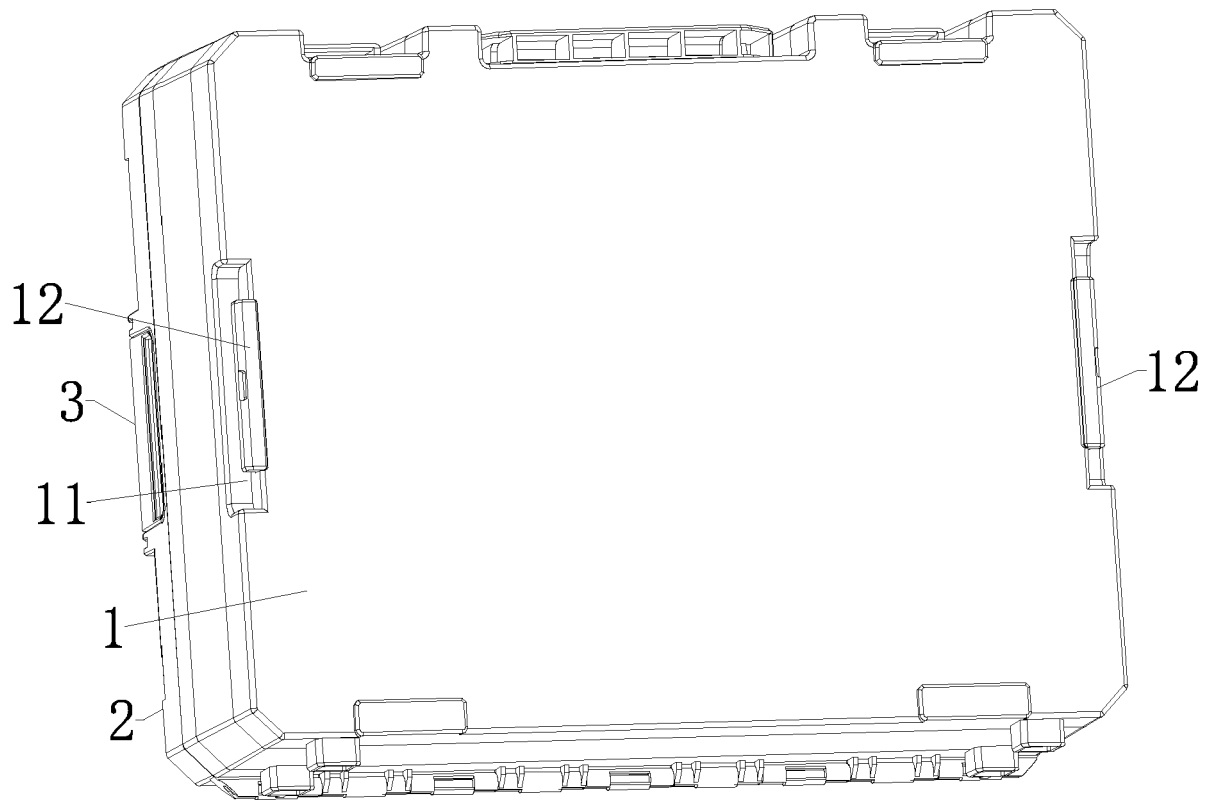


FIG. 2

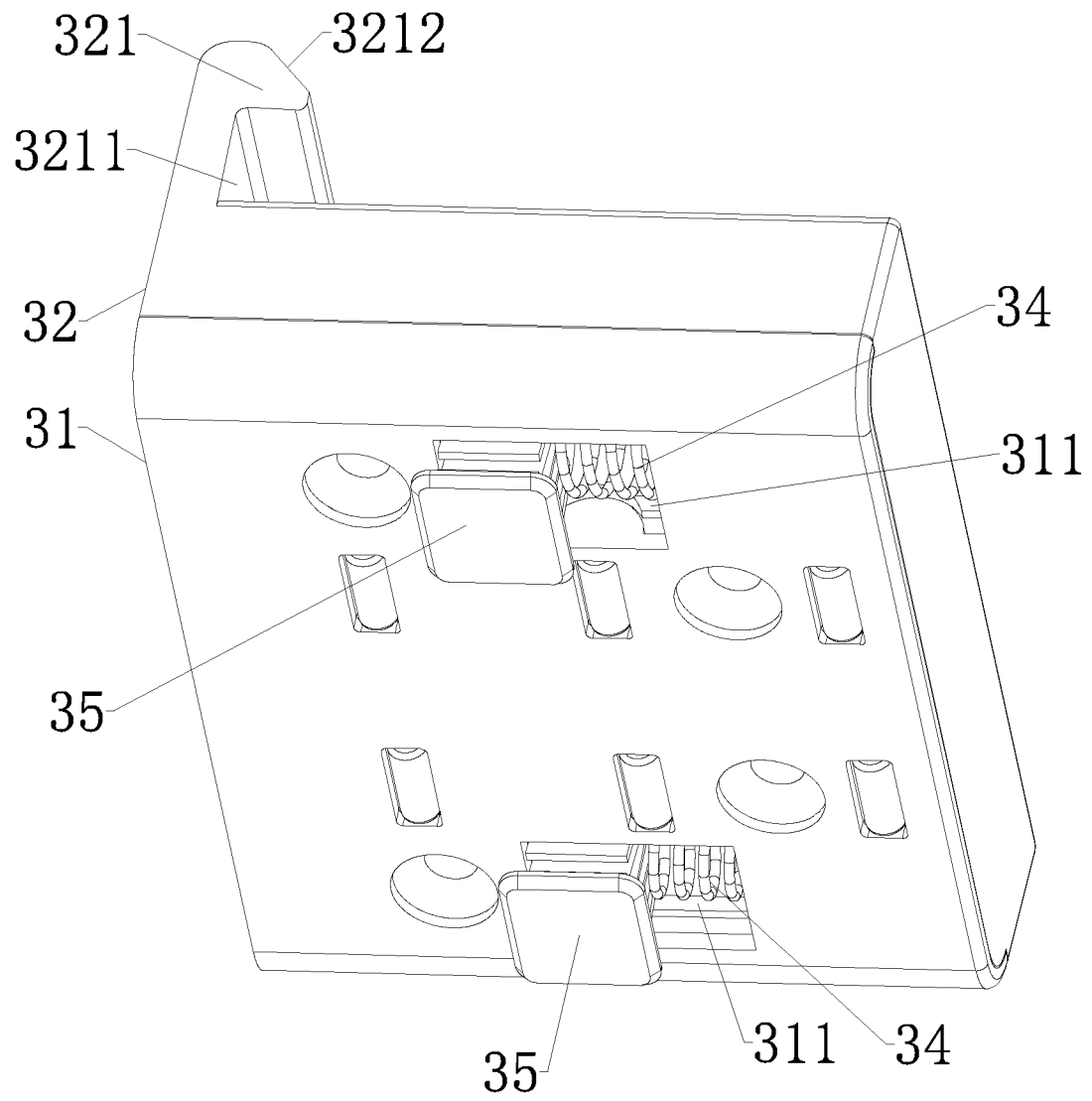


FIG. 3

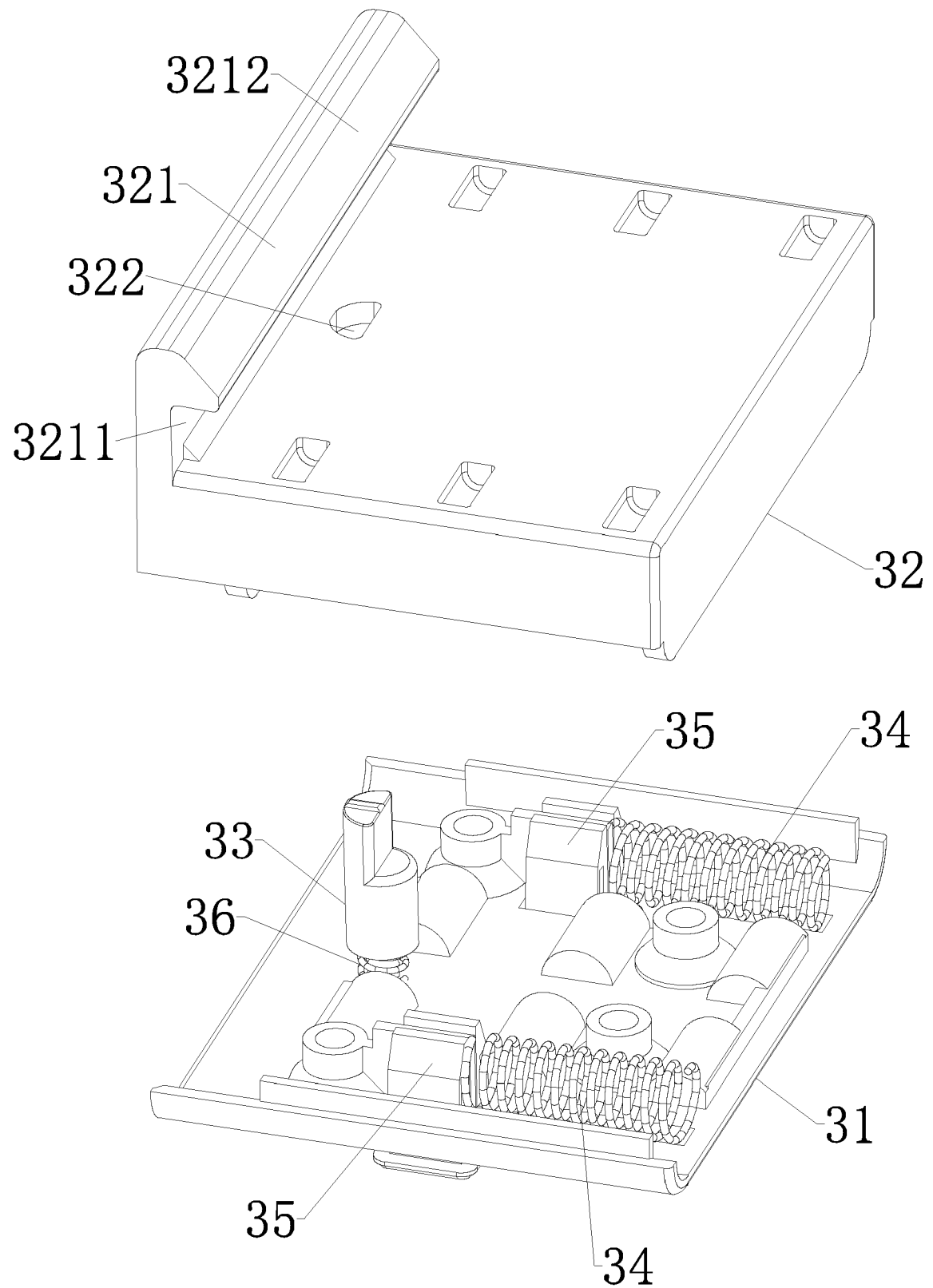


FIG. 4

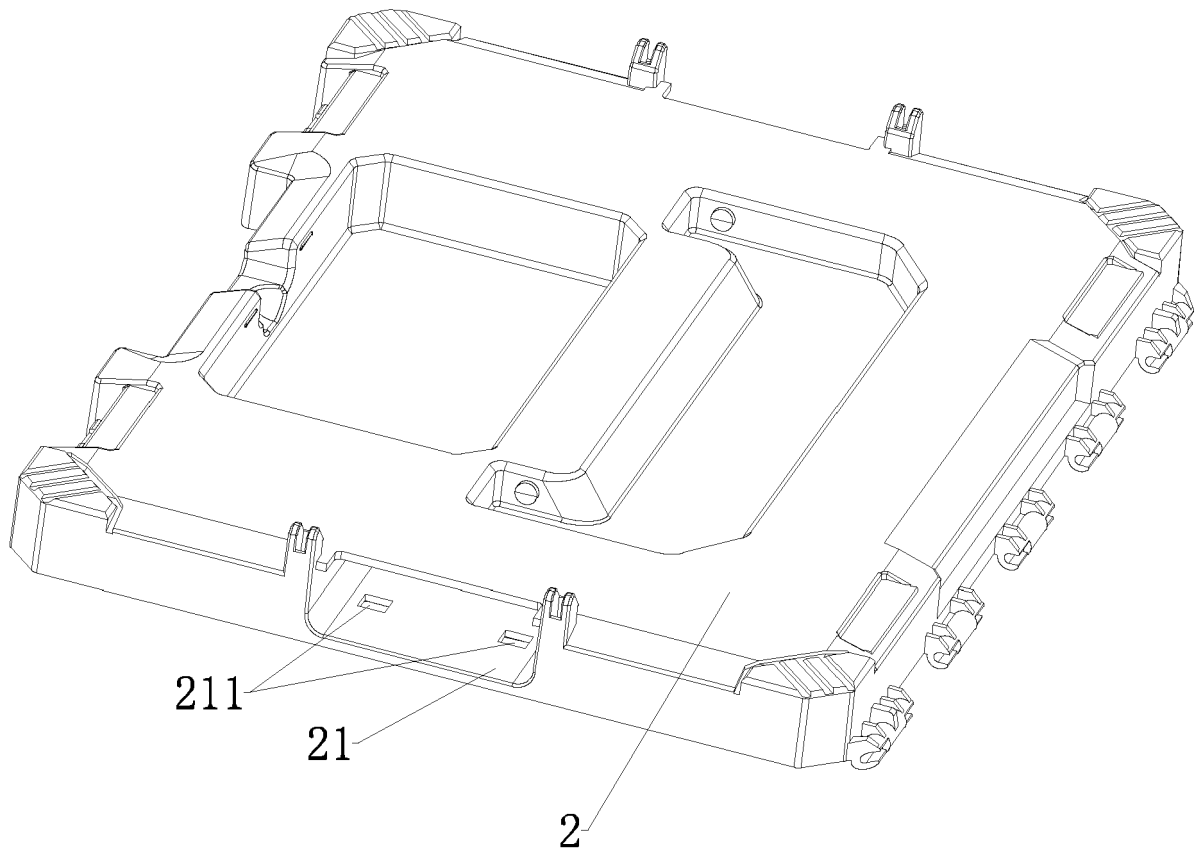


FIG. 5

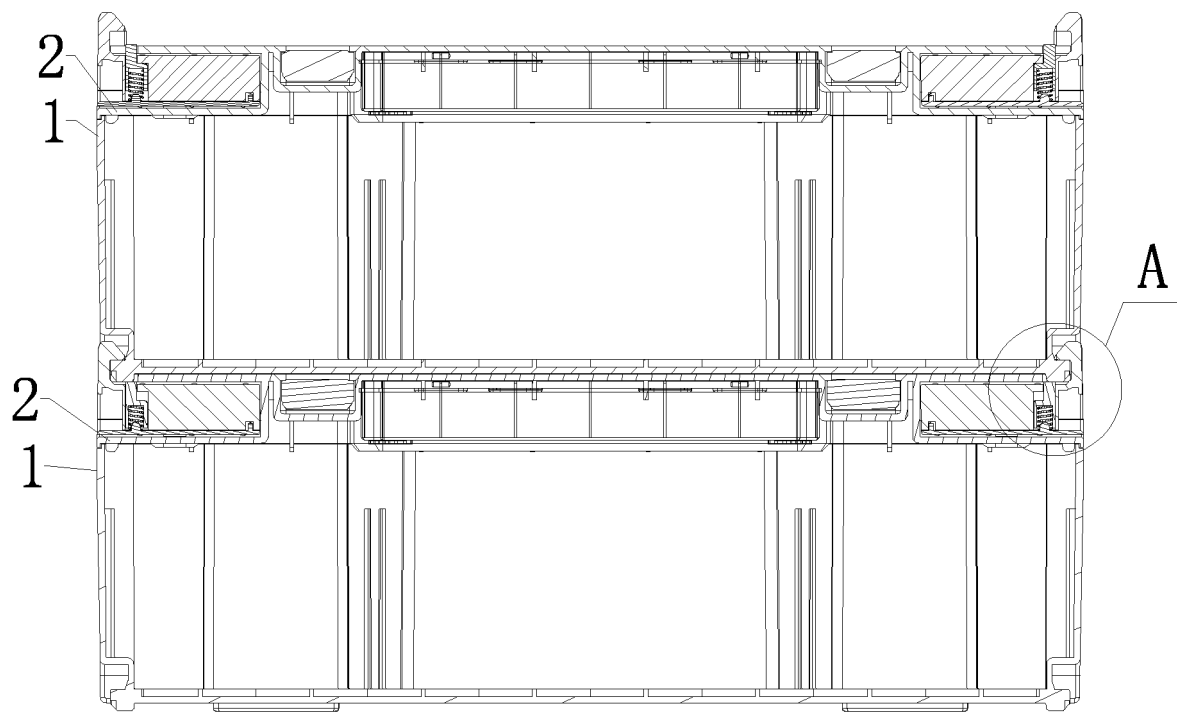


FIG. 6

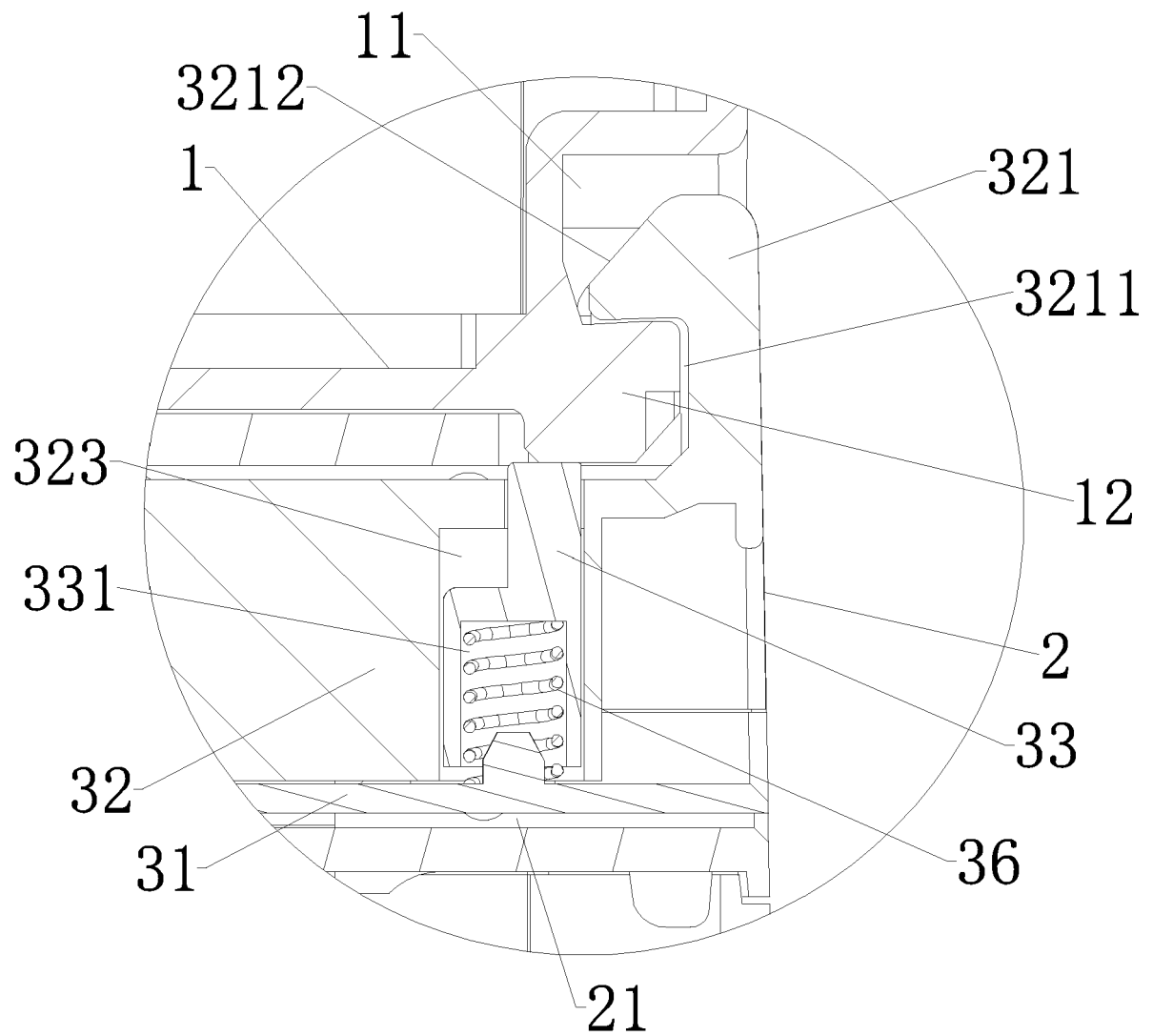


FIG. 7

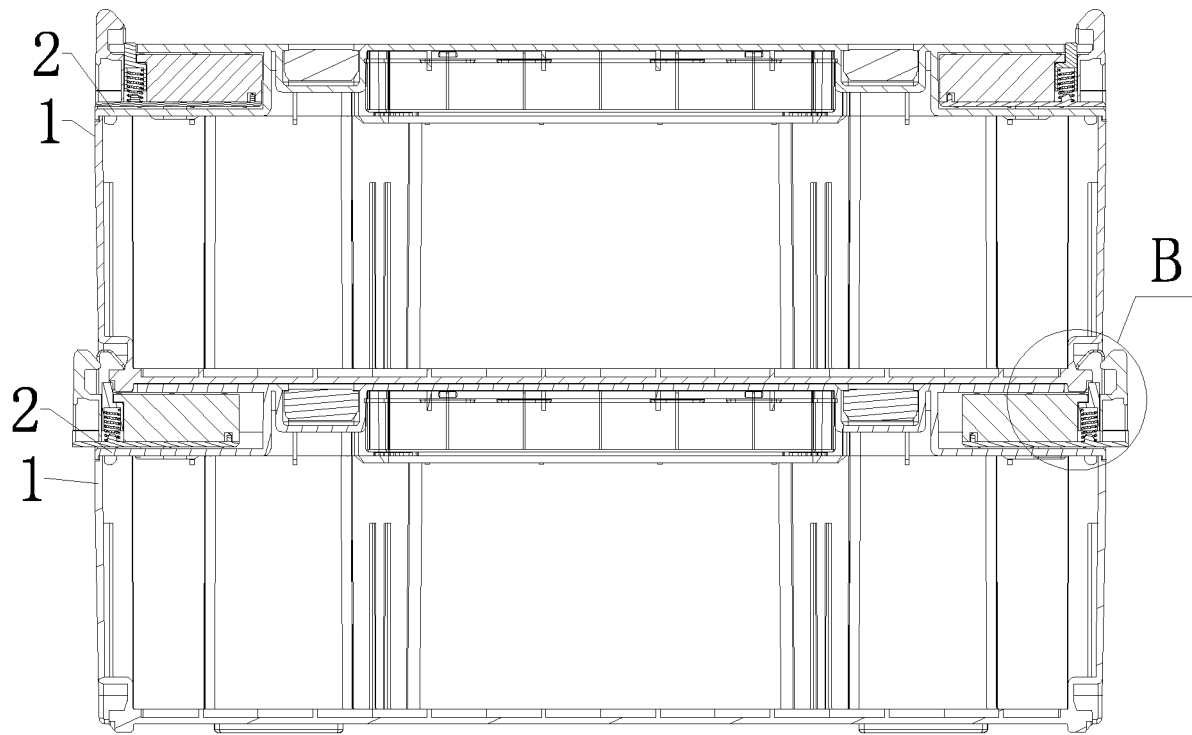


FIG. 8

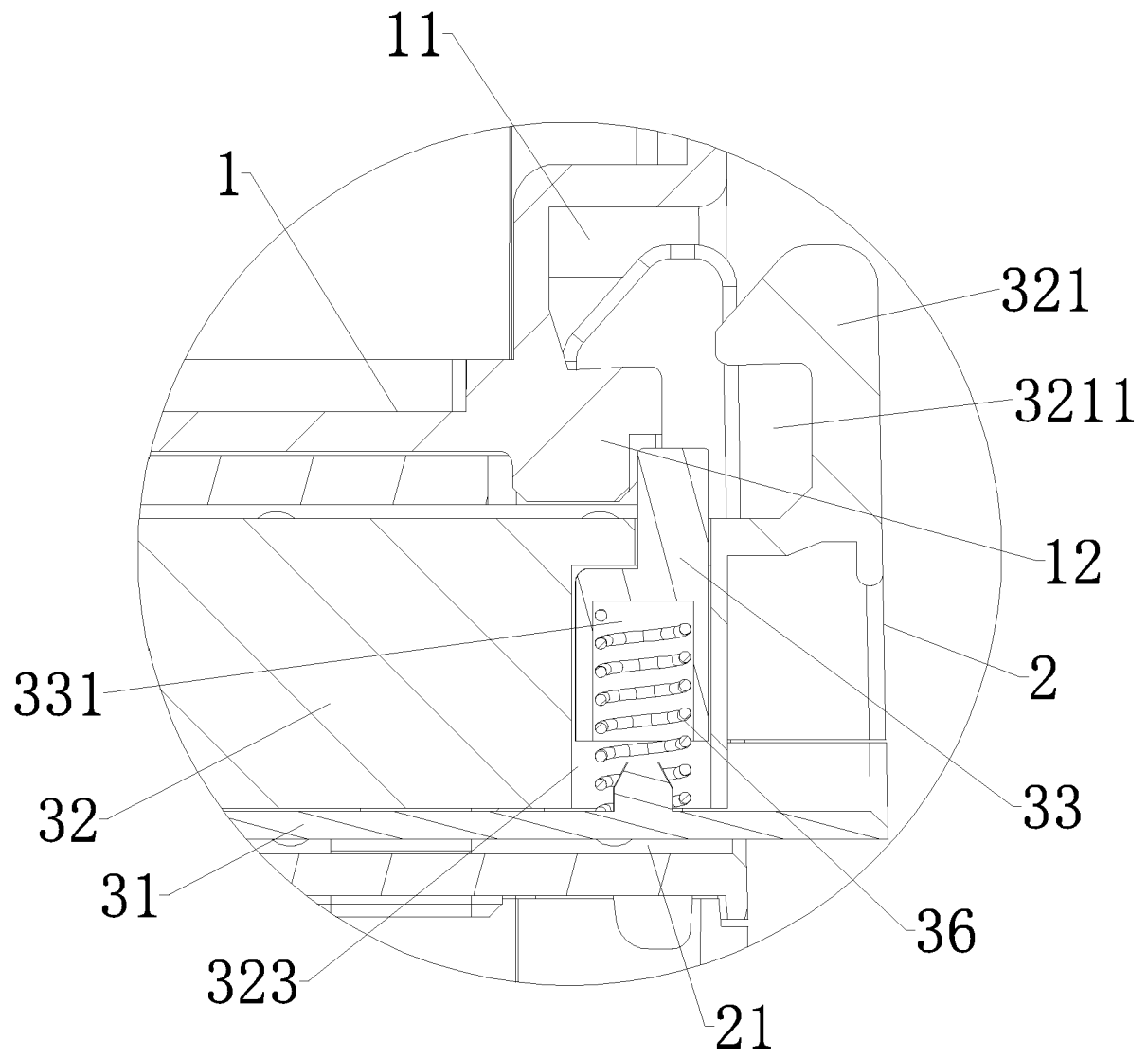


FIG. 9

**REFERENCES CITED IN THE DESCRIPTION**

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